

Permitting Decisions- Variation

We have decided to grant the variation for Virtus Slough Campus Data Centres operated by Virtus Holdco Limited.

The variation number is EPR/BP3945QX/V003.

The permit was issued on 15/04/2026.

The variation is for the operation of 16 gas oil fuelled emergency standby generators (LON12) at the Virtus Slough Campus (NGR: SU 95864 81174), taking the total number of generators at the installation from 31 to 47. The Virtus Slough Campus comprises LON3 (6 generators), LON 4 (19 generators), LON10 (6 generators) and, following this variation, LON 12 (16 generators). The net rated thermal input of the LON12 generators is 101.4 MWth bringing to the total aggregated capacity of all 47 generators at the installation to 281.95 MWth. Under normal operating conditions, the data centre will be powered by grid supplied electricity. The generators will provide power to the site in the event of an emergency scenario such as failure of the grid supplied electricity.

All generators at LON12 data centre (emission points A33-A48) will be fitted with selective catalytic reduction (SCR).

Emission point W4 has been added as part of this variation. Clean uncontaminated surface water will be discharged to Thames Water surface water sewer via a full retention separator, discharging to Salt Hill Stream.

The permit has also been reviewed against the requirements of the Medium Combustion Plant Directive (MCPD) for 2025 and relevant conditions and monitoring requirements have been added.

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 considerations](#) section to show how the main relevant factors have been taken into account

- explains why we have also made an Environment Agency initiated variation
- 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 and the variation notice.

Key issues of the decision

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

1. Overview of the installation

The installation is subject to the Environmental Permitting Regulations (EPR) as it carries out an activity listed in Part 1 of Schedule 1 to the EPR:

- Section 1.1 Part A(1)(a): Burning any fuel in an appliance with a rated thermal input of 50 megawatts or more.

The data centre facility is located at 14 Liverpool Road Slough, SL1 4QZ.

The site currently comprises 31 standby generators across 3 separate buildings, referred to as LON3, LON4 and LON10 data centres. These data centres are operated independently but are grouped together in a single data centre campus under the same management system and management structure. The variation adds 16 generators (LON12) to the existing Virtus Slough Campus taking the number of generators from 31 to 47. All LON12 generators will be fitted with SCR abatement. The SCR system is designed to provide a reduction in emissions to 100mg/m^3. Each generator will have a urea tank of 2000 litres, allowing 48 hours of operation at 65% load.

The 16 LON12 gas oil fuelled generators have an individual thermal input of 6.34 MWth aggregating to 101.4 MWth.

2. Best Available Techniques (BAT)

Engine Specification

Environment Agency guidance specifies the BAT emissions specifications for new diesel-fired reciprocating engines as 2g TA-Luft or US EPA Tier II (or equivalent standard) with NO_x emission levels in the range of 2000 mg/m³ at 5% oxygen and reference conditions.

The generators proposed for the installation are emissions optimised and meet the above US EPA Tier II specification at 75% load which is the intended typical operational load, we are satisfied this is in line with Environment Agency guidance.

Choice of Fuel

We have specified the fuel to be burned in the engines to consist of gas oil or equivalent substitute to be agreed in writing with the Environment Agency with a sulphur concentration of 0.001% w/w. We are in the process of developing our position on the use of gas oil substitute fuels, therefore we have required that if any of these fuels are proposed, written agreement is sought by the operator from the Environment Agency's regulatory officer.

Fuel Storage

At the base of each individual engine is an integrally bunded steel belly tank containing gas oil for the operation of that generator. The tanks will be made to BS799-5 standard. Each tank will be fitted with a level probe and overfill valve and a high/low alarm and will have integral bunding. All transfer pipes, with the exception of the rising pipe to the generator, are held within the tank. The fill points are remote to the fuel tank and are contained within specialised fill cabinets with a drip tray above the hardstanding area. Dedicated drainage separator with automatic shut off acts as a tertiary containment measure. A fuel polishing unit is fixed to the tank to maintain fuel during long periods of storage.

The belly tanks for each LON12 engine have a capacity of 31,000 litres. The total fuel storage capacity of the site is 1,315,604 litres.

3. Testing and Maintenance

Operation of the generators will occur via testing and maintenance and in the event of an outage of power at the facility.

Every generator will have a monthly off load test, this usually takes a maximum of 10 minutes, at no load. Every generator will also have an annual on load test consisting of an initial 20 minutes at 100% load immediately followed by 120 minutes at 75% load. In the month that the on load test is carried out no off load test is required, hence there are 11 off load tests and 1 on load test per generator per year. Testing schedule as follows:

<i>Data Centre</i>	<i>Number of generators</i>	<i>Offload tests per month (11 per year)</i>	<i>On load tests (1 per year)</i>
LON3	6 high voltage	1 All 6 generators tested simultaneously	6
LON4	5 high voltage 14 low voltage	15 1 test for the high voltage generators. Low voltage generators tested individually	19
LON10	6 high voltage	1 All 6 generators tested simultaneously	6
LON12	16 low voltage	16 All low voltage generators tested individually	16

Operation during an emergency event

The Applicant has conservatively assessed the impact on air quality based on all generators operating at 100% load for up to 72 hours to cover an emergency power outage scenario. This is in line with Environment Agency guidance and represents a theoretical complete mains electricity failure of 72 hours duration. In this scenario there is an initial period of 20-30 minutes where generators are required to run at 100% load, to recharge the UPS battery array before dropping to the actual load required. Based on Ofgem grid operator outage data and on-site outage worst case estimates, the Applicant calculated average annual operation emergency scenario assumed a power outage occurs once in every five or six years for 24 hours.

4. Air quality assessment (AQA)

The primary pollutants of concern to air quality from the combustion processes at the installation are nitrogen dioxide (NO₂), carbon monoxide (CO), particulates (PM₁₀) and sulphur dioxide (SO₂) resulting from the combustion process on site. We don't consider SO₂ emissions to be a risk from the operation of the

installation as we have included a condition in the permit restricting the fuel to ultra-low sulphur gas oil, resulting in negligible emissions of sulphur.

The Applicant's assessment of the impact of air quality is set out in document 'Virtus Data Centre London 12 Air Quality Assessment' revision 1 dated 16 June 2025.

The assessment comprises:

- Dispersion modelling of emissions to air from the operation of the generators at LON 12.
- Dispersion modelling of emissions to air from the operation of the 16 generators at LON 12 in combination with 2 x generators at LON3, 4 x generators at LON4, 2 x generators at LON10 and 4 x generators at LON9 and 6 x generators at LON11. LON9 and LON11 are permitted under a separate permit.
- Dispersion modelling for the emergency scenario assuming all 80 generators across the Virtus Slough Campus operating concurrently at 100% load
- A study of the impact of emissions on nearby sensitive conservation sites.

The Applicant proposes to add 2 generators at LON4 in the future so has included these in their assessment of worst-case scenario.

The air dispersion modelling carried out by the Applicant used ADMS 6 (version 6.0.1.0) which we consider an appropriate air quality modelling tool for regulatory purposes. The model used five years of meteorological data observed at Heathrow Airport between 2015 and 2019. The airport is located approximately 12 km to the southeast and is considered to be representative of the modelling domain.

Airflow around buildings is often complex and may create zones of strong turbulence and downward mixing on the lee side, an effect known as building downwash. To represent this effect, the AQA includes 8 building structures in the model (Table 7-1 of the AQA).

Source parameters and emission rates are presented in table C-1 to C-5 of the AQA. These are derived from the technical data sheets. We have calculated slightly higher emission rates for the LON12 and LON4 generators and have applied these in our modelling.

Modelling scenarios

For dispersion modelling purposes, the off load testing assumes 18 generators (16 LON12 generators and 2 prospective LON4 generators) operating

concurrently for one hour. In reality, the LON12 generators will be tested individually for 10 minutes or less. The high voltage generators can be tested simultaneously in a bank of 5 to 6 (LON3, LON4 and LON10). The actual testing regime is within the envelope of the modelled scenarios. All testing is normally carried out between 1pm and 3pm for off load tests.

The on load test modelling assumes that 34 generators (16 in LON12, 2 in LON3, 4 in LON4, 2 in LON10 and 4 in LON9 and 6 in LON11) will be operated at 100% load, concurrently for 140 minutes. In reality, the test will run at 100% load for an initial 20 minutes immediately followed by 120 minutes at 75% load with generators tested individually. Tests are 'de-clashed' amongst the data centres, however, on occasion operations may overlap. On-load testing is carried out one per year and usually takes place between 10am and 4pm.

The emergency scenario models all 80 generators across the Slough Campus operating concurrently at 100% load.

The modelling scenarios are conservative.

Air quality impacts (human health)

The Applicant modelled impacts at 16 discrete receptor locations. The Applicant has used the 100th percentile for 1-hour NO₂ rather than the 99.79th; we agree this is worst-case.

The AQA results indicate no exceedance of the annual or 1-hour NO₂ ES, annual or 1-hour NO ES or US EPA Acute Exposure Guideline Levels (AEGLs) for NO₂ at the receptor locations for either the testing or emergency scenario.

We have reviewed the Applicant's modelling, including the choice of the model and the assumptions made. Whilst we do not agree with the Applicant's numerical values, we agree with the Applicant's conclusions the emissions to air are unlikely to cause an exceedance of any environmental standards at human health receptors.

Air quality impacts (habitats)

The Applicant identified the following European sites within the 10km screening distance of the facility:

- Chilterns Beechwoods Special Area of Conservation (SAC)
- Burnham Beeches SAC
- South West London Waterbodies Special Protection Area (SPA) and Ramsar
- Windsor Forest & Great Park SAC

There are no sites of Special Scientific Interest (SSSIs) within the 2km screening distance of the facility.

The Applicant identified the following non-statutory local wildlife and conservation sites within 2km screening distance of the facility:

- Haymill Valley Local Wildlife Site (LWS) and Local Nature Reserve (LNR)
- Cocksherd Wood LWS and LNR
- Railway Triangle LWS

The Applicant assessed the impacts of NO_x and NH₃ on critical levels, nutrient nitrogen deposition and acid deposition and the modelling predictions are summarised below:

- The annual NO_x, nutrient nitrogen and acid deposition PCs are all less than 1% of the critical levels and critical loads at all ecological receptors and are therefore insignificant.
- For test one, the PCs are less than 10% of the daily NO_x critical level of 75 µg/m³ at all European ecological receptors.
- For test two, the PCs are greater than 10% of the daily NO_x critical level at all European ecological receptors. PCs are greater than 100% of the daily NO_x critical level for Railway Triangle LWS.
- For the emergency scenario, PCs are greater than 10% of the daily NO_x critical level at all European ecological receptors. PCs are greater than 100% of the daily critical level for all local nature sites.

The Applicant applied the PCs for the daily NO_x against the critical level of 75µg/m³. The maximum PCs do not exceed the higher critical level of 200µg/m³ which we have considered in our audit based on the SO₂ and Ozone background conditions. Our review of the Applicant's assessment leads us to agree with the conclusions that the emissions are not significant and are unlikely to cause exceedances of critical levels or loads at ecological designations.

5. Emission Limits

No emission limits have been added, amended or deleted as a result of this variation.

As the plant is limited to less than 500 hours of emergency operation by permit condition 2.3.3 and less than 50 hours for maintenance and testing in permit table S1.1, air emission limits have not been set.

6. Monitoring Requirements

For the new emission points, A33-A48, we have decided that monitoring should be carried out for the parameters listed in table S3.1 of the permit.

We have specified monitoring of emissions of carbon monoxide (CO) from emission points A33 to A48, with a minimum frequency of once every 1,500 hours of operation and no less frequent than every five years (whichever comes first). This monitoring has been included in the permit in order to comply with the requirements of Medium Combustion Plant Directive (MCPD), which specifies the minimum requirements for monitoring of carbon monoxide emissions, regardless of the reduced operating hours of the plant.

We have also specified monitoring of emissions of nitrogen oxides (NO_x) from emission points A33 to A48, with the same frequency specified for the monitoring of carbon monoxide emissions. In setting out this requirement, we have applied our regulatory discretion, as we consider that this limited monitoring, to happen in concurrence with the carbon monoxide monitoring, is proportionate to the risk associated with the emissions of NO_x from the installation.

Taking into account the limited hours of operation of the engines operating at the installation, and the fact that we are not setting emission limits for NO_x and carbon monoxide, we consider this monitoring can be carried out in line with web guide 'Monitoring stack emissions: low risk MCPs and specified generators' Published 20 January 2026 (formerly known as TGN M5).

The generators are new MCP and we have, therefore, set a requirement for the first monitoring to be carried out within 4 months of the issue date of the permit or the date when each new medium combustion plant is first put into operation, whichever is later (permit condition 3.5.4).

For existing MCP (A1 to A8 and A12-A16) with net rated thermal input of greater than 5MW, we have set a requirement for the first monitoring to happen at any time, but no later than the relevant compliance date (permit condition 3.5.4) unless otherwise agreed under Improvement Condition 2.

We have also specified continuous process monitoring of levels of nitrogen oxides (NO_x) from emission points A33 to A48 because these generators are fitted with SCR, hence we consider this monitoring necessary to ensure the effective operations of the abatement system, to prevent excessive ammonia slip and to dose the right amount of urea solution. Because this monitoring is not specified to assess compliance with emission limits, we are satisfied that it will not require certification to MCERTS standards.

7. Operational Hours

We set operational hour limits for data centres at 500 hours as they are permitted for emergency use only. The limit on the emergency use of 500 hours is for the installation as a whole i.e. as soon as one generator starts operating the hours count towards the 500 hours.

The operational hours on the site will be monitored and reported as follows:

Emergency operation limited to 500 hours for the installation via permit condition 2.3.3.

Maintenance and testing regime limited to <10 hours per stack, linked to operating techniques table S1.2.

8. Emissions to Water

Emission point, W4, has been added to the permit. Surface water runoff from LON12 is routed through a dedicated surface water drainage system via a full retention separator before being pumped into the surface water drainage system. Only uncontaminated water will be discharged.

9. Noise and Vibration

The Application contained a noise impact assessment (NIA) which identified local noise-sensitive receptors, potential sources of noise at the proposed plant and noise attenuation measures. An assessment was carried out in accordance with BS4142:2014 to compare the predicted generator plant rating noise levels with the established background levels.

We have reviewed the requirement for a noise impact assessment using our qualitative noise screening criteria. Based on the nature of the installation and its location, the limited hours of operation and the proposed noise mitigation measures, we anticipate that the risk of noise impacts will not be significant. Consequently, we have not required a noise management plan as part of this determination.

However, we have included our standard noise condition in the variation notice, which allows us to ask for a noise management plan if we become aware of noise-related problems on site.

Decision considerations

Confidential information

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

Identifying confidential information

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

The decision was taken in accordance with our guidance on 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:

- Slough Environmental Protection Department
- UK Health Security Agency
- Health and Safety Executive
- Thames Water

The comments and our responses are summarised in the [consultation responses](#) section.

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 RGN 2 'Interpretation of Schedule 1'.

The operator has provided the grid reference for the emission points from the medium combustion plants.

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 plans which we consider to be satisfactory.

These show the extent of the site of the facility including the discharge points.

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 but further clarification is needed. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under the Industrial Emissions Directive.

Improvement condition, IC7, has been added. See Improvement programme section for further detail.

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 but we have sent them a copy of the HRA stage 1 for information.

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.

Operating techniques for emissions that screen out as insignificant

Emissions of nitrogen oxides (NO_x), sulphur dioxide (SO₂), carbon monoxide (CO), particulate matter (with a diameter less than 10 microns (PM₁₀) and 2.5 microns (PM_{2.5})) have been screened out as insignificant, and so we agree that the applicant's proposed techniques are Best Available Techniques (BAT) for the installation.

We consider that the emission limits are not needed for this installation and reflect the BAT for the sector.

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 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.

Updating permit conditions during consolidation

We have updated permit conditions to those in the current generic permit template as part of permit consolidation. The conditions will provide the same level of protection as those in the previous permit.

Changes to the permit conditions due to an Environment Agency initiated variation

We have varied the permit as stated in the variation notice. The permit has been reviewed against the requirements of the Medium Combustion Plant Directive (MCPD) for 2025 and relevant conditions and monitoring requirements have been added.

Raw materials

We have specified limits and controls on the use of raw materials and fuels in table S2.1 of the permit.

Improvement programme

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

We have included the following improvement conditions:

IC6	<p>Performance of SCR systems</p> <p>The operator shall submit a written report to the Environment Agency for assessment and written approval. The report must contain:</p> <ul style="list-style-type: none"> • Detailed information on the specification of the suitability of the NO_x sensors and urea solution dosing to the SCR systems • Evidence of the initial calibration of the NO_x sensors and verification of the levels of unabated and abated NO_x emissions upstream and downstream of the SCR system according to a methodology consistent with web guide 'Monitoring stack emissions: low risk MCPs and specified generators' Published 20 January 2026 (formerly known as TGN M5) • Confirmation that the SCR systems achieve the NO_x abatement performance stated in the application documents referred to in table S1.2, or a proposal for remedial actions when this is not achieved • A plan to periodically calibrate the NO_x sensors and verify the performance of the SCR systems, including the proposed frequencies. <p>The operator must implement the proposals in the report in line with the timescales agreed within the Environment Agency's written approval.</p>
IC7	<p>Site condition report</p> <p>The operator shall submit an updated site condition report on the baseline conditions of soil and groundwater at the installation to the Environment Agency for assessment and written approval, taking into account any sampling undertaking during the construction phase.</p> <p>The report shall contain the information necessary to determine the state of soil and groundwater contamination so as to make a quantified comparison with the state upon definitive cessation of activities provided for in Article 22(3) of the IED.</p> <p>The report shall contain information, supplementary to that already provided in application Site Condition Report, needed to meet the information requirements of Article 22(2) of the IED.</p>

Reporting

For emission points A33 to A48 (new MCPs) We have added reporting in the permit for the following parameters:

Oxides of Nitrogen

Carbon monoxide

For emission points A1-A8 and A12-A16 (LON4) (existing MCPs) we have added reporting in the permit for the following parameters:

Oxides of Nitrogen

Carbon monoxide

Reporting requirements are specified in table S4.1 of the permit.

We made these decisions in accordance with Medium Combustion Plant guidance: <https://www.gov.uk/guidance/medium-combustion-plant-and-specified-generator-permits-how-to-comply>.

We have specified reporting of SCR abatement efficiency for emission points A33-A48.

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.

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 variation.

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: UKHSA

Brief summary of issues raised:

- All sensitive receptors, such as schools and childcare setting are include in the AQA and impacts at these receptors are assessed.
- For emergency scenario 2, the maximum modelled NO₂ hourly mean on the grid exceeds the short-term standard with a 100% risk of exceedance. The maximum on the grid also exceeds the NO₂ AEGL-1 for the 10 min, 30 min and hourly mean. Identify the location of the overall maximum, characterise public exposure and consider measures to reduce emissions of NO₂ below AEGL-1 for 10 and 30 min mean and below the risk of exceeding 5% of the short-term standard (200µg/m³) for the hourly mean.
- PCs are insignificant where they are less than 1% however, there are no criteria to decide whether PCs are significant. The applicant notes that annual mean impacts are highly conservative and does not consider them further. Recommend that the Environment Agency are satisfied with the applicant's assumption on the insignificant of annual mean PC for NO₂.
- The discharge risk assessment is updated accordingly with any change to the air quality assessment.
- Emission points W2 and W3 are to soakaway. In the DRA there are no soakaways on LON12
- The Environment Agency should ensure that scenarios such as fire, fire water run-off, flooding and extreme weather are considered within the accident risk assessment and the impacts on receptors are assessed.

Summary of actions taken:

- We have audited the Applicant's AQA. The Applicant considered 16 discrete receptor locations. We included a further 6 discrete receptor locations and consider this representative of short-term public exposure. The results of the AQA are discussed in the key issues section of this document.
- The exceedance occurs within 60m of the generators to the north of the site in an area of mixed commercial/light industrial use without residential properties. The modelling scenarios considered by the Applicant are conservative.

- We have audited the AQA and agree with the Applicant's conclusions.
- The AQA was resubmitted on 18/06/2025 and is updated to include the addition of SCR abatement.
- There are no soakaways for LON12. W4 has been added to the permit as a result of this variation. Clean, uncontaminated water will be discharged to surface water sewer via a full retention separator.
- LON12 will be operate as part of the Virtus Slough Campus under the same management system and management structure.

Response received from: HSE

Brief summary of issues raised: No comments

Summary of actions taken: No action required