

Environment Agency permitting decisions

Variation

We have decided to issue the variation for Huntingdon Green Energy Generation Facility operated by Energy 10 Limited.

The variation number is [EPR/CP3034CD/V003](#).

The application was duly made on 20/08/14.

The application was submitted as a normal variation and determined as a substantial variation. The addition of new listed activities to the permit classified the application as substantial.

The existing pyrolysis activity schedule reference was amended from Section 5.1 A(1)(b) to a Section 1.2 A(1)(j)(iv) for activities involving pyrolysis of other carbonaceous material. The following listed activities have been added to the permit:

- Section 5.6 A(1)(a) temporary storage of hazardous waste with a total capacity exceeding 50 tonnes.
- Section 5.3 A(1)(a)(ii) disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving physico-chemical treatment.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Structure of this document

- Key issues
- Annex 1 the decision checklist
- Annex 2 the consultation and web publicising responses

Key issues of the decision

This variation authorises the following changes.

- to revise the pyrolysis activity schedule reference from Section 5.1 A(1)(b) to a Section 1.2 A(1)(j)(iv) for activities involving pyrolysis of other carbonaceous material;
- to add a listed activity under Section 5.6 A(1)(a) temporary storage of hazardous waste with a total capacity exceeding 50 tonnes;
- to add a listed activity under Section 5.3 A(1)(a)(ii) disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving physico-chemical treatment;
- to include additional European Waste Catalogue (EWC) codes for treatment in the permit;
- to remove a rotating dryer and an intermediate ball mill and thermal oxidiser from the permit;
- Removal of an on-site composting facility to treat the char from the permit. The char will now be removed from site for disposal or recovery;
- to consolidate the existing bespoke Part A1 relating to the pyrolysis activities (EPR/CP3034CD) and the area of an existing Standard Rules permit for waste storage (EPR/JB3439RK/A001); and
- To reflect a company name change and address change which are now as follows: Energy 10 Huntingdon Limited, 9 Lanark Square, London, E14 9RE. This is a change of detail only and does not change the legal entity that operates the site.

Reclassification of pyrolysis listed activity

The primary activity at the site is an integrated two-stage pyrolysis system which pyrolyses waste in a conversion vessel to produce synthesis gas which is burnt in an engine. The plant is designed to process a maximum quantity of 6 tonnes per hour.

The pyrolysis activity has been reclassified from a 5.1 A(1)(b) non-hazardous waste incineration activity to a 1.2 A(1)(j)(iv) activity involving pyrolysis of other carbonaceous material. The Industrial Emissions Directive (IED) article 42 states that chapter IV on waste incineration and co-incineration shall not apply to gasification or pyrolysis plants, if the gases resulting from this thermal treatment of waste are purified to such an extent that they are no longer a waste prior to their incineration and they can cause emissions no higher than those resulting from the burning of natural gas. There are two elements to this, the syngas must be no longer a waste *and* cause emissions no higher than those resulting from burning of natural gas. The syngas at the Energy 10 Limited Huntingdon site was considered to meet end of waste status in March 2014 provided that the syngas actually meets the specification outline in the variation application EPR/CP3034CD/V003 during operation. We consider

that information submitted in support of the permit variation application (dated 20/08/2014, 22/05/2014 and 05/06/2015) indicates that combustion of the syngas would result in emissions no higher than from natural gas burning (see *syngas composition* section below for further information).

As a result, the activity would not fall within chapter IV and is reclassified from the 5.1 activity specified in the original permit issued in 2009 to a 1.2 activity. The IED Chapter IV emission limit values (ELVs) and monitoring requirements no longer apply to the emissions to air from emission point A1 which includes emissions from the gas engine burning the syngas and the pyrolysis burners. The facility was previously subject to the IED Chapter IV ELVs and monitoring requirements through its previous classification as a non-hazardous waste incinerator. The ELVs incorporated through this variation are subject to different sampling requirements but continue to deliver a high level of protection for the environment and human health. We are satisfied that the ELVs included the permit reflect BAT for this type of plant.

Syngas treatment and composition

The post pyrolysis gas treatment utilised at Huntingdon predominantly relies on wet scrubbing (absorption) techniques. The systems combine water and chemical scrubbing. Further details on the scrubbing process is outlined in the application document 'Post pyrolysis gas clean up and treatment system' dated 01/07/2014.

The permit variation application contained a chemical analysis of the syngas produced by the pyrolyser however; we did not consider that the application contained adequate information to demonstrate that the syngas would produce emissions that are no higher than natural gas. Two schedule 5 notices requesting further information regarding the quality of the syngas were issued to the Applicant on 27 October 2014 and 02 March 2015.

The applicant submitted additional information on 22/05/2015 outlining the results of natural gas metal content sampling results and on 05/06/2015 outlining further syngas metal content sampling results. A revised synthesis gas specification was also submitted on 22/05/2015 for pollutants other than metals. Monitoring methods were based on those outlined in Technical Guidance Note M2. The analysis was carried out in an MCERTS (Environment Agency Monitoring Certification Scheme) accredited laboratory. The following tables summarise the findings.

Table 2 – syngas composition in comparison to natural gas for pollutants other than metals

Substance	Natural gas specification based on CV of >37	Syngas specification based on a CV of 20	Equivalent syngas specification at a CV of 37
Total Sulphur	50 mg/m ³	≤ 27.1	42.28
Hydrogen Sulphide (H ₂ S)	5 mg/m ³	≤ 2.7	4.21
Total	1.5 mg/m ³	≤ 0.8	1.25

Halogenated Hydrocarbons			
Total aromatic hydrocarbons (expressed as xylene)	100 mg/m ³	≤ 54.2	84.55

The results in table 2 shows that the sampling result provided indicate that values of pollutants other than metals are shown to be present in concentrations lower than those in natural gas. Based on these results we can therefore conclude that combustion of the syngas should not result in emissions higher than natural gas, however the condition 3.5.1 in the permit specifies a requirement for ongoing monitoring of these pollutants in line with the requirements in table S3.2 to ensure that actual emissions remain no higher than those from natural gas.

The Applicant compared the metal content of the syngas produced at the Huntingdon site with emission factor data from the European Environment Agency (EEA) and with the composition of natural gas, a sample of which they had analysed.

The results indicate that although the composition of individual metals varies in value, that the overall total level of metals in the syngas is similar to values specified in natural gas analysis composition data from the EEA and also in the analysis sample of natural gas provided by the Applicant. Individual metal values within the syngas are all low in level.

The permit requires monitoring of the syngas composition during operation of the plant. An improvement condition also requires the operator to submit a report outlining syngas composition in comparison to the limits in the permit and to the composition of three additional samples of natural gas within six months following the issue of variation EPR/CP3034CD/V003. Further testing of natural gas is also required to validate the sampling results submitted with the variation application. Although the Applicant provided the analysis of a sample of natural gas, the content of natural gas will vary between samples and therefore further evidence to confirm the expected average composition is required. The Applicant submitted adequate information to allow demonstration that the emissions sampling data could result in emissions no higher than natural gas, however, we require further demonstration of this during the operational stage of the plant to ensure that these criteria are met on an ongoing basis and to confirm that chapter IV IED limits are not applicable.

Summary

We are satisfied that the syngas is no longer a waste and can cause emissions no higher than those resulting from burning of natural gas. This is based on both the EEA emission factor data and when comparing the syngas to natural gas analysis. The improvement condition mentioned above is to confirm this conclusion with both operating data on the syngas and with further natural gas analysis.

Emissions to air

The original impact assessment for emissions to air was based on the maximum IED Chapter IV ELVs. The impact assessment is considered conservative for the emission profile following the variation. The number of gas engines permitted at the site has reduced from two to one and therefore the proposed volume of syngas that will be combusted at the site has decreased. The nitrogen dioxide limit was previously set at 200mg/m³ for one gas engine and a thermal oxidiser and has now been varied to 500mg/m³ for one gas engine. The primary reason for the reduction in number of engines results from the limited capacity of feed in available to the national grid. The thermal oxidiser has also been removed from the site. The mass emission of NO_x will decrease as a result of the variation as set out in the table below.

Table 3 – Emissions of oxides of nitrogen at the installation before and after the variation

Parameters	2 engines, thermal oxidiser	1 engine, no thermal oxidiser
Actual flow rate (m ³ /hr)	32754	16377
Actual flow rate (m ³ /s)	9.098	4.549
Actual O ₂ (%)	11	11
Temp °C	325	325
Temp K	598	598
Ref O ₂	11%	5%
Normalised flow rate (m ³ /s)	4.154	1.293
Emission Limit NO _x (mg/m ³)	200	500
Mass Emission (g/s)	0.831	0.647

A reduction in other combustion gases including carbon monoxide would also be associated with the reduction in the number of engines from two to one.

The applicant covers several other changes to the site infrastructure which will result in a change in the profile of the emissions to air from the site in comparison to the original application. A dryer and ball mill have been removed from the permit which will reduce the potential emissions of particulates from the process.

Waste types

Prior to the variation, the pyrolysis plant could accept only waste wood. The waste types accepted onto the installation following the variation will be classified into three feedstock types as follows:

- Feedstock 1 consisting of mixed waste wood and compost oversize materials;

- Feedstock 2 will consist of refuse derived fuel (RDF) and shredded residual wastes, textiles and packaging;
- Feedstock 3 will consist of oil contaminated residual wastes and oil contaminated textiles and packaging.

As a result of the addition of hazardous waste storage and treatment (see wastes associated with feedstock 3 above for details) to the installation the following listed activities have been added to the permit:

- Section 5.6 A(1)(a) temporary storage of hazardous waste with a total capacity exceeding 50 tonnes.
- Section 5.3 A(1)(a)(ii) disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving physico-chemical treatment.

Although the composition of waste pyrolysed will change following the variation, the requirement is for the syngas which will be burnt in the engines will be treated to a level to allow it to meet the end of waste specification and to produce emissions no higher than natural gas. These criteria will ensure that there is no significant increase in emissions associated with the variation.

Waste storage, handling and processing

All wastes accepted on site are subject to waste acceptance criteria in accordance with the site environmental management plan and associated procedures as follows:

- Waste pre-acceptance;
- Waste acceptance;
- Waste rejection.

All vehicles will enter the site via the existing roadway and report to the weighbridge. All vehicles are directed from the weighbridge to the external waste reception area. All wood waste is tipped onto the external wood waste processing area. All RDF and oil contaminated packaging wastes will be unloaded by forklift and delivered directly into dedicated impermeable concrete storage areas. All oil contaminated materials will be stored in sealed containers or located within a dedicated bunded compound.

Waste will be treated as soon as possible and will be stored in the relevant storage areas for a target timescale of 5 working days. There is a two week maximum storage period to allow for contingencies such as plant maintenance periods. We consider this proposal to be BAT for waste storage in line with the Sector Guidance Note S5.06 Guidance for the recovery and disposal of hazardous and non-hazardous waste.

The waste wood firstly passes through a primary shredder and then a high speed shredder in the external wood processing area. Any visible impurities (metals, glass etc) shall be removed as required and disposed of in the appropriate skip. The shredded work shall be stockpiled for use as fuel as required when it will be transferred to the pyrolysis plant.

All contaminated packaging material will be shredded through a high speed shredder in the main process building. Metallic waste and inert waste will be removed prior to the shredded waste and RDF being transferred directly into the pyrolysis plant feed hopper.

Fugitive emissions

Dust levels will be monitored by a visual assessment. Weather conditions shall be monitored online on a daily basis. The proposed operational practices will minimise dust emissions:

- The shredding equipment will have a dust suppression system to minimise dust emissions.
- Site surfaces will be regularly dampened and cleaned.
- Internal access roads and other vehicle movement areas to be dampened down.

Noise is not anticipated to vary significantly from the original permit application. The tonnage of waste input is not increasing which means no additional deliveries or lorry movements.

There is no anticipated increase in levels of odour at the site. There is no increase in the tonnage of waste brought onto site or processed on site. The oil contaminated waste will be stored in sealed containers and processed within a building. The RDF will arrive on site in shredded form and is fed straight into the process with no treatment required. All waste received will be fed into the process within five working days under normal operating circumstances.

Consolidation of permits

The new bespoke permit and standard rules permit will be consolidated. There will be no increase from the currently permitted 49,000 tonnes of waste processed at the site.

The site is currently permitted under the existing environmental permits to carry out the following activities:

- EPR/CP3034CD: To process 49,000 tonnes of mixed waste wood and off specification composts (EWC 19-12-07; 19-05-03) for the purposes of treatment via pyrolysis;
- EPR/JB3439RK/001): Able to process a maximum of 75,000 tonnes per annum of waste wood. The standard rules will no longer apply and the permitted area covered by the standard rules will be incorporated into bespoke permit EPR/CP3034CD.

Under this permit variation it is not proposed to increase either the total quantity of wastes processed within the Part A(1) Installation. Storage and processing on site will therefore be limited to 49,000 tonnes per annum following the variation.

The land covered by the existing standard rules permit will be incorporated into the Part A(1) installation.

Annex 1: decision checklist

This document should be read in conjunction with the Duly Making checklist, the application and supporting information and notice.

Aspect considered	Justification / Detail	Criteria met
		Yes
Consultation		
Scope of consultation	The consultation requirements were identified and implemented. The decision was taken in accordance with Regulatory Guidance Note 6 High Profile Sites, our Public Participation Statement and our Working Together Agreements.	✓
Responses to consultation and web publicising	The web publicising and consultation responses (Annex 2) were taken into account in the decision. The decision was taken in accordance with our guidance.	✓
Operator		
Control of the facility	We are satisfied that the applicant (now the operator) is the person who will have control over the operation of the facility after the grant of the permit. The decision was taken in accordance with EPR Regulatory Guidance Note 1 Understanding the meaning of operator.	✓
European Directives		
Applicable directives	All applicable European directives have been considered in the determination of the application.	✓
The site		
Extent of the site of the facility	The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility. A plan is included in the permit and the operator is required to carry on the permitted activities within the site boundary.	✓
Site condition report	The operator has provided a description of the condition of the site. We consider this description is satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under IED–guidance and templates (H5).	✓
Biodiversity, Heritage, Landscape and Nature Conservation	The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat. There is no increase in emissions to air in relation to the	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	<p>original permit application. The potential for an increase in fugitive emissions is addressed above.</p> <p>No consultation was carried out with Natural England; this decision was taken in accordance with our guidance.</p>	
Environmental Risk Assessment and operating techniques		
Environmental risk	<p>We have reviewed the operator's assessment of the environmental risk from the facility.</p> <p>The operator's risk assessment is satisfactory. See sections above for further information.</p>	✓
Operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes. See key issues section above for key operating techniques.</p> <p>The proposed techniques/ emission levels for priorities for control are in line with the benchmark levels contained in the Technical Guidance Note and we consider them to represent appropriate techniques for the facility. The permit conditions ensure compliance with relevant BREFs and BAT Conclusions, and ELVs deliver compliance with BAT-AELs.</p> <p>We consider that the emission limits included in the installation permit reflect the BAT for the sector. We made these decisions in accordance with the Technical Guidance LFTGN 08 and Sector Guidance Note 5.6 guidance for the recovery and disposal of hazardous and non-hazardous waste.</p>	✓
The permit conditions		
Updating permit conditions during consolidation	<p>We have updated previous permit conditions to those in the new generic permit template as part of permit consolidation.</p> <p>The operator has agreed that the new conditions are acceptable.</p>	✓
Waste types	<p>We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility. See key issues section for further information.</p> <p>We made these decisions with respect to waste types in accordance with the Sector Guidance Note S5.06 Guidance for the recovery and disposal of hazardous and non-hazardous waste.</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
Pre-operational conditions	Based on the information in the application, we consider that we need to impose pre-operational conditions. Two existing pre-operational conditions remain in the permit.	✓
Improvement conditions	Based on the information on the application, we consider that we need to impose improvement conditions.	✓
Incorporating the application	We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process. These descriptions are specified in the Operating Techniques table in the permit.	✓
Emission limits	We have decided that emission limits should be set for the parameters listed in the permit. Emission limit values (ELVs) for oxides of nitrogen (NO ₂) and carbon monoxide (CO) have been set for emission point A1 from the gas engine. These ELVs are in line the benchmarks specified in Technical Guidance Note 'LFTGN08 v2 2010: Guidance for monitoring landfill gas engine emissions'. We consider the benchmarks specified in LFTGN08 appropriate to be applied to the engine due to the correlation in size. The engine is smaller than the size of boilers/engines to which combustion Technical Guidance Note EPR1.01 is generally applied. It is considered that the ELVs/ equivalent parameters or technical measures will ensure that significant pollution of the environment is prevented and a high level of protection for the environment secured.	✓
Monitoring	We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified. Based on the information in the application we are satisfied that the operator's techniques, personnel and equipment have either MCERTS (the Environment Agency's Certification Scheme) certification or MCERTS accreditation as appropriate.	✓
Reporting	We have specified reporting as specified in Schedule 4 for the following reasons; i) to ensure emissions are within ELVs and equivalent	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	<p>parameters,</p> <p>ii) that the installation is being operated in an efficient manner.</p> <p>We made these decisions in accordance with the Sector Guidance Note 5.6 guidance for the recovery and disposal of hazardous and non-hazardous waste.</p>	
Operator Competence		
Environment management system	<p>There is no known reason to consider that the operator will not have the management systems to enable it to comply with the permit conditions. The decision was taken in accordance with Regulatory Guidance Note 5 on Operator Competence.</p>	✓

Annex 2: Consultation and web publicising responses

Summary of responses to consultation and web publication and the way in which we have taken these into account in the determination process. (Newspaper advertising is only carried out for certain application types, in line with our guidance.)

Response received on 15 October 2014 from
Huntingdonshire District Council (Environmental Health)
Brief summary of issues raised
Environmental Health does not have any objections to the variation being granted but we are aware of previous issues of a build-up of waste wood waiting to be processed so we would request that a suitable condition(s) be included to ensure that un-processed material is stored in a manner that will not cause any issues offsite.
Summary of actions taken or show how this has been covered
The application confirms that the waste will be kept on the site for a target length of five days which is significantly reduced from the 3 months maximum storage requirement in the existing standard rules set. The operator has outlined that in order to cover contingency scenarios such as plant maintenance periods, that a maximum storage time of two weeks may be utilised in such instances. The application contains a pre-operational condition requiring the operator to submit waste acceptance procedures for the wastes.

Response received on 16/10/14 from
Cambridgeshire County Council (Planning Department)
Brief summary of issues raised
There is an existing planning condition relating to noise for the facility. There have been no complaints received in relation to the noise planning conditions within the last three years. The original planning permission referred to processing of waste wood. Three types of waste are identified in the variation application: wood and compost oversized materials; refuse derived fuel (RDF); and oil contaminated wastes. Some of the wastes it is proposed to use as feedstock will be classified as hazardous. The original planning permission was submitted, assessed and approved on the basis that the plant would not accept hazardous waste. For this reason the waste planning authority objects to the application for the environmental permit. The revised plant layout is inconsistent with the site layout plan referred to in the planning permission. The areas are similar however there are a number of features that do not show on the site layout plans such as the water treatment plant; cooling tower and flare. The quantity of wood that may be delivered to the site is limited by the current planning permission to a maximum of 6 vehicle loads per day. The planning permission limits the hours during which wood may be brought onto the site and power operated plant or machinery used to 0730 to 1800 hours.

Summary of actions taken or show how this has been covered
The applicant has been informed of the comments raised by Cambridgeshire County Council relating to the differences between the planning application and permit applications. The applicant stated that they will contact the County Council separately to follow up on the feedback. The number of lorry movements and operating hours are issues which are covered by the relevant planning authority. The waste throughput to the site is not increasing as a result of the variation and therefore should not result in an increase in lorry movements.

Response dated 09 October 2014 received from
Public Health England (PHE)
Brief summary of issues raised
Based solely on the information contained in the application provided, PHE has no significant concerns regarding the risk to health of the local population from this proposed facility, providing that the applicant takes all appropriate measures to prevent or control pollution, in accordance with the relevant sector technical guidance or industry best practice.
Summary of actions taken or show how this has been covered
The application has been assessed against the relevant sector guidance notes and contains standard conditions requiring operation in accordance with the relevant sections within these.

Response received from
Cambridgeshire County Council Director of Public Health
Brief summary of issues raised
No response received
Summary of actions taken or show how this has been covered
No further action required.

Response received from
Health and Safety Executive
Brief summary of issues raised
No response received
Summary of actions taken or show how this has been covered
No action required

The application was advertised on our website for 20 working days. No representations were received during this period.