

Eve Morley
Permitting Officer Installations
Environment Agency
National Permitting Service
Quadrant 2
99 Parkway Avenue
Sheffield
S9 4WF.

Dear Eve,

Date 2024/09/20

EPR/VP3225SC/A001 – Response to Notification requesting additional information (dated 09th September 2024)

Ramboll
1 Broad Gate
The Headrow
Leeds
LS1 8EQ
United Kingdom

Thank you for the notification related to EPR/VP3225SC/A001 for the Vantage LHR21 installation dated 09th September 2024. Please find the response to the queries within the notification on behalf of the operator (VDC LHR21 Limited) below.

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<https://uk.ramboll.com/environment-and-health>

Please note that the additional or amended documents have been included as attachments at the end of the document.

Ref 1620013218-007

- 1) *Form A, Question 6a - complete this question with details of either your company secretary or a director.*

Please see Attachment 1 for the amended form A.

- 2) *Form B3, Appendix 1, Question 13 - complete this section with details for each MCP and resubmit (on a separate sheet if required). The declaration for operating the MCPs <500 hours per year must be signed by a relevant person i.e. a director / company secretary. **As discussed, you are welcome to complete the combustion plant list spreadsheet instead (see link), the same declaration RE 500 hours operation is within –*
<https://www.gov.uk/government/publications/application-for-an-environmental-permit-part-c25-vary-to-add-a-new-mcpsg-or-change-an-existing-mcp-or-sg-permit> **

Please see Attachment 2 for the details of each MCP.

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- 3) *Provide an updated EMS summary, which includes all of the below elements, in line with <https://www.gov.uk/guidance/develop-a-management-system-environmental-permits>:*
- *Site Operations*
 - *Site and equipment maintenance plan*
 - *Contingency plans*
 - *Accident prevention and management plan*
 - *A changing climate*
 - *Complaints procedure*
 - *Managing staff competence and training records*
 - *Keeping records*
 - *Review your management system*
 - *Making sure people understand what you do*

Please note the updated EMS summary (amending Section 2.5 Management Systems of the Operations Report (ref: REH2023N01286-RAM-RP-00007)) below:

The Installation will be operated under an Environmental Management System (EMS), which will be developed in line with the requirements of the ISO14001 standard. In summary, the management system will identify systems and procedures that minimise the risk of pollution and harm to human health, which may arise from the operation, maintenance, accidents, incidents and non-conformances specific to the proposed plant.

The EMS will cover the operation of the emergency generators and associated infrastructure, including but not limited to, the fuel tanks. The EMS will include a detailed overview of the installation operation. The operator will develop a maintenance plan for the installation and all associated plant and equipment prior to commencement of operations; the maintenance plan will include the frequency of maintenance and will be based on Original Equipment Manufacturer (OEM) recommendations. The EMS will include an Emergency Plan identifying potential risks of accidents from the installation and the mitigation and management measures to prevent and control accidents.

The generators are intended to be used in the case of emergencies only, with operations typically limited to less than 50 hours a year, therefore, the impact of the operation on the surrounding environment is expected to be minimal. However, the operator will regularly review the operation to identify options to improve the environmental impact of the installation. The EMS will include an external complaints procedure to allow anyone aggrieved by the operations to file a complaint with the operator. The complaint procedure will describe the follow-on process after a complaint is filed, including communications to be relayed to the complainant outlining the actions undertaken to resolve the complaint. All employees of the installation, both temporary (such as contractors) and permanent, will be trained regarding the requirements of the environmental permit and the EMS. All relevant records related to the operation of the installation required by the environmental permit will be retained by the operator for the period required by law.

The management system and procedures will be available for inspection at the facility and will be applicable to all staff, contractors, and visitors to the facility. The management system will be developed to enable compliance with the Environmental Permit and other legislative requirements for the protection of the environment and human health.

The management system will include a review of risks from climate change on the operations in line with EA guidance¹ and will have integrated climate change adaptation measures. A review of climate change related risks to the operation has been undertaken and included in the Environmental Risk Assessment document; this will be reviewed regularly and updated as necessary. A climate change adaptation plan of

¹ Climate change: risk assessment and adaptation planning in your management system, Environment Agency, Published: 03 April 2023

action will be developed in line with ISO 14090:2019. As part of the management system, the installation shall record environmental near misses and extreme weather events and these will be reviewed to inform the future planning process related to climate change risks; these will be logged appropriately and the record retained on site.

Written procedures clearly describing responsibilities, actions and communication channels will be available for operational personnel dealing with emergencies.

The systems and procedures will be externally audited and contingency plans written in preparation for any unexpected complications. Internal review of the management system (or relevant parts therein) will be undertaken at least on an annual basis or in the event of a change in operations / site processes.

Internal audits will be undertaken to ensure compliance with the management system, relevant legal requirements, environmental and management performance and to identify preventative / corrective actions to minimise the risk of breach / non-compliance. The findings of any such review and audits will be communicated to all staff and relevant external contractors and, where appropriate, improvement works / corrective actions will be implemented. All internal reviews, audits, amendments to the management system and improvement measures implemented will be recorded for reference and inspection purposes.

- 4) *BAT Assessment. Provide an updated BAT assessment which addresses the different types of technologies and fuel types considered, the size and number of units chosen and the frequency and duration of operations.*

Please see below a summary of the technology and fuel selection process representing BAT assessment, amending Section 7 Application of BAT of the Operations Report (ref: REH2023N01286-RAM-RP-00007)) below:

A review of combustion technologies has been undertaken to demonstrate the decision process for the selection of the generators at the installation. The review includes an assessment of pros and cons of various combustion technologies available at present, in terms of their use for different purposes.

The review and its' conclusions are shown in Table 1 below.

Table 1: Combustion Technology review

Backup power source	Advantages	Disadvantages	Decision
Diesel/ HVO generators	Rapid response time; readily available with ability to store fuel directly on site (no off-site reliance); capable of running with both diesel and HVO to provide sufficient flexibility in operations	High NOx & CO ₂ emissions; storage of diesel creates additional environmental risk at the site; noise impacts.	Selected – reliability is critical element for back-up power
Natural gas generators	Readily available; good response time	Medium NOx emissions; CO ₂ emissions; high cost; noise impacts; reliance on external supply provision	Not selected – cost and lack of control over fuel supply reduces reliability

Backup power source	Advantages	Disadvantages	Decision
Battery storage	No emissions; low noise impact	adds risk to emergency scenarios Limited capacity (maximum 3 hrs capability) – longer-term (24-48hr) capability still in R&D stage	Selected for immediate (<6 minutes) Uninterruptable Power Supply (UPS) provision only – current capacities not capable of meeting 24-48hr back-up requirement
Hydrogen fuel cell	No emissions; low noise impact	Limited experience in relation to data centre operation; limited capacity - longer-term (24-48hr) capability still in R&D stage	Not selected - current capacities not capable of meeting 24-48hr back-up requirement
Solar/wind	No emissions; low to medium noise impact	Cannot be relied on for power input required in event of grid failure	Not selected – cannot be relied upon during loss of power event

The number of generator units is based on the total power requirement of the data centre. The generators will be capable of providing a N+1 level of resilience with each of the generators running in Standby Mode, which is applicable for supplying power to support the maximum electrical demand, including starting and distorted loads for the duration of power interruption of a reliable utility source.

The power supply to the site is protected by an uninterruptable power supply (UPS), consisting of banks of batteries capable of meeting the full load capacity of the site for approximately 10 minutes. The generators are automatically triggered to start once the power supply has been interrupted, providing power within 20 seconds of the failure of the National Grid supply, at which point the UPS would revert to standby.

The use of the generators to provide electrical power to the site is considered to be unlikely, on the basis that the site is supplied with electricity via two diverse routes and associated infrastructure (e.g. transformers) providing a 2N level of resilience, where N is the power demand of the Installation.

The likelihood of long periods of reliance on the generators to provide power to the site is considered to be highly unlikely given that the National Grid Electricity Transmission System, which serves the site, reportedly achieved an overall reliability of supply of 99.999981% over the period 2022 - 23².

Regular testing of the generators at the site will ensure that these are operational and capable of providing back-up power. Each of the generators at the site will be subject to a regular testing regime; the testing regime is expected to be in place prior to commencement of operations. Minimum testing periods are based on the OEM recommendations.

This has instructed the operational regime for the generators.

² National Electricity Transmission System Performance Report 2022-23, NationalGridESO, published 28th September 2023, available at <https://www.nationalgrideso.com/industry-information/industry-data-and-reports/system-performance-reports> accessed on 22nd October 2023

5) *Operating scenarios. Provide a defined maintenance scenario; this should be clear and explicit, and include:*

- *Frequency, schedule and duration of operation*
- *Sequence of operations and the number of units (e.g. the number of plants operating at any one time)*
- *Loads*

The generators will be used to provide back-up power in the event of a loss of power to the data centre, i.e. an emergency scenario. For the purposes of the modelling it is assumed that all of the generators would operate simultaneously at maximum load in an emergency. The likelihood of this occurring is very low given the grid reliability and redundancy in power supplies to the data centre; in addition, it is not predictable when an emergency scenario would occur.

Regular testing of the generators at the site is also required to ensure that the generators are operational and capable of providing back-up power. Each of the generators at the site will be subject to a regular testing regime; the testing regime is expected to be in place prior to commencement of operations. The testing regime is likely to involve periods of operation at different loads on a monthly basis, but as worst-case basis full load operation can be assumed.

The testing modelling assessment was based on 1 engine tested for 2 hours per month operating at full load with SCR applied, therefore, each generator will be run for up to 24 hours per year for periodic testing. The air quality assessment has been undertaken on this basis.

Exact maintenance procedures will be developed prior to commencement of operations.

6) *Air Quality Assessment. Provide the model input files used within the provided AQA.*

Please see Attachment 3 showing the air quality assessment modelling files.

7) *Noise Impact Assessment. Provide the following:*

- *Raw data from the background sound level measurements*
- *Accompanying computer modelling files or calculation spreadsheets to BS4142*

Please see Attachments 4 and 5 providing this information.

8) *Send us a Noise and Vibration Management Plan.*

Please see Attachment 6. A payment of the associated application fee (£1,246) for the review of the Noise Management Plan via credit card is being arranged separately, please let me know if this is not received.

I trust the provided information is sufficient to duly make the application and proceed to the determination process. Please do not hesitate to let me know if you require further information.

Yours sincerely



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Attachments:

1. Form A
2. Details of each MCP
3. AQA Modelling files
4. Raw data from the background sound level measurements
5. Noise impact assessment modelling files
6. Noise Management Plan