

Natural Resources Wales permitting decisions

Bryn Power Limited

Gelliargwellt Farm
Anaerobic Digester Facility

Decision Document

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Bespoke permit variation

The permit variation number is: EPR/AB3092ZE/V003

The applicant /operator is: Bryn Power Limited

The Installation is located at: Gelliargwellt Farm, Gelligaer, Hengoed, CF82 8FY

We have decided to issue the permit variation V003 for Gelliargwellt Farm Anaerobic Digester facility operated by Bryn Power Limited.

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.

The permit is for an operational anaerobic digester facility. The normal variation applied for is to:

- Add a second 1.4 MW_{th} combined heat and power (CHP) engine. This is because the amount of biogas generated from the anaerobic digester is more than originally expected, and more than the capacity of the single engine originally permitted. It is therefore needed to fully recover the energy from the biogas.
- Increase the emission limit for volatile organic compounds (VOCs) from the existing CHP engine. The site has struggled to meet existing compliance limits for VOC for technical reasons, and has sought to increase the limit. They have presented data to show that the change has minimal environmental impact, and that they have taken all reasonable measures to minimise emissions of VOC from the engines.
- Add to the permitted site boundary to incorporate 3 additional areas (external hardstanding, a second biofilter, and some additional parts of the waste reception building which is shared with a separately permitted waste facility [EPR/WB3993HE] and which was formerly the reception for a now redundant in-vessel composting facility). There are no new activities associated with the additional land.
- Add an emission points to water, W1, for uncontaminated surface water which is periodically discharged from a sump to a soakaway.

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.

Key issues of the decision

Receipt of application

Consultation

The consultation requirements were identified and implemented. The decision was taken in accordance with RGN 6 High Profile Sites, our Public Participation Statement and our Working Together Agreements. We do not routinely consult on normal variations such as this.

A copy of the Application and all other documents relevant to our determination (see below) are available for the public to view on our online public register (<https://publicregister.naturalresources.wales/>).

The facility

The regulated facility is an installation which comprises the following activities listed in Part 2 of Schedule 1 to the Environmental Permitting Regulations and the following directly associated activities.

- S5.4A(1)(b)(i) Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving one or more of the following activities: Biological Treatment.

Legislation

NRW is satisfied that this decision is compatible 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

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

The site

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.

This normal variation has been determined following issue of partial surrender AB3092ZE/S004, which was submitted in parallel with this application and surrendered 3 small parcels of unused land from the permit. This variation has added a number of small areas to the permit (area of hardstanding, a second biofilter, and some additional parts of the waste reception building which is shared with a separately permitted waste facility [[EPR/WB3993HE] and was formerly the reception for a now redundant in-vessel composting facility). There are no new activities associated with the additional land. The revised site plan included in the consolidated permit shows the final permitted area following both already determined surrender elements and additions under this variation.

Site condition report

The operator has provided a description of the condition of the areas of land to be added to the site. These detail history of previous use and current condition, and describe in detailed narrative which areas are to be added, and both their previous and intended use. Intrusive sampling is not deemed necessary.

We consider this description is satisfactory. The decision was taken in accordance with our guidance on site condition reports – guidance and templates (H5).

Compared to the area of the permitted facility, the areas to be added are small, and constitute a low risk. The information provided is proportionate.

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 .

Aberbargoed Grasslands special area of conservation (SAC) is within a 10km screening distance of the installation, and is located about 4km from the site.

Nelson Bog site of special scientific interest (SSSI) is within a 2km screening distance of the installation, and is located about 320m from the site.

The site is surrounded by numerous discrete areas of designated ancient woodland and a number of designated local wildlife sites which lie within a 2km screening distance of the installation.

While several protected sites are within screening distance as described, the installation is not within or immediately bordering a designated or protected area.

The only credible mechanism of impact from the proposed changes to the installation on the protected sites is via changes to air emissions from the CHP engines, resulting from addition of a second engine, and changes to emission limit value for the existing engine for VOCs. Direct impacts are improbable given the separation of the installation from the protected areas by at least 100m. The applicant has provided detailed air dispersion modelling in order to assess the impact of the proposed changes to operation on sensitive receptors including these protected sites and habitats. This is discussed in further detail below.

A full assessment of the application and its potential to affect the sites and habitats has been carried out as part of the permitting process, in consultation with habitats experts. We consider that the application will not affect the features of the sites and habitats.

Environmental Risk Assessment

Air

This section of the decision document deals primarily with the dispersion modelling of emissions to air from the stack and its impact on local air quality.

The Applicant has assessed the Installation's potential emissions to air against the relevant air quality standards, and the potential impact upon human health and protected sites and habitats. These assessments predict the potential effects on local air quality from the Installation's stack emission.

The air impact assessments, and the dispersion modelling has been based on the Installation operating continuously at the relevant long-term or short-term emission limit values, i.e. the maximum permitted emission rate, including the increased VOC limit proposed by this variation. The assessment includes inputs from both the existing permitted and proposed second CHP engines, and from two planned small incineration plant on the site to burn waste wood, which will be separately permitted by the local authority. Therefore the model input considers all relevant sources of air pollutants from the wider site operation.

We are in agreement with this approach. The assumptions underpinning the model have been checked and are reasonably precautionary. The way in which the Applicant used dispersion models, its selection of input data, use of background data and the assumptions it made have been reviewed by Natural Resources Wales to establish the robustness of the Applicant's air impact assessment and effect on human and ecological receptors.

A methodology for risk assessment of point source emissions to air, which we use to assess the risk of applications we receive for permits, is set out in the guidance 'Air emissions risk assessment for your environmental permit' (available on the .gov.uk website) and has the following steps:

- Describe emissions and receptors
- Calculate process contributions
- Screen out insignificant emissions that do not warrant further investigation
- Decide if detailed air modelling is needed
- Assess emissions against relevant standards
- Summarise the effects of emissions

The applicant has followed these steps and has provided information on the impact of the proposed changes both at the point of maximum impact, and at a range of nearby sensitive receptors (human and ecological), which we consider are representative of the impact of the installation.

The methodology uses a concept of “process contribution (PC)”, which is the estimated concentration of emitted substances after dispersion into the receiving environmental media at the point where the magnitude of the concentration is greatest. The methodology (known as “H1 assessment”) provides a simple method of calculating PC primarily for screening purposes and for estimating process contributions where environmental consequences are relatively low. It is based on using dispersion factors. These factors assume worst case dispersion conditions with no allowance made for thermal or momentum plume rise and so the process contributions calculated are likely to be an overestimate of the actual maximum concentrations. More accurate calculation of process contributions can be achieved by mathematical dispersion models, which take into account relevant parameters of the release and surrounding conditions, including local meteorology – these techniques are expensive but normally lead to a lower prediction of PC. As the screening assessment of emissions from the installation, with proposed changes, did not screen out as insignificant (with the exception of carbon monoxide), air dispersion modelling has been undertaken.

Once short-term and long-term PCs have been calculated using the air dispersion model, they are compared with Environmental Standards (ES). ES are described in the web guide ‘Air emissions risk assessment for your environmental permit’ (available on the .gov.uk website).

PCs are screened out as Insignificant if:

- the long-term process contribution is less than 1% of the relevant ES; and
- the short-term process contribution is less than 10% of the relevant ES.

The long term 1% process contribution insignificance threshold is based on the judgements that:

- It is unlikely that an emission at this level will make a significant contribution to air quality;
- The threshold provides a substantial safety margin to protect health and the environment.

The short term 10% process contribution insignificance threshold is based on the judgements that:

- spatial and temporal conditions mean that short term process contributions are transient and limited in comparison with long term process contributions;
- the threshold provides a substantial safety margin to protect health and the environment.

Where an emission is screened out in this way, we would normally consider that the Applicant's proposals for the prevention and control of the emission to be appropriate. That is because if the impact of the emission is already insignificant, it follows that any further reduction in this emission will also be insignificant.

However, where an emission cannot be screened out as insignificant, it does not mean it will necessarily be significant.

For those pollutants which do not screen out as insignificant, we determine whether exceedances of the relevant ES are likely. This is done through review of the Applicant's air dispersion modelling taking background concentrations into account. Where an exceedance of an ES is identified, we may require the Applicant to go beyond what would normally be considered necessary for the Installation or we may refuse the application if the applicant is unable to provide suitable proposals.

This is not the end of the risk assessment, because we also take into account local factors (for example, particularly sensitive receptors nearby such as protected habitats sites, see below). These additional factors may also lead us to include more stringent conditions.

If, as a result of reviewing of the risk assessment and taking account of any additional techniques that could be applied to limit emissions, we consider that emissions would cause significant pollution, we would refuse the Application.

Applicant's Air dispersion Modelling - overview

The Applicant's assessment of the impact of air quality is set out in The "air quality assessment" (Feb 2019) report submitted with the variation application. The assessment comprises:

- A screening assessment using the Environment Agency screening tool of emissions to air from the operation of the incinerator.
- Dispersion modelling of emissions to air from the operation of the 2 CHP engines and two planned waste wood incinerators on the same farm (expected to be separately permitted by the local authority).
- A study of the impact of emissions on nearby human population and sensitive habitat / conservation sites.

This section of the decision document deals with the dispersion modelling of emissions to air from the facility as described above, and their combined impact on local air quality. The impact on conservation sites is considered after the first section, which concentrates on the potential impact on human receptors.

The Applicant has assessed the Installation's potential emissions to air against the relevant air quality standards, and the potential impact upon local conservation and habitat sites and human health. These assessments predict the potential effects on local air quality from the Installation's stack emissions using the ADMS 5.2 dispersion model, which is a commonly used computer model for regulatory dispersion modelling. The model used 5 years of meteorological data collected from the weather station at Cardiff airport between 2012 and 2016. . The impact of the terrain surrounding the site upon plume dispersion was considered in the dispersion modelling.

The air impact assessments, and the dispersion modelling upon which they were based, employed the following assumptions. First, they assumed that the ELVs in the varied permit for both engines would be the same as those for the one engine in their

current permit, with the exception of VOC, for which they proposed a higher limit (see separate section below). The limits in the current permit align with guidance for landfill gas [and similar] engines in guidance LFTGN08 (2010). The substances with emission limits are:

- Oxides of nitrogen (NO_x), expressed as NO₂
- Carbon monoxide (CO)
- Sulphur dioxide (SO₂)
- Volatile Organic Compounds (VOCs)

Second, they assumed that the Installation operates continuously at the relevant long-term or short-term ELVs, i.e. the maximum permitted emission rate

We are in agreement with this approach. The assumptions underpinning the model have been checked and are reasonably precautionary.

The Applicant used background air quality modelling data which is publicly available (DEFRA background maps). This data is summarised in the Application and has been used by the Applicant to establish the background (or existing) air quality against which to measure the potential impact of the installation, following proposed changes. They have not used specific background concentrations which are available for some protected habitats sites.

As well as calculating the peak ground level concentration, the Applicant has modelled the concentration of key pollutants at a number of specified locations within the surrounding area, which represent points at which sensitive receptors are or may be present. These are fully detailed in the report. We are in agreement with this approach, in that the points selected are demonstrated to include the nearest, and most impacted human and ecological receptors. 15 residential receptors/area points are modelled. These are the closest human receptors to the installation, spread in all directions, and including the farmhouse which is associated with the installation site/business (therefore the closest human receptors). 7 habitats receptor points are modelled, which are closest to the installation, and in a range of directions.

The way in which the Applicant used dispersion models, its selection and validation of input data, use of background data and the assumptions it made have been reviewed by Natural Resources Wales to establish the robustness of the Applicant's air impact

assessment. Our review of the Applicant's assessment leads us to agree with the Applicant's conclusions. While the exact impact at some of the more distant protected habitats sites have not been quantified, it is evident from the data presented for nearby representative locations, and via isopleth diagrams (which illustrate the dispersion of pollutants with distance from the site), that the maximum impact at all sensitive receptors can be reasonably assessed or screened out.

It is noted that the second CHP engine is already operating (since February 2016), and that non-inclusion of this engine in the original permit was an oversight as the project specification was finalised. This fact does not materially affect our determination process, including the possibility of refusal if environmental impacts are unacceptable. However, it does mean that existing emission impacts already contribute to background pollutant levels used, so the overall effect of the installation on environmental pollutant concentrations will in fact be lower than modelled.

Applicant's Air dispersion Modelling - assessment of outputs

The Applicant's modelling predictions are summarised in the table below.

The Applicant's modelling predicted peak ground level exposure to pollutants in ambient air and at discrete receptors. The tables below show the maximum ground level concentrations in the modelled area for each pollutant. The impact at identified receptors is lower.

Whilst we have used the Applicant's modelling predictions in the table below, we have made our own simple verification calculation of the percentage process contribution and predicted environmental concentration. These are the numbers shown in the tables below and so may be very slightly different to those shown in the Application. Any such minor discrepancies do not materially impact on our conclusions.

Pollutant	EQS / ES		Back-ground	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
	µg/m³			µg/m³	µg/m³	% of ES	µg/m³
NO ₂	40	1	10.4	11.1	27.75	21.5	53.8
	200	2	20.8	72.3	36.2	93.1	46.6
SO ₂	266	3	6.48	89.3	33.6	95.78	36.0
	350	4	6.48	78.9	22.54	85.38	24.4
	125	5	6.48	43.6	34.9	50.08	40.1
CO	10000	6	120	304.0	3.04		
VOC (total)				31.783			
VOC (as benzene)	5	1, 7	0.297	1.589	31.78	1.886	37.72

- 1 Annual Mean
- 2 99.79th %ile of 1-hour means
- 3 99.9th ile of 15-min means
- 4 99.73rd %ile of 1-hour means
- 5 99.18th %ile of 24-hour means
- 6 Maximum daily running 8-hour mean
- 7 Benzene assumed to be 5% of total VOC emission. There is no ES for "total VOC" (see below)

(i) Screening out emissions which are insignificant

From the tables above the following emissions can be screened out as insignificant in that the process contribution is < 1% of the long term ES or <10% of the short term ES for human receptors. These are:

- Carbon Monoxide (which only has a short term ES)

Therefore we consider the Applicant's proposals for preventing and minimising the impact of emissions of these substances to be suitable for the Installation.

(ii) Emissions unlikely to give rise to significant pollution

Also from the tables above the following emissions (which were not screened out as insignificant) have been assessed as being unlikely to give rise to significant pollution in that the predicted environmental concentration is less than 100% (taking expected modelling uncertainties into account) of the relevant ES:

- Nitrogen dioxide (annual and hourly averages), sulphur dioxide (15 minute, hourly and 24-hour averages), Benzene (annual average).

For all those emissions that do not screen out, we have carefully scrutinised the Applicant's proposals to ensure that they are applying the Best Available Technique (BAT) to prevent and minimise impact of emissions of these substances. This is reported later in this document.

(iii) Emissions requiring further assessment

All emissions either screen out as insignificant, or where they do not screen out as insignificant are considered unlikely to give rise to significant pollution.

Applicant's Air dispersion Modelling - Note on assessment of VOC

Volatile organic compounds (VOC) is a term for **carbon-containing** chemicals that have a high vapor pressure, and so tend to be found in emissions to air from industrial processes because they evaporate readily. VOC are not one specific chemical, but a group of chemicals with some similar properties, which are measured together in emissions in a single test.

In biogas, the majority of VOC will be methane (~50%), while non-methane VOC will be typically <1%, with other gases such as nitrogen and carbon dioxide making up the remainder (). When the biogas is combusted in an engine, most of the VOC will be burnt as fuel, but some may remain unburned, or react to form other chemical substances, as a by-product of the combustion process. The majority of VOC in the combustion gases will therefore still be methane, with some other minor components also being present.

There is no ES for VOC (because it is not possible to assess the impact of a group of chemicals where the composition is variable), or for methane (which is not significantly harmful to human health or the environment at relevant concentrations, although it is a potent greenhouse gas). The applicant has therefore used the ES for benzene for their assessment of the impact of VOC, as shown above. This is based on benzene having the lowest (most stringent) ES of organic species likely to be present in VOC.

It is not expected that there would be any significant quantity of benzene in the biogas or combustion gases, rather this is a worst-case assumption for screening purposes. The applicant has assumed that 5% of total VOC is benzene, which again is a worst-case estimate for screening purposes. We are in agreement with this approach.

The above table shows that for VOC emissions, the peak long term PC is greater than 1% of the ES and therefore cannot be screened out as insignificant. Even so, from the table above, the emission is not expected to result in the ES being exceeded, and is therefore unlikely to give rise to significant pollution. Furthermore, the applicant notes that even if it was assumed that 100% of VOC was present as benzene (highly improbable worst-case assumption), although the ES would be breached at the point of maximum ground concentration, the maximum at receptors would be below the ES (97% of ES, taking background into consideration).

Applicant's Air dispersion Modelling - Other factors

No Air Quality Management Areas (AQMAs) have been declared within an area likely to be affected by emissions from the installation. No other specific local factors (other than sensitive receptors detailed in this document) have been identified which would affect the dispersion or impact of the emissions from the installation.

Impact of air emissions on ecological receptors (Habitats sites, SSSIs, non-statutory conservation sites etc).

Protected ecological receptors / habitats within relevant distance criteria of the installation are identified above.

Note that the ES relevant to ecological receptors are different from those for human receptors, with some different substances being considered, and different limits for some substances. These substances/limits are detailed as necessary in the sections below.

European designated Habitats impact assessment (SAC/SPA/RAMSAR)

The nearest European habitats site is 4km from the Installation. The applicant did not present specific calculations of impact at this receptor, instead concentrating on more

local, and more impacted receptors. However, it is clear from the data presented (quantified impacts at 23 points in closer proximity to the site, and isopleth diagrams showing dispersion with distance from the site for selected pollutants/limits) that the process contribution for all relevant pollutants (NO_x annual average and daily average, SO₂, nutrient nitrogen deposition and acid deposition) would be well below 1% for long term ES or 10% for short term ES, and would therefore be insignificant. The 1% significance threshold boundary is within 2km of the installation for all pollutants relevant to habitats assessment.

The Applicant's Habitats assessment was reviewed by Natural Resources Wales, including habitats specialists, who agreed with the assessment's conclusions, that there would be no likely significant effect on the interest features of the protected sites.

SSSI Assessment

The Applicant's assessment of the SSSI within screening distance of the installation was reviewed by Natural Resources Wales, who agreed with the assessment's conclusions, that the proposal does not damage the special features of the SSSI. The table below shows the maximum predicted impact of the installation (with proposed variations) at the SSSI.

Pollutant	EQS / ES	Back-ground	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
Direct Impacts ¹						
NO _x annual	30	13.7	0.248	0.83		
NO _x daily mean	75	27.4	2.93	3.9		
SO ₂	10 ²	1.76	0.098	0.98		
Deposition Impacts ¹						
N Deposition (kg N/ha/yr)	10	29.4	0.025	0.25		
Acidification (Keg/ha/yr)	0.895	2.65	0.014	1.56	2.664	297.65

(1) Direct impact units are µg/m³ and deposition impact units are kg N/ha/yr or Keq/ha/yr.

(2) Lower limit of 10 µg/m³ applied as bryophytes present

It is noted that the applicant assessed impact against the general limit for SO₂ for the protection of vegetation, of 20µg/m³. However, Natural Resources Wales advice is that, as bryophytes are present at sensitive receptor sites, then a lower limit of 10 µg/m³ should be applied, as shown. Our assessment of impact is therefore against this lower limit. While the process contribution in µg/m³ is taken from calculations in the applicant's dispersion modelling, the percentage PC is recalculated for the lower limit, and conclusions are drawn with respect to this limit.

With the exception of acid deposition, all relevant pollutants screen out as insignificant at the maximum point of impact in the SSSI as the PC is less than 1% of long term ES, or less than 10% of short term ES. For acid deposition, where NO_x and SO₂ contribute to acidification by deposition, the predicted PC at point of maximum impact in the SSSI is over the 1% screening threshold, but under 2%. It is noted that the background deposition is already substantially over the critical load.. Recognising the numerous conservative assumptions in the modelling, it is accepted that a maximum calculated <2% contribution within the SSSI from a relatively small magnitude source, while not screened out as insignificant is still not likely to damage the sensitive features of the SSSI.

Assessment of other conservation sites

Conservation sites are protected in law by different legislation. For SACs SPAs, Ramsars and SSSIs we consider the contribution PC and the background levels in making an assessment of impact. In assessing other designated conservation sites we look at the impact from the Installation alone in order to determine whether it would cause significant pollution. This is a proportionate approach, in line with the levels of protection offered by the conservation legislation whilst ensuring that we do not restrict development.

Therefore we would generally conclude that the Installation is not causing significant pollution at these other sites if the PC is less than the relevant critical level or critical load, provided that the Applicant is using appropriate techniques to control emissions and their impacts.

The applicant has modelled the impact of the proposed installation (with proposed variation) on the closest, most impacted conservation sites (other than SSSI and Habitats sites which are considered separately) to the installation. The table below shows the maximum predicted impact at these sites, which are an area of ancient woodland to the east of the installation, and a local wildlife site to the east. The applicant has not modelled the impact at every conservation site within screening distance, which as noted above, are numerous. We are satisfied from examining the available data (impact at 23 discrete modelled points, and isopleth diagrams showing pollutant dispersion) that the two modelled sites represent maximum impact, and impact at other conservation sites will be lower.

Pollutant	EQS / ES	Process Contribution (PC)	
Direct Impacts ¹			
NO _x annual	30	1.079	3.60
NO _x daily mean	75	11.205	14.9
SO ₂	10	0.814	8.14
Deposition Impacts ¹			
N Deposition (kg N/ha/yr) ²	10	0.31	3.1
Acidification (Keg/ha/yr) ²	0.895	0.21	23.46

(1) Direct impact units are µg/m³ and deposition impact units are kg N/ha/yr or Keq/ha/yr.

(2) deposition and acidification limits vary dependent on habitat. The lowest figures in the surrounding area are used in a precautionary approach

The table shows that the PCs are below the critical levels or loads for all pollutants. We have calculated reasonable worst case nitrogen deposition and acidification, as these were not submitted by the applicant. We are satisfied that the Installation will not cause significant pollution at the sites. The Applicant is required to prevent, minimise and control emissions using BAT, this is considered further below.

Emission limits

We have decided that emission limits should be set for the parameters listed in the permit.

The following substances have been identified as being emitted in significant quantities and ELVs have been set for those substances:

- Oxides of Nitrogen (NO and NO₂, expressed as NO₂)
- Carbon monoxide
- Sulphur dioxide
- VOCs

It is considered that the ELVs described above will ensure that significant pollution of the environment is prevented and a high level of protection for the environment secured. The limits for the second engine are the same as already in place for the first engine, with the exception of VOC which is increased for the first engine and set at the same level for the second, for the reasons outlined in this document.

It is noted that the reference conditions for emissions limits has been changed to 5% oxygen correction, which is standard for engines of this type. Previously the permit specified 3% oxygen correction.

Water

In a minor technical change to the existing permit, an existing emission point designated W1 is formally identified in the permit. This is to allow the discharge of uncontaminated surface water (rainwater) only, to a soakaway. The soakaway is already marked on the site plan as part of the installation, but the emission parameters were not recorded. These are now added to table S3.2, and W1 is marked on the site plan. The discharge comprises of rainwater from clean areas (e.g. building roofs) which are discharged continually when it rains, and rainwater which collects in bunds, and is periodically discharged when valves are opened to allow the discharge. There is a management system operating procedure, and testing, to ensure that water from such areas is uncontaminated, before batch discharge (by visual check and testing for ammonia as a surrogate for AD feed/digest contamination). If contamination is detected, this water is not discharged, but is instead returned into the AD process. We are satisfied that the appropriate measures will be in place to prevent pollution of ground and surface water and ensure that only uncontaminated surface water is discharged.

Other pollutants/media (odour, noise, soil, fugitive emissions)

No significant changes to emission of other pollutants, or releases to other media, have been identified as a result of this variation.

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. These monitoring requirements have been imposed in order to ensure that emission limits for air, as laid out in LFTGN08, are complied with.

Based on the information in the application we are satisfied that the operator's techniques, personnel and equipment have either MCERTS certification or MCERTS accreditation as appropriate.

Reporting

Reporting requirements are as established in the previous version of the permit, other than to add the same requirements for the second CHP engine.

Operating techniques

We have reviewed the techniques used by the operator and compared these with the relevant guidance notes in respect of proposed changes to the permit. The only relevant techniques relate to the control of emissions from the CHP engines, specifically VOC.

The original application did not contain sufficient information as to why the site was able to comply with existing, standard VOC limits, so we asked for more information during our determination, referencing techniques referred to in LFTGN08 for controlling VOC emissions from similar engines.

The applicant has responded, and confirmed that all proportionate measures have been taken to reduce VOC emissions as far as possible, including investigation during routine engine maintenance of any reasons for elevated emissions. Specifically, the applicant has confirmed that crankcase emissions are recirculated back into each engine, which is noted in LFTGN08 as a specific control measure for VOCs. Emissions from the engines on this site are higher than benchmark values contained in the TGN owing to specific design characteristics, and operation on the biogas from the AD plant, which varies in composition from site to site, and also differs somewhat from landfill gas, which LFTGN08 concerns. We have accepted the operators justification, and consider the proposed techniques and emission levels to represent appropriate techniques for the facility, on the basis that the impact of proposed emissions at increased VOC limits have been shown to be insignificant and that reasonable efforts have and are being made to minimise emissions.

In assessing the impact of the emissions to air from the site through dispersion modelling, the applicant noted that the existing CHP engines had exhaust stacks which were 4.5m above ground level. Dispersion from stacks at this height led to limited plume dispersion, and higher environmental pollutant concentrations. In order to obtain acceptable environmental pollutant dispersion, stack heights for the two CHP engines were modelled at 10m in the results presented above. When pollutant emission concentrations have been minimised at source through appropriate equipment design and operation, it is acceptable to minimise impact of pollutant

release by ensuring adequate dispersion over a suitably wide area, as confirmed by appropriate modelling. In this case, we accept that 4.5m emission stacks are insufficient, and that 10m stacks are required, given that steps have already been taken to minimise emissions at source. Given that the exhaust stacks on site are currently 4.5m (pending determination of the permit variation), we have included an improvement condition (see below) to ensure that appropriate measures are taken in a timely manner to improve plume dispersion.

The permit conditions

Updating permit conditions during consolidation

We have updated previous permit conditions to those in the new generic permit template as part of permit consolidation. The new conditions have the same meaning as those in the previous permit(s). There are no substantive changes to permit conditions, other than those identified below

The operator has agreed that the new conditions are acceptable.

Improvement conditions

Based on the information on the application, we consider that we need to impose improvement conditions. Details of the improvement conditions used can be found at Annex 1.

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.

Technical competence

Technical competency is required for activities permitted. The operator is a member of an agreed scheme, and has presented evidence of ongoing membership / competence with the permit variation application.

OPRA

The OPRA score at permit issue is 52.

ANNEX 1: Improvement Conditions

IC2	The Operator shall increase the stack height of the emission points A1 and A5 (CHP engine exhausts) to at least 10m above ground level, as identified as necessary in their permit variation V003 air quality assessment (dated February 2019) to ensure sufficient dispersion of pollutants from these sources. The Operator should obtain any necessary permissions, consents etc necessary to undertake the work, which shall be completed as soon as possible, in any case within 6 months of permit variation V003 issue.
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In the event that a height extension is not possible for any reason, the Operator will need to identify and implement alternative options with at least equal emissions impact reduction. In this case the operator shall agree such options and a plan for their implementation in writing, with Natural Resources Wales, within the time allocated for IC2.

ANNEX 3: Consultation Responses

1) Consultation Responses from Statutory Bodies

Response Received from Natural Resources Wales – Conservation Officer	
Brief summary of issues raised:	Summary of action taken / how this has been covered
Clarification of details of proposed changes, in order to fully understand possible impacts on protected habitats.	Conservation has agreed with assessment that proposed variation can be permitted