

Environment Agency permitting decisions

Bespoke permit

We have decided to grant the permit for Redfield Road Combustion Plant operated by Viridis 178 Limited.

The permit number is EPR/CP3331RF

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.

Key issues of the decision

Description of the main features of the application

The proposed facility will serve the Balancing Market on the electricity grid by rapidly providing additional short term supply to meet peak demand or shortfalls in available supply from other sources. It consists of up to 27 type JGC 420 GS-N.L-CMUK-D spark ignition gas-fired engines. The aggregated thermal input of the 27 engines is 81MW. Natural gas will be utilised as the fuel.

Operating Hours

The application was originally for up to 2,000 hours of operation each year. Current guidance on developing best available techniques (BAT) to serve the balancing market identifies two categories; less than 500hrs and up to 1,500hrs. There is currently no guidance for the operation of this type of plant beyond 1,500hrs. The Applicant has not provided sufficient information on anticipated running times to determine whether reciprocating engines represent BAT for periods greater than 1,500 hours each year. The balancing market is made up of 3 services: Rapid response (2 minutes response); Short Term Operating Reserve (STOR) (30mins response); Peaking (90mins response). Without evidence of operating profiles it is unclear whether spark-ignition engines represent BAT for STOR and Peaking.

Air modelling and the noise assessment submitted has been based on 1,750 hours of operation only. The noise assessment identifies a significant adverse impact during night time operation and our assessment of air emissions identified a potential exceedence of the daily NO_x (Oxides of Nitrogen) critical level at the Beeston Canal Local Wildlife Site. Operation beyond 1,500 hours requires a CHP cost-benefit analysis involving discounted cash flow. In order to avoid further delay in determination through the provision of missing information, the application was amended to the operation of combustion plant for less than 1,500hrs each year following a written request from the Applicant dated 10/10/16.

Chapter III of the IED

Chapter III of the Industrial Emissions Directive (IED) applies to new and existing large combustion plants (LCPs) which have a total rated thermal input which is greater or equal to 50MW. Articles 28 and 29 explain exclusions to Chapter III and aggregation rules respectively.

The aggregation rule is as follows:

- A LCP has a total rated thermal input $\geq 50\text{MWth}$.
- Where waste gases from two or more separate combustion plant discharge through a common windshield, the combination formed by the plants are considered as a single large combustion plant.

- The size of the LCP is calculated by adding the capacities of the plant discharging through the common windshield disregarding any units <15MWth.

A “common windshield” is frequently referred to as a common structure or windshield and may contain one or more flues. In this application, emissions shall be released via 6 windshields, three containing 5 flues (3 x 15MW) and 3 containing 4 flues (3 x 12MW). It is, therefore, a common structure containing one or more flues.

As the combustion plant on the installation is composed of 27 x 3 MWth engines it does not form part of an LCP and so do not come under chapter III requirements. Nevertheless, they will still aggregate to be part of the Section 1.1 A(1)(a) activity listed in Schedule 1 of the Environmental Permitting regulations because they have a rated thermal input of 50MW or over. The installation is therefore a Chapter II installation and subject to the Medium Combustion Plant Directive

BAT assessment

Combustion technology

The Applicant (now the Operator) carried out a review of the following candidate combustion technologies and made an assessment of the technology in order to determine which technology can be considered the best available technique (BAT). This is detailed in document April version 37641 Final report v2.

- Combined Cycle Gas Turbines (CCGT)
- Open Cycle Gas Turbines (OCGT)
- Gas Engines (GE)
- Diesel Engines (DE)

Based on the results of this assessment, the Applicant has chosen Jenbacher Spark Ignition Gas Engines for the following reasons:

- Generation output is achieved within two minutes of start-up;
- Electrical generation efficiency is greater than alternative options;
- There is no requirement for on-site fuel storage;
- The achievement of Medium Combustion Plant Directive (MCPD) limits without the need for secondary abatement or Exhaust Gas Recirculation (EGR);
- Electronic engine management system for continuous control;
- The engines meet the operational criteria for the balancing market.

Choice of Fuel

The Applicant has chosen mains gas as this represents the most reliable and least polluting fuel available for use at the site. By using mains gas, there will be negligible emissions of sulphur and particulates and by operating in a lean-

burn mode, the quantities of Nitrogen oxides emitted comply with the Medium Combustion Plant Directive for new gas fuelled engines.

The choice of mains gas only (not dual fuel) also minimises the need to store significant quantities of raw materials on-site. We are satisfied that mains supply natural gas represents BAT in terms of fuel choice for this installation.

Water use

Water shall only be used to replenish the cooling systems of the 27 spark ignition engines. The predicted monthly average water usage is approximately 10m³. The Applicant is required to report water usage annually.

Justification for allowing up to 1,500 hours of unabated operation

The initial application was for up to 2,000 hours of operation a year. Modelling of air and noise emissions were based on 1750 hours of operation only. In order to avoid further delay in determination through the provision of missing information, the application was amended to the operation of combustion plant for less than 1,500hrs each year. We assessed the unabated operation of gas fuelled spark-ignition engines for up to 1,500 hours a year to serve the National Grid Balancing Market and we are satisfied it represents Best Available Techniques (BAT).

Primary emissions Controls

The Applicant has demonstrated sufficient primary emission controls are in place through the use of a computerised management system. This controls the emissions of Nitrogen Oxides by continuously adjusting the operating requirements of the engines to achieve the emission limits through Enhanced Lean Burn.

Abatement Systems

The Applicant considered a range of abatement systems. These included:

- Exhaust Gas Recirculation (Primary measure)
- Water Injection (Primary measure)
- Selective Catalytic Reduction (SCR) (Secondary measure)
- Non Selective Catalytic Reduction (NSCR) (Secondary measure)
- Lean NOx Trap (LNT) Catalysis (Secondary measure)

Full details of the assessments are contained in pages 32-37 of the supporting document 36830. The conclusions regarding suitability are summarised as:

- Exhaust Gas Recirculation (Primary measure) is not suitable for lean burn gas engines as it reduces full load efficiency;
- Water injection for reciprocating engines is limited to Compression Ignition only;
- Selective Catalytic Reduction capital and operating costs are disproportionate to the environmental benefit;

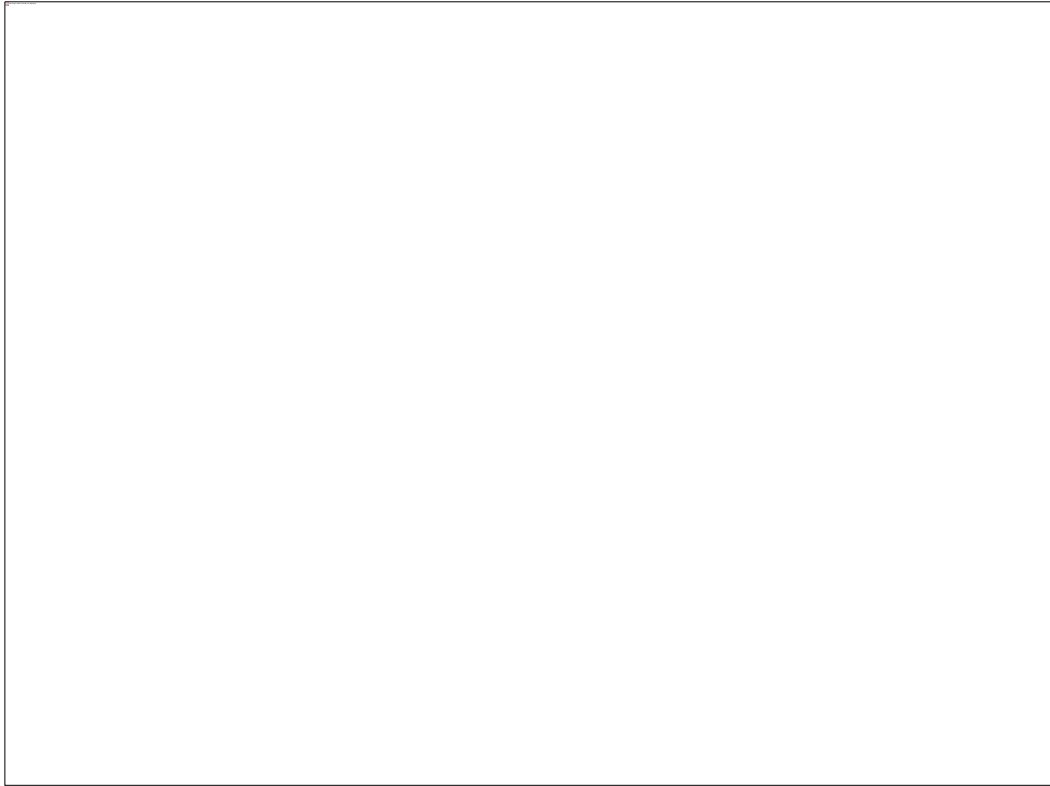
- Non Selective Catalytic Reduction is only effective under stoichiometric or fuel rich operating conditions. It is therefore unsuitable for lean-burn applications;
- Lean NOx Trap (LNT) Catalysis is a recently new technique for natural gas engines, which is still emerging. There are currently very few, if any, suppliers that offer this technology in the UK market.

Assessment against BAT standards for the energy balancing market

The Applicant has compared the chosen technology against the Department of Energy and Climate Change draft report Developing Best Available Techniques for Combustion Plants operating in the balancing market, dated March 2016 and we have compared this with the final report dated June 2016. We are satisfied the spark ignition engines exceed the minimum efficiency for electrical generation and the NOx emissions will achieve less than 95 mg/m³ and comply with the Medium Combustion Plant Directive.

Engine and stack arrangement

The Installation comprises 27 spark ignition engines, each housed in an individual container and each requiring a separate flue. Emissions from the engines are described in the application as via 6 windshields, each containing either 4 or 5 individual flues of 10 metres in height. In response to a clarification request for information, emissions are via 6 combined stacks, each containing either 4 or 5 individual flues as illustrated on the following page. The site layout and configuration of engines, transformers and emission points are also demonstrated in the layout plan on the following page. We are satisfied that no alternative stack configuration would make this a Chapter III installation. The Applicant has submitted Air Dispersion Modelling, which concludes that there is unlikely to be an exceedence of any Environmental Quality Standard (EQS) for oxides of Nitrogen (NOx) or Carbon Monoxide (CO₂) at any non Air Quality Management Area (AQMA) receptors and process contributions (PCs) are insignificant, less than 1%, at the AQMA. We agree with this assessment and are therefore satisfied the engine and stack arrangement represent BAT for the location. However, we do not agree with the applicant's conclusions that there will not be an exceedence of the daily critical level for NOx. At Beeston Canal there is potential for an exceedence of the daily critical level. This exceedence is based on the site operating for 14 hours per day, from 7:00 – 21:00. Consultation with the relevant local authority (Nottingham City Council) could not determine whether the features located in affected part this site are sensitive to the daily NOx critical level and consideration was given to whether the flue configuration and stack heights truly represented BAT. A limit on the daily engine operating hours has therefore been included until we are satisfied there are no features located in the affected part of the Beeston Canal that are sensitive to the daily NOx critical level.



Emissions and operating techniques assessment

Emissions of noise

The primary source of noise at this installation is the gas engines.

The Applicant has reviewed the onsite noise generating sources and the potential for impact in line with our H3 Noise guidance Part 2 – Noise Assessment and Control and BS4142 2014.

The Applicant has concluded on the basis of a numerical noise impact prediction that there is an indication of a significant adverse night-time impact on the nearest sensitive receptor on Gibbons Street.

We have assessed the Applicant's proposals and predict a lower numerical noise impact.

Noise Mitigation

To ensure there is no significant risk of noise at the site, the Applicant outlined a number of measures to manage noise emissions and submitted a Noise Management Plan in response to a request for additional information dated 04/10/16. The principal measures included:

- the engines will be housed in containerised units which are acoustically treated to reduce external noise emissions to an acceptable level;
- Unit flues are fitted with silencers;
- All units will be subject to planned preventative maintenance, which will minimise the risk of noise from vibration and plant failure.

Based on the results of the noise assessment and the proposed mitigation measures, we are satisfied that the Applicant has implemented BAT to manage the risk of noise emissions from the facility. Nevertheless, because there is an indication of a significant adverse night-time impact, we have restricted operating hours to between 07:00 – 23:00 only. We have inserted an improvement condition (IC2) into the permit to ensure the Applicant undertakes monitoring of noise post-commissioning to validate the conclusions of the noise assessment submitted with the application. The restriction on operating hours will be reviewed according to the outcome of the post-commissioning noise survey.

Secondary containment

Oils are the only List I or List II substances stored on site. The Applicant may install a tank for the storage of 5,000 litres of lubricating oil. Otherwise, there shall be no bulk storage of chemicals on site. If installed, all tanks will be double skinned and located in bunded areas with 110% of the tanks capacity. Engine containers are bunded to prevent fugitive emissions during operation and maintenance. Oil and chemicals will be brought on to the site in volumes of less than 220 litres. Details of quantities stored on-site are contained in Table 5.2 of document April version 37641 Final report v2.

Flood zone

The facility is located in a flood zone 2 on Redfield Road in the City of Nottingham at grid reference SK 55274 37802. The Applicant has outlined measures to prevent significant failure of infrastructure or pollution due to flood. These include:

- Engine containers and the control room door will be banded;
- Cooling oil and engines are contained within sealed systems; and
- The storage of chemicals on site is minimal.

We have assessed the Applicant's proposals and we are satisfied the risk of pollution of surface water and groundwater is negligible. They therefore represent the best available techniques.

Air Emissions

Assessment of Impacts on Air Quality

The Applicant's assessment of the impact on air quality is set out in the Application in document Ref 36830, Final Report 16142i1 dated April 2016.

The assessment comprises:

- Dispersion modelling of emissions to air from the operation of the spark ignition engines;
- A study of the impact of emissions on human and ecological receptors.

The assessment used meteorological data from Watnall meteorological station for the years 2010-2014 in the model. This station is located approximately 9km north-west of the proposed site and is considered the most representative meteorological station for the assessment.

The impact of the terrain surrounding the site and buildings upon plume dispersion was considered in the dispersion modelling. 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 modelling has considered the plant operating continuously for a total of 1750 hours per calendar year.

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 were not modelled by the Applicant. We agree with this approach.

Human Receptors

The Applicant's modelling predictions are presented in Table 1 below. The figures shown indicate the predicted peak ground level exposure to pollutants in ambient air at the nearest sensitive receptor. We have made our own verification of the percentage process contribution/deposition and predicted environmental concentrations submitted by the Applicant. These may be

slightly different to those shown in the Application. Any such minor discrepancies do not materially impact on our conclusions.

Table 1 Maximum modelled nitrogen dioxide concentrations at the most sensitive human receptors.

Pollutant	EQS / EAL	Back-ground	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
	µg/m3		µg/m3	µg/m3	% of EAL	µg/m3
NO ₂ (annual) Gibbons Street	40	25.57	1.88	4.7	27.45	68.6
NO ₂ (1 hour) Gibbons Street	200	51.15	48.08	24.04	99.23	49.6

From Table 1, nitrogen dioxide cannot be screened out as insignificant in that the process contribution is >1% of the long term EQS/EAL and >10% of the short term EAQ/EAL.

Although nitrogen dioxide did not screen out as insignificant, we consider that emissions are not significant because the predicted environmental concentration (PEC) is less than 70% of both the long term and short term EQS/EAL.

We have checked the modelling data and our results are consistent with the Applicant's assessment. The conclusion is that there will be no significant impact on human health caused by the operation of this installation.

The Applicant has also considered the implication of the impacts at a range of receptors including three local Air Quality Management Areas (AQMA's); Lace Street AQMA, Marlborough Street AQMA and Beeston Street AQMA. Process Contribution (PC) impacts at these locations were insignificant. Full details are contained in Tables 4.1 and 4.2 of the Application document Ref 36830, Final Report 16142i1 dated April 2016.

Table 2 Maximum modelled carbon monoxide concentrations at the most sensitive human receptors.

Pollutant	EQS / EAL	Back-ground	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
	mg/m3		mg/m3	mg/m3	% of EAL	µg/m3
CO (8 hourly mean) Gibbons Street	10,000	1,026	334	3.34	1,360	13.6
CO (1Hour mean) Gibbons Street	30,000	1,026	617	2.06	1,643	5.5

From table 2 above, carbon monoxide can be screened out as insignificant in that the process contribution is <10% of the short term EAQ/EAL. Although it cannot be screened out as insignificant for long term impacts because the process contribution is <1% of long term EAQ/EAL, emissions are not

significant because the predicted environmental concentration (PEC) is less than 70% of the long term EQS/EAL.

We have checked the modelling data and our results are consistent with the Applicant's assessment. The conclusion is that there will be no significant impact on human health caused by the operation of this installation.

Ecological receptors

There are no European sites within 10Km of the proposed installation and no SSSI's within 2km. There are 3 Nature Reserves and 21 Local Wildlife Sites within 2km. The nearest of these is the Beeston Canal, approximately 50 metres to the north-west.

The following trigger thresholds have been applied for the assessment of these sites:

- If the process contribution (PC) is below 100% of the relevant critical level (CLe) or critical load (CLo) then the installation can be permitted with no further assessment.

The modelling information provided by the Applicant has predicted that the process contribution (PC) is less than 100% of the relevant long-term (annual) critical level and less than 100% of the relevant short-term critical levels and critical loads for nitrogen dioxide at all of 3 Nature Reserves and 21 local Wildlife Sites within 2km of the site. Full details are contained in Tables 4.4, 4.5 and 4.6 of the Application document Ref 36830, Final Report 16142i1 dated April 2016.

Beeston Canal Critical Level - Long Term Impact

Table 3 – Maximum modelled Annual mean NO_x concentrations at the nearest conservation site

Location	Critical Level (CLe)	Back-ground µg/m3	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
	µg/m3		µg/m3	% of CLe	µg/m3	% of PEC
Beeston Canal 1	30	51.07	0.26	0.86	51.33	171.1
Beeston Canal 2	30	43.24	0.36	1.20	43.60	145.3
Beeston Canal 3	30	43.24	0.69	2.30	43.93	146.4
Beeston Canal 4	30	37.60	1.71	5.70	39.31	131.0
Beeston Canal 5	30	37.60	2.72	9.07	40.32	134.4
Beeston Canal 6	30	37.61	0.23	0.77	37.84	126.1

From Table 3, the Applicant concludes long term nitrogen oxides emissions from the Redfield Road site can be screened out as insignificant and that the process contribution (PC) is below 100% of the long term Critical Level (CLe).

Beeston Canal Critical Level - Short Term Impact

Table 4 – Maximum modelled daily mean NO_x concentrations at the nearest conservation site

Location	Critical Level (CLe)	Back-ground	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
	µg/m ³		µg/m ³	µg/m ³	% of CLe	µg/m ³
Beeston Canal 1	75	102.12	4.70	6.26	106.82	142.4
Beeston Canal 2	75	86.48	6.14	8.19	92.62	123.5
Beeston Canal 3	75	86.47	9.75	13.00	96.22	128.3
Beeston Canal 4	75	75.21	48.79	65.05	124.00	165.3
Beeston Canal 5	75	75.20	29.71	39.61	104.91	139.9
Beeston Canal 6	75	37.61	0.23	0.77	81.48	108.6

From Table 4, the Applicant concludes that short-term nitrogen oxides emissions from the Redfield Road site can be screened out as the process contribution (PC) is below 100% of the long term Critical Level (CLe).

Beeston Canal Critical Load.

Table 5 – Maximum modelled Annual mean NO_x concentrations at the nearest conservation site

Location	Critical Load (CLo)	Back-ground	Process Contribution (PC)		(PEDR) Predicted Environmental Deposition Rate	
	KgNha ⁻¹ y ⁻¹		KgNha ⁻¹ y ⁻¹	KgNha ⁻¹ y ⁻¹	% of CLo	µg/m ³
Beeston Canal 1	N/A	20.5809	0.0091	N/A	20.59	N/A
Beeston Canal 2	N/A	20.5775	0.0125	N/A	20.59	N/A
Beeston Canal 3	N/A	20.5762	0.0238	N/A	20.60	N/A
Beeston Canal 4	N/A	20.5811	0.0589	N/A	20.64	N/A
Beeston Canal 5	N/A	20.5761	0.0939	N/A	20.67	N/A
Beeston Canal 6	N/A	20.1619	0.0081	N/A	20.17	N/A

From Table 5, the Applicant concludes that nutrient nitrogen deposition rates from the Redfield Road site are extremely small process contributions (less than 1% based on a critical load of 10 KgNha⁻¹y⁻¹), which would not be considered significant.

We have checked the modelling data and our results with the Applicant's assessment. We agree with the Applicant's conclusion that it is unlikely there will be an exceedance of any annual critical levels or critical loads. However,

we do not agree with the conclusion that there will be no exceedence of the daily critical level. There is potential for exceedences of the daily critical level for nitrogen oxides (NOx) at part of the Beeston Canal. This is because the Applicant has applied for the flexibility to operate between 07:00hr – 23:00hr each day. There are 27 spark ignition engines, which allows 432 engine hours of operation each day. It is not possible to use the Applicant's emission correction factor as this is based on yearly operations. We have calculated the number of engine operating hours beyond that at which the process contribution (PC) from the installation will exceed the NOx daily critical level at parts of the Beeston Canal to be 288 hours. This has been included as a daily limit in Table S3.1 of Schedule 3 of the Permit.

From our consultations with Nottinghamshire City Council and Fisheries, Biodiversity and Geomorphology Specialists, it is not clear whether the affected part of the Beeston Canal contains any botanical features that are NOx sensitive. We have therefore included an improvement condition (IC 5) requiring the Operator to submit a written report to the Environment Agency for approval, detailing the botanical features on the Beeston Canal Local Wildlife Site within a 200 metres radius of the installation boundary. The report shall describe the sensitivity of each botanical feature to NOx and acidic pollution and the relationship with daily operating hours and maximum engine emissions of plant within the installation. Subject to the outcome of the report, the daily limit on the number of engine hours can be reviewed and agreed with the Environment Agency.

Other emissions to air

There is insufficient evidence regarding the effects of enhanced lean burn (ELB) on methane slip and formaldehyde production by oxidation or incomplete combustion of hydrocarbons at raised carbon monoxide levels. Improvement Conditions IC 3 and IC 4 have been included to establish these emission levels under ELB, compare them with the manufacturer's specifications and appropriate benchmark levels and undertake an assessment of the impacts of carbon monoxide emissions and possible impacts of formaldehyde in line with our H1 guidance or equivalent methodology. These improvement conditions are applied to all new installations using spark-ignition engines to serve the balancing market on the electricity Grid.

Emissions to Surface water and groundwater

There will be no generation of process water within the installation and therefore no emissions to surface water or ground water. Rain water drain-off in unbunded areas of the site will be to ground.

Emissions to Sewer

There will be no generation of process water within the installation and therefore no emissions to sewer.

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	<p>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.</p> <p>For this application we consulted the following bodies:</p> <ul style="list-style-type: none"> • Local Authority Environmental Protection Department – Nottingham City Council • Health and Safety Executive • National Grid • Public Health England and the relevant Director of Public Health – Nottingham City Council • Food Standards Agency 	✓
Responses to consultation and web publicising	<p>The web publicising and consultation responses (Annex 2) were taken into account in the decision.</p> <p>The decision was taken in accordance with our guidance.</p>	✓
Applicant		
Control of the facility	We are satisfied that the applicant (now the Applicant) 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 Applicant.	✓
European Directives		
Applicable directives	All applicable European directives have been considered in the determination of the application.	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
The site		
Extent of the site of the facility	<p>The Applicant has provided a plan which we consider is satisfactory, showing the extent of the site of the facility including discharge points.</p> <p>A plan is included in the permit and the Applicant is required to carry on the permitted activities within the site boundary.</p>	✓
Site condition report	<p>The Applicant has provided a description of the condition of the site.</p> <p>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).</p>	✓
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 sites (see key issues section of this document).</p>	✓
Environmental Risk Assessment and operating techniques		
Environmental risk	<p>We have reviewed the Applicant's assessment of the environmental risk from the facility.</p> <p>The Applicant's risk assessment is satisfactory.</p> <p>The assessment shows that, applying the conservative criteria in our guidance on Environmental Risk Assessment [or similar methodology supplied by the Applicant and reviewed by ourselves], all emissions may be categorised as environmentally insignificant (see key issues section of this document).</p>	✓
Operating techniques	<p>We have reviewed the techniques used by the Applicant and compared these with the relevant guidance notes. (See Key Issues)</p>	✓
The permit conditions		
Use of conditions other than	<p>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</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
those from the template	consultation with industry having regard to the relevant legislation.	
Improvement conditions	<p>Based on the information on the application, we consider that we need to impose improvement conditions.</p> <p>IC1 has been included to ensure the Applicant reports the outcome of the commissioning of the installation to the Environment Agency. This is to ensure we are aware of any change to infrastructure or operating techniques.</p> <p>IC2 has been included to ensure the Applicant undertakes an additional noise survey post commissioning and provides a report to the Environment Agency to demonstrate whether additional noise management and/or mitigation techniques need to be implemented. It shall also allow the Environment Agency to review the limit on the operation of the installation between the night time hours of 23:00 - 07:00.</p> <p>IC3 has been included to provide evidence to establish the methane emissions from the engines when operating at Enhanced Lean Burn (ELB)</p> <p>IC4 has been included to provide evidence to establish the emissions and relationship (if any) of Carbon Monoxide and formaldehyde from the engines when operating at Enhanced Lean Burn (ELB) and to undertake an assessment of the impacts of these emissions</p> <p>IC5 has been included to undertake a survey detailing the botanical features on the Beeston Canal Local Wildlife Site within a 200 metres radius of the installation boundary. The report shall describe the sensitivity of each botanical feature to NOx and acidic pollution and the relationship with daily operating hours and maximum engine emissions of plant within the installation.</p> <p>IC6 has been included for the Applicant to describe how the technology represents BAT for operation of the plant beyond 1,500 hours. The report shall use data obtained from the installation during the first 12 months of operation.</p> <p>IC7 has been included to ensure the Operator reports the number of hours the site has operated over 3 years and undertakes a cost benefit analysis to determine whether the application of secondary abatement (e.g. SCR,</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	NSCR, and LNR) can be considered BAT based on the frequency and duration of engine operation.	
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 and equivalent parameters or technical measures have been set for those substances</p> <ul style="list-style-type: none"> • Oxides of Nitrogen (NO_x and NO₂ expressed as NO₂). These limits have been imposed in line with the requirements of the Medium Combustion Plant Directive MCPD for this type of plant. • Noise during night time hours. <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>	✓
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>These monitoring requirements have been imposed in order to meet the requirement of the Medium Combustion Plant Directive (MCPD) to monitor emissions from Medium Combustion Plant with a rated thermal input greater than 20MW on an annual basis.</p> <p>Based on the information in the application we are satisfied that the Applicant'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>Reporting frequencies are based on annual requirement for monitoring and that the site operates at 1,500 hours per year. The result will allow us to compare air emissions</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	and operating hours projected in the air quality modelling to ensure they reflect those achieved in practice are in line with Medium Combustion Plant Directive.	
Applicant Competence		
Environment management system	There is no known reason to consider that the Applicant 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 Applicant Competence.	✓
Relevant convictions	The National Enforcement Database has been checked to ensure that all relevant convictions have been declared. No relevant convictions were found. The Applicant satisfies the criteria in RGN 5 on Applicant Competence.	✓
Financial provision	There is no known reason to consider that the Applicant will not be financially able to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Applicant Competence.	✓

Annex 2: Consultation and web publicising

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. Centre for Radiation, Chemical and Environmental Hazards (CRCE) at on 26 th July 2016.
<i>Brief summary of issues raised</i>
<p>PHE recommends the Regulator confirms the gas engine emission profiles and the input into the methodology used for calculating the process contribution from the gas engines for part time operations.</p> <p>The NO₂ process contribution concentration at the Air Quality Management Area (AQMA) is 0.39 ug/m³, so an approximate 1% additional contribution. The applicant states that typically the gas engines will be operating for approximately one third of the time and has included a dispersion model using 2011 meteorological conditions. We ask that the Regulator is satisfied that these inputs are representative and that the site will not have a significant impact on NO₂ levels locally, and particularly in the AQMA.</p> <p>The proposed installation is in close proximity (550 metres) to the Beeston Road AQMA, where existing background concentrations of NO₂ are elevated, and on occasions in past years have exceeded the AQS objective level of 40ug/m³. Therefore, consideration should be given to not introducing any additional sources of NO₂ in this area which would contribute to the overall burden of NO₂ concentrations, particularly in AQMA's.</p>
<i>Summary of actions taken or show how this has been covered</i>
<p>The Applicant has used an Emission Limit Value (ELV) for each engine of 250mg/Nm³ at exhaust reference conditions of 273 K, 101.3 kPa, 5% oxygen content and dry gas. The ELV values stated in the MCPD are based on an emission concentration of 95 mg/Nm³ with an oxygen content of 15%. This is the equivalent of an emission concentration of 256 mg/Nm³ at 5% oxygen.</p> <p>The Applicant has considered the implication of the impacts at a range of receptors including three local Air Quality Management Areas (AQMA's); Lace Street AQMA, Marlborough Street AQMA and Beeston Street AQMA. Process Contribution (PC) impacts at these locations were determined to be insignificant.</p> <p>We agree that the Applicant's predictions for human health can be used for permit determination. The conclusion is that there will be no significant impact on human health caused by the operation of this installation.</p>

We also agree with the Applicant's conclusion that it is not likely there will be an exceedance of any annual critical levels or critical loads. However, we do not agree with the Applicant's conclusion that there will be no exceedances of the daily critical level. There is potential for exceedances of the daily critical level for nitrogen oxides (NOx) at part of the Beeston Canal. This exceedance is addressed in the key issues section of this document.

The Local Authority Environmental Protection Department, Health and Safety Executive, Food Standards Agency and National Grid were also consulted. However, no responses were received from these Consultees.

This proposal was also publicised on our website between 14/07/2016 and 12/08/2016 and no representations were received.