Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Go Green Fuels Limited

South Marston Demonstration Facility
Units A3 and A4 Marston Gate
Stirling Road
South Marston Park
Swindon
SN3 4DE

Permit number

EPR/JP3336RM

South Marston Demonstration Facility
Permit number EPR/JP3336RM

Introductory note

This introductory note does not form a part of the permit

This permit controls the operation of a gasification plant located at Marston Gate, South Marston Park Swindon. The relevant listed activity is Section 1.2 Part A(1)(ja). “gasification of other carbonaceous material” Refuse derived fuel and wood waste will be gasified to produce a fuel gas, known as syngas, quality tested compressed gas to be used as a vehicle fuel or be injected into the National Grid.

The main features of the permit are as follows:

The site will process a maximum quantity of 7,884 tonnes of RDF and waste wood feedstock per annum via advanced Gasplasma® thermal process. This is a dual system consisting of a single fluidised bed gasifier with a maximum rate of 1 tonne per hour to produce crude syngas. The crude syngas is then transferred from the gasifier to a plasma converter. This system is referred as Gasplasma®. The produced syngas will be purified to the extent that it will no longer be classed as a waste, and its combustion will result in emissions no higher than those resulting from the combustion of natural gas.

The overall facility can be viewed as comprising of three distinct processes:

1. **Syngas Production** converts the RDF into a syngas through the Gasplasma® process which includes cooling, cleaning and conditioning of the syngas. During the syngas cooling stage, steam is produced which is used in the Gasplasma® and methanation processes. This steam is used in the drying of RDF and in the Gasplasma® process. The syngas is compressed to the methanation process operating pressure.

2. **Methanation & upgrading processes.** The syngas is polished to remove catalyst poisons, a water gas shift reaction to obtain the correct ratio of hydrogen to carbon monoxide, a methanation stage and a methane purification stage for removal of CO_2 to ensure that the compressed methane complies with the specifications for use in transport, as well as for grid export (subject to down -stream processing if required). The removed CO_2 is liquefied compressed and stored in tanks for transport off site and use as an industrial gas.

3. **Preparation for Export.** The final stage is to check the quality of the methane to ensure it meets grid and transport specification. For direct supply as transport fuel it is then compressed to 250barg and stored in a tube trailer. For export to grid, the gas is further upgraded using propane as required before being tested and metered onto the local gas grid.

Chapter IV of the Industrial Emissions Directive does not apply whereby article 42 (1) is achieved i.e. syngas is no longer a waste and that it can cause emissions no higher than combustion of natural gas.

There are no emissions to air (other than the use of a flare in an emergency), water or land. Waste waters are tankered off site or, subject to appropriate approval, treated and discharged to the sewer. Molten slag from the plasma converter is recovered, cooled formed a vitrified material meets the end of waste criteria approved for use in the construction industry. This material is trademarked under the name Plasmarok®

The Installation will be located at South Marston Park, Swindon. The immediate area around the installation is industrial with the nearest residential properties being approximately 370m away. North Meadow & Clattinger Farm Special Areas of Conservation is the nearest habitat site at ~9.8km away. There are no Sites of Special Scientific Interest within 2km. The closest other ecological site is Stanton Park (LNR) 469 m away.

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

Status log of the permit		
Description	**Date**	**Comments**
Application EPR/JP3336RM/A001	Duly made 30/03/16	Application for 4.4MW thermal input gasification process.
Schedule 5 dated 22/04/2016	Received 09/05/16	BAT Assessment of Thermal Treatment, Confirmation of Waste Types, Waste reception and Handling, APC Residue Handling and Storage, Flaring, Energy Balance
	Received 19/05/2016	Fire Prevention Plan
Additional information requested by email 22/06/16	Received 23/06/16	Clarification of annual throughput and specification of levels of H_2S and Arsenic in the clean syngas.
Permit determined	25/07/2016	Permit issued to Go Green Fuels Limited

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number

EPR/JP3336RM

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

Go Green Fuels Limited ("the operator"),

whose registered office is

Unit B2/B3 Marston Gate
South Marston Business Park
Stirling Road
Swindon
SN3 4DE

company registration number 06423856

to operate an installation at

South Marston Demonstration Facility
Units A3 and A4 Marston Gate
Stirling Road
South Marston Park
Swindon
SN3 4DE

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

Name	Date
J Linton	**25/07/2016**

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.

1.1.4 The operator shall comply with the requirements of an approved competence scheme or other approval issued by the Environment Agency.

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.

1.3 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.

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 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 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.

2.3.2 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.

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

2.3.4 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 by recycling.

2.3.5 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.

2.3.6 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.

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

(a) any process monitoring limit in schedule 3 table S3.3 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, except during start-up, shutdown or for emergency reasons.

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 and S3.2.

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.

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 and S3.2;

(b) process monitoring specified in table S3.3.

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.

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 and S3.3 unless otherwise agreed in writing by the Environment Agency.

3.5.5 The monitoring frequency for total sulphur, hydrogen sulphide, total halogenated hydrocarbons, heavy metals and total aromatic hydrocarbons as referred to in Table S3.3 shall be:

(a) Daily. After 7 successive daily 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 weekly 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 monthly 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 (b).

3.5.6 If any sample exceeds a limit in Table S3.3 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 from pests;

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

3.7 Fire prevention

3.7.1 The operator shall take all appropriate measures to prevent fires on site and minimise the risk of pollution from them including, but not limited to, those specified in any approved fire prevention plan.

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 In the event:

(a) 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) 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) 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.

In any other case:

(a) the death of any of the named operators (where the operator consists of more than one named individual);

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

(c) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.

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.

4.3.7 Where the operator has entered into a climate change agreement with the Government, the Environment Agency shall be notified within one month of:

(a) a decision by the Secretary of State not to re-certify the agreement;

(b) a decision by either the operator or the Secretary of State to terminate the agreement; and

(c) any subsequent decision by the Secretary of State to re-certify such an agreement.

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 “immediately, 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 other carbonaceous material	From receipt of waste for charging into the gasification system to the transfer of purified syngas off site. No syngas shall be burnt on site except at start up, shutdown and in emergencies, and only those waste types and quantities as specified in tables S2.2 shall be gasified.
Directly Associated Activities		
Syngas purification	Syngas cleaning using thermal cracking, dry gas cleaning activated carbon filter, dual wet scrubbing system.	From receipt of raw syngas to transfer of purified syngas to the compression unit.
Gas compression	Compression of syngas at 0.175 bar(g) from the Gasplasma® process to 250 bar(g) for delivery for road transport fuel.	From receipt of purified syngas which complies with table S3.3 of this permit [i.e. that which results in emissions no higher than those from the combustion of natural gas] to the export of pressurised purified syngas off site.
Electricity Generation	Generation of up to 3MWe by heat recovery boiler (waste heat from fluid bed gasifier) and steam turbine.	From receipt of waste heat to export of electricity to national grid
Emergency flare	Combustion of syngas in emergency flare.	From receipt of syngas to emission of combustion gases. For use at start up, shut down or for emergency reasons only.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application	Document Operating Techniques and Monitoring Plan January 2016	Duly Made 30/03/2016
Response to Schedule 5 Notice dated 22/04/16	Question 1,2,3,4, and 5 CRM 057 006 PE R 010 C Fire Prevention Plan FINAL CONSOLIDATED	Received 09/05/16 Received 19/05/2016
Response to email dated 22/06/16	Confirmation of treatment capacity and annual tonnage, process monitoring of metals.	Received on 23/06/16

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 gasified
IC2	The Operator shall submit a written report to the Environment Agency on the commissioning of the installation. The report shall summarise the environmental and operational 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 carry out checks to verify that the syngas composition is lower than the limits specified in Table 3.3 across a range of operating scenarios and waste feedstock mixes, and that it meets the End of Waste criteria. The Operator shall also carry out analysis of at least 3 samples of natural gas for the parameters specified in table S3.3. A written report shall be submitted to the Environment Agency containing the results of syngas testing and natural gas analysis, and shall include but not be limited to: • A comparison of data between syngas and natural gas for the parameters specified in table S3.3 • Details of the waste types that were gasified to generate the syngas which was sampled and analysed during this verification • Details of process parameters which could be used as surrogate monitoring to provide assurance that syngas quality as specified in table S3.3 will be achieved • Details of any other monitoring / analysis undertaken for quality control for the supply of compressed syngas • A statement of action (including timescales for implementation) to be taken should syngas levels be shown to have higher pollutant levels than detected within the natural gas analysis.	Within 2 months of the completion of commissioning
IC4	The operator shall submit a report on the recovery of ash from process, vitrified product “Plasmarok” material. The report shall include analysis of the ash as specified in Section 5.4 of the Application and confirmation of its suitability for available recovery outlets.	3 months following commissioning
IC5	The operator shall submit a report on the performance of syngas clean up techniques to demonstrate the removal of pollutants as detailed in the application. The report shall include analysis of representative samples of ash, syngas and scrubber residues to demonstrate the removal efficiency of acid gases, dioxins, heavy metals and ammonia abatement.	3 months following 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 Environment Agency web guide on developing a management system for environmental permits (found on www.gov.uk). 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	No combustible waste shall be stored or treated in the reception building until: • The fire detection and suppression system specified in section 4.4.2 of the approved Fire Prevention Plan has been installed and commissioned; • A commissioning plan has been submitted to the Environment Agency that includes, but need not be limited to, confirmation that the above measures have been completed; and the Environment Agency has agreed in writing that combustible waste acceptance may commence.
PO3	At least three months before final commissioning, the operator shall submit proof of agreement for the export and sale of syngas, including evidence that no further processing to the syngas is required prior to use (or any other appropriate documentation demonstrating certainty of use of syngas) for approval in writing by the Environment Agency.
PO4	No waste water shall be discharged to sewer until a discharge consent from Thames Water has been submitted and the Environment Agency has agreed in writing that discharge to sewer may acceptance may commence.
PO5	At least 2 months before final commissioning; the Operator shall provide a written commissioning plan including timelines for completion, for approval by the Environment Agency. The commissioning plan shall include: • Specific operational parameters for the activities listed in Table S1.1 required to define “final commissioning”. • A written plan for sampling and analysis of the syngas against the parameters set out in table S3.3 of the permit, • The expected emissions to the environment during the different stages of commissioning and final 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. • Details of emergency scenarios under which the flare will be used, and confirmation that this will meet the operational requirements of guidance LFTGN05. Commissioning shall be carried out in accordance with the commissioning plan as approved.
PO6	At least 1 month before final commissioning the operator shall submit a Syngas Monitoring Methodology for approval in writing by the Environment Agency - detailing how representative sampling and analysis of syngas will occur to demonstrate that it meets the limits specified in table S3.3. The methodology shall include, but not be limited to: • Sample point location and evidence of homogenous sample collection. • Details of sampling methods, including duration, for representative sampling across different operating loads and waste feedstock. • Sample analysis methods, limits of detection and availability of laboratory accreditation for methods. • Procedures for implementing the requirements of conditions 3.5.5 and 3.5.6, including details of sampling, courier, analysis and reporting responsibilities and timescales. The methodology shall be implemented in accordance with the Environment Agency`s written approval.
PO7	Prior to the commencement of final commissioning the operator shall submit procedures for the management of out of specification syngas to the Environment Agency for approval in writing. Procedures shall include details of syngas specification, how syngas recirculation processes operate and identify processes for the management of syngas where any limit in Schedule 3 Table 3.3 has been exceeded and/or the requirements of conditions 3.5.5 or 3.5.6 are being met.

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 the gasification plant	
Maximum quantity	**7,884 tonnes/annum**
Waste code	**Description**
19 12	**wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 07	wood other than that mentioned in 19 12 06
19 12 10	combustible waste (refuse derived fuel)

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	No parameter set	Waste reception area vent	No limit set			
A2	No parameter set	Carbon Dioxide stripper	No limit set			
A3	No parameter set	Emergency Flare	No limit set			
A4	No parameter set	Ancillary gas boiler	No limit set			
Syngas	No parameter set	Pressure relief valves	No limit set			

Table S3.2 Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements						
Emission point ref. & location	**Source**	**Parameter**	**Limit (incl. Unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
S1 - DRG NoP169-MG-15120300	Aqueous residues from water treatment plant	No Parameters set	No Limit set			

Table S3.3 Process monitoring requirements					
Location or description of point of measurement	**Parameter**	**Limit (incl. unit)** The following calculation shall be used to show compliance with the limits in this table [syngas monitoring result / syngas calorific value) x 37]	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
P1 – post syngas cleaning. Sampling points to be agreed through PO6.	Total sulphur	50 mg/m^3	As specified in condition 3.5.5	Method based on USEPA Method 8	
	Hydrogen sulphide	5 mg/m^3		Method based on USEPA Method 11	
	Total halogenated hydrocarbons	1.5 mg/m^3		Method based on BS EN 13649	
	Heavy metals Hg, Cd, Tl, Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.03 mg/m^3		Method based on BS EN 14385	
	Total aromatic hydrocarbons expressed as Xylene	100 mg/m^3		Semi continuous GC or DOAS or method based on BS EN 13649	
	Calorific value		continuous		

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**
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 exported, imported and used at the installation	Annually	MWh / tonne of waste gasified
Water usage	Annually	m^3 / tonne of waste gasified
Natural gas usage	Annually	MWh / tonne of waste gasified
Solid residues from gasifier/plasma converter unit	Annually	Kg / tonne of waste gasified
Flare operation during start-up and shut down	Annually	Hours
Flare operation during emergency scenarios	Annually	Hours

Table S4.4 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Energy usage	Form energy 1 or other form as agreed in writing by the Environment Agency	25/07/16
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	25/07/16
Process monitoring	Form process1 or other form as agreed in writing by the Environment Agency	25/07/16

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	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
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 limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
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**

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
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

“abatement equipment” means that equipment dedicated to the removal of polluting substances from releases from the installation to air or water media.

“abnormal operation” means any technically unavoidable stoppages, disturbances, or failures of the abatement plant or the measurement devices , during which the emissions into the air and the discharges of waste water may exceed the prescribed emission limit values

“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.

“background concentration” means such concentration of that substance as is present in:

- for emissions to surface water, the surface water quality up-gradient of the site; or
- for emissions to sewer, the surface water quality up-gradient of the sewage treatment works discharge.

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

“CEM” Continuous emission monitor

“CEN” means Commité Européen de Normalisation “bi-annual” means twice per year with at least five months between tests;

“dioxin and furans” means polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans.

“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 or background concentration 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.

‘List of Wastes’ means the list of wastes established by Commission Decision 2000/532/EC replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste, as amended from time to time

“MCERTS” means the Environment Agency’s Monitoring Certification Scheme.

“pests” means Birds, Vermin and Insects.

"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.

"*RDF*" means refuse derived fuel.

"shut 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 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

"*Weekly*" means once in each week.

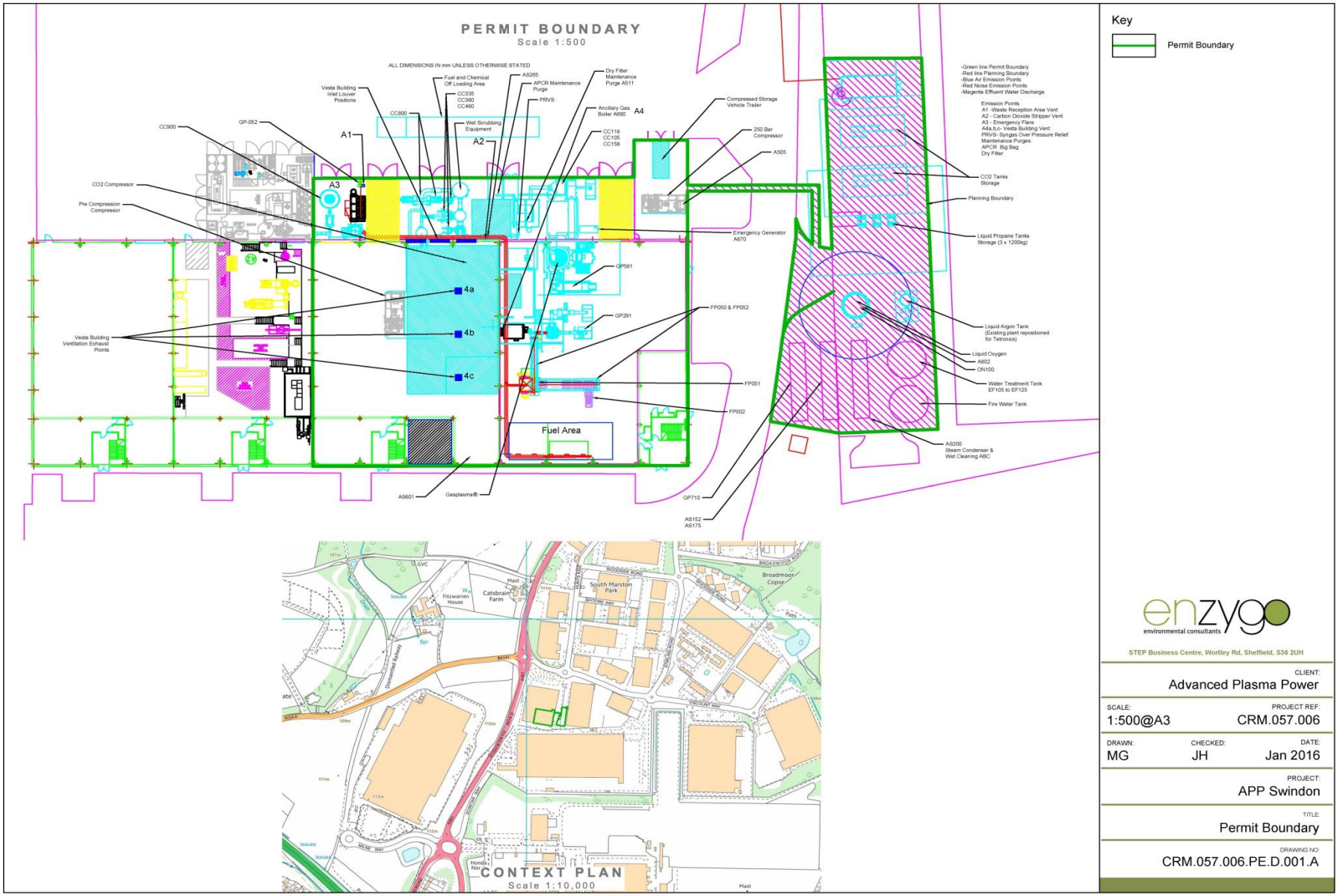
Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

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

(a) in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or

"year" means calendar year ending 31 December.

Schedule 7 – Site plan



END OF PERMIT

Permit Number: EPR/JP3336RM **Operator:** Go Green Fuels Limited

Facility: South Marston Demonstration Facility **Form Number:** **Process 1 25/07/2016**

Reporting of process monitoring for the period from DD/MM/YYYY to DD/MM/YYYY

Emission Point	Substance /Parameter	Emission Limit Value	Reference Period	Result [1]	TestMethod [2]	Sample Date and Times [3]	Uncertainty[4]
P1 Syngas post gas cleaning line and pre-combustion.	Total Sulphur	50 mg/m^3	Frequency as specified within condition 3.5.5		Method based on USEPA Method 8		
	Hydrogen sulphide	5 mg/m^3			Method based on USEPA Method 11		
	Total halogenated hydrocarbons	1.5 mg/m^3			Method based on BS EN 13649		
	Heavy metals [Hg,Cd,Tl,Sb, As,Pb,Cr,Co,Cu,Mn Ni and V and their compounds (total)]	0.03 mg/m^3			Method based on BS EN 14385		
	Total aromatic hydrocarbons expressed as Xylene	100 mg/m^3			Semi continuous GC or DOAS or method based on BS EN 13649		
	Calorific value		Continuous				

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.

[3] For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.

[4] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed …… Date……..

(Authorised to sign as representative of Operator)

Permit Number: EPR/JP3336RM **Operator:** Go Green Fuels Limited

Facility: South Marston Demonstration Facility **Form Number:** Performance 1 25/07/2016

Reporting of other performance indicators for the period DD/MM/YYYY to DD/MM/YYYY

Parameter		**Units**
Electrical energy exported, imported and used at the installation		MWh / tonne of waste gasified
Water usage		M^3
Natural gas usage		MWh / tonne of waste gasified
Solid residues from gasifier/plasma converter unit		MWh / tonne of waste gasified
Flare operation during start-up and shut down		Hours
Flare operation during emergency scenarios		Hours

Operator's comments:

Signed ……. Date……..

(Authorised to sign as representative of Operator)

Permit Number: EPR/JP3336RM **Operator:** Go Green Fuels Limited

Facility: South Marston Demonstration Facility **Form Number:** Energy 25/07/2016

Reporting of energy usage for the period DD/MM/YYYY to DD/MM/YYYY

Energy Source	Energy Usage	MWh	MWh/tonne waste gasified
Electrical produced			
Electricity exported			
Heat Produced			
Heat exported			
Heat/steam used in the installation			

Operator's comments:

Signed ……. Date……..

(Authorised to sign as representative of Operator)