

# Permitting decisions

## Bespoke permit

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We have decided to grant the permit for Saltholme South Power operated by Saltholme South Power Limited.

The permit number is EPR/XP3106PT.

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

### Purpose of this document

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

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

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

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

The proposed facility will consist of 4 x 26 megawatt thermal (MWth) fast start spark ignition reciprocating gas engines and will operate to provide energy to the grid during peak periods operating under Section 1.1 Part A(1)(a) of the Environmental Permitting Regulations (EPR) for the burning of fuel in an appliance with a rated thermal input of 50 or more MW thermal (MWth).

The individual engines are also Medium Combustion Plant (MCP) under Schedule 25A of the Environmental Permitting Regulations.

The gas engines are designed to operate in the capacity market to provide electricity to the National Grid. The engines have an aggregated thermal input of approximately 105 MW. The operator applied for an annual running capacity of 3,500 hours.

The site is located to the east of Cowpen Bewley Rd, Saltholme, Stockton-on-Tees. The approximate post code is TS23 4HS and the site is centred at National Grid Reference NZ 48999 23783.

The site covers approximately 0.7 hectares of arable farmland and includes access from the A1185 and installation of a new access track to a gas connection kiosk.

# Key issues of the decision

## Best Available Techniques (BAT) Assessment

### Operating Hours

We established BAT for single cycle peaking plant following publication of the report “Department of Energy and Climate Change, Developing Best Available Techniques for combustion plants operating in the balancing market, March 2015”. We currently normally limit these plant to 1,500 hours per annum on a 5 year rolling average.

The peaking market is generally made up of fast start Large Combustion Plant (LCP) turbines and aggregations of smaller high speed gas reciprocating engines. They are usually unabated for oxides of nitrogen (NOx). High speed engines have an emission limit value (ELV) of 95mg/Nm<sup>3</sup>. Open cycle gas turbines can achieve 50mg/Nm<sup>3</sup>. Both technologies are around 40% energy efficient.

Statera installations, Saltholme South and Saltholme North (EPR/XP3106PT/A001 and EPR/LP3300PZ/A001) have installed larger medium speed gas engines which have Selected Catalytic Reduction (SCR) NOx abatement capable of achieving <30mg/Nm<sup>3</sup> and greater energy efficiency of more than 48%. With this improved environmental performance, they have applied for a mid-merit category of operating hours at 3,500 per annum. Mid merit is typically up to 4,000 hours per annum operation.

In considering whether to permit these operating hours, as well as the usual impact assessments we have carried out a BAT assessment looking at the NOx intensity, energy efficiency, methane slip and Defra 2020 NOx damage costs. We have also considered the likely carbon dioxide (CO<sub>2</sub>) emissions. In considering if this is BAT, we have looked at other peaking technology but also older Combined Cycle Gas Turbines (CCGTs) that may also operate in the mid merit market. This market usually requires at least two fast starts in a day, often more to balance electricity supplied by intermittent renewables. This BAT analysis is the subject of a more detailed paper currently being drafted but the following summary uses data from that analysis, based on the values in the table below:

Table of NOx and methane (CH<sub>4</sub>) ELVS and Energy Efficiency AEEL

Technology	NOx ELV/mgNm <sup>3</sup> @15%O <sub>2</sub> <sup>1</sup>	CH <sub>4</sub> ELV/mg/Nm <sup>3</sup> @15%O <sub>2</sub> <sup>1</sup>	Energy Efficiency/%
Existing Open Cycle Gas Turbine (OCGT)	50	n/a	38
Existing CCGT	50	n/a	55
Existing High Speed engine	95	215 and 560	40
New Medium Speed Engine with SCR	30	215 and 500	48

<sup>1</sup>Daily average

Table of NOx and CO<sub>2</sub> intensity and NOx damage costs by technology types at 2960 hrs for 2 starts a day including start up.

Technology	NOx Intensity /kg/MWhe	CO <sub>2</sub> intensity /tpa/MWhe as C	NOx Damage cost/£/MWhe
Existing OCGT	0.408	0.668	0.562 <sup>1</sup>
Existing CCGT	0.278	0.555	0.383 <sup>1</sup>
Existing High Speed engine	0.645	0.650	0.975 <sup>2</sup>
New Medium Speed Engine	0.199	0.543	0.301 <sup>2</sup>

<sup>1</sup>Calculated by NOx intensity \* Defra NOx damage cost for 50-100m stack in population density <250people per km<sup>2</sup> (£1378/tNOx) eg 0.408kg/MWh\*£1512/1000 = £0.562/MWhe

<sup>2</sup> Calculated by NOx intensity \* Defra NOx damage cost for <50m stack in population density <250people per km<sup>2</sup> (£1512/tNOx) eg 0.645kg/MWh\*£1512/1000 = £0.975/MWhe

From the comparative data, if these medium speed abated engines displace unabated high speed engines, this will be beneficial to the environment with respect to NOx emissions and CO<sub>2</sub> by:

1. 0.446kg NOx/MWh,

This is calculated from the difference between the NOx intensity for unabated high speed engines and medium speed engines with SCR ie 0.645kg/MWhe - 0.199kg/MWhe = 0.446kg/MWhe

And 1.32t/year if generating 2960MWhe.

This is calculated by multiplying 0.446kg/MWhe \* 2960h = 1.32tNOx

2. 0.09tpaCO<sub>2</sub>/MWh(0.28t/year if generating 3000MWh).

If they displace older less efficient OCGTs shifting the case is:

1. 0.2kgNOx/MWh(0.6t/year if generating 3000MWh), and:
2. 0.19tpaCO<sub>2</sub>/MWh(0.57t/year if generating 3000MWh).

It is unlikely CCGTs will operate more starts than this in a day as it is not technically practicable but the case is:

1. 0.08kgNOx/MWh(0.24t/year if generating 3000MWh), and
2. 0.01kg/CO<sub>2</sub>/MWh(0.03t/year if generating 3000MWh)

In conclusion this new technology may displace existing technology in the balancing market if we permit it as a mid-merit plant rather than a peaking plant as it can effectively operate in both markets. It is most likely to displace high speed gas engines or open cycle gas turbines which can do two or more fast starts in a day – this will be beneficial with respect to both NOx and CO<sub>2</sub> emissions. If existing older CCGTs are displaced NOx emissions will be reduced and it is likely CO<sub>2</sub> as well however it is unlikely these two technologies will be competing as CCGTs are very unlikely to do more than two starts in a day and these are not fast starts.

We therefore conclude it is BAT to operate this technology as a mid-merit plant.

#### Combustion technology

The Applicant has considered reciprocating engines as the most suitable technology and BAT for their proposal. They have stated that, for peaking plant, reciprocating engines are well suited to fast reserve as they are capable of quick start up and shut down times and that small individual engines can be run at optimum loading and hence optimum efficiency. Furthermore, they provide the necessary flexibility required for the peaking plant.

We agree that the use of reciprocating engines can be considered BAT for peaking plant as detailed above if SCR is utilised to minimise NOx emissions.

#### Fuel type

The Applicant has chosen to operate their proposal using mains gas. Natural gas represents the most reliable and least polluting fuel available. The use of natural gas means that there will be negligible emissions of sulphur dioxide and particulates.

The choice of mains gas also minimises the requirement 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.

#### Primary emissions controls

The engines operate at a high rate of efficiency to minimise exhaust emissions to air.

#### Secondary emissions control

SCR will be used to further abate emissions.

#### Cooling system

The Applicant identified a number of cooling systems, from the Best Available Techniques (BAT) Reference Document for Large Combustion Plants, in order to consider the most appropriate cooling technology for the proposed peaking plant. These included:

- once through cooling (wet cooling);
- evaporative cooling tower (wet cooling);
- hybrid cooling (wet cooling); and
- fin fan coolers.

Once through water cooling is not feasible for the proposed facility due to there being no suitable source of water for abstraction in the volumes of water that would be needed within the vicinity of the plant, the closest water features comprise an array of small Becks including Belasis Beck. Larger watercourses are the River Tees at circa 1.7km from the site. Providing infrastructure to this water source for once through cooling was not considered economically feasible.

Furthermore as a consequence of the intermittent operation required there would be the issues surrounding biological control and issues of fouling from operation of once through cooling, which would result in additional cost and potential maintenance concerns. Siltation and settlement are also likely to be problematic as a result of the intermittent operation. These issues can be avoided for power plant which operate continuously as a minimum level of flow is maintained at all times. The facility would not create a high enough load for this to be feasible, and there would be an energy penalty due to the intermittent operation which could exceed the savings that direct cooling can deliver.

The issues identified above would also apply to the remaining wet cooling options and therefore these options were not considered further.

Fin-fan coolers have no significant water consumption requirement and hence are suited to the site location and operational profile and will not result in effluent discharges. Furthermore, they have a lower visual impact when compared with evaporative techniques together with lower associated storage requirements.

Whilst fin fan coolers can give rise to greater noise impacts, the noise assessment carried out concluded that the noise effects from the facility will not result in significant noise impacts with appropriate mitigation methods in place.

It was recognised that the fin-fan cooler option has a higher energy demand than other cooling options. However the energy consumption by the fin-fan coolers was considered not to have a material 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 (CCCW) were considered BAT for providing cooling to the gas engines at this site.

We agree with the Applicants assessment that the use of air cooled condensers can be considered BAT for this Installation.

### Stack configuration

The Applicant has chosen to utilise individual stacks for each engine. The proposed peaking plant will have four 15 metre flue stacks.

The Applicant carried out an air quality assessment, of the new emission points, to demonstrate that the stack height and configuration are suitable to ensure effective dispersion of emissions. The air quality assessment modelled impacts of NO<sub>x</sub> and ammonia process contributions emitted from the power plant. The assessment showed that all emissions either screen out as insignificant or where they do not screen out as insignificant are considered unlikely to give rise to significant pollution. This is discussed more in the following section.

We are satisfied that this stack configuration is appropriate for this Installation.

### Energy efficiency

Under Article 14 of the Energy Efficiency Directive (2012/27/EU) (EED), operators of certain types of combustion installations are required to undertake an assessment of opportunities for cogeneration (also known as combined heat and power (CHP)) or supplying a district heating or cooling network.

The proposed Saltholme South gas fired generating facility is a new facility that exceeds the threshold of a 14,5(a) type installation, having a net thermal input of more than 20MW, and is therefore required to carry out an assessment of CHP opportunities.

The operator carried out a search for potential heat loads at existing facilities within 10 km including consideration of changes or expansions to these facilities that could offer heat demand in the future.

The search for existing facilities was carried out using the following steps:

- a 10 km search radius map based search to identify a list of sites that may have facilities with heat demand,
- a more detailed look at candidate sites using aerial photography and Google Street View to identify the scale of buildings or evidence of industrial processes as indicators of possible heat demand.

The search radius encompassed all of Stockton-on-Tees, Middlesbrough and Hartlepool and also a large rural area to the North West and the Teesmouth Estuary to the east. Within this area the map indicated that there is around 11 TWh of aggregated heat demand. This is very large relative to the installation's heat output and is dominated by the residential and industrial sectors. The District Heating Map indicates that there is two district heating installation within the search area:

- University Hospital of North Tees (7.5 km)
- University Hospital of Hartlepool (10.5 km)

Each of these is a considerable distance from the site and it may not be technically feasible to supply them with heat from the installation.

The applicant considered factors listed in Environment Agency 2015 draft guidance on completing cost-benefit assessments for installations under Article 14 of the Energy Efficiency Directive (V0.9 April 2015) to determine whether any of the identified potential heat loads would be technically feasible. The two critical factors are the level of heat demand relative to supply and the compatibility of the heat load profiles with the heat supply (including whether thermal stores or other techniques could be feasible to bridge incompatible supply/load profiles).

This was assessed using the Environment Agency calculation template to establish the primary energy saving (PES) compared to separate generation of heat and power that could theoretically be achieved by supplying the identified potentially-feasible heat loads. This indicates a potential PES of approximately 9.76%. If the PES is less than 10%, the scenario is not considered to be technically feasible 'high-efficiency cogeneration' and further detailed cost benefit analysis is not required. However because the installation is

greater than 50MWth the less than 10% criteria does not apply as BAT is to do a full assessment in order to maximise the Primary Energy Saving and implement where Cost Beneficial. Therefore improvement condition IC6 has been set requiring a full CBA in accordance with Environment Agency guidance BAT and CHP Ready Guidance for Combustion and Energy from Waste Power Plants V1.0 February 2013.

The Operator is required to report energy usage and energy generated under condition 4.2 and tables S4.2 and S4.3 in Schedule 4. This will enable the Environment Agency to monitor energy efficiency at the Installation and take action if at any stage the energy efficiency is less than proposed.

## **Minimising 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 and water.

The next 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 and what measures we are requiring to ensure a high level of protection.

### **Assessment methodology**

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 guidance 'Air emissions risk assessment for your environmental permit' 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 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 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 complex applications, we normally require the Applicant to submit a full air dispersion model as part of their application. 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 Standards (ES). ES are described in our web guide 'Air emissions risk assessment for your environmental permit'.

Our web guide sets out the relevant ES as:

- Ambient Air Directive Limit Values
- Ambient Air Directive and 4th Daughter Directive Target Values

- UK Air Quality Strategy Objectives
- Environmental Assessment Levels

Where an Ambient Air Directive (AAD) Limit Value exists, the relevant standard is the AAD Limit Value. Where an AAD Limit Value does not exist, AAD target values, UK Air Quality Strategy (AQS) Objectives or Environmental Assessment Levels (EALs) are used. Our web guide sets out EALs which have been derived to provide a similar level of protection to Human Health and the Environment as the AAD limit values, AAD target and AQS objectives. In a very small number of cases, e.g. for emissions of lead, the AQS objective is more stringent than the AAD value. In such cases, we use the AQS objective for our assessment.

AAD target values, AQS objectives and EALs do not have the same legal status as AAD limit values, and there is no explicit requirement to impose stricter conditions than BAT in order to comply with them. However, they are a standard for harm and any significant contribution to a breach is likely to be unacceptable.

PCs are screened out as **Insignificant** if:

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

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 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 an exceedance of an AAD limit value 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 Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) or Special Protection Area (SPA). 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 appendix C of the Application. The assessment comprises:

- Dispersion modelling of emissions to air from the operation of the site.
- 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 site and its impact on local air quality.

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 5.2 dispersion model, which is a commonly used computer model for regulatory dispersion modelling. The model used 3 years of meteorological data (2012 – 2013) collected from the weather station at Durham Tees Valley Airport, which is approximately 15 km south west of the site with a prevailing south westerly wind direction.

Airflow around buildings may create zones of turbulence and downward mixing on the lee side. To account for the downwash effect, the consultant has included 4 on site buildings within their model. Our checks indicate that the applicant has included all buildings that are likely to influence dispersion.

The Applicant has not included terrain in their assessment. The area around the facility has a gradient lower than 1 in 10 and therefore we agree with this approach.

Surface roughness is a parameter used in dispersion modelling to express the land surface characteristics that influences the mechanical turbulence. The Applicant used a surface roughness length of 0.5 m indicative of open parkland and suburbia at the dispersion site and 0.3 m indicative of agriculture minimum at the meteorological site. The land use around the site is rural to the east but with industrial buildings and extensive residential buildings to the west, therefore we consider the surface roughness length selected for the dispersion site appropriate.

The key pollutant emissions associated with combustion processes are oxides of nitrogen (NO<sub>x</sub>), carbon monoxide (CO), sulphur dioxide (SO<sub>2</sub>) volatile organic compounds (VOCs), water and other pollutants in trace quantities.

However for gas-fired spark-ignition engines, the pollutant of principal concern is NO<sub>x</sub>.

The air impact assessments, and the dispersion modelling upon which they were based, employed the following assumptions.

- The model assumed that the emission limit values (ELVs) in the Permit would be below the maximum permitted by Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions. The Directive states that an ELV of 95 mg/m<sup>3</sup> is considered BAT for engines fired on natural gas however due to the engines being fitted with SCR they can operate with an ELV of 30 mg/m<sup>3</sup> for oxides of nitrogen, expressed as NO<sub>2</sub>.
- The model assumed that the Installation operates continuously at the relevant long-term or short-term ELVs, i.e. the maximum permitted emission rate.
- Long term impacts were calculated by adjusting the predicted annual average concentrations to 3,500 operational hours rather than using a time-varying source file which aligns with peak demand times.
- Saltholme South and the adjoining Saltholme North site were assumed to operate at the same time and for 24hrs per day in the modelling of short term impacts.
- The Applicant used the maximum Process Contribution for each given ecological site when assessing impact of the facility against the feature specific critical loads.
- The model also considered emissions of ammonia (NH<sub>3</sub>) as SCR utilises ammonia to reduce NO<sub>x</sub> emissions.

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



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 for cumulative operation of Saltholme South and Saltholme North Sites

The emission concentrations used for modelling purposes are detailed below;

- Oxides of nitrogen 30 mg/m<sup>3</sup>
- Ammonia 5 mg/m<sup>3</sup>

The Applicant's modelling maximum predicted concentrations are summarised in the tables below;

##### Long term

Pollutant	EQS / EAL (ES)	Background Concentration	Process Contribution (PC)	PC as % of EQS / EAL (ES)	Predicted Environmental Concentration (PEC)	PEC as % EQS / EAL
Nitrogen dioxide	40	14	4.6	11.5	18.6	46.5
Ammonia	180	-	0.04	0.02	-	-

##### Short term

Pollutant	EQS / EAL (ES)	Background Concentration	Process Contribution (PC)	PC as % of EQS / EAL (ES)	Predicted Environmental Concentration (PEC)	PEC as % EQS / EAL
Nitrogen dioxide	200	14	43	21.5	71	35.5
Ammonia	2,500	-	2.2	0.09	-	-

Note 1 All the above concentration figures are in µg/m<sup>3</sup>

Note 2 For the assessment of short term impacts the PEC is determined by adding twice the long term background concentration to the short term process contribution.

#### Consideration of key pollutants

##### Nitrogen dioxide (NO<sub>2</sub>)

The impact on air quality from NO<sub>2</sub> emissions has been assessed against the ES of 40 µg/m<sup>3</sup> as a long term annual average and a short term hourly average of 200 µg/m<sup>3</sup>. The model assumes a 70% NO<sub>x</sub> to NO<sub>2</sub> 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 peak long term PC is greater than 1% of the ES and the short term PC is greater than 10% of the ES and the impact cannot be screened out as insignificant.

However from the tables above the emissions of NO<sub>2</sub> (which were not screened out as insignificant) cannot be considered to have the potential to give rise to significant pollution in that the predicted environmental concentration is less than 70% of the long and short term ES.

The applicant also modelled the impact of NO<sub>2</sub> at relevant human health receptors and concluded that both long and short term PCs screen out as insignificant being less than 1% and 10% of the relevant ES respectively.

Our check modelling verified the applicant's results and therefore we agree with applicant's conclusions for the effect on human health from emissions of NO<sub>2</sub>.

#### Ammonia

The impact on air quality from ammonia emissions has been assessed against the ES of 180 µg/m<sup>3</sup> as a long term annual average and a short term hourly average of 2,500 µg/m<sup>3</sup>. The above tables show that the peak long term PC is less than 1% of the ES and the peak short term PC is less than 10% of the ES and so can be screened out as insignificant.

Our check modelling verified the applicant's results and therefore we agree with applicant's conclusions for the effect on human health from emissions of ammonia.

## **Habitats and SSSI Assessment**

The following sites were identified as within the relevant distance criteria;

- Teesmouth & Cleveland Coast SPA, Ramsar, SSSI and SPA sites;
- Northumbria Coast SPA and Ramsar site;
- North York Moors SPA;
- Durham Coast SAC;
- North York Moors SPA.

For the purposes of this assessment the Saltholme South and Saltholme North sites are considered as one larger site and were assessed in combination. In addition the impacts for short term NO<sub>x</sub> emissions and nutrient deposition were assessed in combination with the following planned three sites;

- Teesside Renewable Energy Plant (REP);
- Billingham Reach Energy from Waste Plant and
- Tees Combined Cycle Power Plant (CCPP).

The following risks were considered relevant and are discussed in further detail below;

- Acidification
- Nutrient enrichment
- Toxic contamination

### Acidification

The process contributions at the North York Moors SAC, Durham Coast SAC, Northumbria Coast SPA, North York Moors SPA, Teesmouth and Cleveland Coast Ramsar and Northumbria Coast Ramsar are all below 1% therefore we conclude that there will be no likely significant effect.

The maximum acid deposition PC exceeds 1% of the critical load function at the Teesmouth and Cleveland Coast SSSI and pSPA. However, the predicted environmental concentration at these sites do not exceed the minimum critical loads therefore we conclude that there will be no likely significant effect on the habitats site and will not damage the special features of the SSSI.

### Nutrient Deposition

The process contribution at the North York Moors SAC, Durham Coast SAC, Northumbria Coast SPA, North York Moors SPA and Northumbria Coast Ramsar are all below 1% of the critical load therefore we conclude that there will be no likely significant effect.

The maximum nitrogen deposition PC is above 1% of the critical load at Teesmouth and Cleveland Coast SSSI. However, the PEC is below the critical level therefore we conclude that the proposal will not damage the special features of the SSSI.

The maximum nitrogen deposition PC exceeds 1% of the critical load range at the Teesmouth and Cleveland Coast SPA/Ramsar site and pSPA. The PECs across parts of these sites exceed the minimum critical load for some interest features and the emissions are considered to be potentially significant therefore we have taken nutrient deposition on to a stage 2 Habitats Risk Assessment (HRA) and consulted Natural England. A summary of the conclusions following a review of the applicant's documents is detailed below.

The maximum PC for N deposition levels for the Teesmouth and Cleveland Coast SPA and Ramsar Site, and for Teesmouth and Cleveland Coast pSPA and proposed Ramsar Site from the proposed projects on their own are calculated as being up to 4% and 10% of the lower range critical loads respectively, and therefore, cannot be considered to be insignificant. The predicted PECs for N deposition are 50% and 56% above the lower range of the critical load threshold for the two sites respectively (8 kgN.ha<sup>-1</sup>.yr<sup>-1</sup>) and assessing this in combination with the other three sites the PECs are 156% and 162% respectively, therefore

significant in the context of N deposition levels for the local receiving environment. The ambient/baseline nutrient-N deposition level for the area (11.7 kgN.ha-1.yr-1) is already recognized to exceed the lower range of the critical load threshold for both habitats sites by 46%.

Since the applicant was unable to screen out nutrient nitrogen deposition impacts, they determined the scale of impact to the designated habitats through a spatial analysis.

The species which could potentially be adversely affected by N deposition are those which are associated with sand dune habitats (little tern, Sandwich tern and common tern) and breeding avocet associated with saltmarsh.

Other species associated with the SPA/pSPA are unlikely to be significantly affected by N deposition, either because the habitats upon which they depend on are not expected to be affected, despite being potentially susceptible to N inputs, or because the species themselves are not susceptible to causative habitat changes.

Contour mapping depicting the depreciation of N-deposition concentrations with increased distance from the proposed development shows that concentrations fall below 1% of the Critical Load between approximately 900m and 3.75km from the proposed development. Consequently, for little tern, whose core habitats are located 13.8km from the proposed development, concentrations of N-deposition in the coastal habitats which they use will be negligible and insignificant. Therefore, adverse effects on the habitats used by this species, and hence the species itself can be ruled out.

Common tern and avocet breed on saltmarsh and sparsely vegetated or short-growing margins (as well as artificial rafts in the case of common terns) predominantly associated with freshwater and/or brackish pools at RSPB's Saltholme Reserve and the wider North Tees Marshes. These areas are within 2km from the proposed project and the N deposition contour mapping shows that deposition levels across much of RSPB's Saltholme Reserve and the North Tees Marshes, including areas where avocet and common tern are known to breed, are predicted to be over the 1% Critical Load threshold. Consequently, there is potential for the habitats in these areas to be adversely affected by N deposition. However, for saltmarsh areas, which are typically subject to daily, periodic flooding with saline water, airborne N deposition is of low importance as the inputs will be significantly below the large nutrient loadings from river and tidal inputs (APIS database). Furthermore, the effects of N deposition are more likely to be associated with taller vegetation of upper marsh communities where interspecific competition and the influence of nutrient enriched runoff is greatest (APIS database). As such, the low and mid-saltmarsh habitats most likely to be used by avocet are not expected to be significantly affected by airborne N deposition compared to other sources. Furthermore, for common terns in particular, the N deposition contribution from airborne emissions is expected to be negligible compared to the inputs from ammonia resulting from the guano deposited within their densely populated nesting colonies during the breeding season. The predicted N deposition contribution from the proposed development will also be infinitesimal compared to the nutrient levels in the freshwater and coastal habitats in which they typically forage. Therefore, it is considered that adverse effects on the SPA/pSPA habitats used by avocet and common tern, and hence the species themselves can be ruled out.

Sandwich terns are known to use coastal habitats approximately 2.8km from the proposed development and hence includes areas where N deposition levels are also predicted to be over the 1% Critical Load threshold.

However, this species is only designated during the post-breeding, passage period when birds are either foraging over open coastal waters or roosting on coastal habitats such as sandy and rocky foreshores or exposed sandbars and outcrops. These, typically unvegetated roosting habitats will not therefore be affected by N deposition, while the nutrient levels in the coastal waters in which they feed are predicted to be significantly greater than that contributed by the proposed development, as detailed above. Therefore, it is considered that adverse effects on the SPA/pSPA habitats used by Sandwich tern, and hence the species itself can also be ruled out.

Based on the results of this assessment into the impact of nutrient N deposition from the proposed sites on ecological receptors in the Teesmouth and Cleveland Coast, we conclude that operation of the sites would not result in adverse impacts and would not adversely affect the integrity of the site. Natural England agreed with this assessment in their response to the HRA stage 2 assessment dated 21/10/2020.

Full details of the HRA can be seen in the document "Combined Stage 1 and 2 Habitats Regulations Assessment Form EPRLP3300PZ and EPRXP3106PT Consultation Final EA&NE".

## Toxic Contamination

### Long term NO<sub>x</sub>

The maximum long term NO<sub>x</sub> PC is below 1% of the critical level at the following sites, North York Moors SAC, Durham Coast SAC, Northumbria Coast SPA, North York Moors SPA, Teesmouth and Cleveland Coast SPA/Ramsar and Northumbria Coast Ramsar therefore we conclude that there will be no likely significant effect.

The maximum long term NO<sub>x</sub> PC is above 1% of the critical level at two habitat sites, Teesmouth and Cleveland Coast SSSI and pSPA. However, the PECs are below the critical level therefore we conclude that there will be no likely significant effect on the habitats sites and will not damage the special features of the SSSI.

### Short term NO<sub>x</sub>

The maximum short term NO<sub>x</sub> PC is below 10% of the critical level at the following sites, North York Moors SAC, Durham Coast SAC, Northumbria Coast SPA, North York Moors SPA and Northumbria Coast Ramsar therefore we conclude that there will be no likely significant effect.

The maximum short term NO<sub>x</sub> PC is above 10% of the critical level at Teesmouth & Cleveland Coast SPA/Ramsar site, SSSI and pSPA. The PECs across parts of these sites exceed the critical level of 75 µg/m<sup>3</sup> and the emissions are considered to be potentially significant therefore we have taken short term NO<sub>x</sub> emissions on to stage 2 HRA and consulted Natural England. A summary of the conclusions following a review of the applicant's ecologist report is detailed below.

The short-term PC for NO<sub>x</sub> was calculated as being above the 10% critical level threshold for the Teesmouth and Cleveland Coast SPA and Ramsar Site (20%) and for Teesmouth and Cleveland Coast pSPA and proposed Ramsar Site and SSSI (58%) and the short-term PC took the overall PEC for the Teesmouth and Cleveland Coast pSPA and proposed Ramsar Site and SSSI over the Critical Level threshold for NO<sub>x</sub>.

The fields associated with and immediately surrounding the development site are of limited value to water birds associated with the habitats site. The ecologist stated that even the habitats associated with the nearest part of the habitats site to the facility are of limited value to wetland birds and the majority of such species use the pools and grassland habitats associated with the wider RSPB Saltholme Reserve in areas located over 300 m from the site.

The species which could potentially be adversely affected by NO<sub>x</sub> emissions above the Critical Level at the Teesmouth and Cleveland Coast SPA and Ramsar Site and SSSI are those which are associated with sand dune habitats namely little tern, Sandwich tern and common tern.

Contour mapping in the air quality assessment addendum reports (RPS, 2019a and 2019b) shows that NO<sub>x</sub> concentrations fall below 10% of the Critical Level between approximately 925m and 1.25km of the proposed development. Therefore, NO<sub>x</sub> concentrations will be negligible and insignificant for the coastal habitats used by little tern and Sandwich tern, whose core habitats are located 13.8 and 2.8km from the proposed development respectively. Therefore, adverse effects on the habitats used by these species, and hence the species themselves can be ruled out.

The freshwater and/or brackish pools at RSPB's Saltholme Reserve and the wider North Tees Marshes, at which most of the pSPAs avocet and common terns breed, are predominantly over 900m from the proposed development. Consequently, the vast majority of areas used by these species are predicted to be below 10% of the Critical Load threshold and hence not significant. In addition, the APIS database identifies that the coastal, freshwater and terrestrial habitats which these birds are most likely to use are subject to much greater N inputs from terrestrial sources than airborne contributions. In relation to nutrient N-deposition, inputs from the guano deposited within the densely populated common tern nesting colonies during the breeding season are also expected to outweigh airborne contributions. Consequently, adverse effects on the habitats used by avocet and common tern within the habitats sites, and hence the species itself can also be ruled out.

Having assessed the impact of short term NO<sub>x</sub> from the proposed sites on ecological receptors in the Teesmouth and Cleveland Coast, we conclude that operation of the installation would not have any adverse impacts. Natural England agreed with this assessment in their response to the HRA stage 2 assessment dated 21/10/2020.

Full details of the HRA can be seen in the document "Combined Stage 1 and 2 Habitats Regulations Assessment Form EPRLP3300PZ and EPRXP3106PT Consultation Final EA&NE".

## Long term ammonia

The maximum long term ammonia PC is above 1% of the critical level at three habitat sites. However, the PECs are below the critical level as such, the emissions are considered to have no likely significant effect at the habitats sites and will not damage the features of the SSSI.

## **Assessment of other conservation sites**

The following sites were identified as being within 2 Km of the site;

- Cowpen Bewley Woodland Local Nature Reserve and Local Wildlife Site (1,410 m)
- Teessaurus Park Local Wildlife Site (1,882 m)

The modelling supplied did not provide numerical predictions at the Local Wildlife Sites/ Local Nature Reserve however sufficient information was provided to understand the likely environmental impacts at the site.

We have assessed the impact and can conclude that the process contribution is not likely to exceed 100% of any critical levels or loads. We do not consider that there will be any significant pollution and no further assessment is required.

## **Noise Impact Assessment**

The peaking plant will consist of two adjacent generating facilities comprising engine enclosures (each with four gas fired reciprocating engines with air inlets and outlets, engine exhaust lines with rupture discs, stacks, cooling radiators, transformers and a gas kiosk. Separate Noise Impact Assessments (NIAs) were submitted for these (referred to as North and South) but we have considered them in combination.

The plant is located on grassland immediately to the north of part of the Teesmouth and Cleveland Coast Ramsar habitat site and SSSI, at its closest the site is 130 m away. The nearest human residential receptors are situated to the west, north and south-west at distances of approximately 1 km. The immediate area has sections of mixed light industrial-residential use and open grassland/ wetlands.

Acoustic data for the plant was provided in the Noise Impact assessments (NIAs) (referenced JAT11291-REPT-02-R0 and JAT11291-REPT-03-R0 dated 14 February 2020) and manufacturer's specification sheets submitted. We found some discrepancies between the data in the NIAs and the manufacturer's data for the rupture discs and exhaust lines (sound powers for these items quoted in the NIAs were 3 dBA and 4 dBA lower respectively than in the manufacturer's data). We used the manufacturer's data in our check modelling. The consultant also provided frequency dependent absorption coefficients and sound reduction indices for the wall and roof cladding materials of the engine enclosures. The engines and exhausts have very high sound powers and it is important that the mitigation measures (enclosures, lagging and silencers) perform as specified therefore improvement condition IC3 has been set requiring the operator to validate the noise assessment provided within the application via a comprehensive noise survey.

The consultant used BS4142:20144 methodology to assess the noise impact of the sites. This methodology assesses the impact at a receptor by subtracting the measured background noise level there from the predicted rating level. The rating level at a receptor is derived by adding an acoustic correction feature for discernible tonality, impulsivity or intermittency to the specific level which is due solely to the operation of the site under assessment. The likely significance of any impacts can be based on the following criteria:

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on context
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on context
- Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

### Impact on human receptors

The consultant carried out background noise surveys at the closest human receptors using a combination of short and long term measurements. The long term data was obtained close to the Cowpen Lane/Cowpen Bewley receptors. These receptors are likely to experience the largest noise increase as a result of the site operating. We have checked the consultant's choice of  $L_{A90}$  values for the BS 4142 assessment and we are satisfied that these are appropriate.

The consultant predicted specific levels lower than background at all receptors considered except for those at Cowpen Lane/Cowpen Bewley Road where the background could be exceeded by 2 dBA. The magnitudes of these predicted levels were at or lower than 40 dBA. The predicted specific level was similar to the lower values of the  $L_{Aeq}$ . The consultant considered that no acoustic correction features were appropriate in this case, we agree with the consultant that an acoustic feature correction would not be appropriate and that the rating level should therefore be equal to the specific value. The highest predicted BS 4142 numerical impact was 2 dBA which is below the level considered to be adverse.

We have checked the results of the consultant's predictions and agree with their conclusions therefore the results of the assessment indicate that significant adverse noise effects would not be expected to occur at any of the sensitive receptors as a result of the operation of the gas engines.

### Impact on habitats sites

The consultant carried out a noise assessment at the Teesmouth and Cleveland Coast SPA/Ramsar habitat site and SSSI. The impact on the habitats site is detailed in two memoranda (Memo: Peaking Plant Facility – Saltholme North, Noise Assessment – Impact on Birdlife, RPS, 13.5.20; Memo: Peaking Plant Facility – Saltholme South, Noise Assessment – Impact on Birdlife, RPS, 6.5.20). The cumulative impact of the two sites was detailed within these memoranda.

The consultant predicted a cumulative sound pressure level of 53 dBA at a point in the habitats site that was 200 m south of the facility however our check modelling found that the closest point of the habitats site was 130 m away and consequently noise levels would be higher.

The consultant used a University of Hull report (Construction and Waterfowl – Defining Sensitivity Response, Impacts and Guidance, Institute of Estuarine and Coastal Studies, University of Hull, February 2009) for guidance on acceptable levels of continuous noise for birdlife. The lowest value quoted was 50 dBA although levels between 55 and 85 dBA were expected to be acceptable. Furthermore the consultant pointed out that birds are not so sensitive to sound below frequencies of around 1 kHz which is where much of the sound emission energy would lie. As the consultant's predicted levels were just 3 dBA above the minimum value for disturbance but well below the higher levels mentioned the consultant concluded that the site would not result in adverse impacts.

The consultant also contended that through a combination of consultation and field survey data it has been shown that the fields associated with and immediately surrounding the development site are of limited value to waterbirds associated with the habitats site. The consultant stated that even the habitats associated with the nearest part of the habitats site to the facility are of limited value to wetland birds and the majority of such species use the pools and grassland habitats associated with the wider RSPB Saltholme Reserve in areas located over 300 m from the site. Therefore based on the acoustic data supplied, noise levels generated by the facility at 300 m from the main development would probably be well below 50 dBA.

A stage 1 and stage 2 habitats risk assessment (HRA) was completed and sent to Natural England for consultation on 10/09/2020. The assessment concluded the following;

It can be ascertained that noise will not have an adverse effect on the integrity of the habitats sites, either alone or in combination with other plans and projects and the proposed permission is not likely to damage any of the flora, fauna or geological or physiological features which are of special interest at the Teesmouth and Cleveland Coast SSSI.

Natural England agreed with these conclusions on 21/10/2020.

Full details of the HRA can be seen in the document "Combined Stage 1 and 2 Habitats Regulations Assessment Form EPRLP3300PZ and EPRXP3106PT Consultation Final EA&NE".

## **Site Condition Report**

The operator has provided a description of the condition of the site, which we consider is satisfactory at this stage. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under the Industrial Emissions Directive.

The site is located to the east of Cowpen Bewley Rd, Saltholme, Stockton-on-Tees. The approximate postcode is TS23 4HS and the site is centred at National Grid Reference NZ 48999 23783.

The site is Greenfield undeveloped land surrounded by agricultural land and there is no historical evidence that any of the contaminants of concern associated with the operation would be present in the soil or groundwater at the site. It was therefore not considered necessary to carry out intrusive site investigation in order to establish the baseline quality for the site.

### **Geology**

Maps indicated that the site is underlain by superficial Glaciolacustrine deposits, superficial tidal flat deposits are indicated adjacent to the south of the site. The bedrock geology is indicated to be Sherwood Sandstone Group which is described as Sandstone, red, yellow and brown, part pebbly; conglomeratic in lower part; pebbles generally extraformational quartz and quartzite, with some intraformational clasts; subordinate red mudstone and siltstone.

### **Hydrogeology**

Aquifer records show that the bedrock is classed as a Principal Aquifer. The superficial deposits are classed as unproductive strata. The site is not situated within a Source Protection Zone and therefore it is not considered that the underlying groundwater is a sensitive receptor.

### **Hydrology**

The River Tees runs approximately 1.7 km to the south of the site. The Belasis Beck runs approximately 60 metres south of the site. A number of ponds are present to the south of the site which form part of the Saltholme Nature Reserve. The nearest pond is approximately 250 metres south of the site.

### **Topography**

OS mapping indicated that the site is relatively flat ranging between 5 and 6 metres Above Ordnance Datum (AOD).

## **Proposed site design: potentially polluting substances and prevention measures**

The proposed features of the Installation for the prevention of pollution to ground and ground water are detailed below;

All process areas will be located on hardstanding and all bunds provided for chemical storage tanks will be manually inspected to ensure they remain empty. All liquid reagent storage tanks will be bunded to 110% of the capacity of the largest storage tank within a bund. Bunds will be constructed to appropriate standards and lined with materials that are impervious to the content of the material they hold.

### **Potentially polluting substances used at the Installation**

Raw material requirements for the site will be limited in number. The main raw materials will be natural gas, lubrication oils, glycol and either ammonia solution (24.5%) or urea. Natural gas will not be stored on site. Lubricating oil will be stored and used within the lubricating system. Storage of lubricating oils will be fully contained within a circa 8m<sup>3</sup> tank within a bund. Storage arrangement will comply with the Oil Storage Regulations.

The site will utilise a CCCW system which will utilise a water/glycol mix and therefore the area containing the fin fan coolers and CCCW circulating pumps will be bunded.

If ammonia is used as the SCR reagent it will be stored in a bunded tank with suitably resistant lining. The bund will have a capacity of 110% of the total capacity of the largest tank within the bund. The tank will also be fitted with level indicators and alarms.

The facility has been designed to also be able to use urea as the SCR reagent instead of ammonia. Urea is not considered to be hazardous and therefore is not considered a risk to ground or groundwater.



### Site Drainage

Surface waters are collected within the surface/storm water system and discharged into attenuation ponds to the west of the site which subsequently discharge in to Belasis Beck. There are no process emissions to controlled waters from the installation

The applicant concluded that given the greenfield nature of the site and the fact that there are no recorded pollution incidents, intrusive site investigation is not considered necessary in order to baseline the condition of the site.

Based on the evidence submitted we agree with this assessment and that there is no contamination of the ground or groundwater with materials which will be associated with the operations on site.

### **Conclusion**

Having assessed the application we conclude that there will be no significant pollution of the environment or harm to human health from the proposed operations alone or in combination.

## Decision checklist

Aspect considered	Decision
<b>Receipt of application</b>	
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.
<b>Consultation</b>	
Consultation	<p>The consultation requirements were identified in accordance with the Environmental Permitting Regulations and our public participation statement.</p> <p>The application was publicised on the GOV.UK website.</p> <p>We consulted the following organisations:</p> <ul style="list-style-type: none"> <li>• Director of Public Health</li> <li>• Public Health England</li> <li>• Food Standards Agency</li> <li>• Environmental Health – Stockton</li> <li>• Local Planning Authority – Stockton</li> </ul> <p>The comments and our responses are summarised in the <a href="#">consultation section</a>.</p>
<b>Operator</b>	
Control of the facility	We are satisfied that the applicant (now the operator) is the person who will have control over the operation of part of the facility after the grant of the permit. The decision was taken in accordance with our guidance on legal operator for environmental permits.
<b>The facility</b>	
The regulated facility	<p>We considered the extent and nature of the facilities at the site in accordance with RGN2 'Understanding the meaning of regulated facility', Appendix 2 of RGN 2 'Defining the scope of the installation', Appendix 1 of RGN 2 'Interpretation of Schedule 1'.</p> <p>The extent of the facilities are defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit.</p> <p>This permit applies to only one part of the installation – Saltholme South Power. The names and permit numbers of the operators of other parts of the installation are detailed in the permit's introductory note.</p>
<b>The site</b>	
Extent of the site of the facility	The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility and the location of the part of the installation to which this permit applies on that site. The plan is included in the

Aspect considered	Decision
	permit.
Site condition report	<p>The operator has provided a description of the condition of the site, which we consider is satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under the Industrial Emissions Directive.</p> <p><b>See Key issues</b></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>We have assessed the application and its potential to affect all known sites of nature conservation, landscape and heritage and/or protected species or habitats identified in the nature conservation screening report as part of the permitting process.</p> <p>We consider that the application will not affect any sites of nature conservation, landscape and heritage, and/or protected species or habitats identified.</p> <p>We have consulted Natural England on our Habitats Regulations and SSSI assessments, and taken their comments into account in the permitting decision.</p> <p><b>See Key issues</b></p>
<b>Environmental risk assessment</b>	
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>
<b>Operating techniques</b>	
General operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes and we consider them to represent appropriate techniques for the facility.</p> <p><b>See Key Issues</b></p>
Operating techniques for emissions that screen out as insignificant	<p>Emissions of oxides of nitrogen and ammonia have been screened out as insignificant for human health and so we agree that the applicant's proposed techniques are BAT for the installation.</p> <p>We consider that the emission limits included in the installation permit reflect the BAT for the sector.</p>
<b>Permit conditions</b>	
Pre-operational conditions	<p>Based on the information in the application, we consider that we need to impose a pre-operational condition.</p> <ul style="list-style-type: none"> <li>At least 4 weeks (or such other date as agreed in writing by the Environment Agency) before any fuel is burnt at the installation, the Operator shall provide confirmation to the Environment Agency that a written Environment Management System (EMS) has been produced,</li> </ul>

Aspect considered	Decision
	which shall be available for inspection.
Improvement programme	<p>Based on the information on the application, we consider that we need to impose an improvement programme.</p> <p>We do not consider emissions of methane, carbon monoxide and formaldehyde present a risk however we have imposed an improvement condition to ensure that the levels of emissions are established and the environmental impact confirmed.</p> <p>IC1 The Operator shall establish the methane (CH<sub>4</sub>) emissions from the engines and compare these to the daily average BAT AEL of 500 mg/m<sup>3</sup> CH<sub>4</sub> expressed as carbon as detailed in BAT 44 Table 26 of the Large Combustion Plant Best Available Techniques reference document (Bref).</p> <p>Based on the conclusions of this assessment the Operator shall submit an appropriate proposal to assess potential methane slip for the lifespan of the engines and outline an action plan that will be followed in the instance that emissions above the manufacturer's specification or appropriate benchmark level or approaching the emission limit value stated in this permit are identified</p> <p>The result of the assessment and the proposed action plan shall be submitted for approval with the Environment Agency and any proposals shall be implemented within the agreed timescales.</p> <p>IC2 The Operator shall establish emissions of carbon monoxide and formaldehyde from the engines.</p> <p>Using this information, an assessment of the impacts of carbon monoxide emissions and possible impacts of formaldehyde should be undertaken in line with our H1 guidance or equivalent methodology. A review of the emission levels in comparison to the relevant benchmark levels shall also be carried out. A written report detailing the findings of the assessment of the emissions, predicted impacts and the review in comparison to the relevant benchmarks should be submitted to the Environment Agency.</p> <p>IC3 In order to validate the noise assessment provided within the application, the Operator shall conduct a comprehensive noise survey undertaken by an independent experienced and suitably qualified person in accordance with BS 4142:2014+A1:2019 (Methods for rating and assessing industrial and commercial sound) and submit a report to the Environment Agency for approval. The survey will compare measurements with the ambient noise levels and the results described in the revised noise assessment dated 14/02/2020 of application EPR/XP3106PT/A001.</p> <p>In the event that the report shows that noise could have a significant adverse impact at the sensitive receptors, the operator shall submit a noise management plan having regard to Appendix 4 of the Environment Agency's Horizontal Guidance Note IPPC H3 (part 2) - Noise Assessment and Control.</p> <p>The plan shall include proposals for the further attenuation and/or management of noise and clearly defined timescales, for the implementation of the proposed measures. The proposals shall be submitted for approval with the Environment Agency and any proposals shall be implemented within the agreed timescales.</p> <p>IC4 The Operator shall submit a written report to the Environment Agency</p>

Aspect considered	Decision
	<p>summarising the start-up time performance compared to the manufacturer's guaranteed performance data with Selective Catalytic Reduction (SCR) installed as detailed in application EPR/XP3106PT/A001.</p> <p>IC5 The Operator shall submit a written report to the Environment Agency describing the performance and optimisation of the SCR system to minimise oxides of nitrogen (NOx) emissions within the emission limit values described in this permit.</p> <p>The report shall include an assessment of the level of ammonia slip versus NOx emissions that can be achieved under optimum operating conditions.</p> <p>IC6 The Operator shall carry out a cost benefit assessment (CBA) of opportunities for cogeneration (also known as combined heat and power) or supplying a district heating or cooling network. The CBA shall be undertaken in line with the Environment Agency's Draft guidance on completing cost-benefit assessments for installations under BAT and CHP Ready Guidance for Combustion and Energy from Waste Power Plants V1.0 February 2013. BAT is to maximise the Primary Energy Saving and implement where cost beneficial.</p> <p>A written report detailing the CBA findings and the assessment methodology used shall be submitted to the Environment Agency for approval.</p>
Emission limits	<p>ELVs have been set for the following substances.</p> <ul style="list-style-type: none"> <li>• Oxides of nitrogen (NO and NO<sub>2</sub> expressed as NO<sub>2</sub>) 30 mg/m<sup>3</sup>.</li> <li>• Ammonia 5 mg/m<sup>3</sup>.</li> </ul> <p>These limits are stricter than the requirements of the Medium Combustion Plant Directive (MCPD) for this type of plant, set out in tables 2 and 3 of Part 1 of Annex II of the Directive. This is because SCR is utilised allowing the engines to operate with lower emissions.</p> <p>It is considered that the ELVs 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 MCPD.</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>Reporting frequencies are based on annual requirement for monitoring that the Installation operates at 3,500 hours per year. The result will allow us to compare air emissions and operating hours specified in the air quality modelling to ensure they reflect those achieved in practice are in line with MCPD.</p>

Aspect considered	Decision
<b>Operator competence</b>	
Management system	<p>There is no known reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.</p> <p>The decision was taken in accordance with the guidance on operator competence and how to develop a management system for environmental permits.</p>
Financial competence	<p>There is no known reason to consider that the operator will not be financially able to comply with the permit conditions.</p>
<b>Growth Duty</b>	
Section 108 Deregulation Act 2015 – Growth duty	<p>We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit.</p> <p>Paragraph 1.3 of the guidance says:</p> <p>“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”</p> <p>We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.</p> <p>We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.</p>

## Consultation

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

### Responses from organisations listed in the consultation section

<b>Response received from</b>
Stockton Borough Council Environmental Health Department (19/12/2019)
<b>Brief summary of issues raised</b>
A Noise Report was submitted by RPS Consultants in February 2019, however concerns have been raised with the applicant regarding the methodology in the report, and about the potential impact on the nearest residential premises which are located approximately 1.1 Km to the north west of the plant. Environmental Health are awaiting a revised Noise Report to be submitted, alongside mitigation measures for implementation. The Noise Report shall be assessed when it has been submitted to the Planning Department.
<b>Summary of actions taken or show how this has been covered</b>
A revised noise assessment report was submitted on 14/02/2020 which we have assessed and determined that there will be no significant impact on sensitive receptors. Standard permit condition 3.4 together with improvement condition IC3 will ensure that any potential impact will not be significant.

<b>Response received from</b>
Stockton Borough Council (24/12/2019)
<b>Brief summary of issues raised</b>
The Council was concerned that the permit application as submitted, was not based on the current planning approval. They stated that the noise report as submitted was also not approved and further testing would be undertaken to understand the impact on nearby residential receptors. They stated that their understanding was a new planning application will be submitted with a new layout, appearance and noise report with other locations to be assessed
<b>Summary of actions taken or show how this has been covered</b>
A revised noise assessment report was submitted on 14/02/2020 which we have assessed and determined that there will be no significant impact on sensitive receptors. Standard permit condition 3.4 together with improvement condition IC3 will ensure that any potential impact will not be significant.

<b>Response received from</b>
Public Health England (16/01/2020)
<b>Brief summary of issues raised</b>
In terms of public health, the main emissions of potential concern are noise and emissions of nitrogen dioxide (NO <sub>2</sub> ) during operation. Noise and air quality assessments, utilising air dispersion modelling, and noise monitoring and SoundPlan modelling software, have been undertaken as part of the application process. The assessments demonstrate that there will be no significant impact on the environment or human health due to the operation of this facility. Impacts were also considered to be non-significant when considered with the adjacent facility at Saltholme North. Based on the reports submitted, PHE has no significant concern regarding the risk to the health of the local population from the installation.
<b>Summary of actions taken or show how this has been covered</b>
We have carried out an assessment of the impact as detailed in the key issues section and this confirms

that there will be no significant impact on air quality or noise associated with normal operation. Standard permit conditions including emission limit values set out in the permit will ensure there is no significant impact.

**Response received from**

Public Health England following revised noise assessment (22/07/2020)

**Brief summary of issues raised**

The additional documents submitted comprise revised noise assessments for the Peaking Plant Facility and the impact on birdlife; for the Saltholme North site. The location of this development is adjacent to the Saltholme South site and subject to a separate environmental permit (reference EPR/LP3300PZ/A001). It should be clarified whether the findings of this report for the Saltholme North development are also applicable to the Saltholme South Power Limited site, or whether a separate report for Saltholme South has been produced. In the absence of this, at present, we are unable to make a further assessment on public health impacts at the Saltholme South Power Limited site.

**Summary of actions taken or show how this has been covered**

A separate report for Saltholme South development was submitted and we assessed the impact of the Saltholme North and South sites in combination. We have carried out an assessment of the impact as detailed in the key issues section and this confirms that there will be no significant impact on noise associated with normal operation.

Standard permit condition 3.4 together with improvement condition IC3 will ensure that any potential impact will not be significant.

**Representations from individual members of the public.**

**Brief summary of issues raised**

Concern about whether both facilities running together has been assessed. It was stated that they live in a conservation area, Cowpen Bewley village and are not mentioned.

Concern that the noise survey submitted is not for their current approved plans and that the monitoring for background was not sufficient. Concern there would be adverse effects due to noise and smell.

**Summary of actions taken or show how this has been covered**

A revised separate report for Saltholme South development was submitted and we assessed the impact of the Saltholme North and South sites in combination. The assessment included any potential impact at Cowpen Bewley village.

We have carried out an assessment of the impact as detailed in the key issues section and this confirms that there will be no significant impact on noise associated with normal operation. Standard permit condition 3.4 together with improvement condition IC3 will ensure that any potential impact will not be significant.

Odour is not regarded as having a significant impact with this type of development. Standard permit condition 3.3 will ensure that any potential impact will not be significant.



## Consultation responses on our draft decision

We consulted on the draft decision document and draft permit from 01/03/2021 to 29/03/2021.

### Responses from organisations listed in the consultation section

<b>Response received from</b>
Public Health England (18/03/2021)
<b>Brief summary of issues raised</b>
In our responses to the original consultations in January 2020, PHE had no significant concerns about potential human health impacts. After consideration of the submitted documentation, we have no further comments to make.
<b>Summary of actions taken or show how this has been covered</b>
N/A

**No further responses were received.**