



EQUINIX

Air Quality Impact Assessment

Summary for Campus Permit Variation

14 October 2020

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1. INTRODUCTION

Equinix operates several data centres on the Slough Trading Estate. These data centres are subject to Environmental Permit (EP) requirements, due to the use of diesel generators at the data centres for the provision of back-up power in the event of a grid outage. The installed thermal capacity of these generators exceeds 50MW_{thermal} and therefore operation requires an EP under Schedule 1, Part 2 of The Environmental Permitting (England and Wales) Regulations 2016 (as amended).

The impact assessment set out in this report supports a proposed substantial variation to the existing EP for the Slough Campus (EPR/LP3303PR). This is required due to the installation of additional generators, therefore increasing the capacity of the already permitted activity.

The information provided follows Environment Agency guidelines for the requirements for dispersion modelling of emissions to air and guidelines for assessing the impacts of emissions from generators. The Environment Agency requires evidence that emissions from the installation are not expected to result in applicable air quality standards being exceeded, or that the probability of exceeding is unlikely. This evidence is provided in this document.

The generators, which are all powered by diesel engines, will be tested periodically during the year, as part of the Equinix standard engine testing regime.

Currently there are two EPs for Equinix at the Slough Trading Estate:

- The Slough Campus Permit (EPR/LP3303PR) covering five data centres::
 - LD4
 - LD5
 - LD6
 - LD7
 - LD10, which is to be named LD13x and is the subject of an application to the EA to be transferred to its own Permit
- A Permit application currently undergoing determination (EPR/CP3409BH) covering:
 - LD11x

This report supports the Permit Variation for Permit EPR/LP3303PR.

This report builds upon:

- the previous impact assessment and modelling for the Slough Campus, presented in *Annex C – Air Dispersion Modelling Report* of the Campus Environmental Permit application (EPR/LP3303PR);
- the previous impact assessment and modelling for LD11x, presented in *Appendix F – AQ Modelling Report FINAL* of the LD11x Environmental Permit application (EPR/CP3409BH); and
- the *Air Quality Impact Assessment - Equinix EPR/LP3303PR Variation and LD13x Partial Transfer with Variation* report which is the main technical report supporting this satellite report, and presents:
 - the site context and baseline air quality in the vicinity of the site;
 - the impact methodology, model inputs and model results;
 - evaluation of the model results.

2. ASSESSMENT SCENARIOS

The six data centres at the Slough Trading Estate are close enough to one another to potentially impact on the same sensitive receptors. Therefore, the impact assessment considers both the individual impacts of the data centres within the EP, and the total potential cumulative impacts.

This impact assessment includes all six of the data centres listed above. Impacts have been modelled in *Air Quality Impact Assessment - Equinix EPR/LP3303PR Variation and LD13x Partial Transfer with Variation*. The six scenarios relevant to this Permit Variation are presented below:

- LD4 alone
- LD5 alone
- LD6 alone
- LD7 alone
- LD4, LD5, LD6 and LD7 in combination (for the revised Campus EP)
- LD4, LD5, LD6, LD7, LD10/13x, LD11 (in-combination assessment for all data centres)

The assessment considers the three test scenarios undertaken at the data centres. These being:

- Quarterly Black Building test – 3 times per year
- Annual Load Bank test – 1 time per year
- Bi-monthly Start Up test – 24 times per year

Additional generators are being installed at some data centres. In addition various amendments have been made to the modelling to reflect refinements of design information and in the case of LD10/13x an improvement condition. The changes are as follows:

- LD4 – 3 additional generators, updated stack heights and updated stack velocities
- LD5 – 8 additional generators, no changes to existing stacks
- LD6 – 0 additional generators, no changes to existing stacks
- LD7 – 12 additional generators, updated stack location, updated diameter, updated velocity
- LD11x – 0 additional generators, no changes to existing stacks
- LD10/LD13x – 4 additional generators plus a diesel fired fire pump engine. In response to Improvement Condition #1 updates to stack height, stack diameters and velocities. Stack locations updated.

3. FINDINGS

3.1 NO_x/NO₂

3.1.1 Routine Testing

The assessment identified that for the Campus alone and for the Campus in combination with LD10/LD13x and LD11x, there is the potential to exceed the hourly nitrogen dioxide standard. This arises in all six model scenarios.

However, the calculated statistical probability of breaching the standard is less than 1% in all modelled cases. The Environment Agency states¹ that below 1% exceedances are highly unlikely, and therefore no further actions are required.

The maximum assessed probability of the testing regime breaching the hourly NO₂ standard is $1.7 \times 10^{-17}\%$ for the Campus alone and $1.0 \times 10^{-12}\%$ for the Campus in combination with LD13x and LD11x, i.e. very low. The Environment Agency guidance² states that where the probability of exceedance is greater than 5%, further proposals of emissions reduction are required. In both cases, exceedances of the hourly NO₂ standard are considered “highly unlikely” as the probabilities are far less than 1%. Therefore, no further proposals to reduce the risk of exceedance are made.

The testing regime scenarios were not predicted to have the potential to impact adversely the annual mean NO₂ standard for the protection of human health, including at the Air Quality Management Areas in Slough Borough.

There are no significant impacts predicted on any protected conservation areas.

3.1.2 Emergency Operations

Emergency power generation scenarios were assessed with all generators of the Campus alone and with all generators of the Campus in combination with LD10/LD13x and LD11x running concurrently.

In both cases, there is predicted to be the potential for the hourly NO₂ standard to be exceeded, and with sufficient running hours for a breach to occur.

Additionally, emergency running of all Campus generators concurrently also has the potential to exceed the 24 hour NO_x standard at Haymill Valley LNR, and in combination with all generators at LD10/LD13x and LD11x there is an added potential of a significant impact at Burnham Beaches SAC. The predicted process contribution is however only marginally over the threshold for insignificance (11% vs a threshold of 10 %).

Furthermore, in practice in the last nine years there has been only one occurrence where some of the data centres (LD6, LD7, LD9 and LD10) had to use the back-up generators, this was during a national power outage in mid-2019. As a result the potential for actual significant impacts at Burnham Beaches SAC is considered highly unlikely.

3.2 PM₁₀ and SO₂

The assessment found that the particulate emissions from the engines (both Campus alone and in combination with LD10/LD13x and LD11x) should not have the potential to breach the air quality standard for PM₁₀ or PM_{2.5}. Sulphur dioxide (SO₂) emissions were not assessed as the Site use ultra-low-sulphur diesel and impacts are anticipated to be insignificant.

¹ As per Environment Agency guidance, Specified generators: dispersion modelling assessment, exceedances are highly unlikely if probability is less than 1%, unlikely if less than 5% and over 5% the potential is likely and the risk must be reduced.

² Environment Agency, 2019, Guidance Specified generators: dispersion modelling assessment, <https://www.gov.uk/guidance/specified-generators-dispersion-modelling-assessment>

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