Permitting Decisions- Bespoke Permit

We have decided to grant the permit for Colt-Powergate operated by Colt Data Centre Services UK Ltd

The permit number is EPR/DP3107LF.

The application is for a data centre with 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. There are thirteen standby generators, with an aggregated thermal input of approximately 62 MWth, which provide power to the site in the event of an emergency, such as a failure of the local electricity transmission network, or an internal component failure requiring disconnection from the grid. Under normal operating conditions the data centre will be powered by grid supplied electricity.

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:

Overview of the Installation

The installation is located within the London Borough of Ealing at national grid reference TQ 20971 82811, in Powergate Business park, an area of industrial and commercial developments.

The site is an existing data centre that has been operational since 2001. There are seven existing engines at the site that have been operational since before 2010. Proposed expansion works resulted in the addition of six new engines in 2023.

The permit authorises the operation of 13 standby liquid fuelled generators serving a data centre, in the event of failure in the electrical grid supply. The generators are not permitted to support Short-Term Operating Reserve (STOR) and/or triad management activities. The permit does not allow the export of electricity to the National Grid.

The contingency standby power solution comprises 3 x 4.17MWth, 1 x 2.86MWth, 3 x 4.27MWth, 1 x 4.3MWth and 5 x 5.9MWth generators with an aggregated thermal input of approximately 62MWth. They will be fuelled with gas oil (or equivalent substitute to be agreed in writing with the Environment Agency) with a maximum sulphur concentration of 0.001% w/w. Each generator has a stack between 10.5 and 13.63 m in height.

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 activity falls under Chapter II of the Industrial Emissions Directive (IED). The liquid fuelled generators are classed as medium combustion plant (MCP) as part of a Chapter II installation. The Medium Combustion Plant Directive (MCPD) requirements are fulfilled through compliance with Chapter II of Directive 2010/75/EU.

The incoming power system has been designed to reduce the likelihood of power outages at the installation and consists of two separate cables originating at one substation. Each feed can support the full site load, meaning that if one feed was to fail electrical provision to the installation would not be compromised.

All of the generators are subject to a maintenance testing schedule to ensure that they are maintained and can perform if/when required. The testing schedule is as follows;

1. Planned Preventative Maintenance Start-up test: Each generator will be tested individually for 15mins at 0% load. This will occur every 6 months (twice per year). Total hours per generator per year = 0.5.

2. Building load test: Each generator will be tested individually for one hour at the current generators load, depending on which of the three data halls it serves. Each different data hall will be tested on a different week, so no more than 5 engines will be tested in a single week. Once a year the monthly test will be replaced an annual test that will see all 13 generators tested consecutively in a single day. Total hours per generator per year = 12.

This testing schedule is summarised in the table below from the *Non-Technical Summary V2*

Regime	Frequency	Duration	Scheduling	Approx. Electrical load	Total hours per generator
PPM Maintenance	6 Monthly (2 per year)	15 minutes per gen	Weekdays	Offload i.e 0% Load	0.5
Building Load Test	Monthly (12 per year)	1 hour per gen	Weekdays	Current site load FDC1 - 40% ISC - 3 50% Halls 5,6,7 - 10%	12
				Total hours of operation per generator	12.5

Consideration has been given to the presence of an additional data centre in close proximity to the installation. Agreement has been sought for testing at Colt Powergate to take place on weekdays and for the other nearby site to undertake testing on weekends in order to avoid any testing occurring simultaneously. The testing regime proposed at the installation is contained within the *Non-Technical Summary V2* which has been listed within Table S1.2 Operating Techniques of the permit.

Generators and fuel tanks are located above-ground. The 7 existing generators and 1 of the new generators are supplied directly by 4 x bulk fuel storage tanks which are adjacent to the generators. Two of these tanks are externally bunded. The other 2 are double skinned to 110% capacity. The remaining 5 new generators will be served by 5 x double skinned day tanks bunded to 110% capacity, which are fed from 3 x integrally bunded bulk tanks, also located adjacent to the generators. Each day and bulk storage tank have leak detection and overfill alarms. Fuel transfer from bulk tanks to the generators is via double skinned above-ground pipework. The total fuel storage capacity is 368,222 litres. The site is covered in hardstanding.

Air Quality Assessment

Our online guidance ("Air emissions risk assessment for your environmental permit", gov.uk) sets out how air emissions risk assessments should be completed, by calculating the impact of emissions and comparing against appropriate environmental standards.

The applicant submitted air dispersion modelling as part of their Air Quality Impact Assessment, which allowed the process contribution (PC) to be predicted at any human and ecological receptor that could be impacted by the operation of the Schedule 1 Part A(1) 1.1(a) activity.

The PC is the estimated concentration of an emitted substance, and when calculated within a dispersion model, takes into account relevant parameters of the release and surrounding conditions, including local meteorology.

Once short-term and long-term PCs have been calculated, they are compared with Environmental Standards (ES).

PCs are considered insignificant if:

- The long-term PC is less than 1% of the relevant ES; and
- The short-term PC is less than 10% of the relevant ES.

The long term 1% PC insignificance threshold is based on the judgements that:

- It is unlikely that an emission at this level will make a significant contribution to air quality; and
- The threshold provides a substantial safety margin to protect health and the environment.

The short term 10% insignificance threshold is based on the judgements that:

- Spatial and temporal conditions mean that short term PCs are transient and limited in comparison with long term process contributions; and
- The threshold provides a substantial safety margin to protect health and the environment.

When assessing the significance of PCs at local nature sites, we consider that emissions are insignificant if:

- The long-term PC is less than 100% of the relevant ES for protected conservation areas; and
- The short-term PC is less than 100% of the relevant ES for protected conservation areas.

When an emission is screened out in this way, we would normally consider that the applicant's proposals for prevention and control of the emission are acceptable. However, where an emission cannot be screened out as insignificant, it does not mean it will necessarily be significant.

Where pollutants do not screen out as insignificant, we determine whether exceedances of the relevant ES are likely. This is done through detailed audit and review of the applicant's dispersion modelling, taking background concentrations and modelling uncertainties into account.

The assessment considers the predicted environmental concentration (PEC), which is the PC of the substance, plus the background concentration of the substance already present in the environment.

PECs are considered to be not significant where:

- Proposed emissions comply with associated emission levels (AELs) or the equivalent requirements where there is no AEL; and
- The resulting PECs do not exceed 100% of the environmental standards.

Where exceedances are predicted, we may require the applicant to go beyond what would normally be considered BAT for the installation to ensure that ESs are met. Local factors are also taken into consideration, for example proximity and impacts upon sensitive designated habitats sites (SAC, SPA, Ramsar, SSSI), which may require us to include more stringent conditions within the permit.

The applicant's assessment of the impact of air quality was completed by a consultant using ADMS 6. A number of revisions of the assessment were made during the course of the determination process:

Air Quality Modelling Assessment report, dated July 2022 (Ref: AQ74494)

Air Quality Assessment update, dated June 2023 (Ref: AQ1040R1)

Air Quality Assessment update, dated August 2023 (Ref: AQ1040R2)

Air Quality Assessment update, dated 06 December 2023 (Ref: AQ1040R3)

Air Quality Assessment update, dated 08 March 2024 (Ref: AQ1040R4)

Air Quality Assessment update, dated 28 March 2024 (Ref: AQ1040R5)

The final version received was used for the purpose of decision-making and is the source of all information contained within this document.

Nitrogen oxides (NO_x) are noted as the principal pollutant for human and ecological impacts, with both acid and nutrient nitrogen deposition assessed.

Assessment of SO_2 was scoped out, as the applicant will be fuelling generators with ultra-low sulphur gas oil. The consultant completed an assessment of CO, PM_{10}, $PM_{2.5}$ and total hydrocarbons. All were screened out as insignificant for the testing scenario and are therefore not discussed further within this document. With respect to the emergency scenario, the 8-hour CO, annual total hydrocarbons, PM_{10} and $PM_{2.5}$ PCs are 'insignificant'. 1-hour CO and 24-hour benzene PCs were not assessed.

The data centre is located within the London Borough of Ealing, within an Air Quality Management Area (AQMA) which is managed for nitrogen dioxide (NO_2-annual mean objective) and particulate matter (PM10-24-hour mean objective).

For the assessment, it is assumed that both the existing engines and proposed new engines will be operational. Operation of the generators will occur during testing and maintenance and in the event of an outage of power at the facility. Both of these scenarios were assessed.

Testing and Maintenance Scenario

This scenario assumed that each generator will be operational for up to 1 hour every month and 1 hour annually (this will typically replace one monthly test), with only 1 generator operating at any one point in time and the tests occurring consecutively. The model was based on the additional assumption that testing will be undertaken at site load (assumed to be 50%).

For this scenario, modelling results predicted:

- **Long Term NO_2**: Predicted annual mean NO_2 concentrations inclusive of background levels (i.e. PECs) are less than 100% of the ES and can be screened out as not significant in accordance with the Environment Agency screening criteria.

- **Short Term NO_2**: The predicted NO_2 PC concentrations were below the relevant EQS at 9 of the 14 sensitive receptor locations and the PEC remained below the EQS at 8 of the 14 sensitive receptor locations for all meteorological data sets.1-hour mean NO_2 concentrations are predicted to exceed 200 $\mu g/m^3$ at 6 receptor locations. Results represent a worst-case scenario of the meteorological conditions within the full 5 years of meteorological data used. For the predicted exceedances to occur these worst-case conditions would need to coincide with a generator testing event. Further analysis was undertaken to determine the potential likelihood of these theoretical peaks occurring. This concluded that receptors R1, R2, R3, R4, R5 and R6 are only predicted to experience hourly NO_2 concentrations above the ES for between 1.1 and 6.8 hours a year.

- **AEGL-1**: Predicted short term NO_2 concentrations have also been compared to US EPA Acute Exposure Guideline Levels (AEGLs). They are used for the assessment of sub-hourly impacts to human health receptors and represent threshold exposure limits for the general public. Predicted concentrations were below the relevant AEGL-1 at all sensitive receptor locations over the modelled 5-year period for all exposure periods considered.

- **Short Term NO**: The predicted PC is less than 10% of the associated ES at all receptor locations sensitive to short term-term exposure. As such, impacts on 1-hour mean NO concentrations at this location can be screened out as insignificant in accordance with the Environment Agency screening criteria.

Emergency Scenario

This scenario assumed that all generators will be operational for a continual period of 72 hours and operating concurrently. This Scenario was undertaken at site load (assumed to be 50%).

- **Long Term NO_2**: Predicted annual mean NO_2 concentrations inclusive of background levels (i.e. PECs) are less than 100% of the ES and can be screened out as not significant in accordance with the Environment Agency screening criteria.

- **Short Term NO_2**: 1-hour mean NO_2 concentrations are predicted to exceed the associated ES at 13 receptor locations during the emergency scenario.
- **Short Term PM_{10}:** 24-hour mean PM_{10} concentrations are predicted to exceed the associated ES at 2 receptor locations.

- **AEGL-1**: Predicted NO_2 concentrations were below the relevant AEGL-1 at 8 of the 14 sensitive receptor locations over the modelled 5 year period for all exposure periods considered. Exceedances were predicted at the remaining 6 sensitive receptor locations.

- **Short Term NO**: The PC proportion of the ES is less than 10% at 5 receptor locations and the PEC is less than 20% at 8 locations sensitive to short term-term exposure. As such, impacts can be screened out as not significant in accordance with the initial stage of the Environment Agency screening criteria

Ecological Impact

Testing and maintenance scenario

- **Long Term:** The NO_x PC is less than 1% of the ES at both Special Area of Conservation (SAC) receptor locations (ER3 Richmond Park, ER4 Wimbledon Common) and less than 100% at all Local Nature Reserve (LNR) / Sites of Importance for Nature Conservation (SINC) receptor locations. As such, impacts on annual mean NOx concentrations at these locations can be screened out as insignificant in accordance with the initial stage of the Environment Agency screening criteria.

- **Short Term:** The NO_x PC proportion of the adopted ES is less than 10% at both SAC receptor locations (ER3 Richmond Park, ER4 Wimbledon Common) and less than 100% at 19 (out of 24) LNR/SINC receptor locations. As such, impacts on 24-hour mean NOx concentrations at these locations can be screened out as insignificant in accordance with the initial stage of the Environment Agency screening criteria. At the remaining 5 LNR/SINC receptor locations (ER5 - ER7 Wesley Playing Fields and ER8 - ER9 Grand Union Canal), the PC proportion of the ES is above 100%. As such, impacts on 24-hour mean NO_x concentrations cannot be screened as insignificant in accordance with the Environment Agency screening criteria. Predicted concentrations are considered to represent a worst-case scenario whereby the worst meteorological conditions overlap with the testing period.

- **Nitrogen and Acid Deposition**: The PC proportion of the Low and High ESs for both nitrogen and acid deposition is less than 1% at both SAC receptor locations (ER3 Richmond Park, ER4 Wimbledon Common) and less than 100% at all LNR/SINC receptor locations. As such, impacts on annual mean nitrogen and acid deposition rates at these locations can be screened out as insignificant in accordance with the initial stage of the Environment Agency screening criteria.

Emergency scenario

- **Long term:** The NO_x PC is less than 1% of the ES at both SAC receptor locations (ER3 Richmond Park, ER4 Wimbledon Common) and less than 100% at all LNR/SINC receptor locations. As such, impacts on annual mean NOx concentrations at these locations can be screened out as insignificant in accordance with the initial stage of the Environment Agency screening criteria.

- **Short term:** The PC proportion of the ES is less than 10% at 1 SAC receptor location (ER4 Wimbledon Common) and less than 100% at 17 (out of 24) LNR/SINC receptor locations. As such, impacts on 24-hour mean NOx concentrations at these locations can be screened out as insignificant in accordance with the initial stage of the Environment Agency screening criteria. At the remaining 1 SAC (ER3 Richmond Park) and the 7 LNR/SINC receptor locations (ER5-ER9 Wesley Playing Fields and Grand Union Canal , ER14 The Canal Feeder, ER26 North Acton Cemetery), the PC proportion of the ES are above 1% and 100% respectively. As such, impacts on 24-hour mean NO_x concentrations cannot be screened as insignificant in accordance with the Environment Agency screening criteria. Predicted concentrations are considered to represent a worst case scenario where by the worst meteorological conditions overlap with the testing period.

- **Nitrogen and Acid Deposition**: The PC proportion of the Low and High ESs for both nitrogen and acid deposition is less than 1% at both SAC receptor locations (ER3 Richmond Park, ER4 Wimbledon Common) and less than 100% at all LNR/SINC receptor locations. As such, impacts on annual mean nitrogen and acid deposition rates at these locations can be screened out as insignificant in accordance with the initial stage of the Environment Agency screening criteria.

Environment Agency review of operator assessment of potential impact on air quality

We audited the dispersion modelling and Air Quality Impact Assessment, carrying out check modelling and sensitivity analysis. We reviewed the selection of modelling inputs, methodologies and assumptions, selection of receptors, outputs of the model, statistical interpretations, and conclusions of the assessment.

We agree with the consultant's conclusions regarding human health as their numerical predictions and statistical analysis indicates that exceedances of the relevant environmental standards are unlikely at sensitive human health receptor locations during both testing and emergency operations.

We agree with the consultant's conclusions regarding ecological sites, however, we cannot rule out exceedances of the higher daily mean NO_X critical level of 200 µg/m^3 during the annual test, should these operations coincide with worst-case meteorological conditions. However, as this is a once-a-year event and the exceedances are small, we consider exceedances to be unlikely. We agree that exceedances of this critical level are not predicted during monthly testing.

We agree that exceedances of any pollutant are unlikely due to emergency operations provided the grid reliability remains high. The modelled electrical outages likely represent worst case scenarios as the operator stated in their BAT Assessment V2 that, 'The substation powering the installation has two feeds (A & B). Each feed can support the full site load, meaning that if one feed was to fail, electrical provision to the installation would not be compromised. A site wide failure is considered extremely rare as it would require a catastrophic regional failure on the grid, or at the supplying power station, and would likely impact not only the site but the surrounding London area.

The applicant also stated that in the last eight years the Powergate site has had high levels of grid reliability, only experiencing micro-outages or 'blips' that last less than 0.1 second.

We noted that:

- For the assessment of NO_x impact on ecosystems the consultant adopted the lower critical level of 75 µg/m^3. The higher critical level of 200 µg/m^3 is appropriate for use at all ecological receptors identified in this assessment, where PECs are shown to exceed the lower critical level of 75 µg/m^3 (in accordance with internal guidance AQTAG21).

- We found that the consultant could be underpredicting 1-hour NO PCs as they explain that PCs have been averaged over the whole year, rather than reporting a reasonable worst-case hourly maximum. We included an assessment of maximum 1-hour NO impacts in our checks to address this.

- For the emergency scenario 1-hour CO and 24-hour benzene PCs were not assessed, however these were considered in our audit.

The specific findings of our check modelling are summarised below:

<u>Human health assessment</u>

Based on the modelled testing scenario where each engine is tested individually, we found that:

- The 99.79th percentile 1-hour NO_2, NO_2 AEGL-1s, and 1-hour NO PCs are 'not insignificant'; however, the PECs are all below the relevant ES.

Based on the modelled emergency scenario representing a 72-hour power outage, we found that:

- The 99.79th percentile 1-hour NO_2 PCs and PECs could exceed the ES, however, statistical analysis using a hypergeometric probability distribution indicates that the chance of exceedance is less than 1% which we consider highly unlikely.

For annual impacts, inclusive of both testing and 72 hours of emergency operations, we find that:

- The annual NO_2 PCs are 'not insignificant'; however, the PECs are all below the relevant ES.

Ecological assessment

Based on the modelled testing scenario where each engine is tested individually, we found that:

- We cannot rule out exceedances of the daily mean NO_X critical level of 200 µg/m^3 during the annual test where all 13 generators are tested individually for one hour within the same 24-hour period, should operations coincide with worst-case meteorological conditions. Note that this is a once-a-year event and predicted exceedances are small, therefore, we consider exceedances to be unlikely.
- For the monthly test, the daily mean NO_X PCs are unlikely to cause an exceedance of the daily mean NO_X critical level of 200 µg/m^3 provided no more than five engines are tested within a single day.
- The BAT Assessment[1] for Colt Powergate states that each data hall is tested on separate weeks (Table 4.1). The largest data hall contains five generators, so there will be no more than five hours of testing in a single day.
- We have modelled the 100th percentile 1-hour NO_X PC and assumed that this PC occurs for five hours within a 24-hour period to calculate a reasonable worst-case daily mean NO_X PC. Our daily mean NO_X PCs are not predicted to exceed the critical level of 200 µg/m^3.

Based on the modelled emergency scenario representing a 72-hour power outage, we find that:

- The daily mean NO_X PCs could exceed the 200 µg/m^3 critical level at the Silverlink Metro and Dudding Hill Loop LWS, Wesley Playing Fields LWS and London's Canals LWS should prolonged emergency operations coincide with worst-case meteorological conditions, however, we consider exceedances to be unlikely provided grid reliability remains high.

For annual impacts, inclusive of both testing and 72 hours of emergency operations, we find that:

[1] Colt Powergate Data Centre – Best Available Technique Assessment – DP3107LF, reference 10290863, data June 2022.

- Annual NO_X, acid and nutrient nitrogen deposition PCs are predicted to be 'insignificant' compared to the relevant critical levels and loads.

Assessment of Best Available Techniques

Technology, Configuration, Sizing and Choice of Fuel

The applicant carried out a BAT assessment of the following viable technologies: fuel oil (diesel) fired generators, gas fired generators, Liquid Petroleum Gas (LPG) Fuelled Generators and Hydrogen Fuel Cell generators. For each type of generator, consideration was given to the following criteria:

- Proven technology for providing reliable power supply
- Start-up time & cold start capability
- Space requirements
- Capital expenditure
- Environmental impact
- Fuel storage

The conclusion of the assessment was that Gas and fuel oil generators are the preferred method for back up electricity generation at this site. Colt have decided to install diesel generators at this installation as they outperform Gas generators when comparing their cold start capability and their reliability in providing an uninterruptible power supply, due to no reliance on an off-site supply of natural gas.

Ultra-low sulphur gas oil is considered to be the most appropriate fuel choice due to ease/safety of storage, availability and costs associated with upkeep, storage and supply.

We have specified the fuel to 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 gas oil substitute fuels such as hydrotreated vegetable oil (HVO), 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.

The default engine specification as a minimum for new plant, to minimise the impacts of emissions to air (NO_x), is 2g TA-Luft, Tier II US EPA or equivalent standard. The 'new MCP' generators (emitting via emission points EP4 and EP9- EP13), are 2g TA-Luft emissions optimised as per the datasheets, meeting the BAT requirements. All other generators (emitting via emission points EP1-3 and EP5 – EP8), were put into operation before 2018, meaning they are classified as 'existing MCP'. They do not meet the 2g TA-Luft or equivalent standard.

The site partly operates with N+1 resilience in accordance with the Uptime Institute's Tier III design and partly with N after any failure in accordance with Uptime Institute's Tier IV design. Generators share the load in the event of an emergency scenario, and therefore can still operate if one engine begins to fail. Furthermore, during maintenance of one generator, the others can provide full cover in an emergency scenario.

Routine Testing

Duration of testing must be minimised, with operators seeking to keep individual generator testing to below 50 hours per annum each. Testing should be scheduled to avoid adding to "at risk" high ambient pollutant background levels. In addition, the operator proposes to undertake testing at alternate times of the week to the adjacent data centre on the industrial park.

To minimise short impacts from routine testing, the operator has proposed the following regime:

- Off load testing: Each generator will be tested individually for 15mins at 0% load. This will occur every 6 months (twice per year). Total hours per generator per year = 0.5.

- Building load test: Each generator will be tested individually for one hour at the current generators load, depending on which of the three data halls it serves. Each different data hall will be tested on a different week, so no more than 5 engines will be tested in a single week. Once a year the monthly test will be replaced an annual test that will see all 13 generators tested consecutively in a single day. Total hours per generator per year = 12

Generators will not be tested simultaneously; they will be tested during the day avoiding peak traffic times (when background NO_x levels would be at their highest). As a result of the testing regime, each generator will run for no more than 12.5 hours per year for routine testing.

Electrical Reliability

As the operation of generators is considered undesirable, the incoming power system was designed to ensure that only the most major power outages would trigger the need for the generators to be used to support the data centre.

Initially when a fault is detected an 'uninterruptible power supply' is provided by on-site battery arrays to cover any potential loss or deduction in the supply to data servers.

Power to the site is provided by the National Grid. The substation powering the installation has two feeds (A & B). Each feed can support the full site load, meaning that if one feed was to fail, electrical provision to the installation would not be compromised. Two power supplies are beneficial, as the site would not need to utilise the generators should one main power feed undergo a fault, be accidentally or maliciously damaged or be shut down. Furthermore, we note that the National Grid give an 8-year average network reliability of 99.99995%.

Permit Conditions

The permit limits use of generators in an emergency scenario to 500 hours per year. Routine testing of generators is <50 hours per year, with the operating techniques incorporated into Table S1.2 in the permit. Emission limit values have not been incorporated into the permit, as they are not applicable to MCPs operating for <500 hours per year.

Monitoring requirements are included in the permit; stack monitoring is included for NO_x and CO every 1500 hours of operation or once every five years (whichever comes first). The first monitoring measurements for the new MCP (EP4 and EP9-EP13) shall be carried out within four months of the issue date of the permit or the date when the MCP is first put into operation, whichever is later. For the existing MCP (EP1-EP3 and EP5-EP8) the first monitoring measurements can be undertaken at any time, but no later than the relevant compliance date of 01/01/2030.

Limits to the AR1 activity within the permit exclude any elective power operation such as Short-Term Operating Reserve (STOR) and triad management activities.

Table S1.2 incorporates operational and management procedures within the Non-Technical Summary V2, minimising the duration of testing, the duration and frequency of whole site tests and planning off-grid maintenance days and most importantly times/ days to avoid adding to any high ambient pollutant background levels.

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

Tables S4.2 and S4.3 require annual reporting of standby engine maintenance run and any electrical outages (planned or grid failures regardless of duration) require both immediate notification to the Environment Agency and annual reporting.

Table S2.1 restricts the fuel to ultra-low sulphur gas oil or equivalent substitute as agreed in writing with the Environment Agency.

Protection of Land, Surface Water & Groundwater

Fuel is stored in bulk fuel tanks which are located externally, above ground on cement plinths. Due to the nature of the site being part legacy generators (operational since 2001) and part new generators, bulk tank specifications differ across the site. Three existing generators and one new generator are fed by ISC bulk tank 1 and 2. Four existing generators are fed by FDC bulk tank 1 and 2. The remaining five new generators are fed by bulk tanks IDC5-7, via individual day tanks. There are no receiver/day tanks for existing ISC and FDC generators. Fuel is fed from bulk tanks to the generators / day tanks via double skinned above ground pipework.

Each bulk tank is fitted with a digital OLE electronic gauge which can be read at the tank or remotely via the monitoring system. These will produce an alert in the event of overfill or leakage.

The ISC tanks are double skinned with integral bunding. These tanks conform to BS 799, and are manufactured with steel conforming to BS EN 1025 and fuel pipework is double skinned and conforms to BS1387.

The FDC tanks are bunded to 110%. These tanks conform to BS 799 pat 5 type J 2010 and are manufactured with steel conforming to BS 4360 43A.

The new IDC5-7 bulk tanks are to be integrally bunded to 110%. Overfill Prevention Valves (OPV) are to be fitted to the tank fill line to help prevent overfilling. Leak detect float switches will be provided within tank bunds should the primary tank become compromised.

The existing ISC and FDC bulk tanks are refuelled via connections in independent fill point cabinets. The fill points for both ISC and the FDC tanks are located within lockable cabinets and are accessed from the pavement on Volt Avenue. These fill points are currently external to the site boundary. Drip trays are present to capture minor spills. Within the fill cabinet there are pneumatic gauges to measure tank levels as well as tank overfill prevention controls/alarms, which are connected to the monitoring system.

Surface water arising from the areas of the site where the legacy ISC and FDC bulk tanks are located drains into three surface water emission points SW1 to SW3. It does not pass through any form of interceptor before reaching these emission points. Improvement condition IC3 has been added to the permit to address this.

The new IDC 5-7 bulk tanks will be refuelled by one independent fill point cabinet with three manual level operated fill valves. The cabinet is lockable and there is a drip tray to capture minor spills. A forecourt separator is to be installed near the bulk tanks which will capture fuel spills that manage to enter the surface water drains. The larger bulk tanks feed individual day tanks for each of the ID5-7 generators. As a result, there will be five bunded and double skinned day tanks fitted within the new generator enclosures. Each tank will be fitted with an OLE gauge to provide detailed fuel level information. The tank bund will incorporate a leak detect float switch to alarm if a leak is detected.

Fuel consumption is low at this installation due to the plant being used for emergency back-up power generation only. Fuel deliveries are on average less than once per year. When required, refuelling is carried out by trained fuel tanker drivers, and supervised by a trained member of the site engineering team. A standard operating procedure (SOP) is in place to facilitate refuelling activities to reduce the risk of a spillage during refuelling.

The SOP for the refuelling of the ISC and FDC tanks requires the use of spill kits and drain covers as these fill points are located outside the site boundary on Volt Avenue. These controls are intended to reduce the risk of fuel spillages (e.g. during refuelling) entering the drainage network for the estate. Regular periodic visual checks for leaks / spills are also undertaken.

We are satisfied that the fuel storage arrangements meet our Oil storage regulations for businesses guidance requirements.

Noise Impact

A Noise Impact Assessment (NIA) was provided by the applicant. However, we conducted a noise appraisal to indicate the sound impacts associated with the installation. We reviewed the requirement for a full noise impact assessment using our qualitative noise screening criteria. Based on the nature and location of the installation, the limited hours of operation and proposed noise mitigation measure, we anticipate that the risk of noise impacts will not be significant. The assessment therefore concluded that a full NIA and Noise Management Plan (NMP) are not required for this application. As such the NIA provided with the application has not been technically assessed.

Routine operation of the generators for testing purposes will only occur during the daytime, when residual and background sound levels are naturally higher. As sustained operation of the engines should occur only infrequency this limits the potential for impact from the generators. We consider the likelihood of prolonged outages to be low.

The following measures will be in place to reduce potential noise impacts from the installation:

- All on-load tests will be carried out on weekdays when background levels are at their highest.
- Equipment (including generators is maintained and inspected in accordance with manufacturer's guidance).
- Unusual noises / vibrations will be investigated immediately in accordance with EMS procedures.
- The engines are contained within acoustically insulated boxes and are generally a negligible noise source compared to the ventilation paths.

Despite not requiring a NMP as part of this determination, we have included our standard noise conditions (3.4) within the permit, which allows us to ask for a Noise Management Plan if we become aware of noise-related issues 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.

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 & Safety Executive (HSE)
- Ealing Local Authority (planning and environmental health)
- UK Health Security Agency (UKHSA) (formerly Public Health England (PHE))

The comments and our responses are summarised in the consultation responses section.

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 and Appendix 1 of RGN 2 ‘Interpretation of Schedule 1’.

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.

This shows the extent of the site of the facility including the emission points.

The plan is included in the permit.

Site condition report

The operator has provided a description of the condition of the site. Additional information regarding the integrity of the hard standing on which the fuel tanks are located was requested in the form of a photolog. This was received on 08/12/23. We consider the information to be 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 Stage 1 Habitats Regulations Assessment (HRA) 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.

Operating techniques for emissions that do not screen out as insignificant

Short term emissions of NO_x cannot be screened out as insignificant during the testing and emergency scenarios. We have assessed whether the proposed techniques are Best Available Techniques (BAT). We consider that emergency operation of the generators for 72 hours is very unlikely to occur; resilience has been built into the power supply system with multiple power cables, to reduce the likelihood of emergency operations.

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. The permit conditions enable compliance with our Environment Agency Data Centre FAQ guidance.

Operating techniques for emissions that screen out as insignificant

Emissions of oxides of nitrogen (long-term), carbon monoxide, sulphur dioxide and particulate matter 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 included in the installation permit 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.

Raw materials

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

Table S2.1 specifies that the gas oil (or equivalent fuel agreed by the Environment Agency) for fuelling generators must have a sulphur content lower than 0.001%.

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:

IC1 requires the operator to produce an Air Quality Management Plan (AQMP) in conjunction with the Local Authority. This outlines any measures to be taken in the event of a National Grid failure and identifies trigger points during an emergency where the Environment Agency and Local Authority should be notified. This improvement condition is included in all data centre permits as standard.

IC2 requires the operator to submit a monitoring plan for approval outlining their proposal for the implementation of the flue gas monitoring requirements specified in Table S3.1, in line with web guide 'Monitoring stack emissions: low risk MCPs and specified generators' Published 16 February 2021 (formerly known as TGN M5).

IC3 requires the operator to submit a revised drainage plan for approval outlining proposals and timescales for directing the drainage to an oil interceptor prior to discharge off site. This is to address the areas of the site draining into emission points SW1 to SW3 that currently do not pass through a separator.

Emission Limits

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

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 S1.2, air emission limits are not applicable.

Monitoring

We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified. In particular:

We have specified monitoring of emissions of carbon monoxide from emission points EP1 to EP13 (new and existing medium combustion plant), 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 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 (NOx) from emission points EP4 and EP9 to EP13 (new medium combustion plant), 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 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 20 March 2024 (formerly known as TGN M5).

We have set an improvement condition (IC2) requesting 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.

The first monitoring measurements are to be carried out within four months of the issue date of the permit or the date when the MCP is first put into operation, whichever is later for the new MCP (EP4 and EP9 – EP13). The first monitoring measurements for the existing MCP (EP1 – EP3 and EP5 – EP8) can be

undertaken at any time, but no later than the relevant compliance date of 01/01/2030.

Reporting

We have specified reporting in the permit.

We require reporting of monitoring data as specified in Table S4.1

Table S4.2 requires additional performance parameters to be reported. Hours operating for both routine testing and emergency must be reported annually. Furthermore, upon commencement of emergency operations, the applicant will need to inform the Environment Agency within 24 hours of the engines starting up.

We made these decisions in accordance with our Environment Agency Data Centre FAQ document.

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

We have assessed operator competence. There is no known reason to consider the applicant will not comply with the permit conditions.

We have checked our systems to ensure that all relevant convictions have been declared. 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: UKHSA

Brief summary of issues raised: The applicant has modelled emissions for two scenarios. There is reference to a third scenario, but no details are provided. The scenarios should accurately reflect the likely operating conditions for the generators. The outputs of the modelled nitrogen dioxide 1 hour mean process contributions have not been provided for either of the modelled scenarios. The PM10 24 hour air quality standard is predicted to be exceeded at two locations for scenario 2 (power outage). The overall cumulative impact should be considered for all permitted combustion activities in the local area.

Summary of actions taken: An updated air quality assessment was submitted with revised modelling scenarios, and a revised non-technical summary document with greater detail about the proposed generator testing regimes. We are satisfied that these accurately represent the likely operating conditions of the generators. The revised air quality assessment also provided process contributions for 1-hour NO_2. We have assessed that emergency operation

(power outage scenario) is extremely unlikely and therefore there is low probability of the modelled potential PM10 24-hour air quality standard exceedances occurring. An improvement condition has been set to create an Air Quality Management Plan (AQMP) to address minimisation of short-term emissions during power outage scenarios. The potential cumulative impact of emissions arising from generators at an adjacent data centre (Equinix Powergate) has been considered and agreement has been reached to undertake routine testing at different times to minimise cumulative impacts.