



Environmental Permit Application

Non-Technical Summary

Avonmouth Data Centre Limited

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SLR Project No.: 416.066815.00001

21 May 2026

Revision: v1

Basis of Report

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1.0 INTRODUCTION

SLR Consulting Limited (SLR) has been instructed by Avonmouth Data Centre Limited (ADC) to prepare a bespoke environmental permit (EP) application for the proposed data centre development located at Severn Road, Pilning, Bristol, United Kingdom, BS11 0YU (the 'site').

Electricity for operation of the data centre will be provided from a number of sources:

- Connection to the local electricity transmission network;
- Via direct wire from the adjacent Viridor operated energy from waste (EfW) facility. This will be a bridging arrangement whereby the EfW facility will provide 80% of the electricity demand of the data centre until grid connections are possible to provide the full electrical demand (anticipated to be late 2027 / early 2028); and
- Potentially from on-site solid oxide fuel cells (SOFC), if further resilience is required due to delays with the grid connection.

However, given the nature of data centres and their requirement to have an available energy supply at all times, the site also incorporates a number of emergency standby generators (SBGs).

The SBGs will provide power to the data centre in the event of an emergency situation such as a brown- or black-out of the local electricity transmission network where there are fluctuations or loss of the electrical power. During such an event, there is the potential for a delay between fault detection and initial operation of the SBGs; on-site battery arrays will provide a temporary uninterruptible power supply to cover such delays and the potential for a loss/reduction in the power supply to on-site equipment.

The SBGs, in accordance with manufacturer requirements, will be subject to planned maintenance and testing. There are currently no agreements in place for the elective generation of electricity for commercial export to the electricity grid.

The data centre will have 32 SBGs, designated for use as emergency backup generators:

- 32 x 2.424MWe generators, each with a thermal rated input of 7.29MWth.

The total rated thermal input (under standby power operating conditions) of the 32 SBGs will be 233.28MWth.

The SBGs will be fuelled with diesel or hydrogenated vegetable oil (HVO), as such for the purpose of this EP application, the air emissions risk assessment has been based on the use of diesel fuel.

The SBGs are considered to be an 'installation' as defined in Paragraph 1, Part 1, Schedule 1 of the EP regulations as "a stationary technical unit (STU) where one or more activities are carried on." The 'activities' that are proposed are defined in Chapter 1, Schedule 1 of the EP regulations, under Section 1.1. (Combustion Activities). Fuel storage for the SBGs and surface water drainage from the permitted Installation area are considered to be directly associated activities (DAAs) of the 'combustion' STU for the data centre.

This document is submitted on behalf of the operator to support the application for the data centre (as per the requirements of Section 2(1), Part 1, Schedule 5 of the EP Regulations).

This non-technical summary (NTS) provides a summary of what is being applied for, along with a summary of the activities that will be undertaken at the data centre and an explanation of key technical standards and control measures that will be implemented at the Installation.



2.0 ENVIRONMENTAL PERMIT APPLICATION

2.1 Regulated Activities

The data centre will comprise in total a thermal input of 233.28MWth. Testing of the SBGs (either routinely or following maintenance) will be undertaken at up to 100% load.

This EP application (including the associated modelling studies and risk assessments) has been prepared on the basis of 32 SBGs:

- 32 x 2.424MWe generators (new SBGs), each with a thermal rated input of 7.29MWth).

Combustion activities that require an EP are defined in Part 2, Schedule 1 of the Environmental Permitting (England and Wales) Regulations (as amended) 2016 (EPR) as:

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

The EP Regulations clarify that:

“...where two or more appliances with an aggregated rated thermal input of 50 or more megawatts are operated on the same site by the same operator, those appliances must be treated as a single appliance with a rated thermal input of 50 or more megawatts.”

The SBG provision includes for a level of redundancy to the SBG system such that, even in a worst-case blackout scenario, only the required number of SBGs would start up to deliver the required electrical IT load for the data centre; the number of operational SBGs at the time of a blackout would be dependent on the extent of the blackout. However, it is noted that, without specific physical controls preventing operation of an SBG, the thermal input of all SBGs is required for determining the capacity of the Installation.

2.1.1 Directly Associated Activities (DAA)

Schedule 1, Part 1 Regulation 2(1) of the EP Regulations provides that a DAA is an operation that, in relation to any other activity:

- Has a technical connection with the activity;
- Is carried out on the same site as the activity; and
- Could have an effect on pollution.

The storage of fuel oil at the data centre associated with the proposed 32 SBGs is considered to be a DAA of the ‘combustion’ STU for that data centre. Surface water drainage from the SBGs and refuelling areas is also considered as a DAA.

2.2 Application Contents

The EP application comprises the following elements:

- Application forms (Parts A, B2, B3, F1 and MCP checklist)
- Non-Technical Summary
- Environmental Risk Assessment
- Air Emissions Risk Assessment
- Best Available Techniques and Operating Techniques
- Noise Impact Assessment
- Site Condition Report



- Supporting Drawings.

2.3 Operating Techniques

The proposed SBGs and associated fuel storage will be designed and operated in accordance with the relevant sections of the following guidance:

- Develop a management system: environmental permits guidance, April 2023;
- Risk assessments for your environmental permit guidance, December 2025;
- Emergency backup diesel engines on installations: best available techniques (BAT), 23 August 2023;
- Best Available Techniques: environmental permits, January 2026;
- Data Centre FAQ, Draft Version 21.0 to TechUK for Discussion 15/11/22; and
- Specified generator: comply with permit conditions, December 2022.

2.3.1 Management Systems

The data storage services at the data centre will be managed in accordance with appropriate standards, these may include:

- ISO/IEC 27001: Information Security Management System.
- ISO 22301: Business Continuity Management.
- ISO 9001: Quality Management System.
- ISO 42001: Artificial Intelligence Management System (AIMS).
- ISO 14001: Environmental Management System. This standard specifies the requirements for an EMS to enable an organisation to develop and implement a policy and objectives which take into account legal requirements and other requirements to which the organization subscribes, and information about significant environmental aspects.

An environmental management system (EMS) will be in place. The EMS will place particular importance on:

- Reducing risks to the environment to a level that is as low as reasonably practicable using best available techniques (BAT);
- Integrating EMS responsibilities within line management;
- A commitment to personnel environmental awareness and competence;
- The ongoing monitoring and review of environmental performance; and
- A commitment to working to achieve continuous improvement in environmental performance.

A summary of the proposed EMS is detailed in the site's Best Available Techniques and Operating Techniques (BATOT) document (SLR reference: 416.066815.00001 BATOT) submitted with the EP application.

2.4 Environmental Risk Assessment

The Environmental Risk Assessment (ERA) (SLR Reference: 416.066815.00001_ERA) has been prepared in support of the EP application in accordance with the Environment Agency (EA) *Risk assessments for your environmental permit*. The ERA is a simple assessment of the risks to the environment and human health from point source emissions to air, accidents,



noise, fugitive emissions and global warming potential that may be associated with the permitted activities at the Installation. The aim of the assessment is to identify any significant risks and demonstrate that the risk of pollution or harm will be acceptable by taking the appropriate measures to manage these risks.

The ERA has assessed the potential risks based on the balance between the probabilities of exposure and the magnitude of the consequences of those exposures. Overall, with measures in place to manage potential risks, no significant environmental risks have been identified from the proposed activities at the Installation.

2.5 Air Emissions Risk Assessment

A detailed air emissions risk assessment (AERA) (SLR Ref. 416.066815.00001_AERA) has been undertaken to investigate the potential for emissions from the SBGs and the potential impact on air quality by comparison to UK Air Quality Standards and EA regulatory benchmarks (e.g. Environmental Assessment Levels) in line with the prevailing guidance. Emissions from the Installation will vary dependent upon the operational scenario of the engines (e.g. full emergency load, testing).

The SBGs will each operate for less than 500 hours per annum and will therefore not be subject to emissions limit values (ELV) for the substances listed in Annex V of Directive 2010/75/EU on industrial emissions (Industrial Emissions Directive, IED).

The AERA predicts for the following:

- **Planned maintenance and testing:** that there will be no significant adverse impacts on identified local human receptors and designated ecological receptors.
- **Emergency Outage Scenario (hypothetical 72 hour outage):** overall there will be no significant adverse impacts on identified local human receptors and designated ecological receptors. Exceptions to this are as follows:
 - There are potential exceedances of the 1-hour mean (<5% probability) and 10-minute (>5% probability) NO₂ AEGs at some of the modelled human receptor locations.
 - There are potential exceedances of the daily mean NO_x CLe at most of the designated ecological sites when assuming a >24-hour outage duration. This assumes the emergency outage is >24 hours, which is considered an unlikely occurrence.
 - Overall, however the risk of a prolonged emergency outage is considered to be low.
- **Commissioning (Cumulative with Testing and Maintenance):** overall it is considered that there will be no significant adverse impacts on identified local human receptors and designated ecological receptors.

2.6 Noise Impact Assessment

A detailed noise impact assessment (SLR Ref. 416.066815.00001_NIA) has been undertaken to investigate the potential impact at noise sensitive receptors surrounding the proposed Installation.



As per EA Guidance¹ the assessment only considers emissions from SBGs and associated infrastructure only. As noise from the data centre itself does not fall under the scope of EA regulation, this has not been considered within the noise assessment.

The assessment has been undertaken in accordance with BS 4142 and EA noise guidance (NVM and MID), and the predictions have been completed using ISO 9613-2, modelling with appropriate worst-case propagation assumptions, during operations involving the SBGs.

Overall, the key findings of the noise assessment are as follows:

- Rating levels from the SBGs during a worst-case emergency operating scenario in which all SBGs are assumed to be operating simultaneously, would remain at least 10 dB below the representative background sound levels at all NSRs.
- The BS 4142 assessment indicates low impact, at all noise sensitive receptors, which means there will be “no, or barely audible or detectable noise” impacts at each noise sensitive receptor.
- With regard to routine testing, the SBGs will typically be operated individually and avoid concurrent testing across multiple SBGs, where practicable. Therefore, noise impact of a single SBG will be lower than emergency operations and thus considered negligible.

Overall, operation of the SBGs at the Installation is not expected to give rise to adverse noise impacts and is therefore considered acceptable in the context of this EP application.

2.7 Site Condition Report

A Site Condition Report (SCR) (SLR Ref: 416.066815.00001_SCR) has been prepared in support of the EP application. Sections 1-3 have been completed; these sections comprise the following aspects:

- site details;
- condition of the land at permit issue;
- geology;
- hydrology;
- hydrogeology;
- pollution history;
- evidence of historic contamination; and
- permitted activities.

Baseline soil and groundwater data was not available at the time of the EP application. As agreed with the EA at the pre-application meeting, this information will be obtained in due course and the SCR updated accordingly.

Sections 4 to 7 of the SCR will be maintained during the lifetime of the EP, and Sections 8 to 10 will be completed and submitted in support of an application to surrender the EP.

2.8 Key Technical Standards

The data centre has been designed to provide maximum reliability of the electrical power supply to the systems on site that are critical for continuous operation of the Installation as a

¹ Noise and vibration: environmental permit application guidance (December 2025)



data centre. The operational techniques that will be in place to manage the activities at the data centre can be summarised as follows:

- Other than for planned maintenance and testing, the SBGs will be operated for emergency back-up purposes which will only commence in the event that electricity is not available from the local transmission network or local supply from the Viridor EfW facility (e.g. brown- or black-out) or if there is an internal failure of power supply.
- The planned maintenance and testing regime for the SBGs will be scheduled so that the impact on air quality as a result of the fuel combustion emissions is minimised.
- The scheduled maintenance and testing regime for each SBG will be notably below the 50-hours per year. The SBGs will not be operated on an 'elective' basis.
- With regard to engine selection, as the SBGs are required to provide emergency/standby power for the data centre, diesel engines have been determined as BAT.
- The SBGs will have dedicated stacks to aid the dispersion of the engine flue gases; these stacks will be vertical. The stack release heights will be circa 26m above ground level.
- The SBGs will be housed within containerised units located at ground level of a dedicated plant gantry area. Fuel for the SBGs will be stored in individual belly tanks located beneath each SBG within the container unit. The belly tanks will be designed and constructed in accordance with BS799-5:2010 Oil Burning Equipment Carbon Steel Oil Storage Tanks. The belly tanks will have primary and secondary containment in line with CIRIA 736.
- The proposed SBGs belly tanks will be fitted with a tank level gauge, high and low level alarms, a pressure delivery over-fill prevention valve, a leak detection alarm, and a pressure relief valves to prevent over pressurisation of diesel supplied from the belly tanks. All of these will be connected to the data centre's building management system (BMS).
- The SBGs will be located in a dedicated compound. This compound will have a bund wall on three sides and a ramped entrance designed to contain any rainwater, spills or leaks. Three floor drainage gullies will be situated within the bunded area, designed to capture run-off from within the bund. Each gully will drain to a manhole each of which will be fitted with a sensor to detect hydrocarbons and ethylene glycol. The sensors will be connected to the BMS; in the event of detection, these will automatically close off the manholes to prevent the discharge of potentially contaminated water from the generator compound entering the surface water drainage system.
- Surface water runoff from within the generator compound will enter the surface water drainage system for the Installation, flowing via a full retention separator before discharging from the Installation at emission point **SW1**.
- There will be no bulk fuel storage at the facility. Fuel delivery tankers will deliver fuel straight to each of the belly tanks beneath the SBG's. Fuel delivery tankers will be required to park in one of two dedicated tanker refuelling concreted layby's and connect to fill points, located in lockable cabinets with drip trays, positioned in the wall of the plant compound. The fuel delivery pipework will feed into each individual SBG belly tank; this pipework will run above ground and will be double walled with leak detection (based on pressurisation levels in the interstitial space between the pipework walls). Fuel deliveries will be managed in accordance with a fuel delivery procedure.



- The refuelling laybys will be concrete surfaced with raised kerbing around the perimeter and cambered so that any runoff drains towards a drainage channel on the outermost edge of each of the layby areas. Each of these drains will direct the runoff from the layby via the surface water drainage system to one of two newly installed full retention Class 1 forecourt petrol interceptors. From the interceptors the runoff will enter the Installation's surface water drainage system and will be directed to the surface water discharge point **SW1**.
- A preventative maintenance system, which defines the required checks for the SGBs, storage tanks and associated infrastructure, will be in place. PPM will be managed and completed by facilities management personnel and if required, by competent third parties appointed by the operator. The facility will be manned 24 hours a day.
- Procedures will be developed and included within the site's EMS for the management of surface water runoff and for the management and maintenance of the surface water drainage systems and interceptors; relevant staff will be suitably trained in these procedures.
- Fluorinated gases (F-gases) will be used at the data centre in the air-cooled free cooling chillers and trim chillers. Units containing refrigerants will be subject to regular maintenance and leak testing undertaken by an operator approved external specialist contractor. The operator will maintain an F-gas register for the data centre and leak detection and maintenance records will be maintained.
- Significant fugitive emissions, odours and noise are not considered likely with respect to operation of the SGBs at the data centre.
- A noise assessment completed for the proposed data centre concluded that there would likely be no significant noise impact on the near-by noise-sensitive receptors.
- The management of energy will be an integral part of the EMS.
- Operation of the SGBs will not produce significant amounts of waste. Waste oil will be generated as a result of generator maintenance. Generator maintenance will be undertaken by an appointed third-party specialist who will be responsible for the off-site disposal of this waste.
- In accordance with the EMS, procedures will be in place for the regular inspection and maintenance of SGBs, storage areas and associated infrastructure. Any accidents or incidents and the action taken to rectify these, will be recorded.



