



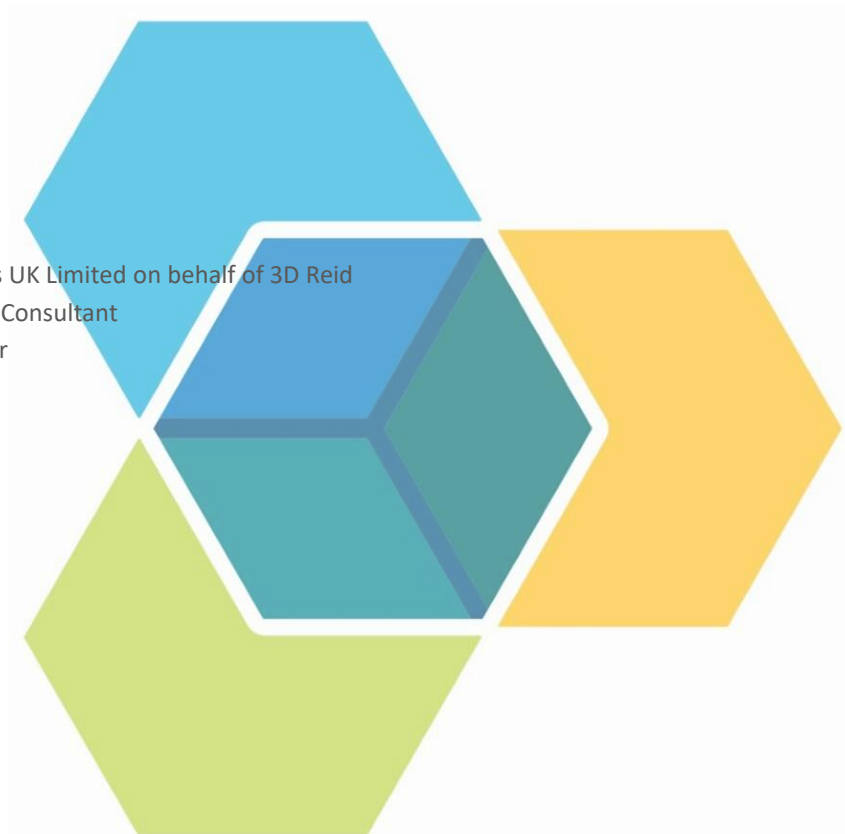
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Non-technical Summary – Environmental Permit Application Ridgeway Data Centre Emergency Back Up Generation Facility

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1 Introduction

EHS Projects Ltd (EHS) has been instructed to prepare an application for an Environmental Permit (EP) for an emergency back-up power generation facility for a data centre located at the Ridgeway Trading Estate near Slough, Iver, Buckinghamshire. The overall site is centred on Grid Reference TQ 03489 80455.

The primary source of electricity for operation of the data centre will be provided from connections to the local electricity transmission network; however, given the nature of data centres and their requirement to have an available energy supply at all times, the site incorporates 27 hydrogenated vegetable oil (HVO)/diesel-fired emergency stand-by generators (ESGs). Of these 26 are the main back-up generators for data centre operations plus a further house generator which will provide emergency power to non-IT infrastructure at the data centre in the rare event of disruption in the grid power supply.

The generators, in accordance with the manufacturer requirements, will be subject to planned maintenance and testing. The ESGs are capable of operating on diesel or biodiesel such as HVO.

The total rated thermal input (under standby power operating conditions) of the ESGs will be 222.98 MWth.

There are no agreements in place for the elective generation of electricity for commercial export to the electricity grid and the generators do not operate in Triad avoidance.

The data centre is yet to be built, commissioned and operated subject to planning and permitting. The ESGs are yet to be procured.

1.1 Purpose of this document

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

2 SITE SUMMARY

2.1 Environmental Permitting – Installation Activity and Extent

The application is for a bespoke Environmental Permit for an emergency back-up power generation facility at a data centre located at the Ridgeway Trading Estate near Slough comprises 27 HVO/diesel-fired generators and associated fuel storage. The total rated thermal input of approximately 222.98 MWth.

The generators 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 provided by the network. To avoid any delay between fault detection and initial operation of the generators; on-site battery arrays will provide a temporary uninterruptible power supply in order to cover such delays to mitigate and the potential for a loss/reduction in the power supply to the onsite equipment. In the event of a worst-case blackout scenario, all the generators will be operated to deliver the required IT load; the required electrical load at the time of a blackout would be shared by the ESGs.

The combustion activities that will be undertaken at the site require a bespoke EP in accordance with Schedule 1 of the Environmental Permitting (England and Wales) Regulations 2016 (as amended):

Chapter 1, Schedule 1, Section 1.1 (Combustion Activities):

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

In addition to the generators, the storage of fuel oil (diesel/HVO) in storage tanks is undertaken; this is considered to be a 'directly associated activity'.

The Installation comprises all the generators and associated fuel storage arrangements.

2.2 Application Contents

The application comprises the following elements:

- Application forms (Parts A, B2, B3 and F1)
- Non-technical Summary
- Best Available Techniques Assessment
- Environmental Risk Assessment
- Air Quality Assessment
- Acoustic Assessment
- Site Condition Report
- Fuel Storage and Distribution Schematics
- The following drawings accompany this Environmental Permit application:
 - Environmental Permit Installation Boundary
 - Air Emission Point Schematic
 - Site Drainage Plan – Surface Water
 - Site Drainage Plan – Foul Water

2.3 Operating Techniques

The site will be designed and operated in accordance with the relevant sections of the following guidance:

- Best available techniques: environmental permits - <https://www.gov.uk/guidance/best-available-techniques-environmental-permits>
- Risk assessments for specific activities: environmental permits - <https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit>
- Environment Agency a working draft BAT guidance document: 'Data Centre FAQ Headline Approach v21' (Nov 2022) - <https://www.techuk.org/asset/BB871EF0-8316-4127-89DC63C6B3B7CD04/> .

The site has been designed and will be operated in accordance with the relevant sections of this guidance.

2.4 Management Systems

The data centre will be operated in accordance with the following standards, or suitable equivalent standards:

- ISO/IEC 27001:2013 that specifies the requirements for establishing, implementing, maintaining and continually improving an information security management system; and
- ISO9001:2015 that specifies the requirements for establishing, implementing, monitoring, managing and improving quality throughout the organisation.
- The operator has corporate standards that require an effective Environmental Management System (EMS) that will operate in a way that is broadly consistent with the internationally recognised ISO 14001:2015 standard.

The EMS places specific focus on the following:

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

A summary of the proposed EMS is detailed in the BAT Assessment document submitted with the application.

2.5 Site Condition Report

A Site Condition Report (SCR) has been prepared in accordance with the Environment Agency's H5 Guidance Note on SCR. The objective of the SCR is to record and describe the condition of the land at the site at the time of the permit application. The SCR provides a point of reference and baseline environmental data so that when the permit is surrendered it can be demonstrated that there has been no deterioration in the condition of the land as a result of the proposed operations and ensures that the condition of the land is in a 'satisfactory state' on surrender of the permit.

2.6 Air Quality Assessment

A detailed air quality risk assessment has been undertaken to investigate the potential for emissions from the generators 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 site will vary dependent upon the operational scenario of the engines (e.g. full emergency load, testing).

The generators 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). Overall, the risk assessment concluded that the potential impacts on air quality as a result of routine (testing and maintenance) operation of the generators will not be significant; and potential impacts on air quality as a result of an assumed 60 'electrical grid outage' operational hours occurrence will not have an impact on either human or ecological receptors.

The operator will develop an Air Quality Management Plan (AQMP) which details the management actions to be taken in the event of an emergency outage that could result in the prolonged usage of the generators which could potentially result in adverse impacts on local air quality. The operator will liaise with the Environment Agency to agree actions to be taken in the event of a prolonged outage situation and a finalised plan will be incorporated into the site's EMS.

2.7 Environmental Risk Assessment

An Environmental Risk Assessment (ERA) has been undertaken in accordance with the Environment Agency (EA) Risk assessments for your environmental permit and is included with the EP application. The ERA provides an 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 proposed operations at the site. The assessment identifies and categorises these risks and demonstrates that the risk of pollution or harm will be acceptable by taking the appropriate measures through the design and operation of the facility to manage these risks.

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 site as a data centre. The ERA has assessed the potential risks from the operation of the data centre standby emergency generator equipment based on the balance between the probabilities of exposure and the magnitude of the consequences of those exposures. Overall, measures (as summarised below) manage these potential risks, and no significant environmental risks have been identified at the site.

- The generators will be operated only for emergency back-up purposes (other than for planned maintenance and testing).
- The generators will not be operated on an 'elective' basis as an alternative source of electricity, or for Triad avoidance.
- The planned maintenance and testing regime for the generators will be scheduled so that the impact on air quality as a result of the combustion emissions is minimised.
- The scheduled maintenance and testing regime for each generator is significantly below the 50-hour testing regime for generators which are used purely for a stand-by emergency role as stated in the EA Data centre FAQ.
- Considering that the generators are required to provide emergency/standby power for the data centres, diesel engines have been determined as BAT.
- The Operator will notify the EA in advance of planned outage/maintenance of the local transmission system.
- Each generator will have a dedicated stack to aid the dispersion of the engine flue gases; these stacks will be vertical (25m above ground level) for each of the main ESGs.
- The main bulk fuel top-up tank is located above ground within a bunded area capable of retaining 110% of the 40,000 litre tank volume in the event of spillage of fuel. In summary the bulk storage tank will have the following protection measures:
 - Bunded to 110% of its capacity
 - Level Sensor connected to the BMS.
 - Tank Gauge Alarm set at 85% capacity connected to the BMS.
 - Level Alarm to control panel at 90% capacity connected to the BMS.
 - Mechanical Overflow Prevention Valve at 95% capacity
 - Leak Detection Probes connected to the BMS.
- The ESG will be housed within proprietary steel container units with integral 16,000 litre belly tank. In summary the belly tanks will have the following protection measures:
 - Bund designed to provide 110% containment.
 - Tank level gauge.
 - High and low level alarms connected to the BMS.
 - A pressure delivery over-fill prevention valve.
 - Leak detection alarms connected to the BMS.
 - The generator sets will have pressure relief valves to prevent over pressurisation of fuel supplied from the belly tanks.
 - An Engine Control Unit will provide instantaneous fuel consumption data which will be automatically collated to calculate total fuel consumption over time.
- All tanks, pipes and valves are designed to appropriate industry standards and flanged connections between pipes are kept to a minimum by the proximity of the tanker fill point as detailed within the BAT Assessment document.
- Fuel infrastructure is situated over hardstanding with drainage which passes to an oil interceptor;
- Fuel tank filling will be carried out by trained fuel tanker drivers.
- Fuel integrity is maintained with each generator housing a fuel polishing unit to constantly circulate and filter the fuel.

- The external area where the ESGs and associated fuel storage will be located is designed to provide adequate containment volume achieved by tertiary containment measures, i.e. surface hardstanding, oil interceptor, drainage within the fuel storage area, kerbing.
- 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 interceptor; relevant staff will be suitably trained in these procedures. These include but are not limited to Spill Response Plan, Planned preventative maintenance (PPM) regime and Fuel Delivery Standard Operating Procedures (SOP).
- Significant fugitive emissions and odours and noise are not considered likely with respect to operation of the generators at the data centre and measures will be employed to prevent such emissions.
- An acoustic assessment completed for the proposed data centre found 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.
- The correct design, operation and maintenance of the generators will ensure the lowest possible consumption rate of fuel.
- Operation of the generators will not produce significant amounts of waste.
- In accordance with the EMS, procedures will be in place for the regular inspection and maintenance of storage areas and associated infrastructure. Any accidents or incidents and the action taken to rectify these, will be recorded.

Therefore, there is unlikely to be a significant environmental impact as a result of the operation of generators at the data centre. The data centre operator is fully committed to ensuring the highest standards are met and will undertake its activities in a manner consistent with best industry practices.