

Environment Agency permitting decisions

Variation

We have decided to issue the variation for Peterborough Power Station operated by Centrica PB Limited.

The variation number is EPR/AP3233LU/V005

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

- Description of main features the changes introduced by the variation
- Key issues
- Annex 1 the decision checklist
- Annex 2 the consultation and web publicising responses

Description of the changes introduced by the Variation

This is a Substantial Variation.

The installation was previously permitted to operate three large Combustion Plants (LCP): LCP No. 55, a 339 MW open cycle gas turbine; LCP No. 56, a 346MW open cycle gas turbine; and LCP No.402, for two proposed unbuilt 330MW open cycle gas turbines.

This variation removes LCP 402, the unbuilt open cycle gas turbines and adds a peaking plant comprising up to five reciprocating spark-ignition gas engines. The new peaking plant will have a total thermal input of circa 105 MWth and will produce up to 49.9 MWe of electricity gross. This will operate to provide additional energy security during periods of peak electricity consumption within the UK. This electricity will be exported to the grid. Operation of the peaking plant is limited to 1,500 hours per annum per engine. Cooling for the gas engines will be provided by new fin-fan coolers which will operate in a closed circuit.

The existing OCGT's, LCP's No.55 and LCP No.56, continue to be limited to 500 hrs operation under the previously chosen IED compliance route.

Emissions to air will result from the combustion of natural gas within the gas engines, which will be released into the atmosphere via 5 dedicated exhaust stacks 30m high. It is expected that there will be no significant sources of odour resulting from the operation of the peaking plant. The main pollutants from the facility will be gaseous combustion products (oxides of nitrogen and carbon monoxide). Assessment by the Environment Agency shows that the nitrogen dioxide (NO₂) impact from the proposed activity is likely to be insignificant at sensitive human receptors.

There are SSSI within 2km and Natura 2000 sites within 10km of the installation. Assessment by the Environment Agency shows that emissions from activities undertaken by the Installation are unlikely to have a significant impact on the habitat sites.

The power station has a maximum electrical output of 240 MWe from the Open Cycle Gas Turbines and 49MWe from the gas spark engines. A pre-operational condition requires the operator to submit details of the final design for the proposed gas engines to the Environment Agency.

Key issues of the decision

1. The Installation's environmental impact

Regulated activities can present different types of risk to the environment, these include odour, noise and vibration; accidents, fugitive emissions to air and water; as well as point source releases to air, discharges to ground or groundwater, global warming potential and generation of waste and other environmental impacts. Consideration may also have to be given to the effect of emissions being subsequently deposited onto land (where there are ecological receptors). All these factors are discussed in this and other sections of this document.

For an installation of this kind, the principal emissions are those to air, although we also consider those to land.

The following sections of this document explain how we have approached the critical issue of assessing the likely impact of the emissions to air from the Installation on human health and the environment.

Assessment Methodology

Application of Environment Agency Web Guide for Air Emissions Risk Assessment

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 our Web Guide 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 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 guidance 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.

Use of Air Dispersion Modelling

For this type of application, we normally require the Applicant to submit a full air dispersion model as part of their application, for the key pollutants. Air dispersion modelling enables the process contribution to be predicted at any environmental receptor that might be impacted by the plant.

Once short-term and long-term PCs have been calculated in this way, they are compared with Environmental Quality Standards (EQS).

Where an EU EQS exists, the relevant standard is the EU EQS. Where an EU EQS does not exist, our guidance sets out a National EQS (also referred to as Environmental Assessment Level - EAL) which has been derived to provide a similar level of protection to Human Health and the Environment as the EU EQS levels. In a very small number of cases, e.g. for emissions of Lead, the National EQS is more stringent than the EU EQS. In such cases, we use the National EQS standard for our assessment.

National EQSs do not have the same legal status as EU EQSs, and there is no explicit requirement to impose stricter conditions than BAT in order to comply with a national EQS. However, national EQSs are a standard for harm and any significant contribution to a breach is likely to be unacceptable.

PCs are considered **Insignificant** if:

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

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 BAT. 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 EQS are likely. This is done through detailed audit and review of the Applicant's air dispersion modelling taking background concentrations and modelling uncertainties into account. Where an exceedance of an EU EQS is identified, we may require the Applicant to go beyond what would normally be considered BAT for the Installation or we may refuse the application if the applicant is unable to provide suitable proposals. Whether or not exceedances are considered likely, the application is subject to the requirement to operate in accordance with BAT.

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 a SSSIs, SACs or SPAs). These additional factors may also lead us to include more stringent conditions than BAT.

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.

Assessment of Impact on Air Quality

The Applicant's assessment of the impact of air quality is set out in the following document submitted with the Application: 'Air Quality Assessment for Substantial Permit Variation Application', revision 1, dated 07/06/16. The assessment comprises:

- Dispersion modelling of emissions to air from the operation of the installation.
- A study of the impact of emissions on nearby sensitive habitat / conservation sites.

This section of the decision document deals primarily with the dispersion modelling of emissions to air from the installation and its impact on local air quality. The impact on conservation sites is considered below.

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 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 Wittering between 2011 and 2015. This weather station was selected as it is the closest to the

installation. 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 NO₂ emission limit values (ELVs) in the Permit would be based on the Medium Combustion Plant Directive emission limit of 95 mg/m³.
- Second, they assumed that the Installation operates for a maximum of 1500 hours at the relevant long-term or short-term emission limit value.

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

The Applicant has used a background from the DEFRA background maps. We agree with the Applicant that this selection of background value is appropriate.

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.

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 the Environment Agency's modelling specialists to establish the robustness of the Applicant's air impact assessment. The output from the model has then been used to inform further assessment of health impacts and impact on habitats and conservation sites.

Our review of the Applicant's assessment leads us to agree with the Applicant's conclusions.

The Applicant's modelling predictions are summarised in the following sections.

Assessment of Air Dispersion Modelling Outputs

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

The Applicant's modelling predicted pollutant concentrations at discreet receptors. The tables below show the ground level concentrations at the most impacted receptor.

Pollutant	EQS / EAL	Back-ground	Process Contribution (PC)		Predicted Environmental Concentration (PEC) ^{Note 1}	
	µg/m ³	µg/m ³	µg/m ³	% of EAL	µg/m ³	% of EAL
NO ₂	40	19.4	0.2	0.5	-	-
	200	38.8	11.1	6	-	-
Note 1: Where an emission is insignificant we do not consider the PEC.						

(i) Screening out emissions which are insignificant
The table above shows that emissions of both long term and short term NO₂ are considered insignificant in that the process contribution is <1% of the long term EQS/EAL and <10% of the short term EAQ/EAL.

For these emissions, we have also assessed the Applicant's proposals to ensure that they are applying the Best Available Techniques to prevent and minimise emissions of these substances. This is reported below.

Consideration of key pollutants

(i) Nitrogen dioxide (NO₂)

The impact on air quality from NO₂ emissions has been assessed against the EU EQS of 40 µg/m³ as a long term annual average and a short term hourly average of 200 µg/m³. The model assumes a 70% NO_x to NO₂ conversion for the long term and 35% for the short term assessment in line with Environment Agency guidance on the use of air dispersion modelling.

The above tables show that the long term PC at discrete receptors is less than 1% of the long term EU EQS and less than 10% of the short term EU EQS and therefore is screened out as insignificant.

(ii) Dust

Natural gas is an ash-free fuel and high efficiency combustion in the gas engines does not generate additional particulate matter. The fuel gas is always filtered. Thus for natural gas fired turbines dust emissions are not an issue.

(iii) Sulphur Dioxide

Natural gas, that meets the standard for acceptance into the National transmission System, is considered to be sulphur free fuel. Hence, sulphur dioxide emissions from burning natural gas, were not considered to be significant and were not modelled by the Applicant. We agree with this approach.

(iv) Carbon Monoxide

Efficient combustion within the proposed plant will ensure that levels of carbon monoxide (CO) are minimised. Control and management of combustion conditions within the proposed gas engines, including performance monitoring, process control techniques and suitable maintenance regimes, will be in place to minimise CO emissions.

Impact on Habitats sites, SSSIs, non-statutory conservation sites etc.

Sites Considered

The following Habitats (i.e. Special Areas of Conservation, Special Protection Areas and Ramsar) sites are located within 10km of the Installation:

- Nene Washes SPA/SAC/Ramsar
- Orton Pit SAC

There are no Sites of Special Scientific Interest located within 2 km of the Installation.

The following non-statutory local wildlife and conservation sites are located within 2 km of the Installation:

- Adderley and Storey's Bar Road Drains County Wildlife Site (CWS)
- Cat's Water Drain CWS
- Northey Gravel Pit CWS

Habitats Assessment

The following table shows the maximum process contributions at Nene Washes SPA/SAC/Ramsar.

Pollutant	EQS / EAL (µg/m ³)	Back-ground (µg/m ³)	Process Contribution (PC) (µg/m ³)	PC as % of EQS / EAL	Predicted Environmental Concentration (PEC) (µg/m ³) Note 1	PEC as % EQS / EAL
Direct Impacts²						
NO _x Annual	30	17.8	0.2	0.7	-	-
NO _x Daily Mean	75	35.6	8.1	10.8	43.7	58.3
Deposition Impacts²						
N Deposition (kg N/ha/yr)	NA Note 2	-	-	-	-	-
Acid Deposition (Keq/ha/yr)	NA note 2	-	-	-	-	-

Pollutant	EQS / EAL ($\mu\text{g}/\text{m}^3$)	Back-ground ($\mu\text{g}/\text{m}^3$)	Process Contribution (PC) ($\mu\text{g}/\text{m}^3$)	PC as % of EQS / EAL	Predicted Environmental Concentration (PEC) ($\mu\text{g}/\text{m}^3$)	PEC as % EQS / EAL
Note 1: Where an emission is insignificant we do not consider the PEC.						
Note 2: Where APIS indicates that the habitats are not sensitive to N deposition or acid deposition, the impact are not considered. Direct impact units are $\mu\text{g}/\text{m}^3$ and deposition impact units are kg N/ha/yr or Keq/ha/yr.						

(i) Screening out emissions which are insignificant
 The PC for direct impact from long term NO_x emissions is <1% of the Critical Level and therefore screens out as insignificant and therefore we can conclude no likely significant effect.

(ii) Emissions unlikely to give rise to significant pollution
 The table above shows that the PC for direct impacts from short term NO_x is not considered insignificant as it is >10% of the short term Critical Level. However, when taking the background into account, there is adequate headroom to indicate that an exceedence of the Critical Level is unlikely and it is possible to conclude no likely significant effect.

The following table shows the maximum process contributions at Orton Pit SAC.

Pollutant	EQS / EAL ($\mu\text{g}/\text{m}^3$)	Back-ground ($\mu\text{g}/\text{m}^3$)	Process Contribution (PC) ($\mu\text{g}/\text{m}^3$)	PC as % of EQS / EAL	Predicted Environmental Concentration (PEC) ($\mu\text{g}/\text{m}^3$)	PEC as % EQS / EAL
Direct Impacts ²						
NO _x Annual	30	22.2	0.1	0.7	-	-
NO _x Daily Mean	75	44.4	2.3	3.1	-	-
Deposition Impacts ²						
N Deposition (kg N/ha/yr)	NA Note 2	-	-	-	-	-
Acid Deposition (Keq/ha/yr)	NA note 2	-	-	-	-	-
Note 1: Where an emission is insignificant we do not consider the PEC.						
Note 2: Where APIS indicates that the habitats are not sensitive to N deposition or acid deposition, the impact are no considered.						

(i) Screening out emissions which are insignificant
 The table above shows that the PC for direct impact from long term NO_x is considered insignificant as it is <1% of the long term Critical Level and therefore we can conclude no likely significant effect. The table above show that the PC for direct impact from short term NO_x is considered insignificant as it is <10%

of the short term Critical Level and therefore we can conclude no likely significant effect.

The Applicant's assessment of Habitats was reviewed by the Environment Agency's technical specialists for modelling, air quality, conservation and ecology technical services, who agreed with the assessment's conclusions, that it is possible to conclude no likely significant effect.

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, considered elsewhere in this document.

Assessment of other conservation sites

Conservation sites are protected in law by legislation. The Habitats Directive provides the highest level of protection for SACs and SPAs, domestic legislation provides a lower but important level of protection for SSSIs. Finally the Environment Act provides more generalised protection for flora and fauna rather than for specifically named conservation designations. It is under the Environment Act that we assess other sites (such as local wildlife sites) which prevents us from permitting something that will result in significant pollution; and which offers levels of protection proportionate with other European and national legislation. However, it should not be assumed that because levels of protection are less stringent for these other sites that they are not of considerable importance. Local sites link and support EU and national nature conservation sites together and hence help to maintain the UK's biodiversity resilience.

For SACs SPAs, Ramsars and SSSIs we consider the contribution PC and the background levels in making an assessment of impact. In assessing these other sites under the Environment Act 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 to protect these other sites (which are generally more numerous than Natura 2000 or SSSIs) whilst ensuring that we do not restrict development.

Critical levels and loads are set to protect the most vulnerable habitat types. Thresholds change in accordance with the levels of protection afforded by the legislation. Therefore the thresholds for SAC SPA and SSSI features are more stringent than those for other nature conservation sites.

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 BAT to control emissions.

The following table shows the maximum impact at the Adderley and Storey's Bar Road Drains County Wildlife Site (CWS). This was the most impacted local conservation site.

Pollutant	EQS / EAL ($\mu\text{g}/\text{m}^3$)	Back-ground ($\mu\text{g}/\text{m}^3$)	Process Contribution (PC) ($\mu\text{g}/\text{m}^3$)	PC as % of EQS / EAL	Predicted Environmental Concentration (PEC) ($\mu\text{g}/\text{m}^3$) Note 1	PEC as % EQS / EAL
Direct Impacts ²						
NO _x Annual	30	22.3	1.2	3.9	18.0	60.1
NO _x Daily Mean	75	44.6	24.9	33.2	69.5	92.7
Deposition Impacts ²						
N Deposition (kg N/ha/yr)	10 - 15	12.9	0.0564	0.6	-	-
Acid deposition (K _{eq} /ha/yr)	NA	-	-	-	-	-
Note 1: Where an emission is insignificant we do not consider the PEC. Note 2: Where APIS indicates that the habitats are not sensitive to N deposition or acid deposition, the impact are no considered.						

(i) Screening out emissions which are insignificant
The table above shows that the PC for N deposition is <1% and we can conclude that impacts are insignificant.

(ii) Emissions unlikely to give rise to significant pollution
The PC for direct impact from long term NO_x is not <1% of the Critical Level and the direct impact from short term NO_x is not <10% of the Critical Level and are therefore not considered insignificant. However, the tables above show that the PC's (and also the PEC's) are below the critical levels or loads. We are satisfied that the installation will not cause significant pollution at the sites.

The Applicant's assessment of impacts on local conservation sites was reviewed by the Environment Agency's technical specialists for modelling, air quality, conservation and ecology technical services, who agreed with the assessment's conclusions, that there would be no likely impact on the sites.

Stack configuration

Aggregation of the 30 metre tall gas engine emission stacks into a single windshield would normally give better dispersion than individual stacks. The operator has provided a BAT assessment report for their proposed individual stack configuration.

As outlined above, the dispersion modelling for the five stack configuration predicts that ground level NO₂ concentrations will be within acceptable levels and therefore the impact on air quality will not be significant. The Applicant's analysis shows that the predicted effect on air quality resulting from a changed

stack configuration would be minimal. In addition there are issues with maintenance access, plant footprint and additional cost for combined flues.

In view of the above, the Environment Agency's technical specialists, agree with the assessment's conclusions, that there would be no likely benefit from stack aggregation.

Cooling systems

As highlighted within the EU BREF for industrial cooling , there is a balance of environmental considerations when considering the cooling option to be employed and that any of the methods below may be considered BAT depending on circumstance.

- Once-through river water;
- Evaporative cooling tower;
- Hybrid cooling tower; and
- Fin-fan coolers.

Each potential system has its particular advantages and disadvantages.

Watercooling methods would have issues surrounding the irregular nature of the peaking plant generation. Due to the intermittent nature of operation of the peaking plant, settlement and siltation within the cooling system is a key problem, which could lead to blockages in the condenser/heat exchanger. This would result in increased maintenance costs and reduced cooling efficiency and could potentially affect reliability of the system. Hence the intermittent requirements for cooling , may cause additional costs and energy penalties. There are also potential issues with biological control and use of dosing chemicals.

Fin-fan coolers have no significant water consumption requirement and hence will not result in additional effluent discharges. Whilst fin fan coolers can give rise to greater noise impacts, the noise assessment carried out has concluded that the noise effects from the peaking plant will not result in significant noise impacts. It is recognised that the fin-fan cooler option has a higher energy demand than other cooling options, however the extra energy consumption by the fin-fan coolers which could be as high as 0.5MWe (1% of output) will not have a large impact on the overall energy efficiency for the project.

On the basis of the above, fin-fan coolers within a closed circuit cooling water system are considered BAT for this limited hours operation peaking plant.

Energy Efficiency Directive

Article 14 of the Energy Efficiency Directive require certain types of combustion installations to carry out a cost benefit analysis for cogeneration (also known as combined heat and power) or supplying a district heating or cooling network when substantially changing an existing installation.

Certain installations are exempt from the requirements for cost benefit analysis as described below.

Table 2 – CBA exempt installations Type of thermal electricity generating installation

- (a) those peak load and back-up electricity generating installations which are planned to operate under 1 500 operating hours per year as a rolling average over a period of five years, based on a verification procedure established by the Member States ensuring that this exemption criterion is met.

Hence as a combustion plant limited to 1500 hours per year a CHP review is not required for this installation.

Annex 1: decision checklist

This document should be read in conjunction with the application, supporting information and permit/notice.

Aspect considered	Justification / Detail	Criteria met
		Yes
Receipt of submission		
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. The decision was taken in accordance with our guidance on commercial confidentiality.	✓
Consultation		
Scope of consultation	The consultation requirements were identified and implemented. The decision was taken in accordance with our Public Participation Statement and our Working Together Agreements. For this application we consulted the following bodies: <ul style="list-style-type: none">• Peterborough Council -Public health• Peterborough Council –Environmental Protection• Public Health England• Health & Safety Executive• National Grid	✓
Responses to consultation, web publicising	The web publicising, responses (Annex 2) were taken into account in the decision. The decision was taken in accordance with our guidance.	✓
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	Plans are included in the permit and the operator is required to carry on the permitted activities within the site boundary.	✓

Aspect considered	Justification / Detail	Criteria met Yes
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>A full assessment of the application and its potential to affect the sites has been carried out as part of the permitting process. We consider that the application will not affect the features of the site/habitat.</p> <p>We have not formally consulted on the application. The decision was taken in accordance with our guidance.</p> <p>See Key issues section for detailed assessment.</p>	✓
Environmental Risk Assessment and operating techniques		
Environmental risk	<p>We have reviewed the operator's assessment of the environmental risk from the facility.</p> <p>The operator's risk assessment is satisfactory.</p> <p>Point source emissions to air. As discussed in the key issues section, for all human health and ecological receptors the impacts from the proposed variation, no significant pollution is predicted.</p> <p>Point source emissions to water. There will be no process water discharges to sewer or surface water from the gas engine plant. Discharges to water will be restricted to surface water run-off from the roof, hardstanding and paved areas etc. and water will flow through the existing surface water drainage system before release into the Racecourse drain. There will be no point source emission to land or groundwater. Emission limits and monitoring requirements in Table S3.2 of the permit remain unaltered.</p> <p>Noise. The consultant predicts no change (+0 dB) above background level for night time as a worst case indicating a low impact in accordance with BS4142:20142. A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context. AQMAU reviewed the applicants noise impact assessment and</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	concluded that the proposed activity is low risk with appropriate mitigation.	
Operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes.</p> <p>Emissions of Nitrogen Dioxide(NO₂) cannot be screened out as insignificant. The Environment Agency has therefore assessed whether the proposed techniques are BAT. The impact of NO_x emissions from the Installation is addressed in the Key issues section of this document.</p> <p>Relevant guidance on BAT includes the Department of Energy and Climate Change “Developing Best Available Techniques for combustion plants operating in the balancing market” report by Amec Foster Wheeler and the Environment Agency draft guidance “Regulatory guidance for regulating >50MWth gas and oil fired plants operating in the balancing market under the Industrial Emissions Directive”</p> <p>The Regulatory guidance gives a hierarchy of plant types, emission limits and operating hours for the balancing market. For a maximum of 1500 hours per annum operation, high efficiency gas engines are considered BAT with medium combustion plant directive emission limits.</p> <p>Combustion temperatures within the piston of spark ignition engines are low, meaning gas engines inherently produce low NO_x. Lean burn technology is to be applied which suppresses NO_x formation. The gas engines achieve 95mg/m³ NO_x which is the directive limit and the limit for gas engines in the Amec Foster Wheeler report.</p> <p>Selective Catalytic Reduction(SCR) is not considered feasible for gas engines operating in the balancing market as it is not active for the first 30 minutes of plant operation.</p> <p>Therefore the proposed techniques are considered to represent appropriate techniques for the gas engine operation.</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	The operating techniques for the previously existing open cycle gas turbines (LCP55 & 56) have not been amended.	
The permit conditions		
Updating permit conditions during consolidation.	<p>We have updated previous permit conditions to those in the new generic permit template as part of permit consolidation. The new conditions have the same meaning as those in the previous permit(s).</p> <p>The operator has agreed that the new conditions are acceptable.</p>	✓
Use of conditions other than those from the template	Based on the information in the application, we consider that we do not need to impose conditions other than those in our permit template, which was developed in consultation with industry having regard to the relevant legislation.	✓
Pre-operational conditions	<p>Based on the information in the application, we consider that we need to impose pre-operational conditions.</p> <p>We have imposed conditions to ensure that: A report be provided with final designs for the gas engines together with a review that the final design meets the requirements of BAT and that the environmental impact assessment still reflects the predicted impacts from the installation. This is to confirm the proposed engines represent the application and number of engines and blackstart options are confirmed.</p>	✓
Improvement conditions	<p>Based on the information on the application, we consider that we need to impose improvement conditions.</p> <p>We have imposed improvement conditions to ensure that: Definition of the start-up and shut down definitions are provided for the gas engines. This will enable reporting of operating hours.</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	<p>Notification is given to the Agency of completion of commissioning of the gas engines.</p> <p>A commissioning report is provided to the Agency providing results of the commissioning programme and detailing any significant changes made.</p> <p>A report be provided on the assessment of the potential release and impacts of formaldehyde from the gas engines.</p> <p>A report be provided on the environmental impact of methane slip from the gas engines.</p> <p>The improvement conditions for reports on formaldehyde and methane slip are standard for all gas engine installations. This is to establish what the generic impacts may be from this technology and how it compares with other technologies like CCGT's. It should also allow the operator to demonstrate that there will be no harm to human health from Formaldehyde emissions.</p>	
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>The following substances have been identified as being emitted in significant quantities and ELVs have been set for those substances.</p> <p>A Nitrogen Dioxide limit of 95mg/m³ has been set. This limit is the relevant limit for new gas engines from the Medium Combustion Plant Directive.</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	<p>It is considered that the ELVs equivalent parameters or technical measures described above will ensure that significant pollution of the environment is prevented and a high level of protection for the environment secured.</p> <p>Emission limits for the previously existing open cycle gas turbines have not been amended.</p>	
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>The monitoring requirements for the gas engines have been imposed in order to satisfy the requirements of the Medium Combustion Plant Directive.</p> <p>The monitoring requirements for the previously existing open cycle gas turbines have not been amended.</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	<p>We have specified reporting in the permit.</p> <p>The reporting requirements for the gas engines have been imposed in order to satisfy the requirements of the Medium Combustion Plant Directive and Electricity Supply Industry reporting protocols.</p> <p>The reporting requirements for the previously existing open cycle gas turbines have not been amended</p>	✓

Aspect considered	Justification / Detail	Criteria met Yes
Operator Competence		
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 our guidance on what a competent operator is.	✓

Annex 2: External Consultation, web publicising and newspaper advertising responses(delete as appropriate)

Summary of responses to consultation and web publication and the way in which we have taken these into account in the determination process.

<i>Response received from</i>
Public Health England
<i>Brief summary of issues raised</i>
No significant concerns raised
<i>Summary of actions taken or show how this has been covered</i>