Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Broadcrown Limited

Wednesbury Advanced Conversion Plant
Portway Road
Wednesbury
West Midlands
WS10 7DZ

Permit number

EPR/WP3730EP

Wednesbury Advanced Conversion Plant
Permit number EPR/WP3730EP

Introductory note

This introductory note does not form a part of the permit

This permit controls the operation of a waste gasification plant. The relevant listed activity is 1.2A(1)(ja). The permit primarily implements the requirements of the EU Directives on Industrial Emissions and Waste.

The main features of the permit are as follows:

The Installation will be located at Spreadeagle Works, Wednesbury. The purpose of the Installation will be to gasify waste, produce a syngas and burn the gas in gas engines to generate electricity. The syngas will be purified to the extent that it will no longer be classed as a waste in that when burned it will be not cause emissions higher than those resulting from the burning of natural gas. The installation is bordered on all sides by commercial properties. The nearest residential properties are ~100m to the north, with commercial properties in between. The Installation will be located on a minor aquifer but not within a source protection zone. The River Tame is the closest watercourse at ~750m from the proposed Installation.

Fens Pool (SAC) is ~9km away. There is a Local Nature Reserve and several local wildlife sites within 2km.
The Installation is located in an AQMA that has been designated for NO_2.

Pre-treated received wastes Refuse Derived Fuel (RDF) and Solid Recovered Fuel (SRF) (RDF/SRF to CEN/ISO 15359) will be stored in a reception hall. The hall will be kept under negative pressure with air being drawn through combustion units. The waste will be shredded, dried and cubed to prepare the material for the gasification process.

The waste will then fed into the gasifier which will be a bubbling fluidised bed system that will operate at 740-900^{o}C. The bed material will be kaolinite based fired clay. The fluidising agent will be a mixture of oxygen and steam. A cyclone will remove 80-90% of entrained particulate matter from the syngas with the remainder removed in later clean up stages.

The syngas will also contain tars which will be reformed in a thermal cracking stage where the syngas will be heated to 1050-1200^{o}C through injection of oxygen. The syngas will then be cooled with energy recovery and steam generation to feed back into the gasifier. After cooling to ~160^{o}C, activated carbon and sodium bicarbonate will be injected before passing through a ceramic filtration plant. The syngas will then be quenched and scrubbed to remove any remaining acid and ammonia and then finally through an activated carbon column to remove remaining hydrogen sulphide.

The clean syngas will then be burned in low NOx gas engines to generate electricity. The syngas will be classed as a non waste at this point in that when burned it will be not cause emissions higher than those resulting from the burning of natural gas. Emissions will be abated using SCR with urea. Waste heat from gas engine exhausts will be used to generate electricity using an Organic Rankine Cycle plant. Any additional heat will be available for export if users become available.
The operator will have an Environmental Management System certified to ISO 14001.

The status log of the permit sets out the permitting history, including any changes to the permit reference number

Status Log of the permit		
Detail	**Date**	**Comments**
Application EPR/WP3730EP/A001	Duly made 03/01/14	
Additional Information Requested	27/01/14	e-mail to Applicant
Additional Information Received	04/02/14	
Additional Information Requested	10/02/14	Schedule 5 notice
Additional Information Received	17/02/14	Response to Schedule 5 notice
Permit determined	02/04/14	

End of Introductory Note

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number
EPR/WP3730EP

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010

Broadcrown Limited ("the operator"),

whose registered office is

Airfield Industrial Estate
Hixon
Stafford
Staffordshire
ST18 0PF

company registration number **02897492**

to operate an installation at

Wednesbury Advanced Conversion Plant
Portway Road
Wednesbury
West Midlands
WS10 7DZ

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

Name	Date
Anne Nightingale	**02/04/14**

Authorised on behalf of the Environment Agency

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

(a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.2 Energy efficiency

1.2.1 The operator shall:

(a) take appropriate measures to ensure that energy is recovered with a high level of energy efficiency and energy is used efficiently in the activities.

(b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and

(c) take any further appropriate measures identified by a review.

1.2.2 The operator shall review the practicability of Combined Heat and Power (CHP) implementation at least every 2 years. The results shall be reported to the Agency within 2 months of each review.

1.3 Efficient use of raw materials

1.3.1 The operator shall:

(a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;

(b) maintain records of raw materials and water used in the activities;

(c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and

(d) take any further appropriate measures identified by a review.

1.4 Avoidance, recovery and disposal of wastes produced by the activities

1.4.1 The operator shall take appropriate measures to ensure that:

(a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and

(b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and

(c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

1.4.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the "activities").

2.1.2 Waste authorised by this permit in condition 2.3.3 shall be clearly distinguished from any other waste on the site.

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at schedule 7 to this permit.

2.3 Operating techniques

2.3.1 (a) The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency.

(b) If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan , and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency.

2.3.2 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.

2.3.3 Waste shall only be accepted if:

(a) it is of a type and quantity listed in schedule 2 table S2.2 ; and

(b) it conforms to the description in the documentation supplied by the producer or holder; and

(c) it having been separately collected for recycling, it is subsequently unsuitable for recovery.

2.3.4 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:

(a) the nature of the process producing the waste;

(b) the composition of the waste;

(c) the handling requirements of the waste;

(d) the hazardous property associated with the waste, if applicable; and

(e) the waste code of the waste.

2.3.5 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.

2.3.6 Waste shall not be charged to the gasifier, or shall cease to be charged, if:

(a) any process monitoring limit in schedule 3 table S3.4 is exceeded for any 2 consecutive samples. The gasifier shall not be brought back into operation until the cause for the exceedence is found and rectified.

(b) Syngas is being burned in the flare.

2.4 Improvement programme

2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.

2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

2.5 Pre-operational conditions

2.5.1 The activities shall not be brought into operation until the measures specified in schedule 1 table S1.4 have been completed.

3 Emissions and monitoring

3.1 Emissions to water, air or land

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1, S3.2 and S3.3.

3.1.2 The limits given in schedule 3 shall not be exceeded.

3.1.3 Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

3.2 Emissions of substances not controlled by emission limits

3.2.1 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 measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.2.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;

(b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

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3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Odour

3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.

3.3.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;

(b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.4 Noise and vibration

3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.

3.4.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;

(b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.5 Monitoring

3.5.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:

(a) point source emissions specified in tables S3.1, S3.2 and S3.3;

(b) process monitoring specified in table S3.4;

3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing by the Environment Agency. Newly installed CEMs, or CEMs replacing existing CEMs, shall have MCERTS certification and have an MCERTS certified range which is not greater than 1.5 times the daily emission limit value (ELV) specified in schedule 3 table S3.1. The CEM shall also be able to measure instantaneous values over the ranges which are to be expected during all operating conditions. If it is necessary to use more than one range setting of the CEM to achieve this requirement, the CEM shall be verified for monitoring supplementary, higher ranges.

3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1, S3.2, S3.3 and S3.4 unless otherwise agreed in writing by the Environment Agency.

3.5.5 The monitoring frequency for total sulphur, total halogenated hydrocarbons and heavy metals as referred to in Table S3.4 shall be:

(a) Daily. After 7 successive samples in which the limit is not exceeded, monitoring frequency can be carried out as specified in 3.5.5 (b);

(b) Weekly. After 4 successive samples in which the limit is not exceeded, monitoring frequency can be carried out as specified in 3.5.5 (c). If a weekly sample exceeds the limit then monitoring shall be carried out as specified in 3.5.5 (a).

(c) Monthly. After 3 successive samples in which the limit is not exceeded, monitoring frequency can be carried out as specified in 3.5.5 (d). If a monthly sample exceeds the limit then monitoring shall be carried out as specified in 3.5.5 (b).

(d) Quarterly. If a Quarterly sample exceeds the limit then monitoring shall be carried out as specified in 3.5.5 (c)

3.5.6 If any sample exceeds a limit in Table S3.4 then a further sample for that parameter shall be taken within 1 week or sooner if required by condition 3.5.5

3.6 Pests

3.6.1 The activities shall not give rise to the presence of pests which are likely to cause pollution, hazard or annoyance outside the boundary of the site. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved pests management plan, have been taken to prevent or where that is not practicable, to minimise the presence of pests on the site.

3.6.2 The operator shall:

(a) if notified by the Environment Agency, submit to the Environment Agency for approval within the period specified, a pests management plan which identifies and minimises risks of pollution, hazard or annoyance from pests;

(b) implement the pests management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

4 Information

4.1 Records

4.1.1 All records required to be made by this permit shall:

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and

(d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:

(i) off-site environmental effects; and

(ii) matters which affect the condition of the land and groundwater.

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report(s) shall include as a minimum:

(a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;

(b) the annual production /treatment data set out in schedule 4 table S4.2; and

(c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.

4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:

(a) in respect of the parameters and emission points specified in schedule 4 table S4.1;

(b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4 ; and

(c) giving the information from such results and assessments as may be required by the forms specified in those tables.

4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Environment Agency, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.2.5 Within 1 month of the end of each quarter, the operator shall submit to the Environment Agency using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter.

4.3 Notifications

4.3.1 The Operator shall

(a) in the event that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—

(i) inform the Environment Agency,

(ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and

(iii) take the measures necessary to prevent further possible incidents or accidents;

(b) in the event of a breach of any permit condition, the operator must immediately—

(i) inform the Environment Agency, and

(ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;

(c) in the event of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must

immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.

4.3.2 Any information provided under condition 4.3.1 (a)(i), or 4.3.1 (b)(i) where the information relates to the breach of a limit specified in the permit, shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.

4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

Where the operator is a registered company:

(a) any change in the operator's trading name, registered name or registered office address; and

(b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

(a) any change in the operator's name or address; and

(b) any steps taken with a view to the dissolution of the operator.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

(a) the Environment Agency shall be notified at least 14 days before making the change; and

(b) the notification shall contain a description of the proposed change in operation.

4.3.6 The Environment Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "without delay", in which case it may be provided by telephone.

Schedule 1 - Operations

Table S1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
S1.2 A1 (ja)	The gasification of waste	From receipt of waste to transfer of syngas to purification system. Waste types as specified in table S2.2.
Directly Associated Activities		
Waste preparation	Drying, shredding and pelletizing waste	From receipt of waste to transfer to gasifier
Syngas purification	Syngas cleaning using cyclone, thermal cracker, carbon injection, filtration, scrubbing, condensation, carbon filter	From receipt of syngas to transfer to gas engines or emergency flare.
Electricity Generation .	Generation of electrical power using 3 gas engines and organic rankine cycle	From receipt of syngas to emission of combustion gases. Combustion of syngas that meets the' end of waste' status as approved by the Environment Agency or combustion of natural gas.
Emergency flare	Combustion of syngas in emergency flare	From receipt of syngas to emission of combustion gases.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application	Application document volume 1 sections 3.2.1, 3.2.2, 3.3, 3.4, 3.5, 3.6.1, 4.1, 4.2, 4.3, 4.6.1, 4.6.2. Not duly made response to questions 13, 14 and 17	03/01/14
Additional information	Response to question 5 and the revised odour management plan	04/02/14
Schedule 5 response	Response to question 2	17/02/14

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC1	The Operator shall submit a written report to the Environment Agency on the implementation of its Environmental Management System and the progress made in the certification of the system by an external body or if appropriate submit a schedule by which the EMS will be certified.	Within 12 months of the date on which waste is first burnt.

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC2	The Operator shall submit a written report to the Environment Agency on the commissioning of the installation. The report shall summarise the environmental performance of the plant as installed against the design parameters set out in the Application. The report shall also include a review of the performance of the facility against the conditions of this permit and details of procedures developed during commissioning for achieving and demonstrating compliance with permit conditions.	Within 4 months of the completion of commissioning.
IC3	The Operator shall submit a written report to the Environment Agency describing the performance and optimisation of the Selective Catalytic Reduction (SCR) system and combustion settings to minimise oxides of nitrogen (NOx) emissions within the emission limit values described in this permit with the minimisation of nitrous oxide emissions. The report shall include an assessment of the level of NOx and N_2O emissions that can be achieved under optimum operating conditions.	Within 4 months of the completion of commissioning.
IC4	The Operator shall submit a written report to the Environment Agency on syngas testing carried out under condition 3.5.5 and as required by PO4. The report shall include a comparison of syngas quality compared to the limits in table S3.4.	Within 6 months of the completion of commissioning

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
PO1	Prior to the commencement of commissioning, the Operator shall send a summary of the site Environment Management System (EMS) to the Environment Agency and make available for inspection all documents and procedures which form part of the EMS. The EMS shall be developed in line with the requirements set out in Section 1 of How to comply with your environmental permit – Getting the basics right. The documents and procedures set out in the EMS shall form the written management system referenced in condition 1.1.1 (a) of the permit.
PO2	Prior to the commencement of commissioning, the Operator shall submit a report on the baseline conditions of soil and groundwater at the installation. The report shall contain the information necessary to determine the state of soil and groundwater contamination so as to make a quantified comparison with the state upon definitive cessation of activities provided for in Article 22(3) of the IED. The report shall contain information, supplementary to that already provided in application Site Condition Report, needed to meet the information requirements of Article 22(2) of the IED.
PO3	Prior to the commencement of commissioning, the Operator shall undertake a noise assessment in accordance with the procedures given in BS4142: 1997 (Rating industrial noise affecting mixed residential and industrial areas) in order to verify the assessment provided within the application. The assessment shall include, but not be limited to: ▪ A review of the noise sources from the facility. Where any noise source(s) are identified as exhibiting tonal contributions, they shall be quantified by means of frequency analysis. . A report shall be provided to the Agency detailing the findings of the assessment along with any proposals for noise reductions if the assessment shows that the impacts could be higher than those shown in the application

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
PO4	Prior to the commencement of commissioning; the Operator shall provide a written commissioning plan including timelines for completion, for approval by the Environment Agency. The commissioning plan shall include a written plan for testing the syngas against the parameters set out in table S3.4 of the permit, the expected emissions to the environment during the different stages of commissioning, the expected durations of commissioning activities and the actions to be taken to protect the environment and report to the Environment Agency in the event that actual emissions exceed expected emissions. Commissioning shall be carried out in accordance with the commissioning plan as approved.
PO5	At least three months before commissioning, the operator shall submit details of the odour control system. This shall include information to show that the system has been designed adequately to maintain negative pressure in the reception building.
PO6	Prior to the commencement of commissioning the Operator shall submit details of the start up and shut down operating procedures to the Environment Agency for approval.
PO7	Prior to the commencement of commissioning the Operator shall send a report to the Environment Agency which will contain a comprehensive review of the options available for utilising the heat generated by the process in order to ensure that it is recovered as far as practicable. The review shall detail any identified proposals for improving the recovery and utilisation of waste heat and shall provide a timetable for their implementation.

Schedule 2 - Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
-	-

Table S2.2 Permitted waste types and quantities for gasification of waste	
Maximum quantity	**30,000 tonnes per year**
Waste code	**Description**
19	**WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE**
19 12	**wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 10	combustible waste (refuse derived fuel) meeting CEN/ISO 15359 or equivalent

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements

Emission point ref. & location	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A1, A2, A3 (as shown on site plan in schedule 7)	Oxides of nitrogen	Gas engines	25 mg/m^3	Daily average	Continuous measurement	BS EN 14181 and BS EN 15267-3
	Carbon monoxide	Gas engines	50 mg/m^3	Daily average	Continuous measurement	BS EN 14181 and BS EN 15267-3
	Particulate matter	Gas engines	10 mg/m^3	periodic over minimum 1-hour period	bi-annually	BS EN 13284-1
A1, A2, A3 (as shown on site plan in schedule 7)	Sulphur dioxide	Gas engines	50 mg/m^3	periodic over minimum 1-hour period	bi-annually	BS EN 14791
A1, A2,A3 (as shown on site plan in schedule 7)	Ammonia (NH_3)	Gas engines	No limit set	periodic over minimum 1-hour period	quarterly in the first year of operation, then bi-annual	Procedural requirements of BS EN 14791
A4 (as shown on site plan in schedule 7)	No parameters set	Flare	No limits set	-	-	-

Table S3.2 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
W1 (emission to surface water system and then River Tame as shown on site plan in schedule 7)	No parameters set	Surface water runoff via oil interceptors	No limits set	-	-	-

Table S3.3 Point source emissions to sewer– emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
S1 (as shown on site plan in schedule 7)	No parameters set	Aqueous residues from water treatment plant	No limits set	-	-	-

Table S3.4 Process monitoring requirements – syngas quality				
Location or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Limit**
Syn gas, post gas cleaning line and pre combustion.	Total Sulphur	As specified in condition 3.5.5	USEPA Method 8	50 mg/m^3
	Total halogenated hydrocarbons	As specified in condition 3.5.5	EN 13649	1.5 mg/m^3
	Heavy metals Hg, Cd, Tl, Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	As specified in condition 3.5.5	EN 13485	Limit of detection
	Xylenes	Quarterly	Semi continuous GC or DOAS	100 mg/m^3

Schedule 4 – Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S4.1 Reporting of monitoring data

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air Parameters as required by condition 3.5.1	A1, A2, A3	Quarterly	1 Jan, 1 Apr, 1 Jul and 1 Oct
Process monitoring Parameters as required by condition 3.5.1	Syngas quality	Quarterly	1 Jan, 1 Apr, 1 Jul and 1 Oct

Table S4.2: Annual production/treatment

Parameter	Units
Waste gasified	tonnes
Syngas produced	m^3

Table S4.3 Performance parameters

Parameter	Frequency of assessment	Units
Electrical energy generated and electrical energy exported	Annually	MWh / tonne of waste gasified
Waste heat generated, exported, and used at the installation	Annually	MWh / tonne of waste gasified
Natural gas usage	Annually	Mwh / tonne of waste gasified
Urea consumption	Annually	Kg / tonne of waste gasified
Solid residues from gasifier	Annually	Kg / tonne of waste gasified
Flare operation	Annually	Hours

Table S4.4 Reporting forms

Media/parameter	Reporting format	Date of form
Air	Forms air 1 and air 2 or other form as agreed in writing by the Environment Agency	01/03/14
Process monitoring	Form process1 or other form as agreed in writing by the Environment Agency	01/03/14
Energy generation and export	Form energy 1 or other form as agreed in writing by the Environment Agency	01/03/14
Waste production	Form waste 1 or other form as agreed in writing by the Environment Agency	01/03/14
Raw material usage	Form RM1 or other form as agreed in writing by the Environment Agency	01/03/14
Flare operation	Form F1 or other form as agreed in writing by the Environment Agency	01/03/14

Schedule 5 - Notification

These pages outline the information that the operator must provide.

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 should 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	**EPR/WP3730EP**
Name of operator	**Broadcrown Limited**
Location of Facility	**Portway Road** **Wednesbury** **West Midlands** **WS10 7DZ**
Time and date of the detection	

(a) Notification requirements for any activity that gives rise to an incident or accident which significantly affects or may significantly affect the environment	
To be notified Immediately	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a permit condition	
To be notified immediately	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	**Notification period**

In the event of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment:	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B - to be submitted as soon as practicable

Any more accurate information on the matters for notification 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 which has been or may be caused by the emission	
The dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 - Interpretation

"accident" means an accident that may result in pollution.

"application" means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

"authorised officer" means any person authorised by the Environment Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

"bi-annual" means twice per year with at least five months between tests;

"CEM" Continuous emission monitor

"*CEN"* means Commité Européen de Normalisation

"disposal". Means any of the operations provided for in Annex I to Directive 2008/98/EC of the European Parliament and of the Council on waste.

"*emissions to land"* includes emissions to groundwater.

"*End of Waste*" means syngas that is no longer considered to be a waste and cannot cause emissions higher than those resulting from the burning of natural gas.

"EP Regulations" means The Environmental Permitting (England and Wales) Regulations SI 2010 No.675 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

"emissions of substances not controlled by emission limits" means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission limit**.**.

"groundwater" means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

"*Industrial Emissions Directive"* means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions

"ISO" means International Standards Organisation*.*

"MCERTS" means the Environment Agency's Monitoring Certification Scheme*.*

"quarterly" for reporting/sampling means after/during each 3 month period, January to March; April to June; July to September and October to December and, when sampling, with at least 2 months between each sampling date.

"quarter" means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

"recovery" means any of the operations provided for in Annex II to Directive 2008/98/EC of the European Parliament and of the Council on waste.

"s*hut down"* is any period where the plant is being returned to a non-operational state and there is no waste being fed to the gasifier or agreed in writing with the Environment Agency.

"start up" is any period, where the plant has been non-operational, until waste has been fed to the gasifier to initiate steady-state conditions or as agreed in writing with the Environment Agency.

"Waste code" means the six digit code referable to a type of waste in accordance with the List of Wastes (England)Regulations 2005, or List of Wastes (Wales) Regulations 2005, as appropriate, and in relation to hazardous waste, includes the asterisk.

"Waste Framework Directive" or "WFD" means Waste Framework Directive 2008/98/EC of the European Parliament and of the Council on waste

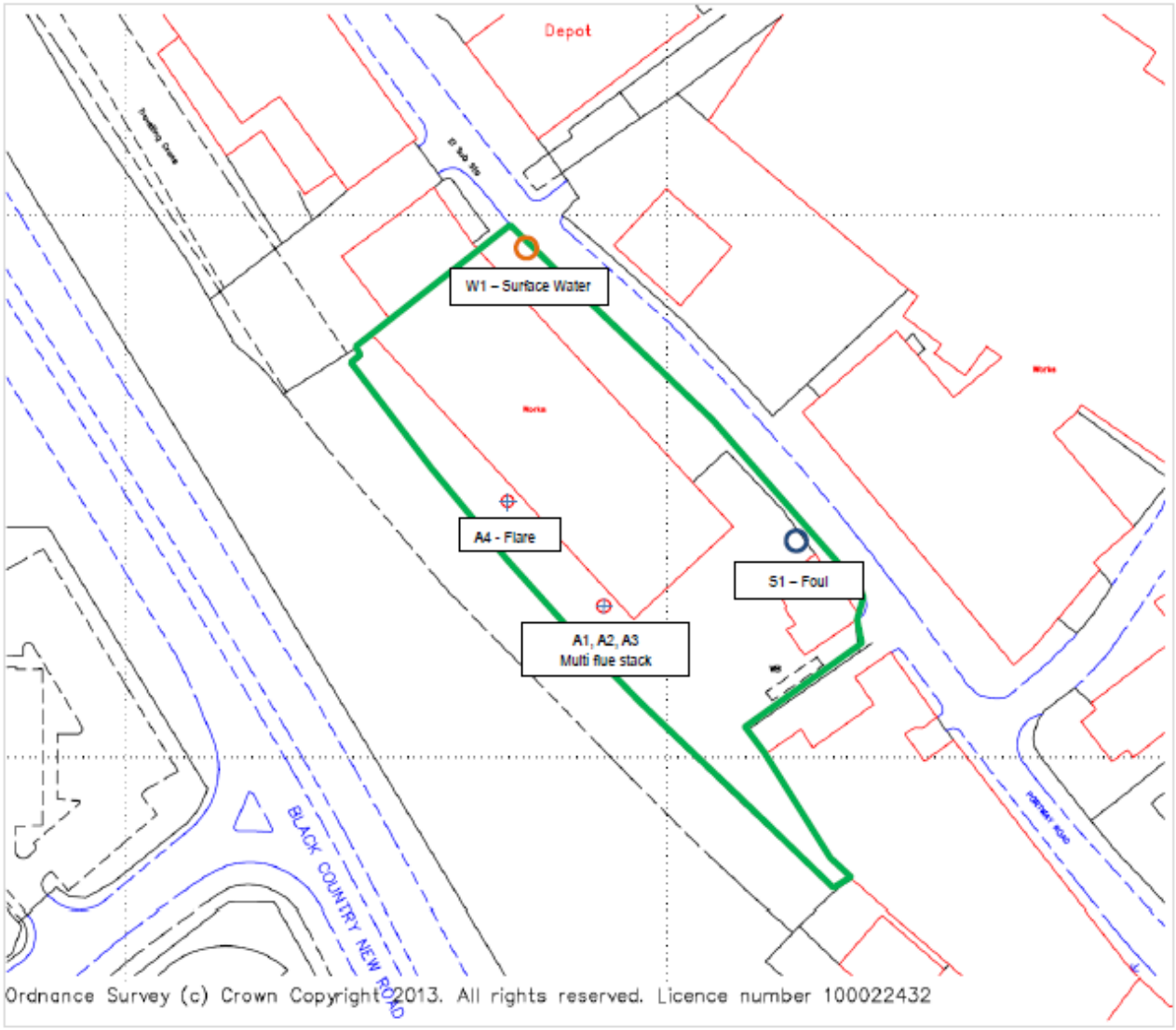
"*year*" means calendar year ending 31 December.

Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

(a) in relation to emissions from gas engines, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 5% dry.

Schedule 7 - Site plan



END OF PERMIT