Decision document new bespoke Permit

We have decided to grant the permit for Didcot Datacentre operated by Amazon Data Services (UK) Limited.

The permit number is EPR/LP3005BL/A001.

The application is for 11 emergency standby diesel generators providing electricity to the associated data centre in the event of a failure of supply from the National Grid. The aggregated thermal input of the generators is 69.7MWth.

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 considerations section to show how the main relevant factors have been taken into account
- highlights key issues in the determination
- 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.

Key issues of the decision

In reaching our decision to grant the permit we took into consideration the following matters:

The Installation

The site is part of a new datacentre which consists of a Section 1.1 Part A(1)(a) activity under the Environmental Permitting (England and Wales) Regulations 2016 for the burning of any fuel in an appliance with a rated thermal input of 50 or more megawatts (MW). The combustion plant only operates during limited routine maintenance or in an emergency scenario. The emergency combustion activity comprises ten 6.8MWth and one 1.7MWth diesel fuelled standby generators which aggregate together to give a total of 69.5MWth. Each generator has an exhaust stack 15m in height.

The installation is limited to the combustion plant and its ancillary works and excludes the datacentre itself. We accept that the generators comprise the 'technical unit' of the installation but the datacentre itself is neither a listed activity in its own right, nor is there a 'technical connection' to the generators. As the generators are housed in a discreet area of the site, it is appropriate to limit the installation accordingly. The permit includes a map which defines the boundary of the installation.

Electrical power is provided to the data centre from the National Grid. However, in the event of a failure in the electrical supply, the operator will utilise the generators to maintain the electrical supply. The generators will be used solely for the purpose of generating power for the facility. No electricity will be exported from the installation.

The datacentre will be developed in four phases as dictated by customer demand for its services with each phase requiring two 6.8MWth emergency generators; a further pair are held in reserve. The generators are sized to match the electrical requirement of the site's eight main MV/LV transformers that supply the datacentre. The 1.7MWth generator is dedicated to the datacentre office accommodation.

The generators are subject to a maintenance testing schedule, with fortnightly testing at 25% load and biannual testing at 100% load. This testing will be carried out sequentially to minimised air quality impact and totals about twenty hours operation per generator per year. In addition there may also be an annual full-building test of the generators at 100% load for up to two hours to ensure that the load-transfer, load management and facility monitoring systems operate correctly.

The generators are containerised and run on diesel fuel. Each has an integrally-bunded day-tank of 16,000 litres fitted with leak detection within its container. There is a single 40,000 litre capacity bulk fuel tank located adjacent to the generators, which is fully bunded and includes a leak detection system.

The site is covered in hardstanding and includes a refuelling area for use by tankers delivering to the site. Surface water from the hardstanding passes through an oil interceptor before being discharged to a surface water sewer where it joins roof-water, before entering a balancing pond and the Moor Ditch. Rainwater from the stack cowls is potentially contaminated by the flue gases and so is discharged to foul sewer.

The site is located on part of the former Didcot A Power Station land in Oxfordshire. The National Grid Reference for the site is SU 51039 91275. The surrounding area is a mix of agricultural, industrial, commercial and residential uses.

Operating Scenarios

The operational scenarios that have been considered for the installation are:
Testing Scenario 1 – each generator unit tested separately at 25% load for 0.5 hour every two weeks per year and 1 hour each quarter, i.e. 17 hours per generator;

Testing Scenario 2 - each generator unit tested separately at 100% load for 1.5 hours, twice a year, i.e. 3 hours per generator;

Full-building Test – all generators running simultaneously at 100% load for 2 hours, once per year; and

Emergency – all 11 generators operating at 100% load for 3 x 24 hours i.e. 72 hours per generator.

Air Quality

Identified Pollutants

The primary pollutants of concern to air quality from the combustion processes at the installation are nitrogen dioxide (NO_2) and Particulate Matter (PM10). Unburnt hydrocarbons may also be present and it is assumed that all hydrocarbon emissions will be in the form of benzene. The Applicant included modelling for emissions of Sulphur dioxide (SO_2), but we did not assess this as we have included a condition in the permit restricting the fuel to ultra-low sulphur diesel, resulting in negligible emissions of sulphur. Carbon monoxide emissions were also included but we consider that these will also be negligible due to installation of modern highly efficient generators which allow for the complete combustion of the fuel.

Modelling of Impacts

The applicant submitted an air dispersion modelling report which assesses the potential impact of emissions of NO_2, PM10, SO_2 and Hydrocarbons from the generators on local air quality. The ADMS 5 software dispersion model was used to predict atmospheric concentrations of the identified pollutants; we accept that the use of this model is appropriate for these circumstances.

The following parameters were used for input data into the model:

- Meteorological Data from RAF Benson Met Office 2016 – 2018
- A complex terrain map of the local area
- Surface roughness length of 0.5m (representative of suburban areas)
- Building wake effects from the adjacent data-hall (136m x 67m footprint, 12.4m high)
- Four different operating scenarios
    - Testing scenario 1 – each generator individually tested at 25% load for 0.5 hours twice a year.
    - Testing scenario 2 – each generator tested at 100% load twice a year.
    - Full-building test – all generators operating at 100% load for up to two hours once per year.
    - Emergency operation – all 11 generators operating at 100% load for 72 hours.
- Emissions are from 15m high stacks of 0.6m diameter
- Pollutant emission rates of NO_x, PM10 and Hydrocarbons for generators typical of those likely to be installed at the installation (TA Luft 2g).
- Ambient (background) air quality data for NO_2 has been obtained from the worse annual mean monitored at Lune Close Didcot between 2014 and 2019.
- Ambient (background) air quality for PM10, Hydrocarbons, SO_2 and CO obtained from DEFRA-mapped background concentration estimates.

We have reviewed the parameters used in the model and agree that suitable, reasonable worse-case options have been used to provide a conservative estimate of the impact. We have audited the model input files used by ADMS 5 and found that they are in agreement with those stated in the report.

The model included an assessment of the long-term impact on air quality, comparing the mean annual process contributions of the pollutants from the installation against the long-term (annual) air quality standard. The purpose of the generators is to provide electrical power over a short period of time (up to three days) in the event of grid failure. We have included restrictions in the permit limiting the emergency operation of the installation to a maximum of 500 hours a year and we expect the operator to comply with the maintenance testing schedule stated in the application documents and included in the permit operating techniques table

S1.2, which entails a number of planned testing hours per generator below 50 per year. Therefore we do not consider that long-term impacts are significant and have restricted our assessment of the Applicants report to the consideration of the predicted short-term impacts.

The air dispersion modelling report included an assessment of the impact of hydrocarbons, using benzene as a surrogate. We do not consider hydrocarbon emission from back-up diesel engine to present a significant risk and so have not reviewed this assessment further.

The application uses generic generator emissions data because at the time of the application, the operator has not confirmed which make/models to be installed. We have accepted the use of this generic data, however we have included a pre-operational condition (PO1) requiring the operator to submit details of the make, type and emissions profile of the installed generators and to re-submit the air quality assessment should emissions be higher than those submitted in the application. Similarly we have included a pre-operational condition (PO3) requiring that the operator confirms that the maintenance scenarios used in the application remain appropriate for the make & model of the generators installed, and revises the air quality impact assessment should the generator manufacturer recommend an increase in the maintenance operation compared to that used in the application.

Impact on Human Receptors

The model assesses the effect of the proposal at a representative selection of human receptors in the vicinity of the proposed installation. Sixteen individual receptor locations were selected, including thirteen residential locations, a school, a village hall and a commercial centre. The direction of the prevailing winds (the wind-rose) has been used to select those receptors most likely to be affected, together with their distance from the installation. We agree that an appropriate selection of human receptors was used.

Short-term Predicted NOx Impacts at Human Receptors

For the maintenance operation scenarios at all but three receptor (R13, 15 & 16) the Process Contributions are less than 10% of the air quality standard and we consider this to be insignificant. For the other three receptors, the operation of the generators is not predicted to cause the short-term NO_2 Air Quality Standard to be exceeded, so is not considered to have a significant impact.

For the emergency operation scenario, process contributions and therefore the predicted environmental concentrations are greater and the air quality modelling indicates a risk that the environment standards for short term NO_2 will be exceeded. Whether or not the standard would actually be breached is dependent on meteorological conditions and how many hours the generator operated for. The air quality standard applies where there are 19 or more hourly mean instances where the NO_2 concentration exceeds 200ug/m^3 and the applicant has

calculated the likelihood of such an event as $1.46x10^{-11}$% per annum and so considerers such an event as extremely unlikely. Our audit of the modelling was unable to replicate this probability. However our statistical analysis indicated the testing regimes are extremely unlikely to coincide with more than 18 exceedance hours.

The modelling also indicates that, at its maximum point within the modelled area, NOx levels may exceed the level associated with discomfort when exceeded over short-term periods (Acute Exposure Guideline Level – AEGL-1 – 940$\mu g/m^3$), although there are no residential receptors at this point. This is the level at which Public Heath England may advise members of the public to take protective action such as leaving the area or sheltering indoors. In response to a request for further information, the operator submitted an isopleth map showing areas where the AEGL-1 level is predicted to be exceeded; these are shown to be very limited in extent and not in places where the public are likely to remain for significant periods.

We have therefore included an improvement condition (IC1) requiring the operator to produce an Air Quality Management Plan in conjunction with the Local Authority which outlines the measures to be taken in the event of a grid failure.

Short-term Predicted PM10 Impact at Human Receptors
The applicant has not modelled the PM10 impact from the Emergency scenario because the number of days of operation of the installation does not exceed the 35-day threshold above which the Air Quality Objective for Particulate Matter applies. We have included a permit condition limiting the hours of operation in Emergency to 500 hours per year (20 days).

All of the short-term process contributions of PM10 are below 10% of the Air Quality Objective and are therefore not considered to be significant. There is no short-term Air Quality Objective for PM2.5, but assuming that all the PM is of PM2.5 and comparing this against the more stringent long-term Air Quality Objective, the Process Contribution will remain below 10% of the objective and therefore not considered significant.

The datacentre is situated 6km from the nearest Air Quality Management Areas (AQMA) at Abingdon and we are satisfied that the AQMA is highly unlikely to be affected by the emissions to air from the proposed installation. The local authorities for the area were consulted and made no comments about the impact on the AQMA.

We have audited the air dispersion modelling report submitted with the permit application. The two maintenance testing scenarios and the emergency scenarios within the modelling were assessed. We agree with the operator that predicted levels for the three testing regimes and emergency operations are unlikely to cause an exceedance of any Environmental Standard for the identified human receptors.

Impact at Ecological Receptors

Short term and long term impacts of air borne NO_x, Nitrogen deposition and acidification on ecological receptors were considered. The process contributions at all relevant conservation sites within the relevant screening distance were insignificant. Our audit of the modelling confirms that NO_x nutrient nitrogen and acid deposition process contributions will be insignificant at all conservation sites.

There are two sites designated under the Conservation of Habitats and Species Regulations 2017 (the 'Habitats Regulations') with the 10km radius used as the preliminary screening criteria for identifying likely significant effects. These are Little Wittenham and Cothill Fen Special Areas of Conservation (SAC's) at 5.7km and 9.4km from the installation respectively. The modelling indicates that the emissions to air from the installation will have no significant effect on any of the qualifying features of the two designated sites, with process contributions below 1% of any critical load. There is no hydraulic connectivity between the installation and either of the designated sites and so no source-pathway-receptor linkage exists for other impacts. We have submitted a Habitats Regulations Assessment to Natural England and received no objection from them.

We have audited the air dispersion modelling report submitted with the permit application. The two maintenance testing scenarios and the emergency scenarios within the modelling were assessed. We agreed with the operator that predicted levels for the three testing regimes and emergency operations were unlikely to cause an exceedance of any Environmental Standard for the identified ecological receptors

Noise

The applicant has provided a detailed noise assessment using the guidance within our Horizontal Guidance Note H3 Part 2 – Noise Assessment & Control. This uses SoundPlan V8 sound-modelling software to predict the sound levels at

down-wind receptors. In addition to the generators, the modelling includes the impact of 43 Air Handling Units, 42 LEV exhausts and 12 heat- exchangers on the roof of the datacentre building, but outside of the Installation. The model also includes topography, screening from buildings and the ground type, together with 'background' noise levels obtained by baseline sound monitoring.
The closest residential receptors to the installation have been identified and sound rating levels at each receptors calculated for both day-time and night-time events. These were then compared against the World Health Organisation Guideline for Community Noise (WHO CGN) criteria.

The site will only run the generators regularly as part of the testing regimes described earlier, occurring during daytime hours. The modelling indicates that these will not cause an increase in overall ambient sound levels in the area.

Overnight operation of the generators will only occur in an emergency situation. The modelling indicates that there is the potential for their noise to be sufficiently high that it would be noticeable above existing sources of sound in the area. However more detailed assessment indicates that with house windows closed, internal noise levels will be below the WHO GCN for sleep disturbance. As this is a new installation it is not possible to consider the likelihood of overnight operation by examining the frequency of historical outages, but the potential for prolonged power outages in the area is considered to be low.

The operator considers that, bearing in mind the infrequency of these events and that affected receptors can counter the effects simply by closing windows, the effects are not significant. Nevertheless they have taken measures to minimise noise emissions, housing generators in acoustic enclosures to reduce acoustic emissions by over 33%.

We have audited the Noise Impact Assessment using our Qualitative Noise Screening Tool (RV09). This indicates that noise is unlikely to become an issue because of the nature of the installation and its location. The limited hours of operation combined with the proposed noise mitigation measures are considered to be sufficient to control noise arising from the installation. The local council have been consulted in this matter and raised no objection.

We have applied standard noise conditions within the permit which we consider impose sufficient control should any issues arise.

The application uses generic generator noise emissions data because at the time of the application, the operator has not confirmed exactly which make/models of generator is to be installed. We have accepted the use of this generic data, however we have included a pre-operational condition (PO2) requiring the operator to submit details of the make, type and noise profile of the installed generators and to re-submit the noise assessment report should noise from the generators be significantly higher than those submitted in the application.

Permit conditions

The permit will include a maximum 500 hours per annum ‘emergency/standby operational limit’ for any or all the plant producing on-site power under the limits of the combustion activity. Therefore emission limit values (to air) and generator emissions monitoring are not required within the permit. Emergency hours’ operation includes those unplanned hours required to come off grid to make emergency repair of electrical infrastructure. The limit on the emergency use of 500 hours is for the installation as a whole, meaning that as soon as one generator starts operating the hours count towards the 500 hours.

In addition the permit allows each individual generator unit to be tested for maintenance. The BAT expectation is that individual generator testing is below 50 hours/annum. In this instance the operator proposes to limit maintaining testing to 39 hours a year per generator; this is in line with BAT and below the level at which ELVs would be needed. We expect the number of and duration of planned testing and generator operations to be minimised as much as possible. The planned testing operations of the generators shall be limited to the maximum testing hours described in the testing schedule outlined in the application documents and included by reference in the Operating Techniques Table S1.2 of the permit’.

The permit includes a condition that excludes voluntary / elective power generation such as for demand side response (i.e. on-site use), grid short term operating reserve (STOR) (i.e. off-site export of electricity) or Frequency Control by Demand Management (FCDM) for grid support. This is primarily to differentiate data centres from ‘diesel arrays’ that voluntarily operate within the balancing market and importantly provide a clear way to demonstrate minimisation of emissions to air as ‘emergency plant’.

Operational and management procedures should reflect the outcomes of the air quality modelling by minimising the duration of testing, phasing generators into subgroups, avoiding whole site tests and planning off-grid maintenance days and most importantly times/days to avoid adding to “at risk” high ambient pollutant background levels

The permit application has assessed and provided evidence of the actual reliability of the local electricity grid distribution allowing the Environment Agency to judge that the realistic likelihood of the plant needing to operate for prolonged periods in an emergency mode is low.

Reporting of standby generator maintenance run hours is required annually and any electrical outages (planned or grid failures regardless of duration) require both annual reporting and immediate notification of the Environment Agency.

It is anticipated that the timescale of operation is likely to be short. They will only operate in this mode when the National Grid is off-line. The Operator has put in multiple measures in place to minimise the risk of National Grid supply failure including dual substation connection and management systems for preventing data centre failure.

We consider that the commissioning of new generators poses particular risks to the environment. We have therefore included a pre-operational condition (PO4) requiring the submission of commissioning plan, which gives details of how the potential impact on the environment will be managed.

Although the Permit contains no requirement for the on-going monitoring of the emissions from the generators, it is expected that such monitoring will be a future requirement. As the retro-fitting of suitable monitoring ports may be prohibitively expensive, we have included a pre-operational condition (PO5) requiring the operator to demonstrate that appropriate sample locations are included in the design of the generators

Best Available Techniques

As outlined in the Environment Agency's '*Data Centre FAQ'* document, we accept that oil fired diesel generators are presently a commonly used technology for standby generators. However we requested a BAT assessment detailing the choice of generator, the particular configuration and plant sizing to meet the standby arrangement (N+1).

The default generator specification as a minimum for new plant to minimise the impacts of emissions to air of NO_x is 2g TA-Luft (or equivalent standard) or an equivalent NOx emission concentration of 2000mg/m^3 at 5% reference oxygen and normal conditions. The operator proposed to install generators meeting the 2g TA-Luft standard but at the time of the application did not know the exact make/model of generator. We have included a pre-operational condition requiring the operator to submit details of the exact generator make/model they will install before operation and to submit a commissioning plan for each new generator.

The operator has provided a stack height determination, identifying what height is required to provide adequate dispersion of the exhaust gas. The ADMS 5 model as above was used to simulate the effect of different stack heights, aiming to determine if there is a height above which no further benefit is gained. We required the operator to provide a detailed justification of the selected stack height.

We required the operator to demonstrate that the number and size of the generators matches the requirements of the data centre. Each of the eight site MV/LV mains transformers is matched to a back-up generator of similar capacity, with two additional generators in reserve (N+2 configuration). This ensures that

there is redundancy built into the design. While a smaller number of larger generators would be able to meet the power requirement, we agree that matching individual generator capacity to individual transformer size is appropriate in this case following the phased development of the data centre. The configuration of the electrical supply prevents the consideration of a greater number of smaller generators. Of the variety of generators considered, the efficiency of their engines was similar regardless of capacity.

In order to minimise the need for emergency operation, the datacentre has two separate substation feeds, each capable of supporting 100% of the load. To address short term fluctuations, brown-outs or black-outs, the site has an uninterruptable power supply which can supply power until the generators operate.

Protection of Land, Surface Water & Groundwater

There are no fugitive emissions to land or groundwater from the installation. The generators are located in containers over hard-standing or concrete flooring. Externally, the Site consists of new hard standing. Diesel, hazardous waste and hazardous materials storage is bunded and/or indoors, such that any source of potential contamination is prevented from discharge to land.

The bulk fuel tank is fully bunded to 110% of its volume and includes a leak detection system. Individual day tanks are integrally-bunded with leak detection alarms and are under cover so not subject to rainwater incursion. The refuelling area is served by a full-retention interceptor connected into the site surface water drainage system.

An accident management plan will be established prior to commencing operation of the installation. It will detail those actions required in the event of an emergency or accident/incident. This will include small incidents such as minor spills and leaks and complaints, as well as major incidents such as fire and major spills. In particular, a system for recording and allocating appropriate follow-up for accidents, incidents and non-conformances will be established prior to operation.

Rainwater is kept separate from any areas in which there may be any potential contaminants. Surface water from exterior hardstanding areas is passed through an interceptor before entering the site drainage system where it joins rainwater from the roof areas. The surface water system discharge into the Moor Ditch via a system of balancing (attenuation) ponds
.
Drainage drawings are provided in the application. Details of the existing condition of the Site can be found in the Site Condition Report supplied with the application, which we have reviewed.

Decision considerations

Confidential information

A claim for commercial or industrial confidentiality has not been made.

The decision was taken in accordance with our guidance on confidentiality.

Identifying confidential information

We have not identified information provided as part of the application that we consider to be confidential.

The decision was taken in accordance with our guidance on confidentiality.

Consultation

The consultation requirements were identified in accordance with the Environmental Permitting (England and Wales) Regulations (2016) and our public participation statement.

The application was publicised on the GOV.UK website.

We consulted the following organisations:

- Health and Safety Executive (HSE)
- Local Authority – Planning – South Oxfordshire & Vale of the White Horse District Councils
- Local Authority - Environmental Health – South Oxfordshire & Vale of the White Horse District Councils
- Oxfordshire Fire & Rescue Service
- Sewage Authority – Thames Water
- Director of Public Health
- Public Health England

Operator

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 regulated facility

We considered the extent and nature of the facility at the site in accordance with. RGN2 ‘Understanding the meaning of regulated facility’, Appendix 2 of RGN2

‘Defining the scope of the installation’, Appendix 1 of RGN2 ‘Interpretation of Schedule 1’, guidance on waste recovery plans and permits.

The extent of the facility is defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit.

The site

The operator has provided a plan which we consider to be satisfactory.

These show the extent of the site of the facility.

The plan is included in the permit.

Site condition report

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.

Nature conservation, landscape, heritage and protected species and habitat designations

We have checked the location of the application to assess if it is within the screening distances we consider relevant for impacts on nature conservation, landscape, heritage and protected species and habitat designations. The application is within our screening distances for these designations.

We have assessed the application and its potential to affect sites of nature conservation, landscape, heritage and protected species and habitat designations identified in the nature conservation screening report as part of the permitting process.

We consider that the application will not affect any site of nature conservation, landscape and heritage, and/or protected species or habitats identified.

We have not consulted Natural England. A completed Habitats Risk Assessment Level 1 was sent to Natural England for Information Only.

The decision was taken in accordance with our guidance.

Environmental risk

We have reviewed the operator's assessment of the environmental risk from the facility.

The operator’s risk assessment is satisfactory.

General operating techniques

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.

The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.

Use of conditions other than those from the template

Based on the information in the application, we consider that we do not need to include conditions other than those in our permit template.

National Air Pollution Control Programme

We have considered the National Air Pollution Control Programme as required by the National Emissions Ceilings Regulations 2018. By setting emission limit values in line with technical guidance, or by imposing a limit to the operational hours through the permit conditions, we are minimising emissions to air. This will aid the delivery of national air quality targets. We do not consider that we need to include any additional conditions in this permit.

Raw materials

We have specified limits and controls on the use of raw materials and fuels.

Pre-operational conditions

Based on the information in the application, we consider that we need to include pre-operational conditions.

We have included pre-operational conditions PO1 to PO5

Refer to the key issue session for further details

Improvement programme

Based on the information on the application, we consider that we need to include an improvement programme.

We have included an improvement programme (IC1) requiring the operator to develop an air quality management plan in conjunction with the Local Authority.

Emission Limits

We have decided that emission limits are not required in the permit.

Reporting

We have specified reporting in the permit to ensure that the installation is being operated in line with that specified in the operating techniques and to ensure that we are notified immediately in the instance that the site ever operates in emergency scenario mode.

Management System

We are not aware of any reason to consider that the operator will not have the management system to enable it 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.

Previous performance

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.

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 Responses

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:

Response received from: Public Health England (PHE) & The Director of Public Health

The consultee noted that the main emissions of potential concern are products of combustion including nitrogen dioxide (NO_2) from the backup diesel generators. The application includes a detailed dispersion modelling assessment. The modelling assessment considers dispersion impacts associated with testing and emergency outage scenarios. The applicant has concluded that the probability there being more than 18 exceedances of the 1-hour mean Air Quality Assessment Level (200 µg/m^3) at receptor locations for any scenario, with worst case assumptions and based on 72 hours operation is below 1% and therefore extremely unlikely according to Environment Agency guidance.
For the emergency use scenario, the applicant predicts maximum short-term (hourly) NO_2 impacts.

- The applicant has not provided an isopleth plot.
- Three receptors including a consented area for residential development have a predicted PEC of more than 200 µg/m^3 with the highest concentration being 420 µg/m^3, which corresponds to high air pollution on the Daily Air Quality Index (DAQI).
- The applicant predicts maximum concentrations as 1006 µg/m^3, which exceeds the US Acute Exposure Guideline Level 1 (AEGL) of 0.5 ppm (941 µg/m^3) for nitrogen dioxide, associated with discomfort when exceeded over short-term (10 minutes) exposure periods and at which, during chemical incidents, members of the public are typically advised by Public Health England to take protective action, such as leaving the area or sheltering indoors until a chemical hazard has passed.

The consultee recommends that:

1. The applicant provides an isopleth map and summary table for the emergency operation scenario for the short-term (hourly) maximum NO2 concentrations for various receptor types including publicly accessible areas and consider the potential impacts and whether further assessment is needed. The control of emissions and prevention of exposure is preferable to strategies reliant on public warning and informing during an emergency situation.
2. Although the applicant considers an emergency outage situation to the extent outlined in the assessment (as defined by generators operating at 100% load for 72 hours) is unlikely to happen, the Environment Agency

should consider whether sufficient mitigation measures are required such as the preparation of an Air Quality Emergency Action Plan.

The consultee also identifies that noise from the installation may be of concern and notes that the applicant has provided a detailed noise assessment. In the case of a severe outage, even though site design and low likelihood of occurrence are stated as mitigating factors, residential receptors may be impacted during night hours.
The consultee recommends that the regulator should be satisfied that the installation will not cause significant off-site noise impacts during periods of severe outage and that adequate mitigation is in place.

Based on the H1 screening and detailed modelling provided, testing shows Air Quality Standards (AQS) were unlikely to be breached. However, in emergency scenarios there is the potential for the one hour AQS to be breached for nitrogen oxides. This risk is considered to be acceptable based on the fact that this is based on an extreme worst case scenario and that there has only been 2 or 3 instances in the last nine years where the generators have been needed. Even if breaching the AQS for NO_x for a single hour does not constitute a breach then the consideration of the Acute Exposure Guidance Levels (AEGL) should be made. It is requested that a written action plan is produced for managing emissions during prolonged emergency operation. Based on the information provided risk to human health is considered low.

Summary of actions taken:
We agree that emergency operation is extremely unlikely, but have imposed a permit restriction limiting the operation of the installation to 500 hours per year. We have also included the maintenance testing schedule to be followed by the operator in the operating techniques table of the permit (S1.2).
Impacts on human receptors screened out for NO_2 and PM_{10} pollutants due to the unlikelihood of emergency power generation and low probability of short term exceedances for the pollutants. Our audit of the air quality modelling did not show any exceedance of the AEGLs at residential receptors and we required the operator to submit an isopleth map showing short-term NO2 concentrations around the installation. This indicated that the areas predicted to exceed the AEGL-1 levels were very small in extent and did not coincide with places that the public were likely to congregate. An improvement condition has been set requiring the operator to develop an Air Quality Management Plan.
We have imposed standard noise conditions in the permit. We consider that these will be sufficient to control any noise issues arising from the installation.

Response received from: South Oxfordshire & Vale of the White Horse District Councils – Environmental Health:

The consultee noted that, subject to the implementation of the mitigation measures identified within the Noise Impact Assessment for Environmental Permit Application prepared by RPS (dated 12 January 2021), they had no Objections.

Summary of actions taken:
We have imposed standard noise conditions in the permit. We consider that these will be sufficient to control any noise issues arising from the installation.

Response received from: South Oxfordshire & Vale of the White Horse District Councils – Planning:

The consultee noted that they were currently processing a planning application for the datacentre (P21/S0274/FUL). The two applications dovetail and are compatible. They had no objection to the application.

Summary of actions taken:
None

Response received from: Thames Water Utilities plc:

The consultee is interested to know the extent of the expected rise in level to the Moor Ditch during storm events, this may affect the ability of the Final Effluent and consented storm flows to exit site without causing down steam flooding to our neighbours.

Summary of actions taken:
We do not consider that this aspect is relevant to the listed activities taking place at the proposed installation. Any increase in storm flows would take place irrespective of whether the combustion plant was installed or not. Any issues should be addressed by the site flood risk assessment submitted during the Planning process.