Permitting decisions

Bespoke permit

We have decided to grant the permit for the Manchester Civic Quarter Energy Centre operated by Manchester Heat Network TradeCo Limited.

The permit number is EPR/JP3700BU.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document provides a record of the decision making process. It summarises the decision making process in the decision checklist to show how all relevant factors have been taken into account.

This decision document provides a record of the decision making process. It:

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

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

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

Key issues of the decision

Air quality

This is a complex bespoke Medium Combustion Plant (MCP)/Specified Generator (SG) application. In line with the Environment Agency's guidance (https://www.gov.uk/guidance/specified-generators-dispersion-modelling-assessment and https://www.gov.uk/guidance/medium-combustion-plant-apply-for-an-environmental-permit#apply-for-a-bespoke-permit), we require applicants to submit detailed air dispersion modelling and impact assessment to assess the predicted impacts on both human receptors (for example dwellings, work places and parks) and ecological sites.

A methodology for risk assessment of point source emissions to air is set out in our guidance (Air emissions risk assessment for your environmental permit) and has the following steps:

- Describe emissions and receptors;
- Calculate process contributions (PC);
- Screen out insignificant emissions that do not warrant further investigation using the Environment Agency's screening tool (specific to assessing impacts from SG);
- Decide if detailed air modelling is needed;
- Assess emissions against relevant standards;
- Summarise the effects of emissions.

We use this methodology to assess the impacts on air quality in the determination of applications.

The methodology uses a concept of “process contribution (PC)”, which is the estimated concentration of emitted substances after dispersion into the receiving environmental media at the point where the magnitude of the concentration is greatest. The methodology 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 PCs calculated are likely to be an overestimate of the actual maximum concentrations. More accurate calculation of PCs can be achieved by mathematical dispersion models, which take into account relevant parameters of the release and surrounding conditions, including local meteorology.

Air dispersion modelling enables the PC to be predicted at any environmental receptor that might be impacted by the emissions from a plant. Once short-term and long-term PCs have been calculated in this way, they are compared with Environmental Standards (ES).

PCs are considered insignificant if:

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

The long-term 1% PC 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; and
- the threshold provides a substantial safety margin to protect health and the environment.

The short-term 10% PC insignificance threshold is based on the judgements that:

- spatial and temporal conditions mean that short-term PCs are transient and limited in comparison with long-term PCs; and
- 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 acceptable. However, where an emission cannot be screened out as insignificant, it does not mean it will necessarily be significant.

For those pollutants which do not screen out as insignificant, we determine whether exceedances of the relevant ES are likely. This is done through detailed audit and review of the applicant’s air dispersion modelling, taking background concentrations and modelling uncertainties into account.

Where the PC is greater than these thresholds, the assessment must continue to determine the impact by considering the predicted environmental concentration (PEC). The PEC is the combination of the PC substance to air and the background concentration of the substance which is already present in the environment.

The PECs can be considered ‘not significant’ if the assessment has shown that both the following apply:

- proposed emissions comply with associated emission levels (AELs) or the equivalent requirements where there is no AEL; and
- the resulting PECs won’t exceed 100% of the ES.

Summary and Audit of Air Quality Assessment

The applicant has assessed the combustion plants potential emissions to air against the relevant ESs, and the potential impact upon human health. There were no Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPA), Special Areas of Conservation (SAC) or Ramsar sites within the 5 km screening distance.

This was provided in their 'Air Quality Technical Appendix' report (Ref. No: 427.06227.00002) dated September 2019.

The facility is located within an Air Quality Management Area (AQMA), declared for nitrogen dioxide (NO_2) and particulate.

The assessment predicts the potential effects on local air quality from the plants stack emissions using the ADMS 5 dispersion model, which is a commonly used computer model for regulatory dispersion modelling. The model used five years of meteorological data collected from the weather station at Manchester Airport between 2012 and 2016.

As a worst case scenario, it was assumed that the combined heat and power (CHP) gas engine operates at maximum output for 8,760 hours/year.

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

The applicant's modelling predicts concentrations at 74 human health receptors, with the highest concentration shown in the table below.

Predicted impacts at most sensitive human receptor (Axis residential receptor)						
Pollutant	**ES**	**Background**	**PC**		**PEC**	
Unit	**µg/m³**	**µg/m³**	**µg/m³**	**% of ES**	**µg/m³**	**PEC % of ES**
NO_x annual mean	40	30.5	1.3	3.25	31.8	79.5
NO_x hourly mean	200	61	20	10	81	40.5

The PEC is not considered to be significant at the most impacted human health receptor i.e. <100% of the ES.

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 air modelling specialists to establish the robustness of the air impact assessment. The output from the model has then been used to inform further assessment of health impacts. Whilst we have not replicated their exact numerical predictions, our review leads us to agree with the applicant's conclusions, that for human health the effects on air quality are considered 'not significant'.

Our check modelling assumed that one of the two boilers ran continuously throughout the year so we have not limited boiler operating hours.

Energy efficiency directive (article 14)

We are required to consider the energy efficiency directive (EED) as the units aggregate above 20 MWth i.e. the two boilers and CHP have their own individual flues, enclosed within a single stack. Only one boiler shall be operated whilst the other is on standby, therefore the CHP and the boiler will aggregate to 20.61 MWth.

The applicant addresses the requirements of Article 14 of the EED in the non-technical summary provided with the application. They confirm that the Energy Centre's high efficiency co-generation CHP's primary purpose is to provide heat and power to the private wire and district heating network. The primary energy source to the district heating system utilises the new CHP facility and is topped up by the use of the boiler plant when in peak conditions. The size of the CHP is such that there is an economic and carbon dioxide (CO_2) benefit which is maximised over a 30-year term with the new CHP, when compared to the existing heating and power installations which will be made redundant by the new network.

In addition to this, the Energy Centre, private wire and district heating design can accommodate further expansion and the addition of new technologies such as additional CHP's, heat pumps and other future technologies as the heating network grows.

We can conclude that the requirements of article 14 of the EED have been satisfied.

Decision checklist

Aspect considered	Decision
Receipt of application	
Confidential information	A claim for commercial or industrial confidentiality has not been made.
Identifying confidential information	We have not identified information provided as part of the application that we consider to be confidential.
Consultation	
Consultation	The consultation requirements were identified in accordance with the Environmental Permitting Regulations (EPR) and our public participation statement. We consulted the local authority. The comments and our responses are summarised in the consultation section.
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 our guidance on legal operator for environmental permits.
The facility	
The regulated facility	The operator has provided the grid reference for the emission points from the MCPs/SG and the activities are defined in table S1.1 of the permit. As the aggregated net rated thermal input of the plant is greater than 20 MW, in accordance with the EP Regulations the activity could be considered to be an aggregated Part B under section 1.1 of schedule 1. However, we are permitting the activity as one described in schedules 25A/25B as BAT does not apply to aggregated section 1.1 Part B activities in accordance with schedule 8 of the EP Regulations.
The site	
Biodiversity, heritage, landscape and nature conservation	The application is not within the relevant distance criteria of a European site Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar site or Site of Special Scientific Interest (SSSI).
Environmental risk assessment	
Environmental risk	We have reviewed the operator's assessment of the environmental risk from the facility. The MCP is located within a local authority air quality management area; however it is not included in the local authority's air quality management plan. An assessment of the impact of emissions on air quality has been carried out.

Aspect considered	Decision
	The operator's risk assessment is satisfactory. The assessment shows that applying the conservative criteria in our guidance on environmental risk assessment all emissions may be categorised as environmentally not significant. The applicant's assessment of predicted impacts at sensitive receptors is based on unlimited operating hours which is included in the modelling. We have not limited operating hours in table S1.1 of the permit as the modelling shows that emissions are environmentally not significant. See key issues section above. Table S1.1 does however only allow the operation of one boiler at any one time consistent with the modelling.
Operating techniques	
Operating techniques	We have specified the operating techniques and the operator must use the operating techniques specified in table S1.2 of the permit.
Permit conditions	
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.
Emission limits	Emission limit values (ELVs) have been set for oxides of nitrogen (NOx). Boilers A limit of **100 mg/Nm^3** has been set for the boilers (emission points A1 and A2) in accordance with Schedule 25A of the EPR. This limit is applicable at **3% oxygen**. CHP engine A lower limit of **35 mg/Nm^3** has been set for the CHP engine (emission point A3) in accordance with Schedule 25B of the EPR. This limit is applicable at **15% oxygen**. This lower limit is applicable as selective catalytic reduction (SCR) abatement for NOx is in place. The operator confirmed the following in their email received 21 July 2020: The CHP engine has SCR secondary abatement in place. In the application document 'EPR-CO_2 Emissions Management & Monitoring Plan' they state that the engine will be able to meet an emission limit of 95 mg/Nm^3 at 15% oxygen. They confirm this was a mis-type and should have read 95 mg/Nm^3 at 5% oxygen. With this in mind and how the concentration at 5% oxygen equates to the concentration at 15% oxygen, then the CHP engine would be able to meet the emission limit of 35 mg/Nm^3 at 15% oxygen. Documents OP03 and EPR-CO_2 were updated accordingly and re-submitted 22 July 2020.

Aspect considered	Decision
Monitoring	We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified. These monitoring requirements have been imposed in order for the operator to demonstrate compliance with the emission limits specified in the permit. The operator will carry out monitoring in accordance with the relevant MCERTS methods. We made these decisions in accordance with MCP and SG technical guidance. *Medium Combustion Plant guidance: https://www.gov.uk//guidance/medium-combustion-plant-and-specified-generator-permits-how-to-comply* *Specified Generator Guidance https://www.gov.uk//guidance/medium-combustion-plant-and-specified-generator-permits-how-to-comply* After the first monitoring measurement within four months of operation, the monitoring frequency is annually as the units share a windshield and are aggregated above 20 MWth (7.59 MWth + 13.02 MWth = 20.61 MWth, based on one operational boiler).
Reporting	We have specified reporting in the permit. The frequency is annually for both the MCP and SG consistent with the monitoring frequency. We made these decisions in accordance with the MCP and SG technical guidance. *Medium Combustion Plan Guidance: https://www.gov.uk//guidance/medium-combustion-plant-and-specified-generator-permits-how-to-comply* *Specified Generator Guidance: https://www.gov.uk//guidance/medium-combustion-plant-and-specified-generator-permits-how-to-comply*
Operator competence	
Management system	The application was originally submitted with Manchester City Council as the operator. This was changed to Manchester Heat Network TradeCo Limited with amended application forms and supporting information resubmitted 19 August 2020. There is no known reason to consider that the operator will not have the management system to enable them to comply with the permit conditions. The decision was taken in accordance with the guidance on operator competence and how to develop a management system for environmental permits.
Relevant convictions	The Case Management System has been checked to ensure that all relevant convictions have been declared. No relevant convictions were found. The operator satisfies the criteria in our guidance on operator competence.
Financial competence	There is no known reason to consider that the operator will not be financially able to comply with the permit conditions.

Aspect considered	Decision
Growth Duty	
Section 108 Deregulation Act 2015 – Growth duty	We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit. Paragraph 1.3 of the guidance says: "The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation." We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections. We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.

Consultation

The following summarises the response to consultation with the local authority and the way in which we have considered this in the determination process.

Responses from organisations listed in the consultation section

Response received from
Manchester City Council – 04 August 2020
Brief summary of issues raised
No issues raised.
Summary of actions taken or show how this has been covered
No action required.