Permitting Decisions- Variation

We have decided to grant the variation for Equinix Slough Campus Data Centre operated by Equinix (UK) Limited.

The variation number is EPR/LP3303PR/V004.

The permit was issued on 29/08/2025

The application is to vary an Installation permit for a data centre campus which has a Schedule 1 Part A(1) 1.1(a) activity for burning any fuel in an appliance with a rated thermal input of 50 or more megawatts. The Variation will involve the installation and operation of 12 new gas oil or equivalent fuelled generators (Medium Combustion Plant (MCP)) at the new data centre LD14 with subsequent fuel and raw material storage and increase of the permitted boundary of the installation. Also, one of the generators that is currently permitted as part of the LD7 data centre will be transferred to LD14.

The permit has been reviewed against the requirements of the Medium Combustion Plant Directive (MCPD) for 2025.

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:

Nature of the site

The Equinix Slough Campus Data Centre consists of five data centres: LD4, LD5, LD6, LD7, and LD14. This Variation focuses on addition of the new data centre LD14 and the associated risks to the environment. The other four data centres have already been permitted, and risks associated with them have been considered with previous applications.

Permitted generators are MCPs, therefore, as part of the variation the permit has been reviewed and updated to include relevant requirements from the Medium Combustion Plant Directive (MCPD).

Best Available Techniques (BAT) Assessment – Emergency Power Provision on Site

Engine Specification

The Applicant has proposed to relocate one gas oil generator from the adjacent data centre LD7 to the new data centre LD14 and install 12 new gas oil generators fitted with Selective Catalytic Reduction (SCR) emissions abatement systems at the new data centre LD14.

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 NOx emission levels in the range of 2000 mg/m^3 at 5% oxygen and reference conditions.

The 12 new generators proposed for LD14 and included in the Air Quality assessment are aligned to TA Luft emissions standard and have NOx emission concentrations of 1,784 mg/Nm^3 at 5% O_2 and reference conditions and therefore are in line with BAT. Furthermore, to minimise the potential impact of NOx emissions at nearby sensitive receptors, the 12 new generators will be fitted with SCR emissions abatement systems to achieve the Medium Combustion Plant Directive (MCPD) emission limit value (ELV) of 190 mg/Nm^3 (15% O_2 and reference conditions) for new engines rated > 5 MWth input and run on diesel fuel. It is noted that whilst the SCR systems have been confirmed to abate NOx emission to this level, ELVs do not apply to the LD14 generators as they will operate for less than 500 hours per year.

Technology & Choice of Fuel

As outlined in the Environment Agency's 'Data Centre FAQ' document, we accept that gas oil or equivalent fuel generators are presently a commonly used technology for standby generators for the supply of standby power for data centres and are a proven technology for providing reliable resilience of functionality which can be started from cold very quickly.

We have specified the fuel to be burned in the engines to be gas oil or equivalent substitute to be agreed in writing with the Environment Agency with a sulphur concentration up to 0.001% w/w.

Fuel Storage & Delivery

At LD14, each engine will have its own dedicated above ground steel double skinned fuel belly tank (31,500 litre capacity for 12 new generators, ~35,000 litre capacity for the generator relocated from LD7) which are integrally bunded to a capacity of 110% of the tank capacity. Due to the height difference of the four generators on the upper gantry, these four generators require a 1000 litre day tank each, to control the fuel flow. All tanks are fitted with leak detection alarms which will be raised to the building management system (BMS). The areas in which the storage tanks will be located will be subject to a daily site housekeeping checks. The applicant confirmed that all new storage tanks will comply with the Oil storage regulations for businesses guidance, as well as CIRIA C736.

As a result of this permit variation, total diesel fuel storage capacity across the data centre campus is approximately 1,692,000 litres.

The applicant submitted a revised fuel filling procedure document. We are satisfied that the necessary controls will be in place to minimise the risk of pollution.

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 so 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 <50 hours per stack, linked to operating techniques table S1.2.

Testing and Maintenance

LD14 is part of the Slough Campus and will operate under the Slough Campus environmental permit. This will include combining the management of emissions from generator testing, to include scheduling of testing to avoid the generators on separate sites testing on the same days.

Based on the prescribed testing regime, each generator at LD14 is expected to operate for up to 11 hours per year. The testing regime for the LD14 data centre will comprise five test types. The testing regime for LD14 does not affect the testing regimes of the other data centres included in the Slough Campus.

Operating scenarios at LD14 are as follows:

Monthly

- During monthly load bank test (8 tests per year) all generators will be run for 30 minutes at 100% load.
- During monthly off-load test, each generator will be fired for approximately 5 minutes at no load.

Quarterly

- During quarterly load bank test all generators will be run independently for 1 hour at 100% load. This test will only be undertaken three times a year – the fourth time will be replaced by the annual full load test

Annually

- During annual load bank test all generators will be run independently for 2 hours at 100% load.
- During annual building load test all generators will be run together for 1 hour at 78% load.

Operation During an Emergency Event

The generators would also run in the event of a loss of power supply, i.e. temporary grid blackout; the generators will be utilised to maintain the required power supply. The generators are designed to automatically activate and provide the required power to the plant pending restoration of mains power, at which time they will automatically ramp down and switch back to utility supply.

Emergency operation is highly unusual, and it is considered very unlikely that the generators would run for extended periods during a blackout event.

To cover an emergency power outage scenario, the Applicant has conservatively assessed the impact on air quality based on:

- the 13 generators at LD14 operating for up to 72 hours; and

- the 13 generators at LD14 operating for up to 72 hours in combination with the activities and operations of the other data centres in the Campus and Extended Campus.

This is in line with Environment Agency guidance.

The Applicant 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 (IED).

Managing Emissions

Point Source Emissions to Air

The primary pollutants of concern to air quality from the combustion processes at the installation are nitrogen dioxide (NO_2), carbon monoxide (CO), particulates (PM_{10}) and sulphur dioxide (SO_2) resulting from the combustion process on site, and ammonia (NH_3) from the SCR abatement. We don't consider SO_2 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 has stated that due to highly optimised operating procedures there will be no ammonia emissions from the Selective Catalytic Reduction system.

The Applicant's assessment of the impact of air quality is set out in 'Air Quality Assessment LD14 Equinix Slough Campus Environmental Permit Assessment – Permit Variation', Rev. 1.0, dated 29/04/2024 of the Application. The assessment comprises:

- Dispersion modelling of emissions to air from the operation of the installation.
- A study of the impact of emissions on nearby sensitive receptors and conservation sites.

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 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, but as part of our assessment, we have also looked into scenarios that the Applicant did not model.

Air Quality Impacts (human health)

We audited the Air Quality Assessment (AQA) submitted with the application and our conclusions are summarised below:

- For LD14 in isolation, testing operations are unlikely to make a significant contribution to or cause an exceedance of an environmental standard at human health receptors.
- For the cumulative assessment, we cannot rule out exceedances of the 1-hour NOx Environmental Standard (ES) and 1-hour NO2 Acute Exposure Guideline Level One (AEGL-1) during the annual building load test for LD4 and LD5. As LD14 is not tested at the same time as the other data centres, LD14 will not increase the existing short-term impacts from LD4 and LD5.
- We cannot rule out exceedances of the 1-hour NO ES, the 99.79th percentile 1-hour NO2 ES or the NO2 AEGL-1, however, likelihood of emergency operations taking place is considered low, as this represents a national emergency event.

We consider that the Applicant has taken measures to minimise emissions from the gas oil or equivalent fuelled generators at LD14 under emergency, testing and maintenance scenarios.

Air Quality Impacts (Habitats)

The following habitat sites are within 10 km of the installation:

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

There are no SSSIs within 2km

The following ‘other conservation sites’ are within 2 km:

- Haymill Valley Local Nature Reserve (LNR)
- Cocksherd Wood LNR

We audited the AQA submitted with the application and our conclusions are summarised below:

- During testing operations, annual NOx and nutrient nitrogen, and acid deposition process contributions (PCs) are all insignificant against the site-specific critical levels and critical loads at all ecological sites.

- For LD14 in isolation, during testing operations, daily mean NOx PCs are all insignificant.
- For the cumulative assessment, during testing operations, we cannot rule out exceedances of the daily mean NOx critical level at Haymill Valley LNR and Cocksherd Wood LNR during the annual building load test, if more than one data centre is tested in the same 24-hour period.
- We cannot rule out exceedances of the daily mean NOx critical level at Haymill Valley LNR, Cocksherd Wood LNR and Burnham Beeches SAC as a result of a 72-hour long emergency outage. However, the likelihood of emergency operations taking place is considered low, as this represents a national emergency event.

The Applicant has stated that testing will be scheduled to avoid the generators on separate sites testing on the same days, therefore there will be no exceedances during the annual building load tests.

We consider that the Applicant has taken measures to minimise emissions from the gas oil or equivalent fuelled generators at LD14 under emergency, testing and maintenance scenarios.

Emission Limits for Emissions to Air

Based on the operational requirements, we have not set any emission limits. As the plant is limited to less than 500 hours of emergency operation by permit condition 2.3.5 and less than 50 hours for maintenance and testing in permit table S1.2, air emission limits are not required. The Operator will be required to record operating hours and the number of runs for each of the generators.

Monitoring Requirements for Emissions to Air

Monitoring requirements for LD14 have been included in the permit as part of the application submitted by the Applicant. Additional monitoring requirements for LD4, LD5, LD6 and LD7 have been included in the permit as part of Environment Agency led variation, initiated as part of the review against the requirements of the MCPD for 2025.

We have specified monitoring of emissions of carbon monoxide (CO) from emission points A0401 to A0410; A0501 to A0514; A0601 to A0624; A0701 to A0706; A1401 to A1413, with a minimum frequency of once every 1,500 hours of operation or every five years (whichever comes first). This monitoring has been included in the permit in order to comply with the requirements of the 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 (NOx) from emission points A0401 to A0410; A0501 to A0514; A0601 to A0624; A0701 to A0706; A1401 to A1413, with the same frequency specified for the monitoring of

carbon monoxide (CO) 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 NOx 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 NOx 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 04 June 2024 (formerly known as TGN M5).

Although the existing permit already has improvement condition 7 (IC7) requiring the Operator to submit a monitoring plan for approval by the Environment Agency detailing the Operator's proposal for the implementation of the flue gas monitoring requirements specified in the permit. For completeness, IC9 has been included in the permit to agree monitoring plan for data hall LD14.

For new MCP, we have set a requirement for the first monitoring to happen 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 3.5.2) unless otherwise agreed under IC7 or IC9.

For existing MCP 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 3.5.2) unless otherwise agreed under IC7.

For existing MCP with net rated thermal input between 1MW-5MW monitoring applies from 01/01/2030, which is the relevant MCPD compliance date. We have set a requirement for the first monitoring to happen at any time, but no later than the relevant compliance date (permit condition 3.5.2) unless otherwise agreed under IC7.

We have also specified continuous process monitoring of levels of nitrogen oxides (NOx) from emission points A1402 to A1413 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.

Aqueous Releases from Site

The Applicant confirmed that there will be no process emissions to surface water, foul sewer, groundwater, or land associated with the LD14.

The listed activities at LD14 will not generate any discharges to sewer other than uncontaminated surface water runoff from roof areas and bunds/tanker unloading

areas. All discharges to surface water sewer will be routed via appropriately maintained pollution control devices to manage the risk of pollution.

Improvement conditions

IC8 - Revisions to the Air Quality Management Plan (AQMP)

This condition has been included to ensure the existing AQMP is revised to include changes made with this permit variation.

IC9 - Monitoring plan - flue gas monitoring requirements at data hall LD14

This condition has been included to ensure monitoring plan is agreed for data hall LD14.

IC10 - Performance of SCR systems

This condition has been included to ensure that the proposed SCR systems are fit for purpose and as described in the application.

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 and director of public health
- 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’ and our data centre FAQ.

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 a plan 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 not 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. Refer to Point Source Emissions to Air subsection in Key issues of the decision section of this document.

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 Operator must use are specified in table S1.2 in the environmental permit.

Operating techniques for emissions that do not screen out as insignificant

Emissions of oxides of nitrogen cannot be screened out as insignificant. We have assessed whether the proposed techniques are Best Available Techniques (BAT). Refer to Point Source Emissions to Air subsection in Key issues of the decision section of this document.

The proposed techniques/ emission levels for emissions that do not screen out as insignificant are in line with the techniques and benchmark levels contained in the technical guidance and we consider them to represent appropriate techniques for the facility.

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.

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

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

Raw materials

We have specified limits on the use of liquid fuel.

Improvement programme

Based on the information on the application, we consider that we need to include an improvement programme. We have set IC8 to ensure that the SCR systems are fit for purpose and as described in the application.

Monitoring

We have decided that monitoring should be added in line with MCPD requirements. See Key issues of the decision section for further details.

Reporting

We have specified reporting in the permit to gather information on emissions to air and performance parameters.

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: UK Health Security Agency (UKHSA) (Environmental Public Health Scientist) – response received 16/09/2024.

Brief summary of issues raised:

a. The Environment Agency should satisfy itself that the Applicant has measures in place to manage both prolonged emergency running of the generators, considering the potential for exceedance of the hourly NO_2 air quality standard during emergency operations, and the prevention of short-term impacts on sensitive receptors.

b. The Environment Agency may wish to consider whether a complaints procedure would be appropriate.

Summary of actions taken:

a. We have considered potential impacts from emissions to air as part of our technical assessment. See Key issues of the decision section for further details.

b. The Applicant has confirmed that they will develop a complaints procedure for use at LD14, in line with the Environment Agency's guidance, that will be in place for the issue date of the permit.