

Natural Resources Wales permitting decisions

Biomass UK No.2 Limited Barry Energy Production Facility

Decision Document

Minor Technical Variation

The application number is: PAN-004454

The Applicant/Operator is: Biomass UK No.2 UK

The Installation is located at: Barry Energy Production Facility, Woodham Road, Barry, Vale of Glamorgan, CF63 4JE

We have decided to issue the variation for the installation operated by Biomass UK No.2 UK.

We consider that in reaching our decision that we have taken into account all relevant considerations and legal requirements and that the permit will ensure 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

- Table of contents
- Key issues of the decision

Table of Contents

Contents

Natural Resources Wales permitting decisions.....	1
Key Issues of the decision.....	4
1. Our Decision.....	4
2. How we reached our decision.....	5
2.1 Receipt of Application.....	5
3. The Legal Framework.....	5
4. The Regulated Facility.....	5
4.1 Description of the Installation and related issues.....	5
4.1.1 The permitted activities.....	5
4.1.2 The Site.....	7
4.1.3 What the Installation does.....	7
4.1.4 Key Issues in the Determination.....	7
4.2 Operation of the Installation – general issues.....	8
4.2.1 Site Setting, Layout and History.....	8
5. Minimising the Installation’s environmental impact.....	8
5.1 Emissions to Air.....	8
5.2 Assessment of impact on Air Quality.....	9
5.3 Fugitive Emissions to Air.....	9
6. Application of the Best Available Techniques.....	10
6.1 BAT Assessment.....	10
6.2 Setting ELV’s for HF and other permit conditions.....	10
6.3 Monitoring.....	12
6.4 Reporting.....	12

Key issues of the decision

1. Our decision

We have decided to issue the variation to the Applicant. This will allow them to operate the Installation, subject to the conditions in the Permit.

We consider that, in reaching this decision, we have taken into account all relevant considerations and legal requirements and that the permit will ensure that a high level of protection is provided for the environment and human health.

This Application is to operate an Installation which is subject principally to the Environmental Permitting Regulations 2016 ('EPR') and is subject to the requirements of the Industrial Emissions Directive ('IED').

The Permit contains many conditions taken from our Environmental Permit template conditions, including the relevant Annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the EPR and other relevant legislation. This document does not therefore include an explanation for these template conditions. Where they are included in the Permit, we have considered the Application and accepted the details are sufficient and satisfactory to make the template condition appropriate.

2. How we reached our decision

2.1 Receipt of Application

The Application was received on the 18th January 2019 and accepted as duly made on the 18th January 2019. This means we considered it was in the correct form and contained sufficient information for us to begin our determination, but not that it necessarily contained all the information we would need to complete that determination.

3. The Legal Framework

All applicable European directives have been considered in the determination of the application.

NRW is satisfied that this decision is consistent with its general purpose of pursuing the sustainable management of natural resources in relation to Wales and applying the principles of sustainable management of natural resources.

4. The Regulated Facility

4.1 Description of the Installation and related issues

4.1.1 The permitted activities

Regulation 8 EPR defines the categories of 'regulated facility' and provides that a regulated facility of some categories may be carried on as part of the operation of a regulated facility of another category.

For the purpose of regulation 8 EPR, NRW has concluded that the regulated facility is an 'Installation' within which a 'waste operation' is conducted.

The Installation is subject to the EPR because it carries out an activity listed in Part 1 of Schedule 1 to the EPR:

- Section 5.1 Part A(1)(b) – incineration of non-hazardous waste in a waste incineration plant or waste co-incineration plant with a capacity exceeding 3 tonnes per hour.

The EPR definition of “waste incineration plants” and “waste co-incineration plants” say;

“waste co-incineration plant” means a stationary or mobile technical unit whose main purpose is the generation of energy or production of material products and which uses waste as a regular or additional fuel or in which waste is thermally treated for the purpose of disposal through the incineration by oxidation of waste as well as other thermal treatment processes, such as pyrolysis, gasification or plasma process, if the substances resulting from the treatment are subsequently incinerated;”

Ash is used within the process as bed material, however, there is no on-site treatment of ash associated with this Installation.

The plant is waste co-incineration plant because the main purpose of the plant is the generation of energy.

Schedule 1 EPR defines ‘Installation to include ‘directly associated activities’ (‘DAA’). At this Installation, the DAA includes the generation of electricity using a steam turbine, fuel reception & storage, an air-cooled condenser for the recovery of water, residue handling & storage, water treatment of make-up water and air pollution control system. Some of these are ‘waste operations’ for the purposes of regulation 8 EPR and in accordance with that regulation have been included within the Installation.

Together, these listed and directly associated activities comprise the Installation.

4.1.2 The Site

The Installation is located off Woodham Road, Barry, Vale of Glamorgan at NGR ST 12605 67691. The Installation is located within the docks area of Barry on brownfield land immediately adjacent to industrial units on Woodham Road to the south west and Viaduct Road to the north east.

The Installation footprint is bound by David Davies Road to the south and Ffordd y Mileniwm to the north. The eastern extent of the Barry Waterfront development is located approximately 200m to the west of the Installation and Dow Corning Chemical Works complex is located approximately 1km to the north east. The Installation occupies an area of approximately 0.74 hectares.

4.1.3 What the Installation does

The installation is a waste co-incinerator that utilises advanced thermal technology, in the form of gasification, as a means of processing mixed waste wood feedstocks to produce a synthesis gas which is then used to raise steam and generate electricity. The plant can process up to 86,400 tonnes of waste wood and includes diesel as a stand-by fuel and for combustion stabilisation.

4.1.4 Key Issues in the Determination

The key issues arising during this determination are;

- Emissions to air

The applicant proposes to substitute continuous monitoring of hydrogen fluoride (HF) with periodic monitoring. This is a surrogate method laid down in the Industrial Emissions Regulations (IED) at IED Annex VI, Part 6 (2.3) this is discussed in more detail at 6.2 below.

The site has abatement control for HF and hydrogen chloride (HCl), this was assessed in section 6.2.3 in the original permit decision document issued 7th February 2018 and remains unchanged for this variation. The hydrated lime reagent method in place remains BAT and Improvement condition 3 is included in the permit regarding optimisation of the reagent for acid gases.

Abatement of HCl is therefore also considered to be BAT and is expected to ensure compliance with the permit conditions, including emission limit values. With these controls in place, we are satisfied that the plant can meet its emission limits for HF and HCl.

4.2 Operation of the Installation – general issues

4.2.1 Site Setting, layout and history

This application is to allow use of an alternative method of monitoring HF emissions to air. All other aspects of the original application remain valid. The site setting, layout and history of the site is described by the Applicant in section 2.1.1 of the revised Site Condition Report originally supplied to NRW and detailed within the permit Decision Document issued 07/02/18 are accepted as remaining valid.

5. Minimising the Installation's environmental impact

Regulated activities can present different types of risk to the environment, these include odour, noise and vibration; accidents, fugitive emissions to air and water; as well as point source releases to air, water, sewer and discharges to ground or groundwater, global warming potential and generation of waste. All these factors were discussed in the original permit decision document and remain valid for this variation.

5.1 Emissions to Air

There is no proposed change to the current emission profile from the site. The variation allows the substitution of continuous HF monitoring for periodic 3 monthly monitoring, while HCl will be measured continuously.

This alternative monitoring arrangement is provided in IED Annex VI, Part 6 (2.3). The HCl treatment requirements are detailed in 4.1.4 above and continuous measurement of HCl will be undertaken to demonstrate abatement of emissions below the specified limits.

Schedule 3, table S3.1 has been amended to reflect this change.

5.2 Assessment of the Impact on Air Quality

The air quality assessments carried out for the original permit remains valid. The only change is the monitoring period of the HF release to air. Therefore, the original H1 supplied with the application as well as the detailed modelling carried out still stands and was assessed to be compliant with all relevant air quality standards.

The variation application provided an assessment of sensitivity of the predicted HF long-term process contribution (PC) to the revised ELV based upon periodic monitoring. There was no material change in the air quality assessment outcome for HF.

The HF emission limit value has been set at 3 mg HF/m³ at 6% oxygen for periodic monitoring. This is derived from the half hourly 97th percentile HF limit in Part 2, section 1.2 of IED Annex VI which is 2 mg/m³ at 11% oxygen content, this is then converted to 3mg/m³ at 6% oxygen content. This is consistent with similar plants in the UK.

The new ELV for periodic HF monitoring of 3mg/m³ replaces the 1.5 mg/m³ daily average and the 6 mg/m³ half-hourly average from the original permit at Schedule 3, table S3.1.

5.3 Fugitive Emissions to air

There are no changes in fugitive emissions associated with this variation application.

6. Application of the Best Available Techniques

6.1 BAT Assessment

The BAT assessment was conducted in section 6 of the original permit decision document. The conclusion was that the use of lime reagent injection to abate the acid pollutants which includes HF and HCl was agreed to be BAT. Improvement Condition 3 requires details of acid gas control optimisation to be reported within 4 months of completion of commissioning.

6.2 Setting ELV's for HF and other permit conditions

Article 14(3) of the IED states that BAT conclusions shall be the reference for permit conditions. Article 15(3) further requires that under normal operating conditions; emissions do not exceed the emission levels associated with the best available techniques as laid down in the decisions on BAT conclusions.

At the time of writing of this document, no BAT conclusions have been published for waste incineration or co-incineration. The use of IED Chapter IV emission limits for air dispersion modelling sets the worst-case scenario. If the IED limits are used to assess impact and these emissions are insignificant then we accept that the Applicant's proposals are BAT, and that there is no justification to reduce ELVs below the Chapter IV limits in these circumstances.

The environmental impact of the Installation has been assessed against relevant EQSs, at the level of performance required by IED. The Installation will not result in the breach of any EQSs. We accept that the applicant's proposals are BAT and that there is no justification to reduce ELVs below IED levels in these circumstances.

The following improvement conditions were included in the permit so that appropriate verifications can be determined.

- Verification of furnace residence time, temperature and oxygen content (IC2);
- Abatement plant optimisation details (IC3); and
- Calibration of the CEMs in accordance with BS EN 14181 (IC8).

Setting the ELV for the periodic HF monitoring derives from the Industrial Emissions Directive (IED) at Annex VI, Part 6 (2.3)) where it states;

‘The continuous measurement of HF may be omitted if treatment stages for HCl are used which ensure that the emission limit value for HCl is not being exceeded. In that case the emissions of HF shall be subject to periodic measurements as laid down in point 2.1(c).

Point 2.1(c) states *‘at least two measurements per year of heavy metals and dioxins and furans; one measurement at least every 3 months shall, however, be carried out for the first 12 months of operation’.*

This surrogate method is allowable if Hydrogen Chloride is continuously abated and meets the emission levels stipulated in the IED Annex VI, part 3, 1.1.

Daily average emission limit values (ELV's) for waste incineration plants;

Hydrogen chloride (HCl) - 10 mg/m³

Hydrogen fluoride (HF) – 1 mg/m³

Half hourly limits -

HCl – 60 mg/m³ - (100%) 10mg/m³ (97%ile limit)

HF – 4 mg/m³ - (100%) 2mg/m³ (97%ile limit)

(reference conditions - temp 273.15 K, pressure 101.3 kPa, 11% Oxygen)

For setting the ELV for the hourly extractive monitoring the above value for the 97%ile half hourly HF limit was used but corrected from 11% oxygen content to 6% content using the formula derived from Technical Guidance note M2 which uses the standard atmospheric oxygen content of 21%.

$$Fo = \frac{21 - O_2\% \text{ reference}}{21 - O_2\% \text{ measured}} \quad \text{Ref TGN M2 version 12, Box 3.5.}$$

Conversion of a concentration as measured to a concentration at reference oxygen level is achieved by multiplying the concentration by Fo to obtain the oxygen correction factor. This results in the given HF ELV of 3mg/m³ for the 3-monthly extractive monitoring. The limit is for a periodic hourly extraction and is set in the amended Schedule 3, table S3.1.

6.3 Monitoring

For emissions to air, the methods for continuous and periodic monitoring are in accordance with the Environment Agency Guidance M2 for the monitoring of stack emissions to air. NRW has adopted this guidance.

Based on the information in the original application form together with the application form for this permit variation, we are satisfied that the Operator's techniques, personnel and equipment will have either MCERTS certification or MCERTS accreditation as appropriate.

Schedule 3 contains the requirements for 3 monthly monitoring of HF to be carried out in the first year. This will be assessed after 1 year in accordance with the IED. Once this 12-month monitoring programme has been completed and if compliance is demonstrated, the Operator can switch to 6 monthly monitoring of HF. The continuous monitoring of HCl will be in place at the outset.

There are no other changes to the monitoring on-site. Schedule 3, table S3.1 has been amended to incorporate this change.

6.4 Reporting

As above, the emissions from Stack A1 shall be reported to NRW to demonstrate compliance, all other reporting in the permit is unchanged.