

Permitting decisions

Variation

We have decided to grant the variation for Stanley's Quarry operated by Mr Ian Bond and Mrs Caroline Bond.

The variation number is EPR/GP3893MX/V006.

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 provides a record of the decision making process. It:

- highlights key issues in the determination
- summarises the decision making process in the decision checklist to show how all relevant factors have been taken into account
- shows how we have considered the consultation responses

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

Read the permitting decisions in conjunction with the environmental permit and the variation notice. The introductory note summarises what the variation covers.

Key issues of the decision

1. Description of the Application

This is a substantial variation. The variation proposes to incorporate several changes to the existing permitted activities in order to enhance overall site performance and implement improvements to the site infrastructure. The proposed changes include the following:

- Addition of third CHP engine
- Addition of organic rankine cycle (ORC) system to utilise heat from emissions from the CHP engines
- Addition of a gas to grid plant including biogas upgrading
- Addition of screw press to remove contaminants to enhance digestate quality
- Addition of air ventilation/extraction system in the reception building
- Replacement of existing emergency flare with two new flares
- Replacement of two existing pasteurisation units with three units
- Incorporation of improvements to the site drainage and secondary containment

2. Air quality and odour assessments

The applicant submitted an Air Quality Assessment in support the changes in this variation application which we audited.

The applicant's air dispersion modelling assessment considers combustion emissions to air from three Combined Heat and Power (CHP) engines on site. These have been modelled as two stacks; with emissions from the two existing CHPs from one stack and the new CHP from another stack. The assessment also considers odour emissions to air from the stack that releases extracted air from the reception building. There is no proposal to include an odour abatement system to serve the reception building.

The emissions from biogas upgrading plant stack were screened out from the Air Quality Assessment as emissions do not occur during normal operation of the plant. The assessment was based on the results from other similar plants. The applicant has confirmed that continuous process monitoring of the stack will be undertaken. To ensure that the applicant's assumptions are accurate we have included two improvement requirements (IC1 and IC2) in Table S1.3 of the permit. These conditions require the applicant to monitor all point source releases to air and following the completion of monitoring, carry out an environmental impact assessment.

The applicant made the following conclusions from the assessments:

- The Process Contribution (PC) of combustion pollutants (Oxides of nitrogen (NO_x expressed as NO₂), Sulphur Dioxide (SO₂), Carbon Monoxide (CO), and VOCs) from the CHP engines are not predicted to lead to exceedences of their respective Air Quality Objectives;
- The PCs of NO_x and SO₂ are not likely to exceed 100% of the relevant Critical Levels or Loads at sensitive ecological receptors.
- Odour emissions from the reception building stack give predicted odour concentrations above the benchmark of 1.5 ou_E/m³ at nearest sensitive receptor Campden Hill Farm. However, the modelling is conservative and used the worst-case scenario and therefore exceedences are considered unlikely.

We audited the applicant's assessments including undertaking detailed check modelling and calculations including sensitivity analysis to our observations.

2.1 Air Quality Assessment

The applicant used air dispersion modelling software ADMS (version 5.2) for their assessment. This is a commonly used computer model for regulatory dispersion modelling. The assessment predict the potential effects on local air quality from the Installation's stack emissions. Meteorological data for the assessment comprises five years continuous monitoring (2012 – 2016) from Pershore Meteorological Station.

The applicant applied a surface roughness value of 0.3 m, the maximum value representative of agricultural areas for the meteorological and dispersion sites. Based on the local topography, this surface roughness value may be high at the meteorological site. We therefore tested sensitivity to this.

We were unable to replicate the emission rates provided in the applicant's report for all pollutants. All necessary parameters for analysis were provided but our calculated values were slightly higher (i.e. around 7% higher). We have tested sensitivity to that.

In addition to modelling gridded receptors, the applicant made predictions at a number of sensitive human health receptors located near the facility.

The applicant included multiple site buildings within the model to consider the implications of building downwash. We have not identified any additional buildings to be included in the model.

The site is located within a quarry and therefore the applicant has taken into account the effects of terrain based on OS Terrain 50 data in their modelling. The ADMS user guide 2 states that gradients of up to 1:3 can be modelled. As the terrain of the quarry is within this gradient, we accept the applicant's use of ADMS.

The applicant has assumed that all VOCs are benzene. This is a conservative assumption as benzene is only likely to account for a small proportion of VOCs in biogas derived from anaerobic digestion of source segregated biodegradable waste.

The applicant has assumed a background for nitrogen dioxide (NO₂) of 5.4 mg/m³, for sulphur dioxide (SO₂) of 1.15 mg/m³, carbon monoxide (CO) of 0.2 mg/m³ and benzene (C₆H₆) of 0.29 mg/m³. These values have been obtained from the Department for Environment, Food and Rural Affairs (Defra)¹ mapped estimates of averaged-background concentrations over 1 km by 1 km grid squares. We have checked the Defra background maps and found background values slightly higher than those used by the applicant.

The applicant's air quality predictions for all pollutants as a maximum at human receptors are presented in Tables 9-11 of the report. For NO₂ they predict a long-term Process Contribution (PC) of 2.8% of the ES and short term PC of 6.4% of the ES. For SO₂ they predict PCs of 11.1%, 7.2% and 9.6% of the ES for 15 minute, hourly and 24 hourly standards respectively. For CO they predict a PC of 0.9% of the 8 hour ES. For VOCs they have predicted a long term PC of 64.2% of the ES, however, this is based on the assumption that the entirety of the VOCs is benzene which is likely to be conservative. In reality the PC is likely to be much lower. When compared against ethylbenzene (which is more likely to be found biogas derived from anaerobic digestion of source segregated biodegradable waste), the impact is insignificant.

The applicant concludes as a Predicted Environmental Concentration (PEC) that the proposed site will not lead to an exceedence of any relevant Environmental Standard (ES).

As a result of our audit, check modelling and sensitivity analysis we agree that any modelling uncertainties are unlikely to affect the conclusions. Consequently, we agree with the applicant's conclusion that it is unlikely the proposed changes to the installation will result in an exceedence of the ES for any pollutants at human receptors.

2.2 Ecological impact assessment

The applicant assessed four habitat sites identified within the Environment Agency guidance screening distance criteria of 2 km for local wildlife sites (LWS). They completed modelling at Campden Wood LWS, Sedgcombe Wood LWS, Norcombe Wood LWS and Bourton Wood LWS.

The applicant compared PCs to the critical levels for annual NO_x, daily NO_x and annual SO₂ in Table 12 of their air quality assessment. At all nearby sensitive habitat sites, the applicant concludes that there will not be an exceedence of 100% of the relevant critical levels.

The applicant presented nutrient nitrogen deposition predictions in Table 12 of their air quality assessment. They predict a PC of less than 100% of the relevant critical loads at all sensitive ecological receptors. The applicant obtained their nutrient nitrogen critical loads from the APIS4 website². We consider these values to be appropriate. The applicant reports that the habitat sites considered are not sensitive to acid deposition and therefore no assessment was undertaken. We have included acid deposition in our sensitivity checks.

As a result of our audit, check modelling and sensitivity analysis, we agree with the applicant's conclusion that no damage will be caused by the proposed changes to the installation. We consider that PCs will be less than 100% of the relevant critical levels and loads at all sites.

2.3 Odour assessment

The applicant states that "the odour concentration of the air within the reception building has been determined from quantitative, at source measurements made within the building during normal operations." This was provided in the Appendices of the applicant's report.

In addition to modelling gridded receptors, the applicant made predictions at multiple sensitive receptors located near the facility. We have checked the locations of these receptors and we are satisfied that they are likely to be reasonably representative of a worst-case odour impact.

The applicant has used an odour benchmark of 1.5 ouE/m³ at the nearest receptor on a 98th percentile basis. According to our H4 guidance³, this benchmark is appropriate based on the waste type (biodegradable waste) which will be delivered to the site.

¹ <http://www.uk-air.defra.gov.uk/>

² www.apis.ac.uk

³ H4 Horizontal guidance – Odour Management

The actual odour emissions from the site will be a horizontal release from a 10 m tall stack with a diameter of 0.6 m. This has been modelled by the applicant as a ground floor release with an 11 m diameter as a conservative assumption. We have tested sensitivity to their modelling approach to ensure worst case impacts have been considered.

The applicant concludes that despite there being predictions of 1.6 ou_E/m³ at receptor 1, Campden Hill Farm, due to the modelling being conservative and showing a worst case, it is unlikely to result in annoyance.

As a result of our audit, check modelling and sensitivity analysis, we agree that any modelling uncertainties are unlikely to affect the conclusions.

We cannot rule out an exceedence of the benchmark of 1.5 ou_E/m³. However, taking context into consideration, we agree with the applicant's conclusions that due to the conservative modelling, it is likely that odour concentrations would be lower than the benchmark at receptor locations.

3. Monitoring and compliance

We have specified that monitoring should be carried out for the parameters listed in Schedule 3 table S3.1 and S3.2 of the permit, using the methods and to the frequencies in those tables. These monitoring requirements have been imposed in order to demonstrate compliance with emission limit values.

Air

Annual monitoring of emissions (Table S3.1 in the permit) from the CHP engines and flares will be undertaken by MCERTS accredited personnel using MCERTS approved methods. The Environment Agency has specified that monitoring of the CHP engines should be carried out in accordance with emission standards in LFTGN 08 - *Guidance for monitoring landfill gas engine emissions* (see Table below) and the monitoring requirements of M2 - *Technical Guidance Note, Monitoring of stack emissions to air*.

Parameter	Emission standard (mg/m ³)
Nitrogen oxides	500
Carbon monoxide	1400
Total volatile organic compounds	1000
Sulphur dioxide	350 (for CHP engine 1 and 2)
	107 (for CHP engine 3)

We have also specified in the permit that emissions testing on the emergency flares should be undertaken 12 months following commissioning and then in the event the flare has been operational for over 10% of the year (876 hours). Guidance for monitoring enclosed landfill gas flares (LFTGN 05) sets out the emission standards for enclosed gas flares (see Table below).

Parameter	Emission standard (mg/m ³)
Oxides of nitrogen as NO ₂	150
Carbon monoxide	50
Total volatile organic compounds	10

4. Secondary containment

This variation incorporates the secondary containment design and construction details that have already been approved by the Environment Agency. Secondary containment is being retrospectively installed to enhance the existing infrastructure on site. Improvements to the secondary containment align with the Environment Agency's Draft Technical Guidance for Anaerobic Digestion and CIRIA 736 guidance. Documents detailing the design and construction are incorporated to the Table S2.1 Operating Techniques of the permit.

5. Derogation BAT 34 – Odour abatement

The applicant's proposal includes an installation of ventilation/air extraction system within the waste reception building. However, there is no proposal to treat the extracted air prior to release through a 10 m stack. Section 3.1.2 of BAT conclusion (published on 17 August 2018) requires use of one or combination of techniques listed in BAT 34 in order to reduce channelled emissions to air of dust, organic compounds and odorous compounds.

During the determination, we requested the applicant to provide details of their choice of abatement technology along with an options appraisal via an information notice dated 13 December 2018. In their response of 21 January 2019, the applicant submitted a request for a derogation from BAT 34.

We have not assessed the applicant's derogation proposal at this time. We have decided to allow the operation of the air extraction system without the odour abatement. This is because:

- The site poses a relatively low risk of odour pollution due to its remote location in a quarry void.
- The proposed changes do not increase the odour risk of the overall installation.
- We are satisfied that there have not been records of any odour complaints during the operational life of the site.
- The odour modelling submitted in support of this application is conservative and we agree with the applicant's conclusions that it is likely that odour concentrations would be lower than the benchmark at receptor locations.
- The operator has an odour management plan in place. The plan has been updated to consider the changes proposed in this application. We are satisfied with the updated plan.

The review of permits in the Biowaste Treatment Sector in line with the Waste Treatment BREF and BAT Conclusions will commence in 2019. There are no exact details of the Sector review or derogation process at the present time. We will re-visit the issue of odour abatement and derogation during the Sector review.

Decision checklist

Aspect considered	Decision
Receipt of application	
Confidential information	A claim for commercial or industrial confidentiality has not been made.
Identifying confidential information	We have not identified information provided as part of the application that we consider to be confidential.
Consultation	
Consultation	<p>The consultation requirements were identified in accordance with the Environmental Permitting Regulations and our public participation statement.</p> <p>The application was publicised on the GOV.UK website.</p> <p>We consulted the following organisations:</p> <ul style="list-style-type: none"> • West Oxfordshire District Council – Environmental Health • Cotswold District Council – Planning • Director of Public Health - Gloucestershire • Public Health England <p>The comments and our responses are summarised in the consultation section.</p>
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 including the emission points. The plan is included in the permit.
Biodiversity, heritage, landscape and nature conservation	<p>The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat.</p> <p>We have assessed the application and its potential to affect all known sites of nature conservation, landscape and heritage and/or protected species or habitats identified in the nature conservation screening report as part of the permitting process.</p> <p>We consider that the application will not affect any sites of nature conservation, landscape and heritage, and/or protected species or habitats identified.</p> <p>See key issues for further information.</p>
Environmental risk assessment	
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.</p> <p>Air Quality and Odour</p> <p>See key issues for further information.</p>

Aspect considered	Decision
	<p><u>Noise</u></p> <p>We have reviewed applicant's noise risk assessment and used our Qualitative Noise Screening Assessment Tool to check whether a quantitative noise impact assessment and noise management plan is required. Based on the screening outcome, we consider that there is no need for further assessment.</p>
Operating techniques	
General operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes and we consider them to represent appropriate techniques for the facility. The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.</p>
Operating techniques for emissions that screen out as insignificant	<p>Emissions of (Oxides of nitrogen (NO_x expressed as NO₂), sulphur dioxide (SO₂), carbon monoxide (CO) and volatile Organic Compounds (VOCs) have been screened out as insignificant, and so we agree that the applicant's proposed techniques are BAT for the installation.</p> <p>We consider that the emission limits included in the installation permit reflect the BAT for the sector.</p>
Odour management	<p>We have reviewed the odour management plan in accordance with our guidance on odour management.</p> <p>We consider that the odour management plan is satisfactory. The proposed changes do not change the site's overall odour risk.</p>
Fire prevention plan	<p>We have removed condition 3.7 relating to Fire prevention plan from the permit. This condition was inserted to the permit in error during the previous IED variation. The AD facilities fall outside the scope of our Fire prevention plan guidance.</p>
Permit conditions	
Updating permit conditions during consolidation	<p>We have updated permit conditions to those in the current generic permit template as part of permit consolidation. The conditions will provide the same level of protection as those in the previous permit(s).</p>
Pre-operational conditions	<p>Based on the information in the application, we consider that we need to impose pre-operational conditions.</p> <p>The applicant proposes to store solid waste from the screw press in the external yard area in the future. To ensure that the applicant has pollution control measures in place prior to operation of this storage, we have included pre-operational measure 1 in Table S1.4 of the permit.</p>
Improvement programme	<p>Based on the information on the application, we consider that we need to impose an improvement programme.</p> <p>We have imposed an improvement programme (IC1 and IC2) to ensure that assumptions made in the application in relation to emissions to air are accurate. See section 2 of <u>key issues</u> for further information.</p>

Aspect considered	Decision
Emission limits	<p>ELVs have been added for the following substances:</p> <p>Oxides of nitrogen (NO_x expressed as NO₂), sulphur dioxide (SO₂), carbon monoxide (CO) and VOCs in relation to emission points A1 and A2 as shown in Schedule 7 of the permit.</p> <p>Oxides of nitrogen (NO_x expressed as NO₂), carbon monoxide (CO) and VOCs in relation to emission points A3a and A3b as shown in Schedule 7 of the permit.</p>
Monitoring	See section 3 of <u>key issues</u> .
Reporting	Reporting is required for emissions to air from the monitoring points A1, A2, A3a and A3b.
Operator competence	
Management system	There is no known reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.
Growth Duty	
Section 108 Deregulation Act 2015 – Growth duty	<p>We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit.</p> <p>Paragraph 1.3 of the guidance says:</p> <p>“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”</p> <p>We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.</p> <p>We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.</p>

Consultation

The following summarises the responses to consultation with other organisations, our notice on GOV.UK for the public and the way in which we have considered these in the determination process.

Responses from organisations listed in the consultation section

Response received from
West Oxfordshire District Council – Environmental Health
Brief summary of issues raised
No adverse comments to make. The application states that there is no increase to annual waste throughput at the facility. Requiring confirmation that the Environment Agency will monitor the throughput.
Summary of actions taken or show how this has been covered
Table S2.2 of the permit sets a limit of maximum annual throughput of 70 000 tonnes. There is no change to this limit as a result of this variation. The operator is required to submit annual Waste Returns to the Environment Agency.

Response received from
Cotswold District Council – Planning
Brief summary of issues raised
Referring to comments made by West Oxfordshire District Council – Environmental Health.
Summary of actions taken or show how this has been covered
As above.

Response received from
Public Health England
Brief summary of issues raised
No significant concerns regarding the risks to the health of the local population from the installation.
Summary of actions taken or show how this has been covered
No action required.