

# **Environment Agency permitting decisions**

## **Bespoke permit**

We have decided to grant the permit for Coleshill Food Waste Anaerobic Digestion Plant operated by Severn Trent Green Power Limited.

The permit number is EPR/BP3537VX.

The permit is for a new food waste anaerobic digestion plant which will operate under Section 5.4 Part A (1)(b)(i) of the Environmental Permitting Regulations 2010. The facility will comprise of the anaerobic digestion plant (AD) plant and associated combined heat and power (CHP) plant. The facility is designed to process up to 48,500 tonnes of incoming feedstock per annum.

Biogas drawn off from the digesters will be used to generate electricity and heat via two spark ignition CHP engines with an aggregated thermal input of 6MW. The facility will generate in the region of 2.4MW of electrical output, in order to supply the AD facility and the adjacent Coleshill STW works, and for export of any surplus electricity to the national grid. The heat produced from the engines will be recovered and integrated in the process heating requirements.

The by-product from the process (liquid digestate) will be stored in tanks prior to despatch off-site as a soil conditioner. The spreading of digestate on land is not included or authorised by this Environmental Permit.

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 responses

## Key issues of the decision

### Waste handling

#### *Pre-acceptance of waste*

The Applicant has identified those indicative Best Available Techniques (BAT) requirements in section 2.1.1 of Technical Guidance IPPC S5.06 which apply to the proposed facility. They report that prior to the acceptance of waste at the site they will produce a waste pre-acceptance procedure that will ensure that these indicative BAT requirements are met. Given the nature of the application in general and on discussions with the Applicant we have no reason to believe that they will not be able to meet these requirements, but accept that their procedure is still in development. We have therefore included a pre-operational condition (PO2) in the permit requiring the Applicant to confirm the specific details of their waste pre-acceptance procedures (for approval) prior to operation.

#### *Acceptance of waste*

Delivery vehicles will be weighed on arrival at the facility via its weighbridge. On arrival at the site, the vehicle will be met by site personnel who will check the vehicle and documentation associated with the waste load for any discrepancies. Before accepting the waste they will also ensure that the site is (a) adequately manned, and (b) that there is adequate space within the reception building. Upon acceptance, the delivery vehicles will enter the waste reception building through fast acting roller shutter doors which will be closed immediately in order to control odours. The building is equipped with 2 unloading bays to accommodate different waste streams and vehicle types.

Solid food wastes will normally be deposited into the waste bunker in the reception building immediately upon acceptance. A small quantity will first be offloaded for inspection, and in the event of contamination the vehicle will be rejected. The offloaded contaminated material will then be quarantined in a designated area within the reception building. Any stored food waste containers will be clearly labelled with well-fitting lids, caps and valves secured in place and any found to be damaged, corroded or unlabelled will be put into the quarantine area. Liquid wastes arriving by tanker will be appropriately sampled prior to acceptance whereupon the waste will be pumped into the underground storage tanks. After depositing their waste load, vehicles (and pipework if necessary) are washed prior to exiting the building via another fast acting door. Any quarantined wastes will, where possible, be removed during the same working day.

We have compared the waste acceptance procedures submitted by the Applicant against indicative BAT requirements. We are satisfied that the Applicant's waste acceptance procedures are consistent with the indicative BAT requirements given in section 2.1.2 of Technical Guidance IPPC S5.06. We also accept that some of the procedures are still in development, for example, the 'rejection, tracking and reporting of non-conforming loads.' Therefore we require the Applicant to confirm the specific details of their waste acceptance procedures (for approval) prior to operation, in accordance with pre-operational condition PO2.

### **Waste composition**

The incoming feedstock will consist of biodegradable, organic food wastes from the commercial and industrial sectors, and energy crop in the form of silage. The Applicant is proposing to accept only waste types which are in line with the Environment Agency/WRAP Quality Protocol for Anaerobic Digestate (January 2014). Having reviewed the European Waste Catalogue (EWC) list contained within the application we are satisfied that the proposed wastes are suitable for processing at the facility.

### **Assessment of Impact on Air Quality**

The Applicant's assessment of the impact on air quality is set out in the Application and comprises of dispersion modelling of emissions to air from the operation of two Combined Heat and Power (CHP) engines; and from the operation of an emergency gas flare. The Applicant's modelling included the following key pollutants;

- oxides of nitrogen ( $\text{NO}_x$  (as  $\text{NO}_2$ )) ,
- sulphur dioxide ( $\text{SO}_2$ ),
- carbon monoxide (CO),
- and volatile organic compounds (VOCs).

The assessment considered the long term emissions arising from the two CHP engines operating constantly for 24 hours per day, 365 days per year, (8760 hours per annum), discharging to atmosphere via twin stacks 18.5m high, within a common windshield also 18.5m high. This was considered to provide a conservative, worst case, prediction of emissions, as it does not take into account any operational variation due to shut-down/maintenance or reduced loading on the engines.

The assessment also considered the short term emissions arising from the two CHP engines operating concurrently with the emergency flare. This scenario is unlikely to occur in practice, and thus the modelling of all 3 sources together provides a conservative short-term prediction.

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. Predictive emissions modelling was undertaken using the ADMS 5 dispersion model, which is a commonly used computer model for dispersion modelling.

Meteorological data for the assessment comprised five years (2008-2012) continuous monitoring from Birmingham International Airport weather station located 7.6km south west of the proposed facility. The Applicant considered this as the most suitable source of meteorological data due to the weather station's proximity to the facility. We agree and would therefore expect the data to be reasonably representative on a regional scale.

The impact of the nearby buildings and terrain surrounding the site upon plume dispersion was considered in the dispersion modelling. In addition to calculating the peak ground level concentration of pollutants within a modelled grid, the Applicant also modelled the concentration of pollutants at a number of sensitive residential and ecological receptors within the surrounding area.

The Applicant's assessment has assumed "worse-case" scenario for conversion rates for NO<sub>x</sub> using 35% in relation to short term impacts and 70% in relation to long term impacts. Both of these ratios are in accordance with Environment Agency guidance.

### *Human receptors*

The Applicant's modelling predictions are presented in Table 1, which shows the predicted maximum concentration for each pollutant and the corresponding residential receptor relevant to that value, over all meteorological years. We use the following guidelines when assessing the results from detailed modelling - emissions can be considered insignificant where the Process Contribution (PC) is less than 1% of the long term air quality standard, or less than 10% of the short term air quality standard. Where emissions cannot be considered insignificant we then compare the Predicted Environmental Concentration (PEC), which is the sum of the PC plus the background concentration, against the relevant air quality standard (AQS).

Pollutant	Air Quality Standard (AQS)	Back-ground conc µg/m <sup>3</sup>	Process Contribution (PC)		Predicted Environmental Concentration (PEC) <sup>[1]</sup> / Receptor reference	
	µg/m <sup>3</sup>		µg/m <sup>3</sup>	% of AQS	µg/m <sup>3</sup>	% of AQS
NO <sub>2</sub> (annual)	40	24.43	0.8	2.0	25.23 (R4) <sup>[2]</sup>	63.0
NO <sub>2</sub> (1 hour)	200	48.86	11.73	5.86	-	-
SO <sub>2</sub> (24 hour)	125	5.9	0.88	0.70	-	-
SO <sub>2</sub> (1 hour)	350	5.9	14.26	4.07	-	-
CO (8 hour mean)	10,000	380	493.53	4.93	-	-
VOCs (annual)	5	0.38	0.16	3.20	0.57 (R4) <sup>[2]</sup>	11.4
<p><b>Note [1]:</b> Where the PC is less than 1% of the benchmark for a long term measurement or less than 10% for a short term measurement, the impact is considered to be insignificant. In these cases, examination of the PEC is not required.</p> <p><b>Note [2]:</b> Receptor R4 - Chattle Hill, NGR 419322 290643</p>						

Table 1 Maximum modelled pollutant concentrations at human receptors

From Table 1, the results of the dispersion modelling show that short term emissions of NO<sub>2</sub>, SO<sub>2</sub> and CO are insignificant as the PC is less than 10% of the AQS. The results also show that the long term PEC for NO<sub>2</sub>, and VOCs do

not exceed the AQS and allow for considerable headroom against the relevant standard. The Applicant's air quality assessment concluded that emissions from the CHP engines were not considered significant at the human receptors included in the model. We have undertaken further assessment using the Environment Agency's AERMOD screening tool, which showed that there is a low risk of environmental impact from the expected emissions. We are satisfied with the Applicant's assessment and agree with their conclusions.

### *Ecological receptors*

There are no statutory European designated sites within 10km of the proposed Installation. The following statutory designated conservation sites are located within 2 km of the Installation: River Blythe SSSI (Site of Special Scientific Interest), and Whitacre Heath SSSI. There are also 21 non-statutory conservation sites located within 2 km of the Installation.

### **Assessment against Critical Levels (NO<sub>2</sub> and SO<sub>2</sub>)**

The Applicant's modelling predictions against Critical Levels for the statutory sites are presented in Table 2. The predicted maximum concentration for each pollutant at each ecological receptor is shown, over all meteorological years. The Critical Level is the gaseous concentration of a pollutant in the atmosphere above which direct adverse effects on receptors, including plants and ecosystems, may occur. For SSSI's, a pollutant is considered insignificant if the long term PC is less than 1% of the Critical Level. Where the PC is greater than 1% of the Critical level but the PEC is less than 70% of the Critical Level we can conclude that the pollutant will not damage the designated site. Short term emissions are deemed to be insignificant where the PC is less than 10% of the Critical Level.

Pollutant	Critical Level (µg/m <sup>3</sup> )	Receptor <sup>[2]</sup>	PC (µg/m <sup>3</sup> )	PC / Critical Level (%)	Bkgd conc (µg/m <sup>3</sup> )	PEC <sup>[1]</sup> (µg/m <sup>3</sup> )	PEC / Critical Level (%)
NO <sub>x</sub> (as NO <sub>2</sub> )	30 <sub>LT</sub>	E1	0.44	1.5	38.44	38.88	129.6
		E2	0.37	1.2	38.44	38.81	129.4
	75 <sub>ST</sub>	E1	6.37	8.5	-	-	-
		E2	2.70	3.6	-	-	-
SO <sub>2</sub>	20 <sub>LT</sub>	E1	0.31	1.5	2.95	3.26	16.3
		E2	0.26	1.3	2.95	3.21	16.0
<p><b>Note [1]:</b> Where the PC is less than 1% of the benchmark for a long term measurement or less than 10% for a short term measurement, the impact is considered to be insignificant. In these cases, examination of the PEC is not required.</p> <p><b>Note [2]:</b> Receptor E1 – River Blythe SSSI Receptor E2 – Whitacre Heath SSSI</p>							

Table 2 – Maximum modelled pollutant concentrations at ecological receptors

From Table 2, the results of the dispersion modelling show that short term emissions of NO<sub>2</sub> are insignificant as the PC is less than 10% of the Critical

Level. The results also show that while long term emissions of SO<sub>2</sub> cannot be considered insignificant, we can nevertheless conclude that SO<sub>2</sub> emissions will not cause damage to the designated site because the PEC is less than 70% of the Critical Level.

The results indicate that damage could be caused at the receptors because the PEC's exceed the Critical Level. The Applicant has however used the incorrect background concentration in their calculations, i.e. they have used the background concentration for total NO<sub>x</sub> rather than NO<sub>2</sub>. Using the correct figure from DEFRA background pollutant mapping for 2013 gives the results shown in Table 3 below.

Pollutant	Critical Level (µg/m <sup>3</sup> )	Receptor <sup>[2]</sup>	PC (µg/m <sup>3</sup> )	PC / Critical Level (%)	Bkgd conc (µg/m <sup>3</sup> )	PEC (µg/m <sup>3</sup> )	PEC / Critical Level (%)
NO <sub>x</sub> (as NO <sub>2</sub> )	30 LT	E1	0.44	1.5	24.43	24.87	82.9
		E2	0.37	1.2	24.43	24.8	82.6

Table 3 – Maximum NO<sub>2</sub> concentrations at receptors E1 and E2

These results show that while the PEC's do not exceed the Critical Level they are still greater than 70%. The applicant has argued that the predicted concentrations are based on the two CHP engines operating constantly at their maximum permitted emission levels, however this is unlikely to occur in practice. They also state that impacts were predicted at the closest point of the designated sites to the facility, but as the sites cover a relatively large area, pollutant concentrations at locations further away are likely to be lower. We consider these points to be reasonable. Therefore given that the predicted PC's are only marginally above the 1% insignificance threshold, and as the PEC's do not exceed the Critical Level, we are satisfied that the designated sites will not be damaged due to long term emissions of NO<sub>2</sub> from the proposed combustion plant.

The applicant has not undertaken a full assessment of potential impacts on non statutory conservation sites, having only considered Sych Wood ancient woodland. While there are no specific regulations for the protection of non statutory sites, we are required to enhance biodiversity under the Natural Environment and Rural Communities Act 2006 and our wider conservation duties under the Environment Act. We are required to ensure that the permitting of the Installation will not result in significant pollution. For non statutory sites, a pollutant is considered insignificant if the PC (either long term or short term) is less than 100% of the Critical Level. The results of the Applicant's assessment are shown in Table 4 below.

Pollutant	Critical Level ( $\mu\text{g}/\text{m}^3$ )	Receptor [2]	PC ( $\mu\text{g}/\text{m}^3$ )	PC / Critical Level (%)	Bkgd conc ( $\mu\text{g}/\text{m}^3$ )	PEC [1] ( $\mu\text{g}/\text{m}^3$ )	PEC / Critical Level (%)
NO <sub>x</sub> (as NO <sub>2</sub> )	30 <sub>LT</sub>	E3	0.28	0.9	-	-	-
	75 <sub>ST</sub>	E3	2.36	3.1	-	-	-
SO <sub>2</sub>	20 <sub>LT</sub>	E3	0.20	1.0	-	-	-
<p><b>Note [1]:</b> Where the PC is less than 1% of the benchmark for a long term measurement or less than 10% for a short term measurement, the impact is considered to be insignificant. In these cases, examination of the PEC is not required.</p> <p><b>Note [2]:</b> Receptor E3 – Sych Wood ancient woodland</p>							

Table 4 – Maximum modelled pollutant concentrations at ecological receptors

From Table 4, the results of the dispersion modelling show that both long term and short term emissions of NO<sub>2</sub> and SO<sub>2</sub> can be considered insignificant as the PC is less than 100% of the Critical Level.

For the remainder of the non-statutory sites we have carried out check calculations against Critical Levels using the Applicant's maximum predicted pollutant concentrations across the modelled grid. As a result we are satisfied that there will be no significant pollution of non statutory sites as the PC's are all less than 100% of the relevant Critical Levels.

## Assessment against Critical Loads

### *Nutrient nitrogen deposition*

The Applicant obtained nitrogen deposition Critical Loads and background deposition rates from the APIS website for Sych Wood ancient woodland. The Critical Load is a quantitative estimate of exposure to one or more pollutants below which significant harmful effects on sensitive elements of the environment are not expected to occur. Sych Wood ancient woodland had a Critical Load assigned using the most suitable habitat type, i.e. Acidophilous Quercus dominated woodland. The modelling results as shown in Table 5 below indicate that impacts from nutrient nitrogen deposition on the designated site can be considered insignificant as the PC is less than 1% of the lower Critical Load value.

Habitat Site	Critical Load (CLo) kgN/ha/yr	APIS habitat type	PC N deposition kgN/ha/yr	PC as % of lower Critical Load
Sych Wood Broadleaved, mixed and yew woodland	10-15	Acidophilous Quercus- dominated woodland)	0.056	0.56

Table 5 – Modelled nutrient nitrogen deposition results

### *Acidification*



The Applicant obtained acid deposition Critical Loads and background deposition rates from the APIS website. Sych Wood ancient woodland had a Critical Load assigned using the most suitable habitat type, i.e. Acidophilous Quercus dominated woodland. The modelling results as shown in Table 6 below indicate that impacts from acid deposition on the designated site could be significant as the PEC exceeds the Critical Load. However this is principally due to the fact that the background deposition already significantly exceeds the Critical Load values.

Habitat Site	Critical Load (CLo) keq/ha/yr			PC keq/ha/yr		PC as % of Critical Load	PEC keq/ha/yr		PEC as % of Critical Load
	CL <sub>max</sub> S	CL <sub>min</sub> N	CL <sub>max</sub> N	N	S		N	S	
Sych Wood Broadleaved, mixed and yew woodland	1.60	0.14	1.74	0.004	0.046	2.9	2.674	0.266	169

Table 6 – Modelled acid deposition results

As before, the Applicant has argued that the predicted concentrations are based on the two CHP engines operating constantly at their maximum permitted emission levels, which is unlikely to occur in practice. They state that impacts were predicted at the closest point of the designated sites to the facility, but as the sites cover a relatively large area, pollutant concentrations at locations further away are likely to be lower. We have carried out check calculations and consider that while the proposed plant will contribute a small increase in acid deposition, we agree with the Applicant's conclusion that emissions from the facility will not have a significant impact in terms of deposition.

### Assessment of odour emissions

The Applicant proposes to install a wet scrubber and a woodchip and bark biofilter to treat the odourous air extracted from the reception building. Odour emissions from the biofilter and from digestate tanker filling operations, were modelled using the air quality modelling software, ADMS 5, with the same meteorological dataset as before (2008-2012). With reference to our H4 Odour Management guidance, the Applicant has considered that odours from the proposed plant should be classed as 'moderately offensive' and as such, they modelled impacts against an indicative odour criterion of 3.0 OU<sub>E</sub>/m<sup>3</sup>. We however consider that the more stringent odour criterion of 1.5 OU<sub>E</sub>/m<sup>3</sup>, typically used for most offensive odours, is more appropriate for the facility.

Results from the odour modelling for the residential receptors considered in the model are presented in Table 7 below. The closest residential receptor is located at Gorse Way, approximately 400m southwest of the proposed site. There are also a number of commercial buildings much closer (i.e. within 100m of the proposed site), although these were not included in the Applicant's assessment.



Sensitive Receptors	Modelled odour concentration ( $C_{98\ 1\ \text{hour}}\ \text{OU}_E/\text{m}^3$ )
R1 – Board Cottages	0.02
R2 – Watton House	0.01
R3 – Gorse Way	0.03
R4 – Chattle Hill	0.03
R5 – Imperial Rise	0.02

Table 7 – Maximum modelled odour concentrations at residential receptors

The Applicant's results show that the indicative criterion of  $3.0\ \text{OU}_E/\text{m}^3$  was not exceeded at any of the receptor locations. The results also show that the more stringent odour criterion of  $1.5\ \text{OU}_E/\text{m}^3$  was also met at each receptor location. On the basis of these results the Applicant concluded that odour nuisance was not anticipated as a result of normal operation of the proposed plant.

The Environment Agency has audited the Applicant's odour modelling. We do not agree with the numerical predictions provided by the Applicant, however after having carried out our own check modelling and sensitivity analysis we agree with their conclusion that it is unlikely that the process would result in odour pollution at the nearby residential receptors included in the model. Assuming a 95% removal efficiency from the biofilter we also considered it is unlikely that there would be any odour pollution at the nearby occupational receptors, however should the biofilter operate at lower efficiencies we could not rule out the possibility of odour nuisance at these locations.

Whether or not odour nuisance is likely compared to the  $1.5\ \text{OU}_E/\text{m}^3$  benchmark, will be dependent on whether the biofilter operates as efficiently as stated by the Applicant. While we consider that a biofilter efficiency of 95% is achievable, it will require effective management with close adherence to regular checks and maintenance.

The Applicant proposes to use a water scrubber as the first stage of odour abatement principally to remove sulphurous compounds. The scrubber solution will be continually blown down, re-supplied with fresh water and the liquor recycled back into the AD process. The biofilter will provide the second stage of odour abatement to treat air extracted from within the reception building. The biofilter will be sized to provide up to 2.5 air changes per hour for the whole of the reception building including the basement. The Applicant reports that the biofilter designed for the facility consists of a container using bark and wood chip as the media. It is designed to provide a ratio of less than 100 for volume of air treated per volume of media and a residence time of 45 seconds, in accordance with Environment Agency guidance. The air extracted from the reception building is ducted to the biofilter and released to the atmosphere via the media.

To prevent fugitive emissions during waste delivery, waste will be transported to the facility in sealed or enclosed vehicle containers. Liquid wastes or slurries will be delivered by tanker and transferred directly into sealed storage tanks. Incoming solid waste will be deposited in the reception building, which is maintained under slightly negative pressure and equipped with a fast-action,

roller shutter doors. The doors will be kept closed except when vehicles deliver and off-load wastes into the reception building.

Solid biodegradable waste will be processed as soon as possible in order to minimise the potential for uncontrolled decomposition and increased odour concentrations within the reception building. Waste will be de-packaged in the reception building and undergo pre-treatment. The solid waste will be shredded prior to mixing with incoming liquid wastes for transfer to the AD process tanks. All mixing and blending operations will take place within enclosed tanks. The treatment tanks will be fully instrumented to ensure that operational conditions are optimised for biogas production.

The Applicant proposes to store digestate in a single covered tank within the main bunded area and within 8 interconnected concrete tanks, open to atmosphere. The open tanks, which are redundant STW infrastructure, will be integrity tested and re-commissioned prior to use. The digestate stored in the open tanks will be covered by a layer of coated clay balls (a proprietary system called Aerocover) to minimise the release of fugitive odour. The clay balls are designed with a hydrophobic coating, ultra violet (UV) activated polymer and chelating agent to provide a degree of treatment, by reducing hydrogen sulphide ( $\text{H}_2\text{S}$ ), carbon dioxide ( $\text{CO}_2$ ) and ammonia ( $\text{NH}_3$ ). The Applicant proposes to digest the incoming feedstock for longer than normal, at 75 days, to optimise the gas yield and maximise the agricultural benefit of the digestate. As a consequence the potential for any residual gas production and odour issues during storage in these tanks will be reduced. This operating philosophy in conjunction with Aerocover has been shown to be effective at minimising odour nuisance at other known permitted AD sites. We are therefore satisfied that the proposed storage system is appropriate for the facility.

The Environment Agency considers that the Applicant has proposed appropriate odour management measures to minimise any impact on nearby sensitive receptors. In the event that odour emissions are causing pollution, the permit conditions require the Applicant to comply with the measures proposed in the Operating Techniques. The odour conditions in the permit are sufficient to ensure that odour emissions from the facility do not cause annoyance. Process monitoring conditions including daily olfactory tests at the site boundary will also ensure that emissions of odour are not causing annoyance.

Although the Applicant submitted an odour management plan with the application (OMP), we consider that the plan requires revision in accordance with the Environment Agency's Horizontal Guidance H4 – *Odour Management*. We consider that the submitted OMP provides for effective control over the majority of potential odour releases from the site, however in some key areas the OMP needs to be more robust, for example, with regard to care and maintenance of the biofilter to ensure optimum operating efficiency; and the venting of digestate tankers during filling. The Applicant is required to operate at all times in accordance with an OMP to prevent pollution arising from odours and implement mitigation measures in line with the plan. We have added a Pre-operational condition (PO3) in the permit that requires the submission of a

revised OMP for approval prior to operation. No waste must be accepted on site without a written approval of the OMP by the Environment Agency.

This permit does not authorise the spreading of digestate (solid or liquid) from this facility on land. The spreading of digestate on land would be subject to a separate permit from the Environment Agency.

### **Emissions to surface water**

The proposed facility will operate with a completely sealed liquid management system. No liquids, with the exception of wastewater from staff welfare facilities and contaminated rainwater (discharged to Coleshill STW), and excess clean rainwater (discharged to the River Tame) leave the facility, other than treated digestate destined as liquid fertiliser, which is collected and transported off-site in sealed tankers.

Uncontaminated roof water from the reception building is harvested and will discharge via underground pipes, to the rainwater tank. Rainwater falling within the main bunded area will flow towards the sumps positioned at the lowest points within the bund. The collected clean rainwater will be used in site operations if daily inspections identify no contaminating spills or drips within the bund and on-site testing for pH and visual turbidity indicates no contamination.

Yard, car park and roadway water will pass through a sediment trap and the hydrocarbon interceptor before passing into the rainwater tank. Biofilter irrigation and scrubber drainage will be collected in the energy crop (silage) effluent tank and recycled within the AD process. Liquids within the reception building will include effluent from organic waste being delivered to the site, liquid waste deliveries, wash-down water from the pressure washer, disinfectant and spillages from tanker off-loading. All such water will be drained back into process tanks and re-used within the AD process.

The Applicant proposes to use as much rainwater as possible within the AD process. Any excess uncontaminated surface water in the rainwater tank that cannot be stored will be discharged via a flow control device to either the River Tame (emission point W1) or to the adjacent Coleshill STW (emission point S1.)

### **Fugitive emissions to air, land and water**

Based upon the information provided, we are satisfied that appropriate measures are in place to prevent fugitive emissions to air, land and water.

The Applicant reports that above-ground tanks are cast in-situ concrete structures. All tanks have a secondary continuous external leak detection lining below ground with viewing/sampling ports located at two positions on each tank. These ports allow level monitoring and sampling to determine direction of leakage. The liner is a GSE HDPE (high density polyethylene) suitable for the application. The tanks will be installed with visual and audible high level alarms in the event of over-pressure.

Operational areas of the site have an impermeable concrete surface which will prevent the release of potentially polluting liquids to surface water and

groundwater. Secondary containment will be provided for all tanks containing liquids whose spillage could be harmful to the environment. The proposed earth bund is designed to hold a minimum of 110% of the capacity of the largest tank or 25% of total tank volume, whichever is the greater.

Additional measures proposed by the Applicant include:

- Daily visual inspection of all parts of the Installation by site personnel to check activities, drainage, litter, fugitive releases.
- Waste handling and treatment processes shall be undertaken in an enclosed building. Waste shall not be stored or processed external to the reception building.
- Roller shutter doors of the reception building will remain closed when waste is being deposited. This will assist in the prevention of odours escaping the reception building.
- All vehicles leaving operational areas will be cleaned before leaving the site to ensure that loose waste and/or mud are not exported from the site onto public roads.
- The waste treatment processes will benefit from a number of process control features and prevent the development of abnormal operating conditions. Operations will be controlled and monitored using the Supervisory Control and Data Acquisition (SCADA) system which creates documentation that can be accessed in remote locations. The system will provide a range of control and monitoring functions that automate and monitor actions throughout the plant. These procedures are designed to ensure the integrity of the plant throughout the life of the facility.

The Applicant submitted a bund assessment with the application. The bund will be created by forming an earth embankment around the tanks on site, which comprise of 2 primary digesters, 2 secondary digesters and a single digestate storage tank. They propose to provide a minimum of 5539m<sup>3</sup> of storage, which is equivalent to 25% of the total volume of all the tanks. We have checked the Applicant's figures and consider them to be appropriate based on the information submitted. The Applicant's bund assessment was based on CIRIA R164 – *Design of Containment Systems for the Prevention of water Pollution from Industrial Accidents*, however due to the recent publishing of CIRIA C736 - *Containment Systems for the Prevention of Pollution - secondary, tertiary and other measures for industrial and commercial premises*, the Applicant has committed to reviewing their bunding requirements in accordance with the latter guidance. We have included a pre-operational condition (PO4) in the permit requiring the submission of a report confirming that the construction and integrity of the earth bund is fit for purpose and in accordance with current industry standards prior to the commencement of site operations. This will ensure that the proposed earth bund is properly designed to minimise risks to the environment and reduce the risks of accidents and their consequences.

The Environment Agency considers that the Applicant has proposed appropriate measures to minimise any impact of fugitive emissions on nearby sensitive receptors. The proposed procedures satisfy the requirements of the Environment Agency's Technical Guidance IPPC S5.06 - *Guidance for the Recovery and Disposal of Hazardous and Non-hazardous Waste* and are considered BAT for this Installation. The permit conditions (3.2.1 to 3.2.3) are sufficient to ensure that emissions of substances not controlled by emission limits do not cause pollution. The Applicant is required to implement mitigation measures in line with an approved emissions management plan in the event activities on site are causing pollution.

### **Accident management**

The Applicant submitted an accidents risk assessment with the application which outlined possible risks from the operation of the facility and control measures. The Environment Agency considers that a detailed Accident Management Plan for the site should be developed which details appropriate measures to be taken to ensure that accidents that may cause pollution are prevented and that, if they should occur, their consequences are minimised. An Accident Management Plan will form part of the Environmental Management System and must be in place prior to commissioning. Pre-operational condition PO1 details this requirement.

### **Monitoring and compliance**

We have specified that monitoring should be carried out for the parameters listed in Schedule 3 table S3.1, S3.2 and S3.3 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.

Annual monitoring of emissions to air (Table S3.1) from the CHP engines and flare will be undertaken by MCERTS accredited personnel using MCERTS approved methods. We have specified that emissions testing on the emergency flare 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).

An auxiliary boiler (with a thermal rating of 0.367 MW<sub>th</sub>) is a self-contained package that will be used for commissioning of the plant. It is therefore considered that the boiler will be activated for only short periods. We have not set any monitoring requirements on the auxiliary boiler on the basis of infrequent use.

Daily visual monitoring of emissions to water (Table S3.2) has been specified in the permit to ensure early detection of contaminated water entering the River Tame.

## Annex 1: decision checklist

This document should be read in conjunction with the Duly Making checklist, the application and supporting information and permit/ 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 RGN 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 RGN 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,	The application is within the relevant distance criteria of a	✓



Aspect considered	Justification / Detail	Criteria met
		Yes
Heritage, Landscape and Nature Conservation	<p>site of heritage, landscape or nature conservation, and/or protected species or habitat .</p> <p>A full assessment of the application and its potential to affect the site(s) has been carried out as part of the permitting process. We consider that the application will not affect the features of the sites.</p> <p>We have not formally consulted on the application. The decision was taken in accordance with our guidance.</p>	
<b>Environmental Risk Assessment and operating techniques</b>		
Environmental risk	We have reviewed the operator's assessment of the environmental risk from the facility. The operator's risk assessment is satisfactory.	✓
Operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes - <i>Technical Guidance IPPC S5.06 - Guidance for the Recovery and Disposal of Hazardous and Non-hazardous Waste</i>.</p> <p>The proposed techniques / emission levels for priorities for control are in line with the benchmark levels contained in the TGN and we consider them to represent appropriate techniques for the facility.</p> <p>We consider that the emission limits included in the installation permit reflect the BAT for the sector.</p>	✓
<b>The permit conditions</b>		
Raw materials	<p>We have specified limits and controls on the use of raw materials and fuels, as follows:</p> <p>Gas oil - not exceeding 0.1% sulphur w/w; and Energy crop (silage) - substantially free of non vegetable matter</p>	✓
Waste types	<p>We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility.</p> <p>We are satisfied that the operator can accept these</p>	✓



Aspect considered	Justification / Detail	Criteria met
		Yes
	<p>wastes because they are contained within the Environment Agency/ WRAP Quality Protocol for Anaerobic Digestate (January 2014).</p> <p>We made these decisions with respect to waste types in accordance with our guidance.</p>	
Pre-operational conditions	<p>Based on the information in the application, we consider that we need to impose pre-operational conditions.</p> <p>See Key Issues section.</p>	✓
Improvement conditions	<p>Based on the information on the application, we consider that we need to impose improvement conditions. We have imposed improvement conditions to ensure that:</p> <ul style="list-style-type: none"> <li>➤ appropriate management systems and management structures are in place and that sufficient financial, technical and manpower resources are available to the operator to ensure compliance with all the permit conditions.</li> <li>➤ the appropriate measures are in place for the closure and decommissioning of the facility.</li> </ul>	✓
Incorporating the application	<p>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.</p> <p>These descriptions are specified in the Operating Techniques table in the permit.</p>	✓
Emission limits	<p>We have decided that emission limits should be set for the parameters listed in the permit.</p> <p>Emissions limits for emissions to air from the CHP engines and emergency flare have been included, in accordance with our guidance LFTGN08 (engines) and LFTGN05 (flares). The limits relate to emissions of NO<sub>x</sub> (as NO<sub>2</sub>), SO<sub>2</sub>, CO, and VOC.</p> <p>It is considered that the ELVs/ equivalent parameters or technical measures described above will ensure that</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	significant pollution of the environment is prevented and a high level of protection for the environment secured.	
Monitoring	<p>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.</p> <p>See Key Issues section.</p> <p>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.</p>	✓
Reporting	We have specified reporting in the permit.	✓
<b>Operator Competence</b>		
Environment management system	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 RGN 5 on Operator Competence.	✓
Relevant convictions	The National Enforcement Database has been checked to ensure that all relevant convictions have been declared. No relevant convictions were found.	✓

## Annex 2: Consultation, web publicising and newspaper advertising responses

Response received from
Public Health England (PHE)
Brief summary of issues raised
<p>PHE recommended that any environmental permit issued for the site should contain conditions to ensure the following potential emissions did not impact on public health: fugitive dust and odour emissions from vehicle movements, particulates during waste processing and odour arising from all stages of the process. They were reassured that the applicant proposes to undertake the majority of these activities indoors which would minimise any impact on public health. PHE noted that since AD processes are inherently odorous they would support any contingency planning in case operations did happen to give rise to emissions with the potential to affect public health.</p> <p>PHE recommended that further consideration is given to the potential for waste to attract an accumulation of birds, vermin and insects on the site and that appropriate control measures should be in place to monitor and prevent this occurring.</p> <p>PHE concluded by saying that they had no significant concerns regarding risk to health of the local population from the proposed activity, provided that the applicant takes all appropriate measures to prevent or control pollution, in accordance with the relevant sector technical guidance or industry best practice.</p>
Summary of actions taken or show how this has been covered
We have considered whether we should impose any further requirements, but believe that the existing conditions in the permit are sufficient to control the issues described above.

Response received from
National Grid
Brief summary of issues raised
<p>National Grid confirmed that they have a high voltage electricity overhead transmission line in close proximity to the proposed development, and which forms an essential part of the electricity transmission network in England and Wales. They described the legal and statutory requirements regarding potential development in proximity to their infrastructure, and provided links to further guidance for developers.</p>
Summary of actions taken or show how this has been covered
This issue is not relevant to our permitting decision and we have passed on National Grid's consultation response to the Applicant.

Response received from
Severn Trent Water Limited
Brief summary of issues raised
<p>Severn Trent Water Ltd made the comment that the applicant did not hold a Trade Effluent Consent or Agreement with Severn Trent Water Ltd, and that further discussion would be required regarding what is to be discharged to their works. They had no further comments.</p>
Summary of actions taken or show how this has been covered
<p>We are mindful that the Applicant proposes to discharge wastewater from the on-site staff welfare facilities and any contaminated bund water to Coleshill STW. It is not expected that the proposed discharge will contain any 'hazardous pollutants' (as defined in Environment Agency guidance) and therefore detailed technical assessment was not required as part of the permit application and subsequent determination. We have passed on Severn Trent Water's consultation response to the Applicant.</p>