EASR Permit Application

Prepared by: Arthian Ltd

For: HFD Construction (Operator Data Vita)

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Initials	Name	Position
NC	[redacted]	Senior Environmental Engineer
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1. Introduction

1.1 Background

HFD Construction is currently responsible for the expansion of the DV1 data centre operated by DataVita Ltd located at a site at 1 York Road, Chapelhall, North Lanarkshire. As part of the expansion, an additional 10 engines will be installed at the site to provide standby power to the data centre in the event of a failure in the mains electricity supply. The total installed thermal input capacity of the 10 engines, in combination with the 2 engines already present at the site, is understood to exceed 50MWth. Given this, the site will require a Permit, issued by the Scottish Environment Protection Agency (SEPA) under the Environmental Authorisations Scotland Regulations (EASR). Operation of combustion plant at the proposed scale, even in standby mode, falls under Schedule 20 to EASR:

> *"CHAPTER 1: Energy industries*
>
> *1. Combustion of fuels in installations with a total rated thermal input of 50 MW or more."*

Industrial activities falling under EASR are required to hold a permit issued by the competent authority (the national environmental regulator) so that they can be operated legally. It is noted that for the purposes of EASR, the operation of a regulated facility includes the period during which it is commissioned, so a permit is required well in advance of the normal commercial operation of the facility.

1.2 Site Permitting History

The site has operated two Generators on the site since mid-2016, each of which has a 4.7 MW rated thermal input capacity and is fuelled using Hydrotreated Vegetable Oil (HVO). The generators fall within the scope of the Medium Combustion Plant Directive (MCPD) which was enacted in Scotland via the Pollution Prevention and Control (PPC) Regulations. However, as the generators are considered existing plant (they were put into service prior to December 2018), they have not required a permit to operate.

1.3 Permitting Guidance

The following guidance documents are considered the most applicable to the proposed activity and have been referenced in the preparation of this document. It is noted that there is currently a gap in guidance available for sites undertaking the same activity as DataVita, i.e., operating a collection of MCPs with a total rated thermal input greater than 50 MW. Guidance for Large Combustion Plant (LCP) is intended for sites operating combustion plant with higher rated thermal inputs rather than aggregations of smaller combustion sources (such as the 12 engines in this proposed installation). Assessment of site operations has therefore been compared to LCP guidance but with comment provided where the guidance is deemed not applicable. Consideration of the requirements of the Medium Combustion Plant Directive (MCPD) has been included where appropriate.

Table 1-1: Permitting Guidance

Reference	Title
LCP BREF	The European Commission's Best Available Techniques (BAT) Reference Document for Large Combustion Plant (2017).
LCP BAT Conclusions	The European Commission's Best Available Techniques (BAT) Conclusions for Large Combustion Plant (2021).
MCPD	Medium Combustion Plant Directive (EU) 2015/2193 (2015)

1.4 SEPA Pre-Application Discussions

Discussion with SEPA Officer [redacted] in May 2026, agreed that an application for a new EASR permit would be made, covering all 12 combustion plant at the site.

It was also agreed that although the site will be permitted as combustion plant with aggregated thermal input greater than 50 MW, that the site consisted of a large grouping of medium combustion plants (MCPs) and not a large combustion plant (LCP). As a result, the LCP BAT Conclusions are not strictly applicable, but with a lack of alternative guidance available, this would be used where sensible when considered BAT for the site. Deviations from LCP BAT, where appropriate, will be justified.

1.5 Installation Boundary

The permitted installation consists of the Stationary Technical Units (STUs), where the permitted activities take place, and any Directly Associated Activities (DAAs) linked to the permitted activities with the potential to impact the environment. The site location and Installation Boundary can be found within Appendix A of this document.

1.5.1 Stationary Technical Units (STUs)

The STUs associated with the installation are noted below:

Table 1-2: Stationary Technical Units

STU	Non-Technical Description
Two existing generators	Two existing 4.7 MWth generators, commissioned in 2016, located to the south of the DV1 data centre site. Both units are identical and are fuelled with Hydrotreated Vegetable Oil (HVO) provided from underground bulk storage tanks via two above ground service tanks. The generators are housed within acoustically treated and internally bunded containers. Currently, the engine exhausts are routed horizontally terminating at release points at the south of the roof of each unit's container. As part of the proposed permit variation, these exhausts will be redirected to vertical flues extending to a height 3m above the containers.

STU	Non-Technical Description
Ten new generators	Ten new HVO generators (eight with rated thermal input of 5.69 MW, two with 5.71 MW rated thermal input), to be commissioned during the Summer of 2026. The new generators will be located to the east of the site within a large, fully bunded enclosure. Each new generator will be housed in individual self-contained unit within the bund. Each unit will have its own structural, integral fuel tank with a working capacity 41,350 litres of fuel, which will again be HVO. The new units are each fitted with their own vertically discharging, 3 m roof mounted stack. The current intention is to operate the generators as stand-by units only, but this may be subject to change in future.

Please note that this permit application concerns the installation of ten new generators to supplement the two existing units at the site. The initial implementation will see nine new generators added with the tenth to follow when necessary, according to the forecast growth in the electrical demand of the DV1 data centre. Some of the schematics and drawings supplied with this application therefore show nine new generators with the location of the additional unit also shown for reference. All assessments of the environmental impact of the installation have been based on the worst-case scenario, with all twelve generators installed (two existing and ten new).

1.5.2 Directly Associated Activities (DAAs)

The DAAs associated with the installation are:

DAA	Non-Technical Description
Selective Catalytic Reduction (SCR) Abatement Systems	Initially six of the new generators will be fitted with roof mounted SCR units. These units utilise AdBlue (a urea solution) and a catalyst to reduce emission of oxides of nitrogen (NO_x) produced by the engines during combustion. The remaining four new units, and the two existing generators will also be retrofitted with SCR abatement systems once additional capital expenditure is approved. This upgrade is scheduled to take place within three years from permit issue.
Chemical Storage	AdBlue for the SCR systems will be stored in 1,250 L bunded tanks housed adjacent to each generator unit fitted with SCR and within the new bunded area. Oils and coolants are not stored onsite; these are brought to and removed from site by DataVita's approved service provider specifically for testing and maintenance. Hazardous materials, excluding fuel and AdBlue, are stored in a lockable Control of Substances Hazardous to Health (COSHH) cabinet with an inbuilt 25 L sump capacity.
Fuel Storage	The site has four 91,027 L underground bulk fuel tanks, although only one of these is in service; three have never been used. These provide bulk fuel storage for the two existing generators. Fuel from the bulk tank is transferred to two 6,520 L above ground service tanks from which the generators' fuel system draws fuel. The systems are fitted with leak detection and secondary containment systems detailed in Section 2. The planned 10 new generators are all to be fitted with individual 41,350 L fuel tanks built into the generators' containers. The systems are fitted with secondary containment as detailed in Section 2.

2. Process Overview

The following sections provide process descriptions for the key aspects of the installation. The following Appendices provide drawings of the installation to support the application:

- Appendix B: Site Layout
- Appendix C: Site Drainage Plan
- Appendix D: Site Emission Point Plan

The Site Condition Report also submitted as part of this application contains further information of surfacing within the installation.

As identified previously, this permit application concerns the installation of ten new generators to supplement the two existing units at the site. The initial implementation will see nine new generators added with the tenth to follow when necessary, according to the forecast growth in the electrical demand of the DV1 data centre. Some of the schematics and drawings supplied with this application therefore show nine new generators with the location of the additional unit also shown for reference. All assessments of the environmental impact of the installation have been based on the worst-case scenario, with all twelve generators installed (two existing and ten new).

2.1 Power Generation

2.1.1 Generation Capacity

The standby generation system has been designed to support an electrical demand of 21.6MW from the data centre (at full operational IT capacity) whilst maintaining appropriate resilience through N+1 redundancy.

A range of generator configurations was assessed. The proposed arrangement comprises ten 2.2 MW (electrical) generator sets, providing sufficient capacity to meet the site demand with one generator available as a standby reserve. As noted above, nine generators will be installed initially with the tenth added at a later date as the data centre electrical demand increases to the 21.6MW maximum.

This approach offers several advantages:

- Provision of N+1 resilience without requiring duplication of the full site load.
- Improved operational flexibility and maintenance capability.
- Reduced redundant capacity when compared with larger-unit solutions requiring equivalent resilience provisions.
- Enhanced availability through the use of multiple independent generating units.
- Improved procurement flexibility in a market experiencing high demand for standby generation equipment associated with data centre and AI infrastructure development.

The proposed configuration is considered to provide a proportionate and efficient balance between resilience, resource efficiency and operational requirements.

2.1.2 Existing Generators

The site has two generators already installed on site, both manufactured by FG Wilson. These are denoted as 1A and 1B in site documentation and both have 4.7 MWth Perkins engines, with information provided below.

Table 2-1: Existing Engine Identification Information

Plant Number	Manufacturer	Engine Model	Serial Number
1A	Perkins	4016-61TRG3	FGWPST04EADH00253
1B	Perkins	4016-61TRG3	FGWPST04CADH00276

2.1.3 New Generators

The ten new generators planned for the site are all manufactured by Cummins. There are to be two Cummins C3000 D5 Generators fitted with Cummins QSK78-G24 engines (5.71 MW net rated thermal input), and eight Cummins C3000 D5e Generators fitted with Cummins QSK78-G16 engines (5.69 MW net rated thermal input), of which an initial six with be fitted with Selective Catalytic Reduction (SCR) for NO_x abatement. It is currently planned to retrofit the remaining six engines (four new and the two existing engines within three years of the permit being granted.

Table 2-2: New Generator Set Identification Information

Plant Number	Engine Manufacturer	Engine Model	Serial Number
2.	Cummins	QSK78-G24	E24D011227
3.	Cummins	QSK78-G24	E24D011217
4.	Cummins	QSK78-G16	TBC
5.	Cummins	QSK78-G16	TBC
6.	Cummins	QSK78-G16 (w SCR)	TBC
7.	Cummins	QSK78-G16 (w SCR)	TBC
8.	Cummins	QSK78-G16 (w SCR)	TBC
9.	Cummins	QSK78-G16 (w SCR)	TBC
10.	Cummins	QSK78-G16 (w SCR)	TBC
11.	Cummins	QSK78-G16 (w SCR)	TBC

The current intention is to operate the generators as stand-by units only, but this may be subject to change in future. It is therefore planned than this initial application will seek authorisation for standby operation only with each plant limited to under 500 hours operation.

2.2 Selective Catalytic Reduction (SCR) Abatement Systems

SCR systems will initially be fitted to six of the new generator systems. The SCR systems utilise AdBlue (a readily commercially available solution of urea and deionised water) sprayed into the exhaust stream. Here the urea vaporises and breaks down into ammonia, which then reacts with oxides of nitrogen (NO_x) in the presence of a catalyst (in this case, a ceramic solid extrudate with vanadium (V) oxide coating), to reduce the NO_x into N_2 and water.

The SCR systems incorporate upstream and downstream NO_x monitoring, exhaust gas temperature and pressure monitoring and automated AdBlue dosing. A dedicated APROVIS Programmable Logic Controller (PLC) will continuously adjust the AdBlue injection rates in response to engine load and measured exhaust conditions, optimising the NO_x reduction performance of the system whilst minimising catalyst fouling and preventing ammonia slip (i.e., unreacted ammonia exiting the exhaust). To inform the system, dosing curves are submitted into the PLC for different engine load conditions.

The system is designed to operate between 320 – 490˚C, with temperature directly impacting the conversion performance of the system. When operating outside the design temperature, the conversion rate of the system is negatively affected. Exceeding the top end of the operating temperature range can reduce the service life of the system through premature aging or potential irreparable damage to the honeycomb structure of the catalyst.

In due course DataVita will retrofit comparable SCR systems on the remaining six generators as well, as capital expenditure budgets allow. It is currently anticipated that this upgrade is scheduled to take place within three years from permit issue.

Appendix E provides an example P&ID for the SCR systems being installed.

2.3 Fuel Systems

2.3.1 Existing Generators' Fuel System

The existing generators, denoted as Plant 1A and 1B in Table 2-1, have a partially common fuel system. Each generator is fitted with a service fuel tank (capacity 6,520 L, enough for each generator to operate for a minimum of 12 hours at full load). The service tanks are double skinned vessels housed just outside the generators'' containers. They are topped up via a duty/standby pump system drawing fuel from an underground fuel tank. The site has four existing 91,027 L carbon steel underground fuel tanks, of which only one is in service (the other three have never been used).

When the service tanks are required to be filled, fuel is pumped through a common fuel manifold and directed via actuated valve into the correct tank. If low level is reached in a service tank, a float within the tanks will signal the fuel system control panel that fuel level is low. This will initiate a start signal to the fuel pump control panel and open the actuated valve for the tank(s) with low fuel level.

As the two generators are both fed from the same underground tank, they have a common fuel fill point, the location of which is shown in the bottom right corner of the Figure 2-1 below. It consists of a 2" connection for fuel tanker deliveries to be gravity fed into the tanks. As the system is gravity fed due to the tank being situated underground, filling from a standard large tanker of capacity 38,000 L takes approximately 4 hours.

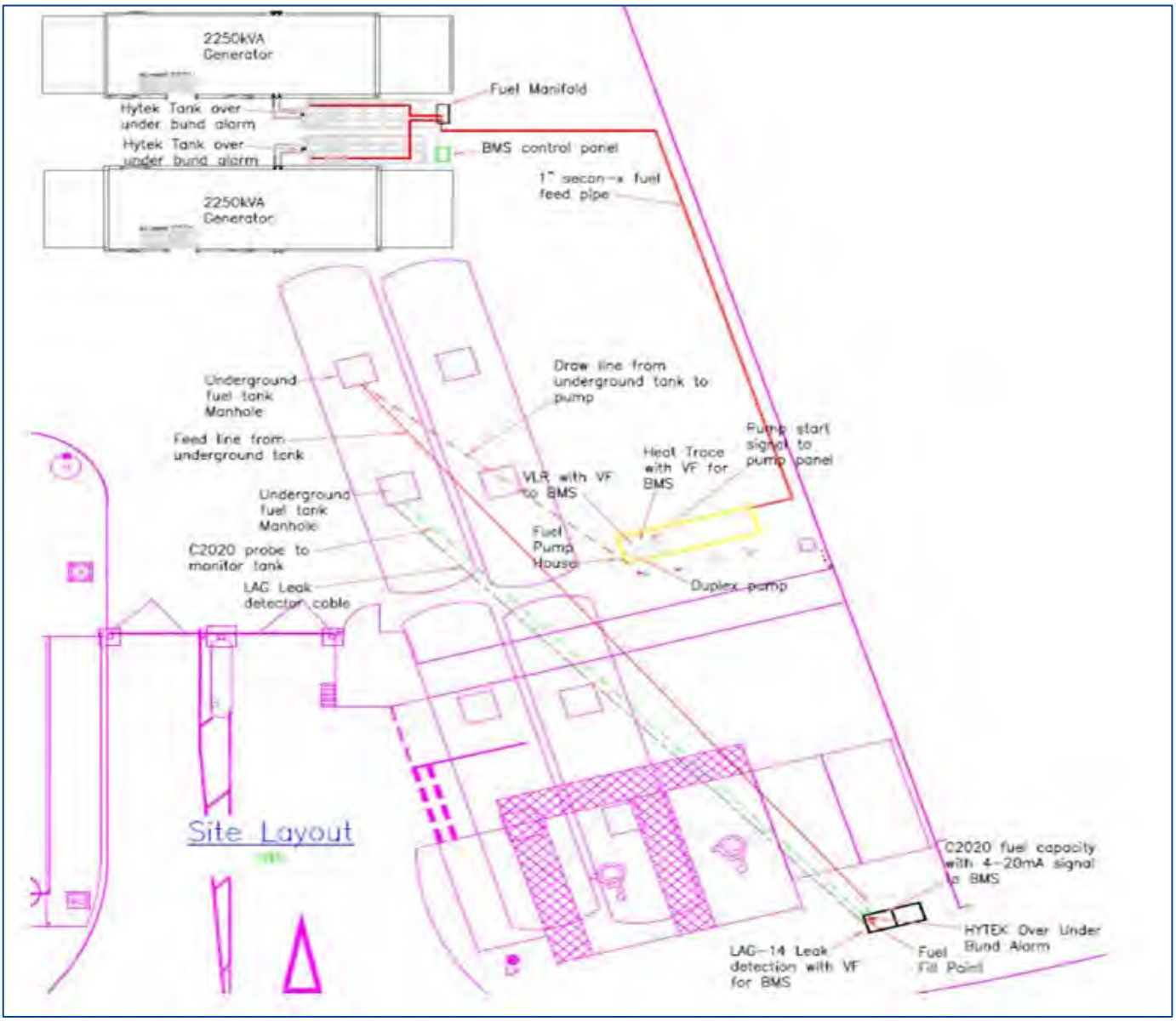

Figure 2-1: Existing Generator Fuel System[1]

The fill point has a C2020 tank alarm system which provides the user with a reading of the tanks contents. At the fill point there is a Hytek over under alarm for the tanker driver to operate before he fills the underground tank. Once the tanker driver has tested the fill alarm, they will connect his fuel hose to the 2" fill point. The Hytek alarm has a cable with a switch (normally open/close on rise) set to a level of 95% of the contents of the fuel tank this will alarm as the fuel reaches the float and close the switch, the same happens in reverse for the low level switch, fuel drops to 25% and the normally open switch closes to send a signal for low fuel to the control panel.

All underground tanks are double skinned to provide additional protection against leaks. All pipework in the fuel system, both above and below ground, are SECON-X double walled pipes. This is a flexible pipe system with a stainless-steel primary pipe designed especially for fuel systems. The pipework is also fitted with vacuum leak detection system. This is an under-pressure leak detector for the continuous monitoring of double skinned pipes.

[1] DT Gen - Fortis Data Centre Fuel System User Guide (pg. 3)

The underground tank is fitted with an LAG-14 ER Leak Detector. This system uses a container filled with liquid mounted in the manhole chamber to the underground tank. The container is connected to a chamber that wraps around the underground tank. This chamber and container are filled with a liquid. If the underground tank cracks this will alter the level of the liquid in the LAG container that will activate a volt free contact back to the fill point mounted LAG-14 panel.

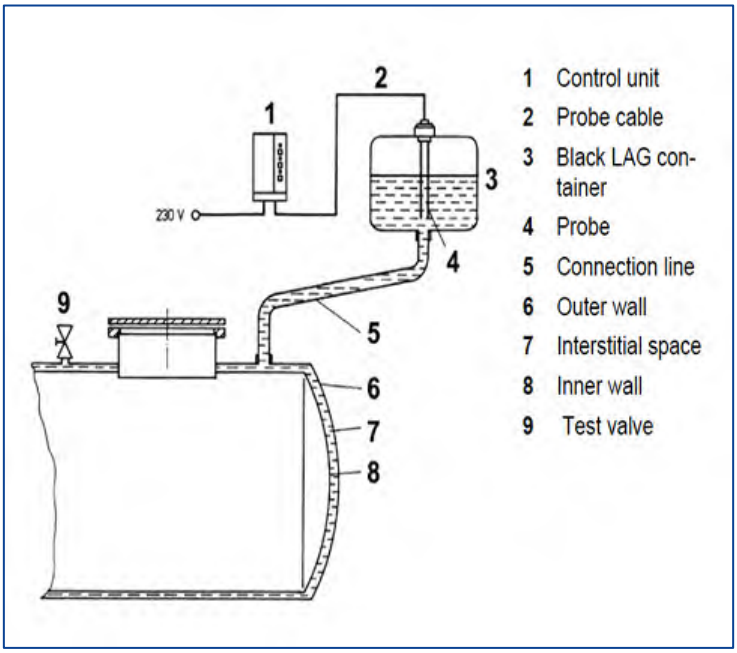

Figure 2-2: LAG-14 ER Leak Detector[2]

2.3.2 New Generators' Fuel Systems

The new generators, which will be located within a new concrete bund located to the east of the DV1 data centre building, will each have an integrally bunded, totally enclosed bunded unit (TEBU) with top outlet as a fuel tank. The working capacity of each tank is 41,350 L. They are designed and certified to OFS T200 and BS799-5:2010 standards for fixed metal tanks. The tanks each have bunding sized for 110% of the tank's contents built into the container. The tanks are each fitted with:

- An overflow vent directing any overflowing fuel into the bund.
- An overfill protection valve that restricts the flow of fuel into the tank once the appropriate fuel level within the tank has been reached.
- An Ocio Gauge for continuous level monitoring.
- High- and low-level alarms, in addition to a bund alarm.

At present, the new units will not have a centralised fuel system like the two existing generators. The systems will be fuelled completely independently with each unit having its own fill point located within the overall engine bund. DataVita is currently investigating the installation of a fuel distribution system which will feed fuel to each generator from a single fuel delivery point. Both the delivery point and the distribution system, if installed would be located entirely within the overall engine bund.

[2] DT Gen - Fortis Data Centre Fuel System User Guide (pg. 7)

2.4 Chemical Storage

The main chemical used on site is AdBlue. This will be stored in 1,250 L bunded tanks housed adjacent to each generator container fitted with SCR and within the overall engine bund. When the two existing generators, located to the south of the DV1 site, are equipped with SCR, a new small bund will be constructed adjacent to the generators to accommodate the AdBlue tanks for these units.

Oils and coolants are not stored onsite; these are brought to and removed from site by DataVita's approved service provider specifically for testing and maintenance.

Hazardous materials, excluding fuel and AdBlue, are stored in a lockable Control of Substances Hazardous to Health (COSHH) cabinet with an inbuilt 25 L sump capacity.

3. Environmental Management System (EMS)

3.1 Overview

3.1.1 Environmental Management System Development

DataVita is committed to the use of Best Available Techniques (BAT) for the management of the operation of the site and its resultant environmental impacts. To this end, DataVita has an ISO9001, 14001 and 45001 accredited integrated management system, which will be used to manage the environmental aspects of site operation, including the standby power engines which are subject of the present application. Having this accreditation in place means that DataVita has an externally audited means of establishing, implementing, maintaining, and continually improving an EMS, helping the company to manage its environmental responsibilities in a systematic and effective way.

3.1.2 EMS Structure

The DataVita EMS provides a practical framework for the ongoing monitoring and management of the environmental performance of the installation and will be collated in a comprehensive Environmental Manual comprising the key system elements, including:

- An environmental policy.
- A register of relevant environmental and related legislation.
- An Environmental Impacts and Aspects register.
- The environmental management team structure, including role profiles and responsibilities.
- Environmental objectives, targets and Key Performance Indicators (KPIs).
- Environmental procedures and associated work instructions.
- Records, including relevant records of monitoring and training.
- An environmental improvement programme.

3.1.3 Senior Leadership Commitment

Responsibility for the environmental, quality and health and safety management of the installation will ultimately lie with the site's senior leadership team. As well as providing a commitment to the continual improvement of the environmental performance of the installation, once commissioned, the senior leadership team will also ensure that adequate financial and human resources are available to assure its safe and sustainable operation.

Reviews of the EMS, once it has been implemented, will be undertaken at least once per year by representatives of the senior leadership team to guarantee its continuing suitability, adequacy and effectiveness. That the EMS is up to date and represents best practice will be further assured by an external auditing process.

3.1.4 Environmental Aspects and Impacts

In developing the EMS, a comprehensive appraisal was undertaken of the DataVita organisation, its processes and products to identify all elements of the operation of the business that interact with the environment either directly (through on-site processes) or indirectly (through the use of externally-sourced materials, goods and services). These are referred to as the site's environmental Aspects and Impacts.

The aspects were to be assessed systematically to determine their overall environmental significance. This assessment considered both the likelihood and the potential severity of the occurrence of each aspect to create an overall risk profile for the environment, the business and for interested parties, including the local community and other stakeholders. The scope, methodology and results of this assessment were recorded in the Environmental Aspects and Impacts Register, which will be a fundamental component of the Environmental Manual. For each aspect considered to be significant (including, by default, all aspects subject to regulatory or legislative compliance), the controls required to manage the aspect were be identified and recorded in the register.

The register is subject to regular review by DataVita, as a minimum annually, to ensure its continued relevance to the operations at the site and to the legislative and regulatory requirements to which the business is subject. The review process is also be triggered by the occurrence of any significant environmental incident or by any planned substantive change to the site.

3.1.5 Objectives and Targets

Building on the risk profile for the installation identified in the Environmental Aspects and Impacts Register, a range of Objectives and Targets were established for the installation and as such for the site as a whole. Environmental Objectives represent the long-term aims of the business (e.g. the minimisation of energy and water use), with the principal objectives summarised in the Environmental Policy as its key commitments. The EMS also includes a range of Environmental Targets, which are the specific and measurable expression of the Objectives and the means by which progress of the site against the Objectives is monitored. The most important targets for the sustainable operation of the business will be reinforced in the EMS as Key Performance Indicators (KPIs), which will be the focus of careful and ongoing management control.

The EMS objectives, targets and KPIs are reviewed as part of the regular review of the system by the senior leadership and environmental management teams. Areas identified by the EMS review and target setting process as presenting risk of non-compliance are be prioritised as action items in an improvement programme and included in the site's capital expenditure programme where necessary.

3.1.6 Operational Procedures

DataVita have developed and continue to refine a range of procedures for the identification, assessment and management of the most significant operational aspects of the activities to be undertaken at the site. These operational procedures are designed to facilitate and monitor the safe, efficient and sustained operation of the site, and to support its ongoing progress against the defined Objectives and Targets.

The system procedures and controls are subject to regular review so that they remain relevant both to the operation of the site and to the legislative environment in which it operates. Procedures are also to be implemented to ensure that the personnel responsible for any activities with the potential for significant environmental impact are both qualified and competent to carry out their duties. Following the issue of the permit for the installation, the procedures will be revised and extended where necessary to address the requirements of the permit specifically.

3.1.7 Competence, Resources and Training

DataVita has an ongoing commitment to staff training and assesses the training and development needs for its staff as part of the performance review process, and all employees receive training relevant to their job role. Line managers are responsible for ensuring employees receive appropriate training, with refresher training provided as the site and legislation relevant to its operation evolve. Records of training are kept for all employees.

As part of the ongoing commitment to best practice within the EMS, the training programme are revised to ensure employees receive enhanced environmental awareness training, so that the implications of the permit for their actions and the site's activities are properly understood. This training will explicitly address:

- Awareness of the regulatory implications of the permit for the site and for staff activities.
- Awareness of the potential environmental effects of the installation under both normal and abnormal circumstances.
- Awareness of the need to report deviation from the permitted activities.
- Awareness of how to prevent environmental incidents, how to minimise their effects should they occur and of the appropriate actions needed to report the nature and scale of incidents.

Procedures for assessing the training needs of contractors working on the site will also be included in the EMS where necessary, including both specialist contractors and other non-permanent site workers. Procedures will be developed for the control of activities undertaken by contractors and basic environmental procedures are communicated to contractors as part of site induction process.

3.1.8 Maintenance

The operations at the installation will be subject to a preventative maintenance programme that covers all key plant and ancillary equipment. Once the site is commissioned, operating procedures will be developed to assist in the identification, review and prioritisation of maintenance activities based on manufacturer recommendations for individual plant items. Environmental considerations will be integral to the scheduling of maintenance activities.

The site will also operate a fault-reporting system to allow all employees to identify equipment in need of repair or other reactive maintenance. Fault records will be used to prioritise maintenance schedules further and will be subject to ongoing management review in order to assist with production scheduling, asset management and the definition of capital expenditure programmes.

3.1.9 Accidents and Incidents

As part of the design and development of the installation, an assessment of the risk presented to the environment by accidents occurring at the site has been undertaken. This assessment is provided in Section 4, which identifies the likelihood and consequences of a range of potential accident scenarios. The assessment incorporates environmental considerations alongside provisions aimed at the protection of health and safety for on-site staff and the general public.

3.1.10 Non-compliance

Written procedures for the handling, investigation and reporting of actual or potential non-compliance with regulatory requirements are defined within the EMS, along with formal mechanisms for the management of complaints relating to the operation of the installation, should these arise.

3.1.11 Monitoring

Monitoring of the operation of the installation will be undertaken to ensure that it is operating as intended, and to demonstrate that the environmental impact of the site is controlled adequately, in line with the required performance standards that will be stipulated in the site's permit. Further details of the monitoring that will be undertaken at the site are provided in Section 6.5 of this application.

Relevant monitoring data will be used by DataVita to assess the overall performance of the site on a day-to-day basis by comparison with specific Environmental Objectives, Targets and KPIs. Long-term tracking of data will also be undertaken to identify trends in the performance of the plant and to allow targeted selection of areas for improvement.

Procedures will be implemented at the site which address how the performance of relevant plant and equipment is to be assessed, including through emissions monitoring, to ensure that the installation will function as intended and that faults will be detected in a timely manner. Where quantitative monitoring data are used to verify compliance with the requirements of environmental legislation (e.g. monitoring of point source emissions to air), the collection and analysis of these data will be accomplished only by appropriately qualified and registered employees or third-party contractors.

3.1.12 Records

Procedures in the EMS identify and control the collection, retention and disposal of data, documents and other relevant evidence. The controlled documentation includes the environmental manual, registers, procedures and other primary documentation as part of the system. Individual copies of these documents are identified and issued to company personnel as appropriate. All documentation is subject to an annual review by the DataVita management team to ensure its continued relevance.

3.1.13 Audit and Review

The EMS includes a defined internal audit programme designed to assess the operational compliance of the installation with the system procedures, along with its compliance with relevant regulatory and legislative obligations. The audit programme will specifically address the ongoing compliance of the installation with its permit, once issued.

Audit of the installation will inevitably identify opportunities for further improvements of the management and operational practices at the site. The audit programme includes an audit scope, the frequency of audits, and the team responsible for conducting the audits. The outcome from all audits is recorded and maintained on file and will form an integral part of the Management Review and, thereby, continual improvement.

Management reviews occur at least annually and assess the effectiveness, adequacy and ongoing suitability of the EMS. The reviews will also serve as the mechanism by which the environmental objectives, targets and KPIs are reviewed, revised and validated.

3.1.14 Decommissioning

Site Closure Plan

Decommissioning activities for the installation will be planned and implemented carefully in order to minimise the potential for environmental impact through the control of potential pollution pathways including: solid and liquid waste, surface water, dust, odour, noise, heat and vibration.

The following table summarises the key stages of the proposed Installation Site Closure Plan, which is at present in a high-level draft form and will be completed once the commissioning of the installation is complete.

Stage	Activities
Coordination	DataVita will appoint a Site Closure Project Manager and support team to co-ordinate the decommissioning process. SEPA will be notified of the intention to surrender the Permit. The team will develop a working plan to determine which parts of the decommissioning process can be performed by the operator and which will require the support of specialist external contractors.
Data Gathering	DataVita will collate data to form a decommissioning data pack, including: • the Initial Site Condition Report • other relevant quantitative investigations of site condition • operational records • site monitoring programmes • site plans • building surveys • environmental incident reports • the Raw Materials Where inventories and documents have been updated during the lifetime of the permit, this information will be added to the data pack to reflect current Site information.
Planning	DataVita will develop a detailed decommissioning programme based on the data pack, to identify the infrastructure, process equipment and raw materials to be removed etc. This programme shall include an assessment of the options available for re-use, recycling and disposal of decommissioned materials. Testing and studies will be arranged as required, e.g. soil and groundwater monitoring. Relevant local stakeholders will be consulted during the planning process.
Hazard Assessment	Once the plan has been developed, DataVita will undertake an assessment of the potential environmental hazards associated with each stage of the decommissioning process.
Hazard Control	Prior to commencing the decommissioning process, DataVita shall prepare a set of method statements to control the decommissioning works. This stage also includes the preparation of pollution prevention measures/ environmental management procedures to ensure the decommissioning works has a minimal impact on the environment including (but not limited to): emergency response procedures, provision of environmental protection products and avoidance of surface water contamination.
Execution	DataVita shall mobilise suitably qualified personnel and licensed contractors to undertake the decommissioning works. Contractors shall prepare method statements and DataVita will ensure that the decommissioning programme is followed. Documentary evidence of the decommissioning process will be kept and made available to SEPA on request.
Permit Surrender	On completion of decommissioning activities, DataVita shall surrender the EASR permit, supplying SEPA with a comprehensive Site Surrender to demonstrate that the Site has been returned to a 'satisfactory state'.

Measures to Prevent Site Deterioration

Operations during the productive life of a regulated installation should not lead to any deterioration of the site, provided Best Available Techniques are applied appropriately in the design, operation and management of the installation. The following summarises the operational and design measures to be implemented in the installation to minimise its potential to cause site deterioration, which may necessitate remediation at the point of decommissioning.

Environment Management

The EMS detailed in the preceding sections will be key in minimising the potential impacts of operations on the site condition.

- Appropriate staff training designed to ensure that personnel can:
  - Operate equipment functions in line with its design specifications, and report deviations as appropriate for investigation and repair;
  - Promptly report and address spills and leaks; and
  - Suggest and action operational improvements where appropriate.
- An asset register to ensure that all items of equipment are properly monitored, recorded and subject to ongoing condition assessment;
- A preventative maintenance programme designed to minimise the risk of plant failure and the potential consequences of such failure;
- Live inventories of waste and raw materials; and
- Procedures to ensure that process change or reconfiguration is managed effectively and documented fully.

Process Design

The following highlights the key elements of the design which will minimise the potential environmental impact associated with its decommissioning and subsequent dismantling:

- Underground infrastructure in the installation will be limited to the existing fuel system for the original two generators and the site's separate surface water and foul drainage systems.
- All above ground areas used for the storage of potentially polluting materials have been designed following best practice guidance for secondary containment (bunds, spill kerbs, etc).

3.2 Specific Management Plans

In addition to the management documents and processes described previously in this section, the nature of the installation warrants some site-specific additional management plans. These are described elsewhere in this document and include:

- Startup / Shutdown information, see Appendix F - Functional Design Specification.
- Accident Prevention and Mitigation Management Plan, see Section 4.

4. Accident Prevention and Mitigation

4.1 Management Control

Operations at the Installation are subject to careful operational control and managed through the use of accredited Quality and Environmental management systems.

The management of risk is an inherent part of the day-to-day operation of the Installation. An outline accident risk assessment and management plan for the proposed changes to the Installation is provided below.

Risk assessments for the proposed variation have been conducted in accordance with the Dangerous Substances Explosive Atmoshpere Regulations 2002 (DSEAR). Potential ignition sources have been identified with control measures regarding the minimisation of potential for ignition discussed and any further recommendations raised. These further recommendations have been considered by DataVita and implemented where possible.

DataVita has also conducted HAZOP studies for all new plant to identify any potential hazards and establish suitable process control measures to mitigate these.

4.2 Identifying Hazards

As the Installation currently operates an EMS, a comprehensive appraisal of the organisation, its processes and products has already been undertaken to identify all elements of the operation of the business that interact with the environment either directly (through onsite processes) or indirectly (through the use of externally sourced materials, goods or services); these are the Installation's Aspects and Impacts.

The aspects have been systematically assessed to determine their overall environmental significance. This assessment takes into account both the likelihood and potential severity of the occurrence of each aspect to create an overall risk profile for the environment, the business and for interested parties, including the local community and other stakeholders. The scope, methodology and results of this assessment are recorded in an Environmental Aspects and Impacts Register, which is a fundamental component of the Installation's EMS. For each aspect considered to be significant (including, by default, all aspects subject to regulatory or legislative compliance), the controls required to manage the aspect have been identified and recorded in the register.

The register is subject to review by DataVita, as a minimum annually, to ensure it is continually relevant to the operations at the Installation and to the legislative and regulatory requirements to which the Installation is subject. The review process is also triggered should any significant environmental incident occur or by any planned substantive change to the Installation.

4.3 Nearby Potential Receptors

4.3.1 Human Receptors

There are a number of human health receptors within 2 km of the site. Houses at the southern edge of Chapelhall are located within 100m of the site to the north. No medical facilities or care homes are located within 2 km of the site. There are multiple schools within that area however, including Chapelhall Primary School, Calderbank Primary School, Corpus Christi Primary School, Christ the King Catholic Primary School and Holytown Primary School. The figure below shows these receptors in relation to the site.

Figure 4-1: Human Health Receptors

4.3.2 Environmental Receptors

Emissions from the facility also have the potential to impact receptors of ecological sensitivity. To support an air emission impact assessment the Proximity Screening tool[3] was used to identify ecological receptors within the relevant screening distance from the Site, as outlined in SEPA guidance[4].Use of the tool for HVO fuel and 50-100MW total thermal input capacity indicated a 7km screening distance. The below ecological designations were therefore identified for inclusion in the assessment. These receptors were also therefore considered relevant to the accident risk assessment.

[3] MCP screening tool | APIS
[4] Air emissions risk assessments | Beta | SEPA | Scottish Environment Protection Agency

- Lady Bell's Moss Site of Special Scientific Interest (SSSI); and
- Hamilton Low Parks SSSI.

Figure 4-2: Environmental Receptors Map (Taken from Appendix G)

4.4 Assessing the Risks

As discussed, the Aspects and Impacts Register that forms an integral part of the Installation's EMS considers a wide range of potential hazard scenarios resulting from both normal and abnormal operating conditions. The register includes an estimate, for each potential environmental accident scenario, of:

- Likelihood – the probability of the event taking place;
- Severity – the potential environmental impact as a result of the event occurring; and
- Overall risk to the environment – through combination of likelihood and severity.

A ranking system is used that attempts to objectively quantify each of these parameters. The tables below describe the ranking systems for the likelihood, severity and overall risk, respectively.

Score	Category	Range
1	Extremely unlikely	Incident occurs less than once in a million years
2	Very unlikely	Incident occurs between once per million and once every 10,000 years
3	Unlikely	Incident occurs between once per 10,000 years and once every 100 years
4	Somewhat unlikely	Incident occurs between once per hundred years and once every 10 years
5	Fairly probable	Incident occurs between once per 10 years and once per year
6	Probable	Incident occurs at least once per year

Score	Category	Definition
1	Minor	• nuisance on site only (no off-site effects) • no outside complaint
2	Noticeable	• noticeable nuisance off-site e.g. discernible odours • minor breach of permitted emission limits, but no environmental harm • one or two complaints from the public
3	Significant	• severe and sustained nuisance, e.g. strong offensive odours or noise disturbance • major breach of permitted emissions limits with possibility of prosecution • numerous public complaints
4	Severe	• hospital treatment required • public warning and off-site emergency plan invoked • hazardous substance releases into water course with ½ mile effect
5	Major	• evacuation of local populace • temporary disabling and hospitalisation • serious toxic effect on beneficial or protected species • widespread but not persistent damage to land • significant fish kill over 5 mile range
6	Catastrophic	• major airborne release with serious offsite effects • site shutdown • serious contamination of groundwater or watercourse with extensive loss of aquatic life

Likelihood	Severity of consequence					
	Minor	Noticeable	Significant	Severe	Major	Catastrophic
Extremely unlikely	1	2	3	4	5	6
Very unlikely	2	4	6	8	10	12
Unlikely	3	6	9	12	15	18
Somewhat unlikely	4	8	12	16	20	24
Fairly probable	5	10	15	20	25	30
Probable	6	12	18	24	30	36

Following the scoring system identified, the scenarios have been placed in the following categories:

- Acceptable (or low risk) – unshaded;
- Acceptable if the risk is controlled as far as is practicable (medium risk) – orange; and
- Unacceptable (high risk) – red.

The estimated overall risks have been assessed to determine the appropriate measures to be undertaken to reduce the risk of accidents and minimise any resulting environmental impact. Appropriate measures may include:

- management techniques, such as standard operating procedures, and work instructions;
- preventative measures, such as abatement plant or secondary containment measures (e.g. bunds); and
- remediation techniques for use in the event of an incident, such as spill kits or drain covers.

The management programme in place at the Installation has emerged from this analysis and is focused on addressing the highest risk scenarios as a priority.

4.4.1 Techniques to Reduce Risks

The following general measures are undertaken to minimise the risk and effects of accidents:

- Procedures put in place to record all accidents and to mitigate their consequences. This includes procedures to:
  - Manage and control raw materials and wastes;
  - Control operations including start up;
  - Address non-conformities (including emergencies) and implement corrective or preventative actions; and
- Control and respond to leaks, spills and emergencies.
- The site Health and Safety management system addresses:
- Accident reporting;
- Audits including environmental elements; and
- Fire prevention and control and evacuation procedures.

- Specialised training needs are reviewed and identified on an annual basis which includes selected personnel being trained in emergency preparedness and response. This covers incident response techniques, including chemical and liquid spill containment, firefighting, control of releases to air and all activities with potentially significant environmental effects;
- Routine safety inspections are undertaken to ensure that equipment is suitable for use;
- A preventative maintenance programme has also been implemented at the installation to minimise the risk of unplanned stoppages and potentially serious incidents; and
- Internal audits are undertaken of all emergency and spill procedures.

4.5 Safety

Safe working practices are ensured by adherence to company procedures and systems. Pertinent features of these are summarised below:

- Hazardous materials – All materials used on site are assessed and controlled under COSHH. William Grant maintains an up-to-date inventory of all substances present on site. with particular attention given to any substances designated as Hazardous Materials and those that could have a significant environmental impact in the event of a spill or leak. Procedures are in place for checking raw materials and wastes to ensure compatibility with other substances with which they may accidentally come into contact.
- Staff training – Staff training includes techniques for the recognition and control of potential environmental incidents. Training is primarily role-specific and conducted and supervised by experienced senior staff. Contractors also receive training appropriate to their role on site.
- Process control – Process equipment is designed and operated to ensure that process parameters are controlled within acceptable limits. There are safe shutdown procedures for key processes.
- Permits-to-Work – The site operates a comprehensive pre-authorisation system for work to be performed on site by both employees and contractors, which takes into account the nature of the task and its location.
- Communication – Procedures are in place to avoid incidents occurring as a result of poor communication among operations staff during shift changes, maintenance or other engineering work that may be being performed.
- Incidents – Abnormal occurrences resulting in injury, loss of material, damage to buildings or equipment are subject to a reporting and investigating procedure that is designed to establish the basic cause and to prevent future recurrence.
- Near-miss reporting – The reporting and investigation processes utilised for abnormal occurrences is also used in the event of near-miss occurrences in which incidents are narrowly avoided.
- Process modifications – Proposed changes to plant and processes are assessed for potential health, safety and environmental impact by a Management of Change Procedure.
- Site Security – The site maintains a high level of security to reduce the risk of theft and vandalism.

Accident or abnormal release scenario	Receptor	Pathway	Likelihood of occurrence	Consequences of occurrence	Severity of occurrence	Risk Rating	Actions taken or proposed to minimise the chances of it happening	Actions planned if the event does occur
Major fire / explosion	Local population and ecological receptors	Wind blown dispersion	Unlikely (3)	Loss of containment of stored materials. Releases to atmosphere. Increase in waste generated. Noise and odour releases.	Severe (4)	Medium	Fire alarm systems installed and maintained. Automatic shutdown of engines in the event of abnormal operating conditions. Flammable chemicals segregated from the rest of materials storage and fitted with fire prevention measures. DSEAR assessments carried out for potential ignition sources.	Follow site Emergency Plan and inform relevant authorities
Minor fire	Local population and ecological receptors	Wind blown dispersion	Somewhat unlikely (4)	Minor release to atmosphere. Small amount of waste generated. Small release of odour.	Significant (3)	Medium	See above for major fire	See above for major fire
Failure to contain firewater	Local water courses. Ground and groundwater.	Surface water drainage system. Diffusion into ground.	Very unlikely (2)	Contaminated waters from fire control entering surface water systems or groundwater.	Severe (4)	Medium	Fire prevention measures as above. Process equipment located indoors where practicable. Process equipment located outdoors will be installed on impermeable surfacing. Any storage containers/tanks located outdoors will be within bunded areas, so retention of firewater for later safe disposal is possible to an extent.	Follow site Emergency Plan and inform relevant authorities

Accident or abnormal release scenario	Receptor	Pathway	Likelihood of occurrence	Consequences of occurrence	Severity of occurrence	Risk Rating	Actions taken or proposed to minimise the chances of it happening	Actions planned if the event does occur
Vandalism	Local population. Ecological receptors. Local water courses. Ground and groundwater	Wind blown dispersion. Surface water drainage system. Diffusion into ground.	Very unlikely (2)	Range of damage to equipment, waste and products and pipe work with consequent release to air / ground / drains / sewer.	Noticeable (2)	Low	Site security measures are in place including controlled access gates. Regular inspections of site take place.	Address any specific equipment damage. Reinstate and review security measures.
Flood	Local water courses. Ground and groundwater.	Surface water drainage system. Diffusion into ground.	Somewhat unlikely (4)	Range of damage to equipment, waste and products and pipe work with consequent release to air / ground / drains / sewer.	Significant (3)	Medium	Site layout has been optimised to reduce potential for future flood risk. The site is not located close to the coast nor any significant rivers and is ~140 m above sea level.	Inform SEPA. Take appropriate corrective and preventative actions to minimise environmental impact.
Fuel / oil spills from vehicles	Local water courses. Ground and groundwater	Surface water drainage system. Diffusion into ground.	Somewhat unlikely (4)	Uncontrolled release to drainage system/ ground / local surface water features	Noticeable (2)	Medium	Supervised offloading. Hardstanding in all areas used by vehicles. Interceptor in drainage systems.	Invoke spill containment procedures. Clean up according to COSHH data sheets and appropriate disposal arrangements.
Fuel spills during delivery	Local water courses. Ground and groundwater.	Surface water drainage system. Diffusion into ground.	Somewhat unlikely (4)	Uncontrolled release to drainage system/ ground / local surface water features	Significant (3)	Medium	Supervised fuelling. Interceptor in drainage systems.	Invoke spill containment procedures. Clean up according to COSHH data sheets and appropriate disposal arrangements. Inform SEPA. Take appropriate corrective and preventative actions to minimise environmental impact.

Accident or abnormal release scenario	Receptor	Pathway	Likelihood of occurrence	Consequences of occurrence	Severity of occurrence	Risk Rating	Actions taken or proposed to minimise the chances of it happening	Actions planned if the event does occur
Chemical spills during delivery	Local water courses. Ground and groundwater.	Surface water drainage system. Diffusion into ground.	Somewhat unlikely (4)	Uncontrolled release to drainage system / local surface water features	Noticeable (2)	Medium	Only chemical used in appreciable quantities is AdBlue. This is delivered directly into the tanks on each SCR unit.	Clean up spillage and transfer waste into appropriate containment for recovery or disposal.

5. Raw Materials and Water Use

DataVita will utilise a limited range of raw materials within the installation to support the operation and maintenance of the data centre's stand-by generators. This includes fuel, coolant, abatement chemicals, oils and greases. Only the materials used within the installation are noted below, not the data centre site as a whole.

The Site Layout, found in Appendix A, denotes the areas on site where these materials are to be stored.

5.1 Raw Material Selection

The two key raw material selection decisions which the site faced relate to the fuel utilised within the generators.

5.1.1 Fuel Type

Hydrotreated Vegetable Oil (HVO) has been selected as the primary fuel for the standby generators due to its significantly lower lifecycle greenhouse gas emissions when sourced from certified sustainable feedstocks, compared with conventional fossil-derived diesel fuel.

HVO is a drop-in replacement fuel that enables the selected generators to achieve the same rapid start-up performance and load acceptance characteristics as conventional diesel systems, whilst reducing the overall carbon intensity of standby operation.

Depending upon feedstock source and supply chain characteristics, HVO derived from certified sustainable feedstocks may achieve lifecycle greenhouse gas emission reductions of up to 80–90% when compared with conventional diesel fuel.

The facility currently utilises HVO supplied through established fuel suppliers, including Crown Oil and Certas Energy. HVO procurement is intended to continue through recognised suppliers operating appropriate sustainability assurance and chain-of-custody arrangements. This approach seeks to maximise the lifecycle carbon benefits associated with standby generation whilst maintaining the operational characteristics required for critical infrastructure resilience.

The selection of HVO was informed by the objective of minimising the carbon impact of standby generation whilst maintaining the resilience characteristics required for critical infrastructure operation. Although the use of any combustion fuel remains less aligned with long-term decarbonisation objectives than fully electrified solutions, HVO represents a significant improvement over conventional diesel and is considered the most appropriate fuel currently available for this application.

Discussions were undertaken with Scottish Gas Networks (SGN) regarding both gas network availability and resilience. SGN advised that no suitable medium-pressure or high-pressure point of connection was available within a reasonable distance of the site and were unable to provide assurance that gas supply would remain available under all foreseeable widespread utility disruption scenarios.

These factors were considered within the BAT assessment of gaseous fuel alternatives. The resilience strategy for the data centre requires a fuel supply that can be stored on site and remain available independently of external utility infrastructure. Liquid fuel storage provides this capability, whereas natural gas remains dependent on continued operation of the external gas distribution network.

Liquefied Petroleum Gas (LPG) was also considered. However, the quantities required to support extended operation would necessitate substantial storage capacity and reliance upon external refuelling arrangements during potentially widespread infrastructure disruption. This was not considered compatible with the resilience requirements of the facility.

HVO therefore represents the most appropriate fuel choice, providing both reduced carbon intensity and enhanced resilience through on-site fuel storage.

5.1.2 SCR Chemicals

Urea solution in the form of AdBlue has been selected as the injection solution for the six SCR units to be installed at site. Urea thermally decomposes to ammonia within the abatement system with the ammonia then undergoing reaction with the combustion gases to reduce NO_x emissions.

AdBlue is a non-hazardous material, making its transportation and storage safer than that of ammonia, the alternative reagent commonly used in SCR systems. Rather than use ammonia, which has multiple hazard statements (H221, H280, H314, H332, H400) and may, depending on the type used, require pressured storage systems with associated leak detection and hazardous area classifications – the use of AdBlue, provides a ready source of ammonia, that is non-hazardous until it decomposes in controlled conditions within the abatement unit, at which time the ammonia is used full in situ to react fully forming N_2 and water.

5.2 Raw Material Inventory

To support this application estimates of expected annual consumption of each raw material used within the installation has been prepared. This also provides comment on the maximum quantity of each which would be expected to be held on site at any given time.

The site maintains an up-to-date inventory of raw materials consumed in activities across the installation. This will continue following the application, with the inventory expanded to include any new materials being used on site. Maintaining an accurate inventory is a key requirement of process management.

Table 5-1: Raw Material Inventory

Raw Material	Estimated Annual Consumption	Storage Arrangements	Notes
HVO Diesel	15,264 L	10 x bunded tanks within the new generator containers. 2 x bunded service tanks associated with existing generators. 1 x double skinned underground storage tank.	Annual consumption is based on testing requirements only. Actual consumption will depend on engine utilisation.
AdBlue	13.9 L/h consumed at 100% load. Conservatively 2,952 L based on 12 SCRs	Initially 6 x AdBlue bunded tanks, housed within the generator containers of units fitted with SCR. The remaining 6 systems will have tanks fitted in due course.	Annual consumption is based on testing requirements only. Actual consumption will depend on engine utilisation.

Raw Material	Estimated Annual Consumption	Storage Arrangements	Notes
Generator Oil	400 L	No reserve inventory is maintained on site, only that which is in use within the generators.	Generator oil changes are completed by a specialist contractor. This contractor brings the oil being used to site and removes waste oil from site.
Generator Coolant (Water/Glycol 50:50 mix)	300 L per generator (changed every 4/5 years, not annually)	No reserve inventory is maintained on site, only that which is in use within the generators.	Generator coolant changes are completed by a specialist contractor. This contractor brings the coolant being used to site and removes waste coolant from site.

5.3 Minimisation of Raw Material Use

Opportunities to minimise the use of raw materials on site are limited due to the installation's purpose. The permit is being sought for combustion plant that will provide back-up power should an outage from the national grid occur. As such the quantities of fuel consumed, except during testing, will be dictated by the resilience of the electrical supply to the site from the grid.

5.4 Water Use

Water use within the permitted installation is minimal. This is limited to small quantities stored as part of the engine coolant within each generator. As noted above this is mixed with an antifreeze chemical, with the engines only being drained of coolant every four to five years. Therefore, water usage in the installation will be minimal.

6. Emissions to Air

6.1 Air Emission Sources

Currently only 2 of the generators covered by this application are currently operational, and even they are only required to undergo monitoring for Carbon Monoxide (CO) as they are both limited to operating under 500 hours per year each. As such the emissions data included below and within the dispersion model submitted in support of this application are taken from specification sheets shared by the original engine manufacturers.

6.2 Channelled Emissions to Air

Following this application the site will have 12 permitted air emission points (EPs). They are denoted as follows:

Table 6-1: Air Emission Points

Plant Number	Associated Engine	Emission Point Plan Label	Discharge Height (m)	Stack Diameter (m)
1A.	4016-61TRG3	EP1	7.5	0.6
1B.	4016-61TRG3	EP2	7.5	0.6
2.	QSK78-G24	EP3	9.4	0.6
3.	QSK78-G24	EP4	9.4	0.6
4.	QSK78-G16	EP5	9.4	0.6
5.	QSK78-G16	EP6	9.4	0.6
6.	QSK78-G16 (with SCR)	EP7	9.4	0.6
7.	QSK78-G16 (with SCR)	EP8	9.4	0.6
8.	QSK78-G16 (with SCR)	EP9	9.4	0.6
9.	QSK78-G16 (with SCR)	EP10	9.4	0.6
10.	QSK78-G16 (with SCR)	EP11	9.4	0.6
11.	QSK78-G16 (with SCR)	EP12	9.4	0.6

6.3 Predicted Discharge Characteristics

Within the 12 generators on site there are three engine types (with one type initially being split between both abated and unabated). The expected emission characteristics, as per the Dispersion Model prepared by Lucion Delta Simons (Lucion) (Appendix G), of each are noted in the table below. Reference conditions provided by the engine manufacturers are 273K, 1atm, 5% O_2, which diverges from the reference conditions for emission limit values (ELVs) for engines specified under MCPD, which are expressed at 15% O_2. It should be noted however that the concentrations provided are equivalent to the MCPD limit values (i.e. 507mg/m^3 of NOx at 5% O_2 is directly equivalent to 190mg/m3 of NOx at 15% O_2).

It should also be noted that the initial operational intention for the engines is that they will each operate below the threshold (500 hours per year) for having MCPD ELVs set within the permit for combustion gases.

Table 6-2: Predicted Discharge Characteristics

Parameter	4016-61TRG3	QSK78-G24	QSK78-G16	QSK78-G16 (SCR)
Flowrate (m^3/h)	31,500	27,060	27,960	27,960
Flowrate (Nm^3/h) @ REF	7,545	7,172	7,393	7,393
Temperature (°C)	475	448	463	463
Efflux Velocity (m/s)	30.95	26.58	27.47	27.47
NO_x Concentration (mg/Nm^3)	3,250	3,025	1,755	507
NO_x Emission Rate (g/s)	6.811	6.027	3.605	1.041
Total Particulate Matter (TPM) Concentration (mg/Nm^3)	40	28	14.3	14.3
TPM Emission Rate (g/s)	0.084	0.056	0.029	0.029
CO Concentration (mg/Nm^3)	210	424	243.4	243.4
CO Emission Rate (g/s)	0.440	0.845	0.500	0.500
Volatile Organic Compounds (VOC) Concentration (mg/Nm^3)	400	73	30.7	30.7
VOC Emission Rate (g/s)	0.838	0.145	0.063	0.063
SO_2 Concentration (mg/Nm^3)	1.8	1.8	1.8	1.8
SO_2 Emission Rate (g/s)	0.004	0.004	0.004	0.004

6.4 Impact Assessment

As noted above, Lucion were contracted by DataVita to undertake air dispersion modelling of the engines' emissions for the DV1 project. The full assessment report is included in Appendix G, with the following sections providing a summary of the scenarios assessed and the assessment findings.

6.4.1 Modelled Scenarios

Three different modelling scenarios were selected to support this assessment:

- Event 1: Testing and maintenance - The generators will operate for 17.7-hours each year, in accordance with a regular schedule that will include the following:
  - Weekly: Each generator will operate individually for 10-minutes off-load every week;
  - Monthly: Each P2500 generator as well as two identical banks of five generators will operate separately for 30-minutes every month at approximately 30% load. No more than five generators will be operational at any one time; and,
  - Annually: Each generator will operate individually for 3-hours every year at 100% load.

- Event 2: Emergency Blackout Event (6 SCRs) - There is the potential for all generators to operate at 100% load in the event of a power outage. The Client has confirmed that emergency operation would occur for a maximum of 24-hours each year. Data provided to the client by Scottish Power Electricity Networks (SPEN) for the substation which will provide the electrical feed to DV1 (Newarthill 33kV Grid Supply Point) confirms that there has been no outage of this duration at the substation within the last 15 years. A short report summarising SPEN outages in the area is provided in Appendix H.
- Event 3: Extended Emergency Blackout (12 SCRs) - There is the potential for all generators to operate at 100% load in the event of a power outage. This extended assessment over 72 hours will assess the engines as all 12 having SCR fitted.

6.4.2 Sensitive Receptors

Lucion undertook a desk-based study to identify sensitive human receptor locations in the vicinity of the site that require specific consideration during the assessment. This identified 12 residential properties spread across eight streets to the north of the site: Girvan Crescent (3); Tarbolton Crescent and Dalry Crescent (2); Bowhill Road, Lindean Drive, Goldstream Grove, Callander Road and Michael Terrace (1). The 12 locations are shown below in Figure 6-1.

As noted in Section 4, Lucion also undertook a desk-based study to identify ecological receptors which had the potential to be impacted by atmospheric emissions from the installation using the proximity screening tool. This identified receptors within 7 km of the site. The 7 km was selected due to the total thermal input for the site being between 50-100 MW and the minimal SO_2 emission associated with HVO combustion. The screening identified the following two sites for inclusion within the assessment:

- E1 - Lady Bell's Moss SSSI; and
- E2 - Hamilton Low Parks SSSI.

For the purpose of the assessment the reference point for each receptor was placed at the closest point to the site, to maximise the potential impacts predicted. The locations of both receptors are shown below in Figure 4-2 previously.

Figure 6-1: Identified Human Receptor Locations (Taken from Appendix G)

6.4.3 Summary of Findings

Full discussion of the air quality findings is available in Appendix G. This section provides extracts from the Lucion Report in reference to each of the scenarios noted in Section 6.4.1, providing an overview of the report's findings.

Event 1: Testing and Maintenance

When considering current AQOs, there were no predicted exceedances of any environmental quality standards (EQS) at any receptor location for any pollutant or averaging period of interest. As such, impacts during Scenario 1 are not considered to be significant.

Event 2: 24 Hour Outage with six engines equipped with SCRs

Short-term Averaging Periods – Human Receptors

The assessment considered the following parameters over their associated averaging periods:

Table 6-3: Short-term Averaging Period Human Receptor Results Summary

Parameter	Averaging Period	EQS (µg/m3)	Highest PC at Receptor (µg/m^3)	Associated Receptor
NO_2	43.15th %ile 1-hour	200	0.02	R5
Benzene	24-hour	30	0.70	R4
CO	8-hour rolling	10,000	263.42	R4
SO_2	99.9th %ile 15-minute	266	2.08	R4
	99.7th %ile 1-hour	350	1.95	R4

Modelling found that no EQS exceedances were predicted at any location for any pollutant or averaging period of interest.

Maximum predicted concentrations for each parameter across their respective averaging periods were obtained across five meteorological data sets (2020 – 2024). These considered the maximum predicted change in concentrations. In all cases, process contributions (PCs) were below 10% of the EQS at all human receptor locations. This enabled the impacts to be screened as insignificant.

Short-term Averaging Periods - Ecological Receptors

Scenario 2 is considered to have the potential to affect the 24-hour mean NO_x concentrations at the two noted ecological receptors. Therefore, assessment of this parameter was undertaken.

Predicted 24-hour mean NO_x PECs at each ecological receptor were obtained. It was found that all PECs were below the EQS (75 µg/m^3) in each case. The PCs calculated were above the 10% EQS screening threshold at both receptors, however, as the PECs were below 100% of the EQS the predicted effects were able to be considered as insignificant

Long-term Averaging Periods - Human Receptors

The assessment considered the follow parameters over their associated averaging periods:

Table 6-4: Long-term Averaging Period Human Receptor Results Summary

Parameter	Averaging Period	EQS (µg/m3)	Highest PC at Receptor (µg/m^3)	Associated Receptor
NO_2	Annual	40	0.90	R5
PM_{10}		18	0.02	R4 and R5
$PM_{2.5}$		10	0.02	R4 and R5
Benzene		3.25	0.001	R2 – R7

Modelling found that no EQS exceedances were predicted at any location for any pollutant or averaging period of interest.

NO_2 PCs were found to be below 1% of the associated EQS at receptors R1 and R8 – R12. At receptors R2 – R7 where 1% was exceeded, the associated PEC was below 70% of the EQS in all cases. Therefore, the predicted effects of the annual mean NO_2 concentrations could be considered to be insignificant.

PM_{10}, $PM_{2.5}$, and Benzene PCs were found to be below 1% at all receptor locations. Therefore, the predicted effect on annual mean concentrations could be considered to be insignificant.

Long-term Averaging Periods - Human Receptors

The assessment considered the following parameters over their associated averaging periods:

Table 6-5: Long-term Averaging Period Ecological Receptor Results Summary

Parameter	Averaging Period	EQS/Critical Load	Highest PC at Receptor (µg/m³)	Associated Receptor
NO_x	Annual	30 µg/m³	0.01	E1 and E2
SO_2		10 µg/m³	0.00002	E1
Nitrogen Deposition		5 (low) 10 (high) kgN/ha/yr	0.0014	E1
Acid Deposition		0.321 (MinN), 0.248 (MaxS), 0.569 (MaxN) Keq/ha/yr	0.00011	E1

Annual PCs for all four parameters were below 1% of the relevant EQS at both ecological receptors. Therefore, it can be considered that the predicted effect for each is insignificant.

Event 3: Extended 72 Hour Outage with all 12 engines equipped with SCRs

Short-term Averaging Periods - Human Receptors

The assessment considered the following parameters over their associated averaging periods:

Table 6-6: Short-term Averaging Period Human Receptor Results Summary

Parameter	Averaging Period	EQS (µg/m3)	Highest PC at Receptor (µg/m³)	Associated Receptor
NO_2	83.68 %ile 1-hour	200	96.47	R5
Benzene	24-hour	30	0.70	R4
CO	8-hour rolling	10,000	263.42	R4
SO_2	99.9th %ile 15-minute	266	2.08	R4
	99.7th %ile 1-hour	350	1.95	R4

Modelling found that no EQS exceedances were predicted at any location for any pollutant or averaging period of interest.

Maximum predicted concentrations for each parameter across their respective averaging periods were obtained across five meteorological data sets (2020 – 2024). These considered the maximum predicted change in concentrations.

NO_2 PC proportions exceeded 20% of the EQS headroom at receptors R3 – R8. The associated PECs at these receptors however were below 70% of the EQS. As such the predicted impacts could be considered as insignificant.

All remaining parameters' (Benzene, CO and SO_2) PCs were predicted as below 10% of their relevant EQS at all human receptor locations. Therefore, it could be considered that the predicted impact on mean concentrations over their respective averaging periods would be insignificant.

Short-term Averaging Periods - Ecological Receptors

Scenario 3 is considered to have the potential to affect the 24-hour mean NO_x concentrations at the two noted ecological receptors. Therefore, assessment of this parameter was undertaken.

Predicted 24-hour mean NO_x PECs at each ecological receptor were obtained. It was found that all PECs were below the EQS (75 µg/m^3) in each case. The PCs calculated were below the 10% EQS screening threshold at both receptors, as such predicted impacts were able to be considered as insignificant.

Long-term Averaging Periods - Human Receptors

The assessment considered the follow parameters over their associated averaging periods:

Table 6-7: Long-term Averaging Period Human Receptor Results Summary

Parameter	Averaging Period	EQS (µg/m3)	Highest PC at Receptor (µg/m^3)	Associated Receptor
NO_2	Annual	40	0.68	R5
PM_{10}		18	0.04	R5
$PM_{2.5}$		10	0.04	R5
Benzene		3.25	0.002	R3 – R5

Modelling found that no EQS exceedances were predicted at any location for any pollutant or averaging period of interest.

NO_2 PCs were found to be below 1% of the associated EQS at receptors R1, R2 and R8 – R12. At receptors R3 – R7 where 1% was exceeded, the associated PEC was below 70% of the EQS in all cases. Therefore, the predicted effects of the annual mean NO_2 concentrations could be considered to be insignificant.

PM_{10}, $PM_{2.5}$, and Benzene PCs were found to be below 1% at all receptor locations. Therefore, the predicted effect on annual mean concentrations could be considered to be insignificant.

Long-term Averaging Periods - Human Receptors

The assessment considered the follow parameters over their associated averaging periods:

Table 6-8: Long-term Averaging Period Ecological Receptor Results Summary

Parameter	Averaging Period	EQS/Critical Load	Highest PC at Receptor (µg/m³)	Associated Receptor
NO_x	Annual	30 µg/m³	0.01	E1
SO_2		10 µg/m³	0.00004	E1
Nitrogen Deposition		5 (low) 10 (high) kgN/ha/yr	0.0010	E1
Acid Deposition		0.321 (MinN), 0.248 (MaxS), 0.569 (MaxN) Keq/ha/yr	0.00008	E1

Annual PCs for all four parameters were below 1% of the relevant EQS at both ecological receptors. Therefore, it can be considered that the predicted effect for each is insignificant.

6.5 Monitoring Requirements

At start-up the generators on site will operate on a stand-by basis, only being used should power supply to the site be disrupted. As such, the only planned operation of the plant following commissioning would be to complete testing. It is considered highly unlikely that in any given year of stand-by operation, that any of the generators would operate for greater than 500 hours.

Within MCPD, an exemption exists to not require plant operating under 500 h/yr to meet the ELVs set out within the directive. It is therefore considered that the stand-by use of the generators at DV1 meet the requirements for this exemption to apply. Therefore, it is proposed that the engines do not have ELVs for NO_x, TPM and SO_2.

Air emission monitoring is required by MCPD for all plant falling under the scope of the directive. This monitoring is required for all parameters for which an ELV is set, and for CO. As noted above, the MCPs at DV1 qualify for an exemption from ELVs and it is therefore proposed that only monitoring of CO be required on an ongoing basis.

The monitoring requirements for each generator, while they are treated as standby plant will be the same. The requirements for each plant, as set out within the MCPD, are included in the table below:

Table 6-9: Air Emission Monitoring Requirements

Parameter	Monitoring Frequency	Method	ELV
NO_x	Not Required (plant to run less than 500h/yr)		None Set
TPM			None Set
SO_2			None Set
CO	As plant will operate under 500 h/yr: • Once every five years; or • 1,500 hours of operation	BS EN 15058	None Set

7. Emissions to Water

7.1 Generation of Trade Effluent

The DV1 facility does hold a trade effluent consent with Scottish Water, however the discharge this relates to does not come from the permitted installation. The consent is to allow cooling water discharge from the data centre cooling systems to sewer. The agreement is referenced as 14087B/1/LOA, however as it does not relate to the installation, this will not be discussed further as part of this application.

The installation is not expected to produce any effluent from its operation under normal conditions, with any liquid wastes generated during maintenance of the generators (oils, coolants etc) being removed from site as waste rather than discharged as effluent.

The fuel delivery location for the new engines will feature a concrete pad surrounded by drainage channels leading to an interceptor tank and then discharging to the foul sewer. Minor spills arising during fuel deliveries will be collected in the interceptor tank and removed from site as waste should they occur. Fuel deliveries will be overseen by both the tanker delivery driver and a DataVita employee to minimise the risk of a spillage and to initiate prompt remedial action should they occur.

7.2 Surface water Run-off

The only aqueous waste discharged from the installation will be surface water run-off generated by rainfall on site. This will be collected by the site's surface water drainage before discharging into the local surface water drainage system. Onsite drainage is shown in Appendix C.

8. Waste

8.1 Waste Management

Waste generated by the permitted installation will be minimal and limited primarily to waste coolant and oils from generator maintenance. Waste streams will be generated from the site, but the permitted activities are expected to add minimal waste streams to this. Waste generated on site will be managed in line with the waste management procedure within the site's integrated management system.

DataVita utilise reputable registered waste contractors for the removal of waste from their sites, with waste transfer notes provided for DataVita's record keeping in line with Duty of Care requirements.

8.2 Waste Inventory and Storage

The below waste inventory includes some aspects which are not strictly only generated by the installation, with some potentially coming from the wider site. Their storage arrangements are also noted within the inventory table.

Careful assessment of waste production will be undertaken following the commissioning of the proposed installation to allow disaggregation of wastes produced by the data centre and by the permitted installation.

Table 8-1: Waste Inventory

Waste Stream	Waste Codes	Quantity	Storage
Generator Oil	13 02 05	400L annually	Collected in suitable container by generator maintenance contractor at time of draining and removed from site.
Spent Generator Coolant (water/glycol mix 50:50)	16 01 14	3,600 L every 4-5 years (300 L per generator)	Collected in suitable container by generator maintenance contractor at time of draining and removed from site.
Gully and Interceptor Waste	20 03 03	8 tonnes annually	NA
General Waste	20 03 01	Approximately 57,200 L annually	Stored in a 1,100 L bin, collected weekly
Dry Mixed Recycling	15 01 06	Approximately 57,200 L annually	Stored in a 1,100 L bin, collected weekly
Battery Collection	16 06 01	As required	Held segregated from other waste until collection by specialist contractor on request.

8.3 Waste Minimisation

As the only two waste streams noted above directly linked to the permitted activities are generator oil and coolant, there are limited opportunity to reduce these. Neither material will be used in significant quantities and are key to the efficient and safe operation of the generators. DataVita are open to opportunities that may arise for waste minimisation; however, these are currently considered limited.

9. Energy

9.1 Power Generation BAT Considerations

9.1.1 Need for Back-up Power Generation

The DV1 facility provides critical digital infrastructure services supporting public sector and commercial organisations across Scotland and the wider UK, including NHS Scotland, local authorities, educational institutions and private sector businesses. Continuous availability of these services is essential to avoid significant operational, economic and societal impacts arising from the loss of IT services.

The facility supports an electrical demand of 21.6 MW (at full IT deployment) and therefore requires a standby power solution capable of maintaining operation during prolonged utility outages whilst satisfying the resilience requirements associated with a Tier III data centre environment.

DV1 is a Tier III data centre and is therefore designed to maintain operation during utility power interruptions through the provision of resilient standby power systems.

The site incorporates Uninterruptible Power Supply (UPS) systems to provide instantaneous ride-through capability and support short-duration disturbances. However, UPS systems are not designed to provide extended-duration autonomy during prolonged utility outages.

The duration of a grid outage cannot be predicted or guaranteed. Consequently, the standby power solution must be capable of supporting the facility during extended-duration outages, including prolonged outages of uncertain duration, subject to fuel replenishment arrangements. Any proposed technology must therefore provide reliable operation for outages ranging from minutes to several days.

Reliance on combustion-based standby generation is recognised as being not fully aligned with the UK Government's Clean Power 2030 ambitions, wider net-zero commitments and the long-term decarbonisation of the electricity system. As part of the BAT assessment, consideration has therefore been given to whether lower-carbon or non-combustion technologies could provide an equivalent level of resilience and operational performance. The technology selection process sought to balance the critical resilience requirements of the facility with the environmental objectives of reducing greenhouse gas emissions and minimising wider environmental impacts.

The option of relying solely upon utility supply and UPS systems without dedicated standby generation was also considered. However, this option was not assessed as capable of satisfying the resilience requirements associated with a Tier III data centre supporting critical public sector, commercial and digital infrastructure services. Accordingly, a dedicated standby power solution was considered necessary as part of the overall resilience strategy for the facility.

As DV1 is an existing operational facility rather than a greenfield development, the BAT assessment has considered not only the theoretical suitability of alternative technologies but also their practical integration within the physical, operational and engineering constraints of the existing site.

Battery Energy Storage Systems (BESS)

Battery Energy Storage Systems were considered as an alternative source of standby power. Whilst BESS technology can provide rapid response and is well suited to short-duration power support applications, the technology is constrained by practical limits on energy storage capacity.

Provision of sufficient battery capacity to support the site electrical demand for prolonged grid outages would require a significantly larger installation than is practical within the available site footprint. In addition, large-scale battery installations introduce additional fire safety considerations, environmental risks associated with battery materials and increased lifecycle replacement requirements.

BESS technology therefore remains appropriate as a short-duration bridging technology and forms part of the overall resilience strategy through the UPS system. However, it is not considered a standalone solution capable of meeting the resilience requirements of the facility.

Rotary UPS Systems

Rotary UPS systems were also considered. Whilst these systems can provide enhanced short-term resilience, many rotary UPS systems suitable for data centre applications incorporate diesel engines to provide long-duration backup power. As such, adoption of a rotary UPS solution would not remove the requirement for combustion-based standby generation and would not provide a material environmental benefit compared with the proposed arrangement.

Emerging and Alternative Low-Carbon Technologies

In recognition of the UK Government's Clean Power 2030 ambitions and wider net-zero commitments, a number of additional low-carbon technologies were considered as part of the BAT assessment, including hydrogen-fuelled generation systems, hydrogen fuel cells, long-duration energy storage technologies and on-site renewable generation.

Hydrogen-Fuelled Generation and Fuel Cells

Hydrogen-fuelled reciprocating engines and hydrogen fuel cell systems were reviewed as potential alternatives to liquid-fuel standby generation. Whilst these technologies offer the potential for reduced operational carbon emissions, commercial deployment at the scale required for critical data centre standby applications remains relatively limited.

In addition, hydrogen supply infrastructure is not currently available at the site and would require significant investment in fuel storage, handling and associated safety systems. The requirement to maintain extended-duration resilience during prolonged utility outages would also necessitate substantial on-site hydrogen storage capacity.

Hydrogen-based technologies were therefore not considered sufficiently mature or practical for this application at the present time.

Long-Duration Energy Storage

Alternative long-duration energy storage technologies, including flow batteries and other emerging storage solutions, were also considered.

Whilst such technologies may provide longer discharge durations than conventional battery systems, commercially available solutions capable of supporting the full site electrical demand of approximately 21.6MW for extended-duration outages were not considered practical within the available site footprint and operational constraints.

These technologies were therefore not assessed as capable of satisfying the resilience and autonomy requirements of the facility at the present time.

Renewable Generation

On-site renewable generation technologies, including solar photovoltaic systems and wind generation, were also reviewed. Whilst such technologies can contribute to the reduction of operational carbon emissions, their output is inherently dependent upon prevailing environmental conditions and cannot be guaranteed during periods of utility outage. In addition to this, as DV1 was an existing site, the existing site boundary and location constrain the prospect of sufficient renewable generation capacity being deployed.

Given the scale of the facility electrical demand and the requirement to maintain uninterrupted operation during prolonged outages, renewable generation alone could not provide the required level of resilience. Any renewable generation solution would still require substantial energy storage capacity and/or alternative standby generation technologies.

Grid Diversification

The potential for enhanced utility resilience through additional grid connections and diversified utility feeds was also considered. DataVita already have contractual measures in place to take additional connections from SPEN Chapelhall Primary Whilst such measures can improve reliability and reduce the likelihood of localised supply interruptions, they do not remove dependence upon the wider electricity transmission and distribution network and cannot provide assurance against widespread or prolonged grid disruption. Additionally, there are no feasible alternative points of connection elsewhere on the network.

Accordingly, diversified utility connections were not considered a replacement for dedicated standby power generation.

9.1.2 Generation Technology Selection

Reciprocating Engine Generators

High-speed reciprocating engine generators were identified as the preferred standby power technology due to their ability to achieve full operational readiness within approximately 15 seconds of a mains power failure. This rapid start capability minimises the autonomy requirement of the UPS system and therefore minimises the quantity of battery storage required on site.

The technology is well established within the data centre sector, offers proven reliability, and can be operated for extended periods with fuel replenishment.

For the operational requirements of the DV1 facility, reciprocating engine generators were assessed as the most appropriate currently available technology capable of providing resilient, long-duration standby power within the available site constraints whilst satisfying the identified operational and resilience requirements.

Gas Engines

Gas-fired reciprocating engines were considered as an alternative technology. Compared with liquid-fuel standby generators, gas engines generally exhibit reduced step-load acceptance capability and slower recovery characteristics following large load changes. Whilst some modern gas engines can achieve relatively rapid start-up times, these characteristics can increase the duration for which battery-backed UPS support is required and may adversely affect resilience during emergency transfers.

In addition, discussions were undertaken with SGN regarding both gas network availability and resilience. SGN advised that no suitable medium-pressure or high-pressure point of connection was available within a reasonable distance of the site and were unable to provide assurance that gas supply would remain available under all foreseeable widespread utility disruption scenarios.

Connection to the low-pressure network would have required installation of gas compression equipment to achieve the pressure requirements of the engines. The resulting arrangement would have increased equipment complexity, standby energy consumption, maintenance requirements and spatial requirements.

Given the limited available site footprint, the dependence on external gas infrastructure and the additional plant requirements, gas engines were not considered the most appropriate solution for this application.

Gas Turbines

Gas turbine technology was also reviewed. Gas turbines are generally most efficient at larger unit ratings and under sustained high-load operation. They are less suited to standby applications requiring rapid start-up, high step-load acceptance and efficient operation at the scale required for this facility.

Furthermore, gas turbines would remain dependent on the availability of a resilient gas supply and would require similar supporting gas infrastructure to that required for gas engine solutions.

For these reasons, gas turbine technology was not considered the most appropriate solution for this application and was not assessed as capable of satisfying all identified operational requirements.

Summary

Whilst these technologies may offer environmental benefits and may become increasingly viable as the electricity system continues to decarbonise, none were assessed as capable of delivering the combination of resilience, extended-duration autonomy, rapid response capability, utility independence and site compatibility required for the DV1 facility at the present time.

Future reviews of the facility's resilience and decarbonisation strategy may consider developments in the commercial maturity and deployment of these technologies.

The assessment demonstrates that no alternative technology satisfies all of the critical operational requirements of the DV1 facility.

Battery Energy Storage Systems are unable to provide practical long-duration autonomy at the required power level and within the available site footprint. Rotary UPS systems would still require combustion engines to support prolonged outages and therefore do not eliminate the need for standby generation. Gas engine and gas turbine solutions are dependent upon continued availability of the gas network during major infrastructure disruption events and would require significant additional infrastructure and site space.

The BAT assessment has considered the relative environmental performance, technical feasibility, operational reliability, resource efficiency, site constraints and practical deliverability of each technology option within the context of the operational requirements of the installation.

The assessment has also considered the extent to which each technology aligns with UK and Scottish Government decarbonisation objectives. Whilst battery-based and other non-combustion technologies offer potential environmental advantages, none were identified as capable of satisfying the full combination of resilience, autonomy, start-up performance and site constraint requirements associated with the DV1 facility.

Based on the assessment undertaken, HVO-fuelled reciprocating engine generators are considered to represent BAT for the standby power requirements of the DV1 facility, satisfying the identified resilience, start-up performance, load acceptance, autonomy, site constraint and utility independence requirements whilst providing reduced lifecycle carbon emissions compared with conventional diesel fuel.

Table 9-1 below provides a summary of the potential alternatives considered to onsite energy generation through combustion.

Table 9-1: Back-up Power Technology Review

Critical Requirement	BESS	Rotary UPS	Gas Engines	Gas Turbines	HVO-Fuelled Reciprocating Generators (Selected Option)	Comments / Basis of Assessment
Support full site load (~18 MW)	Partially Meets Requirement	Meets Requirement	Meets Requirement	Meets Requirement	Meets Requirement	BESS can support the load but only for a limited duration before depletion.
Provide extended-duration autonomy during prolonged grid outages	Does Not Meet Requirement	Meets Requirement	Meets Requirement	Meets Requirement	Meets Requirement	BESS autonomy is constrained by practical battery capacity. Engine-based solutions can operate for extended periods subject to fuel availability.
Achieve operational readiness within approximately 15 seconds	Meets Requirement	Meets Requirement	Partially Meets Requirement	Does Not Meet Requirement	Meets Requirement	Depending on technology selection, gas engines may achieve rapid start-up but generally exhibit slower load acceptance and recovery characteristics than diesel/HVO standby generators.
Accept rapid step-load changes associated with data centre operation	Meets Requirement	Meets Requirement	Partially Meets Requirement	Does Not Meet Requirement	Meets Requirement	Data centres can experience significant load steps which are more readily accommodated by diesel/HVO generators.
Minimise UPS autonomy requirements	Meets Requirement	Meets Requirement	Partially Meets Requirement	Does Not Meet Requirement	Meets Requirement	Technologies with slower start-up times and reduced load acceptance characteristics require larger UPS systems and increased battery storage.
Operate independently of external utility infrastructure during outages	Meets Requirement	Meets Requirement	Does Not Meet Requirement	Does Not Meet Requirement	Meets Requirement	Gas-fired technologies remain dependent upon continued operation of the gas distribution network.
Be accommodated within the available site footprint	Does Not Meet Requirement	Partially Meets Requirement	Partially Meets Requirement	Partially Meets Requirement	Meets Requirement	Extended-duration BESS installations and gas infrastructure would require significantly greater space than is available at the site.
Provide N+1 resilience in a practical and efficient configuration	Partially Meets Requirement	Meets Requirement	Meets Requirement	Partially Meets Requirement	Meets Requirement	Larger generating units increase redundancy requirements and reduce flexibility. The selected configuration achieves N+1 resilience efficiently.

Critical Requirement	BESS	Rotary UPS	Gas Engines	Gas Turbines	HVO-Fuelled Reciprocating Generators (Selected Option)	Comments / Basis of Assessment
Avoid significant additional infrastructure requirements	Partially Meets Requirement	Partially Meets Requirement	Does Not Meet Requirement	Does Not Meet Requirement	Meets Requirement	Gas solutions would require additional network connections, pressure regulation, compression equipment and associated plant.
Deliver reduced lifecycle carbon emissions compared with conventional diesel	Meets Requirement	Partially Meets Requirement	Partially Meets Requirement	Partially Meets Requirement	Meets Requirement	Natural gas can reduce direct combustion CO_2 emissions relative to diesel, although lifecycle benefits depend on fuel source and methane leakage assumptions. HVO sourced from certified sustainable feedstocks can provide substantial lifecycle carbon reductions whilst maintaining standby performance requirements.
Compliance with all critical operational requirements	Does Not Meet Requirement	Partially Meets Requirement	Partially Meets Requirement	Does Not Meet Requirement	Meets Requirement	Only the selected HVO-fuelled reciprocating generator solution satisfies all identified operational, resilience and site constraints simultaneously.

9.2 Energy Consumption

As noted in Section 2, the permitted activity at DV1 is to support the continued operation of the data centre should a power outage occur. The electrical demand of DV1's critical systems (at maximum IT deployment) requires an additional 18 MW of generation to be installed to support the site during potential power outages. This would equate to nine new generators (each 2.2 MW electrical). For redundancy (N+1), an extra generator has also been planned. These new generators will supplement the two existing 2 MW electrical generators.

As noted previously, only nine new generators will be added initially, with the tenth added subsequently as the data centre reached full IT deployment capacity. All environmental assessments included in this application support document are based on the final configuration of the site, with 12 engines installed (two existing and ten new).

As these systems all are to operate as stand-by only upon the permit being granted, the only planned energy consumption associated with their operation is during maintenance and testing. The energy consumption will be derived solely from the combustion of fuel (in this case HVO).

Table 9-2: Estimated Energy Consumption

Source	Estimated Annual Quantity	Net Calorific Value	Annual Energy Consumption
HVO	15,264 L	44 MJ/Kg[5]	523,860 MJ

9.3 Climate Change Levy Agreement

DataVita have entered into a climate change agreement as of 01 January 2026. This agreement is titled DATC-T00083 CCA3 Underlying Agreement V1, and is provided in Appendix I.

[5] HVO Spec Sheet - Crown Oil (https://www.crownoil.co.uk/wp-content/uploads/2024/02/Crown-HVO-Spec-Sheet_2023.pdf) accessed 23/06/2

10. Noise and Vibration

10.1 Overview

During Planning, DataVita engaged New Acoustics to produce a BS4142 Noise Impact Assessment for the generators at site. The planning assessment has been updated to align with SEPA's noise assessment criteria. This report is included as Appendix J along with relevant calibration certificates, with a summary of New Acoustics' findings presented below.

10.2 Noise Sensitive Receptors (NSRs)

The nearest residential properties to the DV1 facility are found on Girvan Cresent, at a distance of 75 m to the north of the main DV1 building and 90 m from where the new generator compound is to be sited. These have been identified as the properties which are most likely to be exposed to noise emanating from DV1. The location of the receptors compared to the site is shown in the figure below.

The NSRs are all two-storey houses. As such they were assessed to a height of 4 m above ground to represent noise levels on the first floor.

Figure 10-1: NSR Locations (From Appendix J)

10.3 Generator Associated Sound Levels

New Acoustics completed a BS4142 assessment of noise form the new proposed stand-by generators for both daytime and nighttime periods. This assessment considered both emergency operation during an outage, as well as routine testing.

Standby generators are typically found to have a low frequency noise associated with their operation which can make the noise generated more perceptible. However, with DV1s location within an existing industrial estate with regular traffic movements, nearby to the M8 Motorway, it is expected that there will be high levels of traffic noise both during the day and night periods; likely reducing the perceptibility of the low frequency noise. However, as part of this assessment the generators were applied a noise rating correction of + 5 dB (+ 3 dB for intermittency and + 2 dB for tonality). This correction penalty has been applied on a precautionary basis.

In all scenarios, NSR 3 and NSR 4 are suffer the worst-case exceedances as they are closest to the generators' location.

Table 10-1BS4142 Assessment of Proposed Standby Generators

Scenario	Time of Day	Specific Noise Level, $L_{Aeq,T}$ (dB)	BS4142 Rating Level, $L_{Ar,T}$ (dB)	Background Noise Level, $L_{a90,T}$ (dB)	Rated Exceedance over Background (dB)
Emergency Operation	Daytime	50	55	47	+8
	Nighttime			40	+15
Routine Testing	Daytime	42	47	47	+0
	Nighttime	NA	NA	NA	NA

The exceedances predicted during the emergency operation scenario are indicative of an adverse impact according to BS4142. However, the scenario is considered to be highly unlikely. DataVita report there has been no power outages in the area within the last 10 years. It is therefore considered that due to the resilience of the power connections to DV1, no additional mitigation is proposed for emergency operation as the likelihood of the scenario occurring is remote.

As routine testing of generators will take place one at a time, during daytime hours when the background noise level is greater, the likelihood of an adverse noise impact emanating from this scenario is considered to be low. As such it is deemed unnecessary for the site to produce and maintain a noise management plan.

11. Odour

Odour is not expected to pose any nuisance from the DV1 site. the only gaseous emissions expected from site are infrequent releases of combustion products. Therefore, odour will not be considered further as part of this application.

12. Commissioning

Commissioning of the generator will have two key stages, individual plant and site wide commissioning. The individual plant commissioning will be completed by DT Gen, Appendix K1 and K2 provides the example commissioning checklist that will be worked through, in addition to the commissioning records from the existing two generators (as an example).

A site wide commissioning plan can be provided once finalised.

13. BAT Assessment

13.1 BAT Assessment against LCP Requirements

The below tables contain a BAT Assessment against the requirements set out within the LCP BATC. As noted in Section 1, these requirements are not strictly applicable to the operation at this site, as this site operates a collection of MCPs aggregating to over 50 MW, all of which are units with rated thermal inputs of less than 15 MWth, however a lack of alternative guidance means this has been used as the basis of this assessment.

BAT Conclusion	Description	Assessment
GENERAL BAT CONCLUSIONS		
Environmental management systems		
BAT 1	In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the following features: i. Commitment of the management, including senior management ii. Definition, by the management, of an environmental policy that includes the continuous improvement of the environmental performance of the installation iii. Planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment iv. Implementation of procedures paying particular attention to: (a) structure and responsibility (b) recruitment, training, awareness and competence (c) communication (d) employee involvement (e) documentation (f) effective process control (g) planned regular maintenance programmes (h) emergency preparedness and response (i) safeguarding compliance with environmental legislation v. Checking performance and taking corrective action, paying particular attention to: (a) monitoring and measurement (see also the JRC Reference Report on Monitoring of emissions to air and water from IED-installations - ROM) (b) corrective and preventive action (c) maintenance of records (d) independent (where practicable) internal and external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained vi. Review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness vii. Following the development of cleaner technologies viii. Consideration for the environmental impacts from the eventual decommissioning of the installation at the stage of designing a new plant, and throughout its operating life including; (a) avoiding underground structures (b) incorporating features that facilitate dismantling (c) choosing surface finishes that are easily decontaminated (d) using an equipment configuration that minimises trapped chemicals and facilitates drainage or cleaning (e) designing flexible, self-contained equipment that enables phased closure (f) using biodegradable and recyclable materials where possible ix. Application of sectoral benchmarking on a regular basis. Specifically for this sector, it is also important to consider the following features of the EMS, described where appropriate in the relevant BAT x. Quality assurance/quality control programmes to ensure that the characteristics of all fuels are fully determined and controlled (see BAT 9) xi. A management plan in order to reduce emissions to air and/or to water during other than normal operating conditions, including start-up and shutdown periods (see BAT 10 and BAT 11) xii. A waste management plan to ensure that waste is avoided, prepared for reuse, recycled or otherwise recovered, including the use of techniques given in BAT 16 xiii. A systematic method to identify and deal with potential uncontrolled and/or unplanned emissions to the environment, in particular: (a) emissions to soil and groundwater from the handling and storage of fuels, additives, by-products and wastes (b) emissions associated with self-heating and/or self-ignition of fuel in the storage and handling activities xiv. A dust management plan to prevent or, where that is not practicable, to reduce diffuse emissions from loading, unloading, storage and/or handling of fuels, residues and additives.	i) The overall responsibility for the EMS lies with the site's senior management team, supported by a cross-functional environmental management team. The team will be responsible for the delegation of environmental responsibilities to individual staff members, as required by their specific roles at the site. Senior management will ensure that adequate financial and human resources are available in order to support the effective operation of the EMS. The EMS is accredited to ISO14001 standards, which provides independent endorsement of its applicability and effectiveness. ii) Continuous improvement of the site's environmental performance is delivered by regular reviews of the EMS its contents, which is enshrined in the requirements for ISO140001. iii) The site's ISO 140001 EMS includes procedures, etc to minimise environmental impact, and targets in the form of KPIs for environmental performance. These procedures and targets will be integrated into the site's general financial planning. iv) The procedures which are included in the EMS take into consideration the points made here. This is included within the requirements of the ISO14001 certification that DataVita's EMS has achieved. v) The site will have dedicated procedures within the EMS to prevent environmental impact which will satisfy this BAT requirement. Procedures to prevent any deviation from best practice environmental performance are included within the site's EMS. The site has documented procedures for monitoring emissions or impacts and it will be ensured that key spares and consumables are held on-site, or available at a short notice, to limit the duration of breakdown periods. Planned preventative and reactive maintenance will be undertaken on all key plant and equipment that could result in an adverse impact on the environment. Failure or atypical operation of plant and equipment will be logged, along with records of maintenance interventions, and the data reported to management as appropriate. If necessary, maintenance and production schedules will be adjusted in light of operational performance data. The requirement for independent external auditing is included in the site's EMS's ISO14001 accreditation. vi) Regular reviews of the site EMS are in place to ensure it continues to reflect best practice. vii) As a significant user of energy and other resources, the DataVita has a commercial interest to continue to improve its environmental performance. The cutting-edge nature of data centres in general also means that DataVita management are well accustomed to seeking new technology developments. viii) The site adheres to these requirements, with underground structures outside the fuel storage tank avoided. More information can be found in the site's decommissioning plan, which is in Section 3.1.14 of this document. ix) As combustion plant on site is solely for the back-up generation of energy, in instances that the data centre loses grid supply, benchmarking is not applicable to site.

BAT Conclusion	Description	Assessment
	xv. A noise management plan where a noise nuisance at sensitive receptors is expected or sustained, including; (a) a protocol for conducting noise monitoring at the plant boundary (b) a noise reduction programme (c) a protocol for response to noise incidents containing appropriate actions and timelines (d) a review of historic noise incidents, corrective actions and dissemination of noise incident knowledge to the affected parties xvi. For the combustion, gasification or co-incineration of malodourous substances, an odour management plan including: (a) a protocol for conducting odour monitoring (b) where necessary, an odour elimination programme to identify and eliminate or reduce the odour emissions (c) a protocol to record odour incidents and the appropriate actions and timelines (d) a review of historic odour incidents, corrective actions and the dissemination of odour incident knowledge to the affected parties.	x) See Section 5.1.1 of this document for a discussion of fuel selection. xi) Transient emissions effects and their control during these periods are included in the site's Functional Design Specification in Appendix F. xii) See Section 8 of this document for a discussion of waste generation and minimisation. xiii) See Section 6 and 7 of this document for a discussion of environmental emissions. xiv) The nature of site operations is not conducive to the generation of dust. While the data centre will use resources in form of energy, etc. it is not a production facility apt to generate dust. See Section 6 for further discussion of air emissions from the site. xv) See Section 10 of this document for a discussion of noise and its management at the site. xvi) Not applicable.
Monitoring		
BAT 2	BAT is to determine the net electrical efficiency and/or the net total fuel utilisation and/or the net mechanical energy efficiency of the gasification, IGCC and/or combustion units by carrying out a performance test at full load, according to EN standards, after the commissioning of the unit and after each modification that could significantly affect the net electrical efficiency and/or the net total fuel utilisation and/or the net mechanical energy efficiency of the unit. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.	The generators' expected electrical efficiency is calculated as between 40 – 43% based on the electrical output and thermal inputs of the various models being utilised. Periodic performance testing of the equipment is conducted at regular intervals to ensure the MCPs will operate as expected should a power outage occur. Records of the tests will be maintained by DataVita.
BAT 3	BAT is to monitor key process parameters relevant for emissions to air and water including those given below. • Flue gas • Waste water from flue gas treatment	Periodic flue gas testing will be carried out in line with the requirements set out for generators operating under 500 h/yr within the MCPD. No waste water is generated by flue gas treatment on site.
BAT 4	BAT is to monitor emissions to air with at least the frequency [provided in the BAT conclusions document] below and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.	Not Applicable. As the site operates multiple MCPs rather than an LCP, the monitoring requirements set out within the MCPD are more applicable to the plant than those set out within BAT 4. In addition, the plant operated at DataVita is installed as standby only. Section 6.5, states the monitoring required by within the MCPD for generators operating under 500 h/yr.
BAT 5	BAT is to monitor emissions to water from flue-gas treatment with at least the frequency given below and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality. • Total organic carbon: Once every month. • Chemical oxygen demand: Once every month. • Total suspended solids: Once every month. • Fluoride: Once every month. • Sulphate: Once every month. • Sulphide, easily released: Once every month. • Sulphite: Once every month. • Metals and metalloids: Once every month. • Chloride: Once every month. • Total nitrogen: Once every month.	Not applicable, no emissions to water from flue gas treatment.
General environmental and combustion performance		
BAT 6	In order to improve the general environmental performance of combustion plants and to reduce emissions to air of CO and unburnt substances, BAT is to ensure optimised combustion and to use an appropriate combination of the techniques given below. • Fuel blending and mixing. • Maintenance of the combustion system. • Advanced control system. • Good design of the combustion equipment. • Fuel choice.	The generators installed at DataVita are to operate as standby plant only. DataVita hold a maintenance agreement with a specialist contractor to ensure that the standby generators are fully operational should they be called upon. Discussion of appropriate technology selection is provided in Section 9. Discussion on fuel selection is provided in Section 5.1.

BAT Conclusion	Description	Assessment
BAT 7	In order to reduce emissions of ammonia to air from the use of selective catalytic reduction (SCR) and/or selective non-catalytic reduction (SNCR) for the abatement of NOX emissions, BAT is to optimise the design and/or operation of SCR and/or SNCR (e.g. optimised reagent to NOX ratio, homogeneous reagent distribution and optimum size of the reagent drops)	The SCR systems incorporate upstream and downstream NO_x monitoring, exhaust gas temperature and pressure monitoring and automated AdBlue dosing. A dedicated APROVIS Programmable Logic Controller (PLC) continuous adjusts the AdBlue injection rates in response to engine load and measured exhaust conditions, optimising the NO_x reduction performance of the system whilst minimising catalyst fouling and preventing ammonia slip (ammonia exiting the exhaust unreacted). To inform the system, dosing curves are submitted into the PLC for different engine load conditions. The system is designed to operate between 320 – 490 °C, with temperature directly impacting the conversion performance of the system. When operating outside the design temperature, the conversion rate of the system is negatively affected. Exceeding the top end of the operating temperature range can reduce the service life of the system through premature aging or potential irreparable damage to the honeycomb structure of the catalyst.
BAT 8	In order to prevent or reduce emissions to air during normal operating conditions, BAT is to ensure, by appropriate design, operation and maintenance, that the emission abatement systems are used at optimal capacity and availability.	Abatement systems are fitted to 6 out of 12 generators initially with the remaining generators to be retrofitted by late 2027. As noted above, these have control systems in place to ensure they operate effectively. These systems are provided to DataVita by reputable supplier APROVIS through the generator supplier. The systems to be employed have been selected specifically to fit the needs at the DataVita site. DataVita will update their preventative maintenance schedules to ensure that the SCR units are maintained in line with the manufacturer's recommendations.
BAT 9	In order to improve the general environmental performance of combustion and/or gasification plants and to reduce emissions to air, BAT is to include the following elements in the quality assurance/quality control programmes for all the fuels used, as part of the environmental management system (see BAT 1): i. Initial full characterisation of the fuel used including at least [Biomass/peat, Coal/lignite, HFO, Gas oil, Natural gas, Process fuels from the chemical industry, Iron and steel process gases, Waste] the parameters listed below and in accordance with EN standards. ISO, national or other international standards may be used provided they ensure the provision of data of an equivalent scientific quality ii. Regular testing of the fuel quality to check that it is consistent with the initial characterisation and according to the plant design specifications. The frequency of testing and the parameters chosen from the table below are based on the variability of the fuel and an assessment of the relevance of pollutant releases (e.g. concentration in fuel, flue-gas treatment employed) iii. Subsequent adjustment of the plant settings as and when needed and practicable (e.g. integration of the fuel characterisation and control in the advanced control system (see description in Section 8.1))	This is not considered applicable to MCPs operating as standby plant.
BAT 10	In order to reduce emissions to air and/or to water during other than normal operating conditions (OTNOC), BAT is to set up and implement a management plan as part of the environmental management system (see BAT 1), commensurate with the relevance of potential pollutant releases, that includes the following elements: • Appropriate design of the systems considered relevant in causing OTNOC that may have an impact on emissions to air, water and/or soil (e.g. low-load design concepts for reducing the minimum start-up and shutdown loads for stable generation in gas turbines) • Set-up and implementation of a specific preventive maintenance plan for these relevant systems • Review and recording of emissions caused by OTNOC and associated circumstances and implementation of corrective actions if necessary • Periodic assessment of the overall emissions during OTNOC (e.g. frequency of events, duration, emissions quantification/estimation) and implementation of corrective actions if necessary	The plant being installed at DataVita is specifically for other than normal operating conditions, where external power supply to the site is either lost or diminished. The site's functional design specification explains how the multiple generators will be used to manage different scales of failure. It is included in Appendix F.
BAT 11	BAT is to appropriately monitor emissions to air and/or to water during OTNOC.	Generator emissions will be tested in line with Section 6 of this report. This is considered appropriate given the low runtimes expected due to their standby application.
Energy Efficiency		
BAT 12	In order to increase the energy efficiency of combustion, gasification and/or IGCC units operated ≥ 1 500 h/yr, BAT is to use an appropriate combination of the techniques given below a. Combustion optimisation b. Optimisation of the working medium conditions c. Optimisation of the steam cycle d. Minimisation of energy consumption e. Preheating of combustion air	Not applicable - the plant being installed at DataVita, is to run under 500 hours per year.

BAT Conclusion	Description	Assessment
	f. Fuel preheating g. Advanced control system h. Feed-water preheating using recovered heat i. Heat recovery by cogeneration (CHP) j. CHP readiness k. Flue-gas condenser l. Heat accumulation m. Wet stack n. Cooling tower discharge o. Fuel pre-drying p. Minimisation of heat losses q. Advanced materials r. Steam turbine upgrades s. Supercritical and ultra-supercritical steam conditions	
Water usage and emissions to water		
BAT 13	In order to reduce water usage and the volume of contaminated waste water discharged, BAT is to use one or both of the techniques given below. a. Water recycling b. Dry bottom ash handling	Not Applicable – wastewater not generated by engines.
BAT 14	In order to prevent the contamination of uncontaminated waste water and to reduce emissions to water, BAT is to segregate waste water streams and to treat them separately, depending on the pollutant content.	Not Applicable – wastewater not generated by engines.
BAT 15	In order to reduce emissions to water from flue-gas treatment, BAT is to use an appropriate combination of the techniques given below, and to use secondary techniques as close as possible to the source in order to avoid dilution • Optimised combustion and flue gas treatment systems • Adsorption on activated carbon • Aerobic biological treatment • Anoxic/anaerobic biological treatment • Coagulation and flocculation • Crystallisation • Filtration • Flotation • Ion exchange • Neutralisation • Oxidation • Precipitation • Sedimentation • Stripping	Not Applicable – wastewater not generated by engines.
Waste management		
BAT 16	In order to reduce the quantity of waste sent for disposal from the combustion and/or gasification process and abatement techniques, BAT is to organise operations so as to maximise, in order of priority and taking into account life-cycle thinking: a. Waste prevention, e.g. maximise the proportion of residues which arise as by-products b. Waste preparation for reuse, e.g. according to the specific requested quality criteria c. Waste recycling d. Other waste recovery (e.g. energy recovery), by implementing an appropriate combination of techniques such as: • Generation of gypsum as a by-product • Recycling or recovery of residues in the construction sector • Energy recovery by using waste in the fuel mix • Preparation of spent catalyst for reuse	Waste generated on site will be managed in line with the site's waste management procedure contained within the site's integrated management system. DataVita use reputable waste contractors, and ensure proper chain of custody through waste transfer notes. DataVita also maintain records of waste collections to enable tracking of generation across the site. Waste generated within the installation on site is expected to be limited primarily to generator oil and coolant. This waste stream arises during engine maintenance and is removed by the contractor completing the maintenance. As such it is not stored on site for any prolonged duration.

BAT Conclusion	Description	Assessment
BAT 17	In order to reduce noise emissions, BAT is to use one or a combination of the techniques given below a. Operational measures b. Low noise equipment c. Noise attenuation d. Noise control equipment e. Appropriate location of equipment and buildings	Noise Impact from the DV 1 site has been assessed by New Acoustics with the assessment included as Appendix J to this document. The findings of this report are summarised in Section 10, detailing how the noise impact has been found to be at acceptable levels at nearby sensitive receptors, partly due to the generators being fitted with silencers.
BAT 18 – 23 are associated with the combustion of coal or lignite and therefore are not applicable.		
BAT 24 – 27 are associated with the combustion of peat and biomass and therefore are not applicable.		
BAT 28 – 30 are associated with HFO and/or gas oil fired boilers and therefore are not applicable.		
HFO and/or gas-oil fired engines (addressed as HVO considered a drop in alternative to diesel)		
BAT 31	In order to increase the energy efficiency of natural gas combustion, BAT is to use an appropriate combination of the techniques given in BAT 12 and below a. Combined cycle	Not applicable – engines are to run under 500 h/yr, whereas BAT 31's noted applicability is over 1,500h/yr operation. The subsequent BAT-AEELs noted in Tabel 17 of the LCP BATC are also not applicable for the same reason.
BAT 32 – 35 are associated with emissions released from HFO and/or gas-oil engines. As noted in BAT 4, it is considered that LCP BAT is not applicable in relation to this aspect due to the small scale, standby nature of the plant being installed, with page 3 of the BATC document specifically saying they are not applicable to plant under 15 MW.		
BAT 36 – 39 are associated with HFO and/or gas-oil turbines and therefore are not applicable.		
BAT 40 – 54 are associated with the combustion of gaseous fuels and therefore are not applicable.		
BAT 55 - 59 are associated with multi-fuel plants and therefore are not applicable.		
BAT 60 - 71 are associated with the co-incineration of waste and therefore are not applicable.		
BAT 72 - 75 are associated with gasification and therefore are not applicable.		

13.2 General BAT Considerations

As noted throughout this document, there is current a guidance gap for what is considered BAT for a collection of MCPs which led to an overall combustion thermal input of greater than 50 MW. Guidance currently focuses on larger plant (LCP BATC expressly notes they are applicable to plant greater than 15MW thermal input). MCPD provides some information but isn't written for site's with over 50 MW total thermal input.

There are key decisions associated with the configuration of the planned installation at DV1, for which BAT justification has been provided throughout this document. The below table provides reference to where these key topics can be found within this document.

Table 13-1: BAT Discussion Section References

Topic	Section
Need for Back-up Power Generation	9.1.1
Generator Technology Selection	9.1.2
Generator Size and Total Generation Capacity	2.1.1
Fuel Selection	5.1.1
SCR Chemical Selection	5.1.2

Appendices

Appendix A1: Site Location

Appendix A2: Authorised Place Boundary

Appendix B: Site Layout

Appendix C: Drainage Plan

Appendix D: Emission Point Plan

Appendix E: SCR P&ID

Appendix F: Functional Design Specification

Appendix G: Air Quality Assessment

Appendix H: SPEN Outage Report

Appendix I: Climate Change Agreement

Appendix J: Noise Impact Assessment

Appendix K1: Commissioning Checklist

Appendix K2: Existing Generators Commissioning Report