Backup Power Generation Report

78 LOCKWOOD ROAD DATA CENTRE (SSD-82211208)

Client:
STACK Infrastructure

Revision:
P4

Date:
24/3/2026

LCI
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REPORT INFORMATION

Project	78 Lockwood Road Data Centre (SSD-82211208)
Title	Backup Power Generation Report
Client	STACK Infrastructure
Revision	P4
Revision Date	24/03/2026
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REVISION SCHEDULE

Revision	Date	Issue Name	Author	Authorised
P1	30.07.2025	Draft	S. Haidar	V. Deo
P2	08.08.2025	Final for SSDA Submission	S. Haidar	V. Deo
P3	20.08.2025	Updated for SSDA Submission	S. Haidar	V. Deo
P4	24.03.2026	Revised for RTS Submission	C.Bechara	P.Palazzolo

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1 Preface

1.1 Executive Summary

The Backup Power Report has been prepared by LCI Consultants on behalf of Stack Infrastructure to accompany a detailed State Significant Development Application (SSDA) for the data centre development at 78 Lockwood Road, Erskine Park. The site is legally described as Lot 101 in Deposited Plan 1268632. This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project (SSD-82211208). This report concludes that the proposed data centre development is suitable and warrants approval subject to the implementation of the following mitigation measures:

- Acoustic attenuation on generator engine equipment
- Limiting testing frequency

After implementing the mitigation measures outlined above, the remaining impacts are considered acceptable. As detailed in Section 3, backup power is essential for the proposed mission-critical facility. Section 4 explores alternative backup generation options, with the site to ultimately rely on diesel generators housed in acoustic-rated enclosures within a dedicated structure. Section 5 provides design considerations, including generator specifications, acoustic treatment, and fuel type. While the exact frequency and duration of testing are yet to be determined, Section 5 offers a general overview of expected operational parameters.

Following exhibition of the SSDA, the project has been refined in response to submissions from the authorities and ongoing design development. This has necessitated an update to the Backup Power Systems Report as outlined below:

- Section 2.3 The Site - Updated site description
- Section 2.4 Project Description – Updated project detail description
- Section 5.1 Site Design – Increased quantity of generators to suit design development
- Section 5.2 Generator Design– Increased quantity of generators to suit design development
- Section 5.3 Fuel on Site & Section 5.3.1 Fuel Storage Requirements – Increased fuel storage to suit final quantity of generators and day tanks.
- Section 5.4 Testing Procedures -Amended proposed generator testing regime
- Section 5.2.2 Acoustic - Reference Acoustic Logic Noise and Vibration Impact Assessment Report.

2 Introduction

2.1 Purpose

The Backup Power Generation Report has been prepared by LCI Consultants on behalf of STACK Infrastructure (STACK, the **applicant**) to accompany a detailed State Significant Development Application (**SSDA**) for a proposed data centre development at 78 Lockwood Road, Erskine Park (the **site**).

The Backup Power Generation Report has been developed to support the SSDA to be submitted to NSW Department of Planning, Housing, and Infrastructure (NSW DPHI) and details the proposed backup power system requirements for the data centre.

This report identifies and examines the proposed back-up power system, detailing its scale, capacity, and projected testing protocols, while presenting a justification for its selection by an evaluation of possible alternative solutions. It aims to demonstrate the system's suitability and reliability for backup power to the proposed mission-critical facility.

2.2 Response to SEARS

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (**SEARs**) dated 11 April 2025 issued for the SSDA (**SSD-82211208**). Specifically, this report has been prepared to respond to the SEARS requirement issued below:

Table 1: SEARs Compliance

Item	Description of Requirement	Section Reference (this Report)
10. Backup Power Requirement	▪ Provide a detailed overview of any proposed back-up power system, including the scale and capacity of the system, and any associated testing procedures (frequency and duration). ▪ Provide a detailed justification for the proposed back-up power system, including alternatives considered.	3 Backup Power Requirement 4.2 Alternatives Considered 5.2 Generator Design 5.3 Fuel on Site 5.4 Testing Procedures

2.3 The Site

The site is located at 78 Lockwood Road, Erskine Park, within the Penrith Local Government Area (**LGA**), approximately 40km west of the Sydney Central Business District (**CBD**), 20km west of the Parramatta CBD, and 10km north-east of the future Western Sydney International Airport.

The site is an irregular shaped 7.7-hectare (**ha**) lot bounded to the north by Lenore Drive and to the east by a zoned E2 Environmental Conservation corridor that follows Ropes Creek. It relies upon access from a cul-de-sac at the eastern end of Lockwood Road at the site's southern boundary. An aerial photograph is provided at Figure 2-1.

Figure 2-1: Site Plan (Source: Urbis GIS, 2025)

The project comprises the construction of a data centre development including the following key components:

- Site preparation and bulk earthworks.
- Temporary construction access from Lenore Drive.
- Construction of a three-storey data centre comprising two buildings, with a maximum height of 26.5 metres and a total gross floor area (GFA) of approximately 56,506m², including technical data halls, office and administrative areas, and ancillary circulation space.
- At-grade under-croft car parking (34 spaces) within the building footprint, plus an additional 44 on-site spaces, providing a total of 78 parking spaces.
- Separate generator gantry accommodating 188 backup generators.
- Landscaping and associated public domain works.
- Extension and augmentation of physical infrastructure and utilities as required, including an on-site substation integrated within the building footprints.
- Off-site works comprising the delivery of two 330kV transmission lines from the TransGrid Sydney West Substation site to the subject site, utilising existing road reserve along Lenore Drive.

This project is proposed to be delivered in two (2) construction stages as follows:

- Stage 1: Eastern data centre building, on-site substation, generator gantry, external plant and equipment, new Lockwood Road access, internal roads, car parking, and landscaping, External HV Cabling Route
- Stage 2: Western data centre building, gantry expansion, external plant and equipment, additional car parking and landscaping.

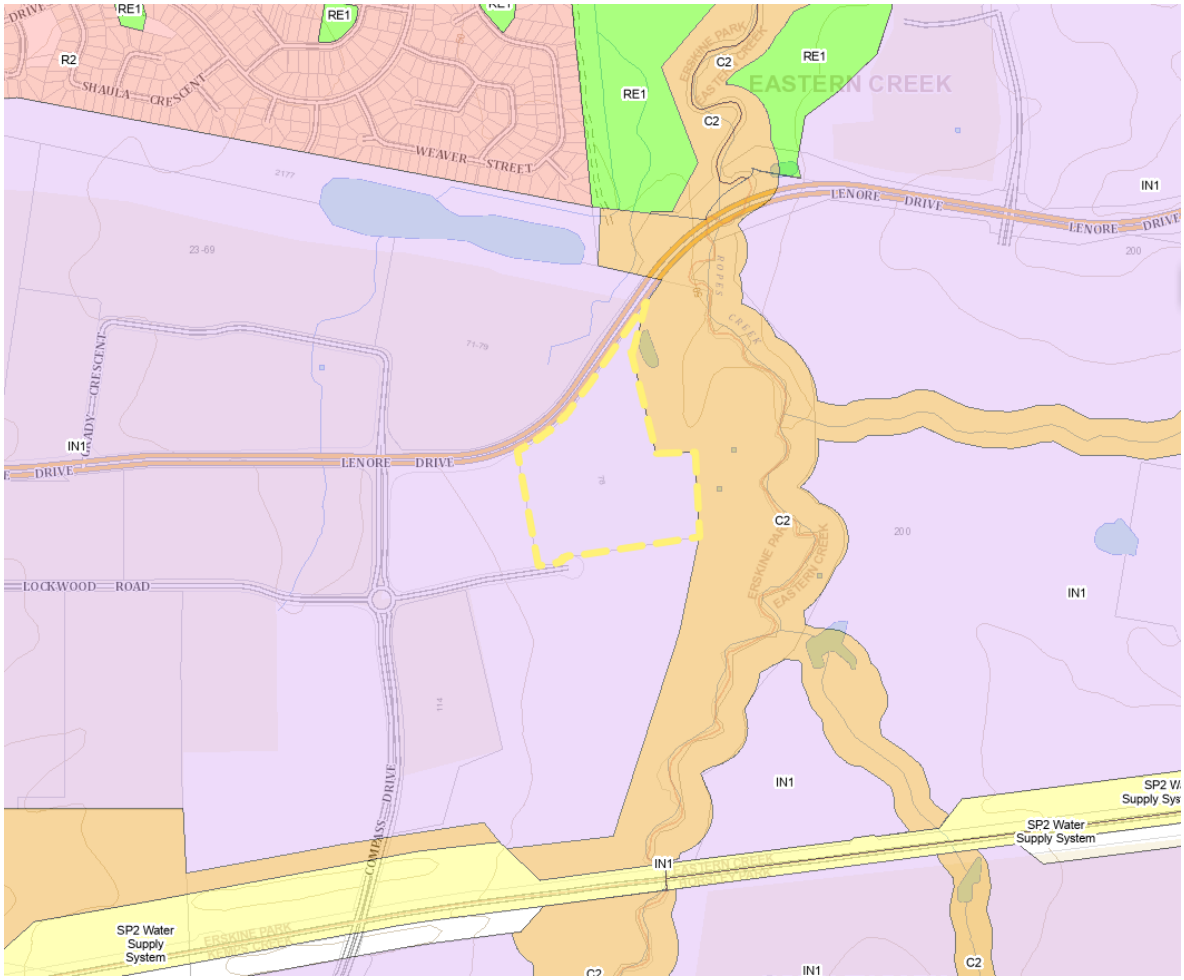

Figure 2-2: Site Context and Zoning (Source: PENRITH Local Environmental Plan, 2010)

The site is located within the 'Fitzpatrick Industrial Estate', an area of approximately 140-ha of land located on Lenore Drive. The estate is bounded by Ropes Creek to the east, the Erskine Park residential area to the north, and the Sydney Catchment Authority pipeline to the south. The Fitzpatrick Industrial Estate is located within the Western Sydney Employment Area (WSEA). The WSEA has long been identified as the single largest greenfield industrial precinct to serve the growing demand for industrial lands in the Sydney Metropolitan Area for the next 20 to 30 years.

The site is surrounded by a variety of industrial land use activities and significant transport and utilities infrastructure. Immediate surrounding development includes:

- **North:** The site is bounded to the north by Lenore Drive and the adjacent AutoNexus, a provider of automotive logistics and supply chain solutions. Further afield is the Erskine Park residential area.
- **East:** Ropes Creek adjoins the site to the east. This is zoned E2 – Environmental Conservation.

An artificial wetland was established immediately east of the subject property boundary and within this E2 zoned land to support the industrial use of the site which results in stormwater runoff being conveyed to the E2 corridor.

- **South:** The Sydney Catchment Authority Pipeline is located approximately 540 metres to the south.
- **West:** Lot 101 and the remainder of the Fitzpatrick Industrial Estate comprise the surrounding land uses to the west. These include a variety of warehouse and logistics land uses.

The following table summarises the key features of the site.

Table 2: Site Description

Feature	Description
Site address	78 Lockwood Road, Erskine Park, NSW, 2759
Legal description	Lot 101 in Deposited Plan 1268632
Site area	77,241.97sqm
Frontages	▪ North (approx. 357m): Lenore Drive ▪ East (approx. 498m): Environmental conservation land, including an artificial dam at the immediate north-east and Ropes Creek further east ▪ South (approx. 292m): Lockwood Road (at south-west); Residual industrial land (along remainder of frontage) ▪ West (approx. 207m): Industrial land
Site topography	The site is generally flat, however exhibits a fall of approximately 3m from the west to the east. The existing site levels were created following the approval of DA19/0818.
Vegetation	The site has been largely cleared of vegetation. There is a small strip of grass and young trees along the northern boundary alignment, on a temporary bund established under DA19/0818. This area of the site is not identified as having any significant biodiversity or environmental qualities. A small portion of the site area – approx. 538sqm of land at the south-east – is zoned C2 Environmental Conservation zone and contains a small amount of grass and tree canopy.
Built environment	The site comprises vacant land and does not contain any existing built form structures. The site survey indicates that there is a drainage channel along the northern boundary of the site.
Contamination	Contamination issues on the site and across the broader, original landholding (being the Fitzpatrick Estate) were considered and resolved as part of development consent DA06/1646. A Validation Report dated 2007 outlined remediation works required and confirmed that the Fitzpatrick Estate lands could be made suitable for industrial uses. A later Validation Report, dated November 2008, was commissioned subsequent to site remediation. This report confirmed that the risk of contamination on the site was greatly reduced following the remediation works.
Flooding	The eastern portion of the site is identified as flood prone land.
Bushfire	The majority of the site is identified as Vegetation Category 2 bushfire land, with the exception of land along the norther boundary which is identified as Vegetation Buffer land.
Biodiversity	The site is predominantly cleared of all vegetation.
Salinity	The 'Salinity Potential of Western Sydney' map prepared in 2002 by the then Department of Infrastructure, Planning and Natural Resources identifies the site is an Area of Moderate Salinity Potential.
Acid Sulphate Soils	The land is not mapped as containing Acid Sulphate Soils.
European Heritage	The land is not affected by any heritage listings or draft heritage listings. The site is not located within any listed or draft Heritage Conservation Area.

Aboriginal Heritage	Previous Aboriginal cultural investigations have confirmed that given the highly disturbed nature of the site, the potential for Aboriginal cultural relics on the land was found to be low.
Obstacle Limitation Surface	The land is affected by the Obstacle Limitation Surface (OLS) restrictions which apply to the Western Sydney Airport, pursuant to Chapter 4 of State Environmental Planning Policy (Precincts—Western Parkland City) 2021. Development on the land is restricted to a maximum height of RL 230.5m AHD.

2.4 Project Description

The key components of the Project are listed in the following table.

Table 3: Project Details

Descriptor	Project Details
Project Area	▪ The project area extends along the Lenore Drive road reserve and includes the crossing of Ropes Creek. Land affected by the works includes 78 Lockwood Road, Erskine Park (Lot 101 in DP 1268632) and Lots 15, 16 and 17 in DP 1157491 located along Lenore Drive. ▪ While the project area defines the extent within which infrastructure may be located and works may occur, not all areas will be disturbed. Detailed design will refine the final alignment of the transmission cable within the road reserve and the location of joint bays and associated infrastructure within the assessed project area.
Proposed Use	Data centre with ancillary office space.
Project Description	▪ Site preparation and bulk earthworks. ▪ Temporary construction access from Lenore Drive. ▪ Construction of a three-storey data centre comprising two buildings, with a maximum height of 26.5 metres and a total gross floor area (GFA) of approximately 56,506m², including technical data halls, office and administrative areas, and ancillary circulation space. ▪ At-grade under-croft car parking (34 spaces) within the building footprint, plus an additional 44 on-site spaces, providing a total of 78 parking spaces. ▪ Separate generator gantry accommodating 188 backup generators. ▪ Landscaping and associated public domain works. ▪ Extension and augmentation of physical infrastructure and utilities as required, including an on-site substation and water storage tanks integrated within the building footprints. ▪ Off-site works comprising the delivery of two 330kV transmission lines from the TransGrid Sydney West Substation site to the subject site, utilising existing road reserve along Lenore Drive.
Total Gross Floor Area	55,506 sqm
Building Height	26.5 metres over 3 storeys
Floor Space Ratio	0.73:1
Data Houses	32 data houses
Landscape Area	15,806.37sqm of deep soil (20.5% of site)
Car Parking	78 car spaces including 2 DDA space
Motorbike Spaces	3
Bicycle Spaces	30
Utilities	Provision of required utilities including:

	▪ 188 x diesel generators ▪ 2 x above-ground water tank for fire water ▪ 330/132/11kV switching station
Power Consumption	450 MW
Operations and Management	The facility will be operated on a 24-hour, 7 day a week basis.
Existing Services and Infrastructure	The site is fully serviced; however, existing services and infrastructure will be extended, adapted and augmented to meet the demands of the project.
Job Numbers	Construction: 1,482 Operational: 200

2.5 Stakeholder Engagement

Stakeholder consultations with Transgrid are ongoing. Refer to the SEARs Infrastructure Report for further details on stakeholder consultations.

2.6 Methodology

This section outlines the methodology used to identify the baseline and undertake the assessment of selection and potential impacts of the proposed backup power system on the surrounding area.

2.6.1 Study Area

The assessment area will be limited to the subject site (including site boundary) and the surrounding roads/buildings.

2.6.2 Method of Assessment

To address the project SEARs, this report has analysed the proposed electrical topology of the site and calculated the individual and aggregate backup power required for each building. The backup power sources have been identified through availability in the market, suitability for Data Centres of this scale, and viability for the proposed site. Through reference projects, vendor information and application of Australian design standards, the designs of the generator enclosures and fuel storage have been proposed.

2.7 Existing Environment and Considerations

There are no backup power sources at scale known to exist at the current site. While already located in an industrial zone, there are low density residential properties to the north of the site which may be impacted by the proposed site while in construction and in operation.

The noise and emissions from the site backup power generation needs to be considered and mitigated through the design and operation of the site. While individual backup generation sources may produce limited pollution individually, the aggregate contribution of the site to the environment is of particular interest. These items are covered in other applicable reports.

3 Backup Power Requirement

The new development is proposed to be supplied via a new 330kV/132kV/11kV Substation. The power supply will be distributed throughout the site via the proponent's own underground electrical reticulation infrastructure. The new substation will be dedicated to the proposed site.

The data centre is a mission critical facility and therefore requires back up generation if there is an interruption to the primary utility supply. Each building will be provided with diesel-generators, uninterrupted power supply (UPS) and battery backup systems. The UPS and battery backup system are designed to maintain supply between loss of utility and changeover to the generator supply and are not intended to maintain the full load of the site for an extended period. For the purposes of this report, only the diesel-generators are considered as "Backup" power, the UPS and battery system are for energy storage and short-term supply only.

Provided the energy transmission system in the area is designed to highly reliability, the risk of interruption to the utility supplies is always a possibility. Furthermore, events that are out of the control of the utility, such as accidents, storms etc. also need to be considered. Any interruption without onsite backup power generation would be extremely damaging to the general community through disruption to the internet services facilitated by the data centre in the area.

4 Backup Power Selection

4.1 Selected Power Generation Technology

The Applicant has opted for diesel-generator sets for the backup power source for the proposed site. This is based on the most appropriate technology for a mission critical data centre and the market readiness for this technology in New South Wales. Alternatives have been considered for this site, but none are considered viable except for alternative fuel for the generator engines. See Section 4.2 below for further details.

4.2 Alternatives Considered

As part of the design development process, LCI has explored various alternatives to diesel fuel for delivering the essential standby power required to meet the development's redundancy needs. After evaluating the site's substantial electrical demand, the critical nature of redundancy, and the risks associated with power failure, the team determined that diesel generation offers the most suitable and justified solution.

Diesel generator systems represent a well-established and reliable technology, supported by extensive industry expertise and a strong track record of performance when properly maintained. In contrast, emerging alternatives with comparable energy capacity are still in early stages of development. Given the importance of uninterrupted operations throughout the project's lifespan, adopting these newer technologies would introduce unacceptable levels of risk.

4.2.1 Potentially Suitable for Deployment

The following table describes the backup supply technologies considered, rating its suitability for deployment for hyperscale data centres. The following technologies were recommended as potentially suitable for deployment as long duration backup supply in data centres:

- Lithium-ion batteries
- Diesel generators with renewable diesel (hydrotreated vegetable oil or HVO) as a fuel
- Open Cycle Gas Turbines (OCGT) or Reciprocating Engines with natural gas as a fuel
- Hydrogen Fuel Generators

Table 4: Backup Power Options Analysis

Technology	Description	Technology maturity	Suitability for Data Centres	Limitations for viability	Viability for the site
Lithium-ion Batteries	Lithium-ion batteries utilize an anode (negative electrode, usually made of graphite), a cathode (positive electrode, from a lithium metal oxide) and	**High** – due to their high energy density, lightweight design and relatively long cycle life, lithium-ion batteries are	**Possibly suitable**: Advantages: • High power density • Declining costs Disadvantages: • Large physical footprint and	Space Constraints: • Reduction in spatial requirements unlikely for this technology. • Capex costs: High due to	Due to the spatial requirements of lithium-ion batteries for the quantity of power generation required, coupled with fire-separation and safety requirements, it is not feasible to provide sufficient batteries in the event of an extended power

	an electrolyte as a conductor.	widely used in portable electronics, electric vehicles and other energy storage systems.	Capex given the site backup requirements • Fire risk	the required capacity.	failure to the site. Current lithium-ion battery provision to the site is to facilitate the switch between utility and backup power. Hence, this technology is **not viable** to be used as standalone backup power for the site.
HVO renewable diesel fuel	HVO fuel (Hydrotreated Vegetable Oil) is a renewable alternative to diesel made from vegetable oil, waste fats and other biological matter. Waste cooking oil, animal fats etc. are collected, with impurities removed during pre-treatment. The stock is then hydrotreated to remove oxygen and saturate the molecules. The final product is then refined to meet diesel standards.	**Moderate** – the HVO supply chain is still fairly localised, and dependent on availability of feedstock. There are no large scale HVO supply chain or support policies in Australia.	**Possibly suitable**: Advantages: • Biodiesel blends are compatible with existing diesel engines • Lower emissions than regular diesel. 100% renewable. Disadvantages: • Availability and supply chain	Availability of HVO is large quantities (available supply chain). There is a requirement of high volume of HVO diesel to be delivered to site for refills.	The site is proposed to use diesel generators, which shall utilize HVO fuel compatible engines, subject to availability and local supply chain, which is currently limited. Hence, this makes HVO fuel **moderately viable**.
Natural Gas Fuel	Natural Gas can be used as a backup generation fuel via gas turbine generators.	**Moderate** - Natural Gas has a mature supply chain, with gas turbine generators used frequently in electric grids globally.	**Possibly suitable**: Advantages: • Proven technology, with fuel delivery via existing gas supply pipes Disadvantages: • Higher emission and noise criteria • Complex and specialized maintenance • High Capex • High cooling requirements	• Environmental approvals, depending on exact technology, expected usage and noise. • Capacity from the existing gas pipeline, which may impact supply within the area	**Not viable** – this technology requires additional space that what is currently available on site, due to additional cooling and ventilation requirements. Furthermore, the impact of a 450MW gas turbine on the local gas supply pipeline is significant and may trigger upgrade requirements.
Hydrogen Fuel	Hydrogen can be used as a backup generation fuel source, via hydrogen fuel cells.	**Moderate** – the current hydrogen supply chains are still immature, with progress improving with passing years. There are currently no data centres utilizing hydrogen fuel for backup generation at this scale.	**Possibly suitable**: Advantages: • Zero emissions • Long storage duration • Quire operation Disadvantages: • Supply chain issues • Large storage requirements, likely triggering major Hazard requirements	• Large spatial requirements due to hazardous hydrogen gas storage • Hydrogen supply chain limitations • Capex costs in line with alternate options	**Not viable** – this technology requires additional space that what is currently available on site, due to storage tank requirements. Furthermore, hydrogen supply pipeline would not be possible in the development timeframe. Safety considerations would have to also be considered, particular to neighbouring site regarding the storage of large quantities of hydrogen.

5 Backup Power Generators

5.1 Site Design

The generators are located adjacent to the buildings they serve, towards the west of the site in an external generator gantry (Figure 5-1). The site is proposed to include a total of 188 (94 per Data Centre Building) containerised diesel generators, each with 990L day tanks within the enclosure and individual double skinned diesel storage tanks with leak detection and a capacity of approximately 22,700L. The generators are proposed to be installed in a 'stacked' arrangement within levels 1-4 of the gantry, with the ground level utilized to house the diesel storage tanks.

The generators and the associated support and storage infrastructure will be constructed in a staged manner, with final capacity reached once all colocation spaces are in use (anticipated to be by 2035). Fuel is proposed to be transferred from the dedicated storage tanks to the day tanks via a duty / standby pumping system with corresponding filtration units located within an enclosure on each respective fuel tank.

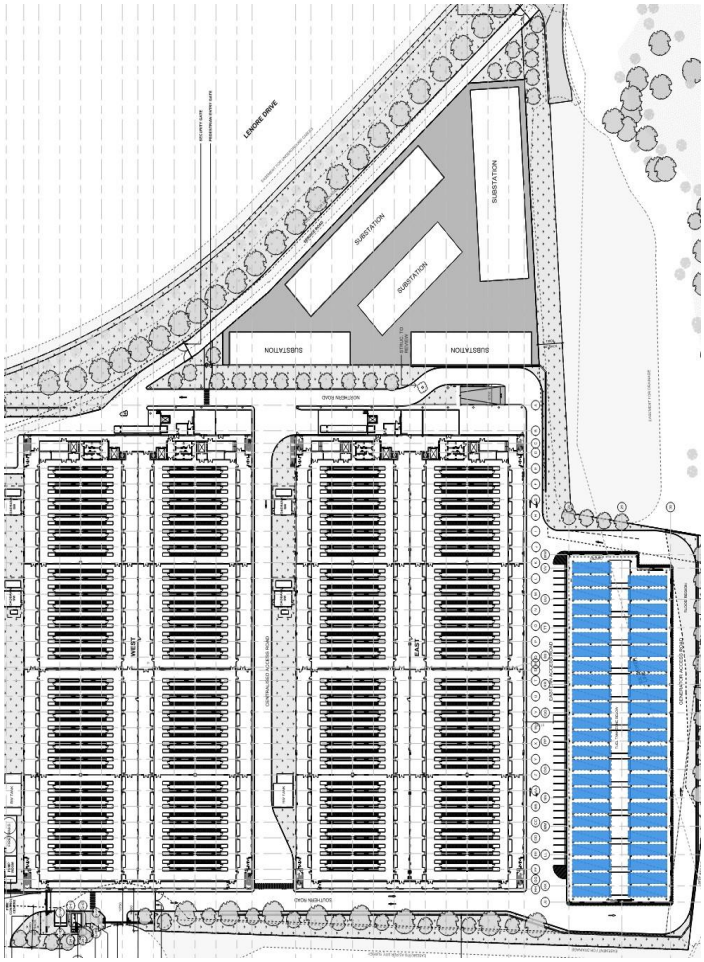

Figure 5-1: Location of proposed Generators (Blue)

5.2 Generator Design

The proposed site will use a total of 188 high voltage 3.1MW generators. This includes 94 generators for the East Building (Stage 1) and 94 for the West Building (Stage 2). These generators will only operate in the event of a mains utility failure to the respective electrical block or for testing purposes. These generators support a total load of 450MW.

5.2.1 Enclosure

To improve acoustics, safety, and general site delivery/readiness, all generators are proposed to be housed in prefabricated, acoustic-rated, enclosures with integrated day-tanks to store diesel locally. The container will include the following:

- Generator Engine Set.
- Local Fuel System, including pumps.
- Control and Power Panels.
- Acoustic attenuation for cold air intake, hot air discharge (for ventilation)
- Exhaust Gas Silencer & Flue

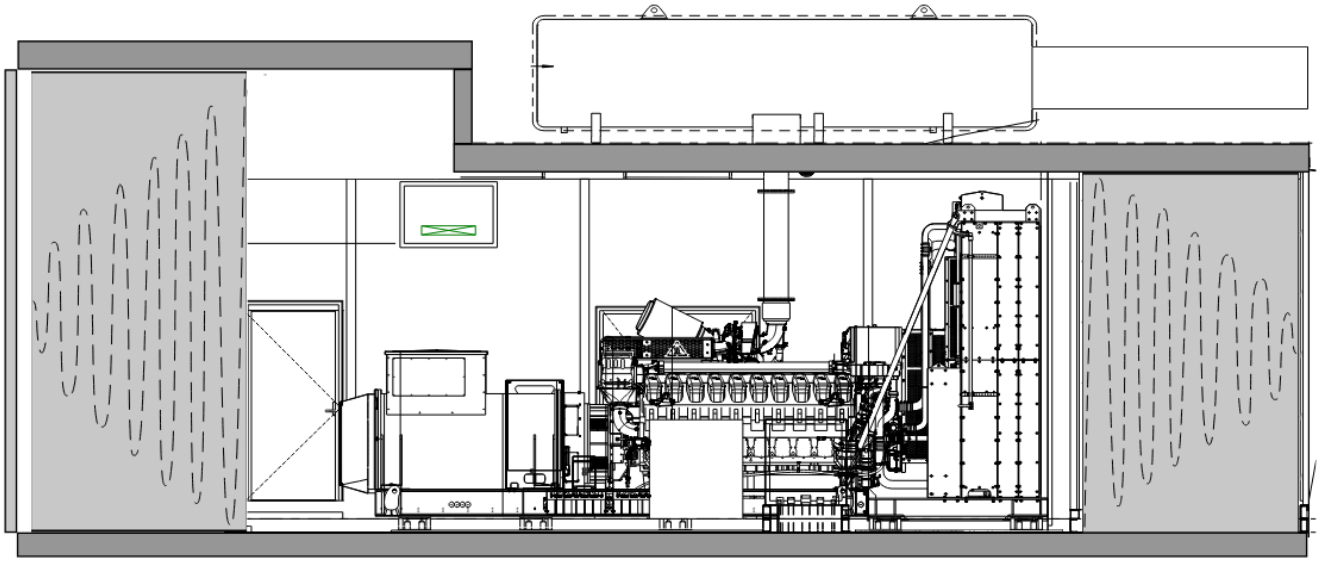

Figure 5-2: Typical Generator Enclosure

5.2.2 Acoustics

Details of the site noise modelling are contained within the *Noise and Vibration Impact Assessment* report by Acoustic Logic. Please refer to that report for further information regarding overall acoustic performance, including generator noise outputs.

5.2.3 Emissions

For further details please refer to the Air Quality Impact Assessment Report by Northstar.

5.3 Fuel on Site

The generator engines on site will use diesel fuel to generate power. All of the generator enclosures will be located on a 4-level gantry structure where the generators are located on levels 1-4 (two rows of generators with a shared exhaust duct located in between each row). The generators are provided with fuel from dedicated individual double bunded fuel tanks on the ground level (refer to Figure 5-3). The dedicated fuel tanks will provide 24 hours of fuel for each generator and proposed to be designed to comply with AS 1940.

The following table provides the final storage requirements per building based on the proposed design. These proposed to be implemented in stages, depending on the utilisation of the colocation space. The final fuel capacity is anticipated to be reached circa 2035.

Table 5: Final Fuel Storage per Building

Storage Area	Storage Type	Chemical	Class / Division	Quantity	Unit Capacity (L)	Total Capacity (L)	Comment
East Building Fuel Storage	Diesel Storage Tank (Individual Double Bunded Tank)	Diesel	C1	94	22,700	2,133,800	
East Building Fuel Storage	Day tank	Diesel	C1	94	990	93,060	
West Building Fuel Storage	Diesel Storage Tank (Individual Double Bunded Tank)	Diesel	C1	94	22,700	2,133,800	
West Building Fuel Storage	Day tank	Diesel	C1	94	990	93,060	
External Fire Pumphouse	Diesel Fire Pump Tank	Diesel	C1	2	514.8	1,030	Assumed 10% additional Volume for SFL.
			Total Above Ground Diesel Quantity			**4,454,750L**	

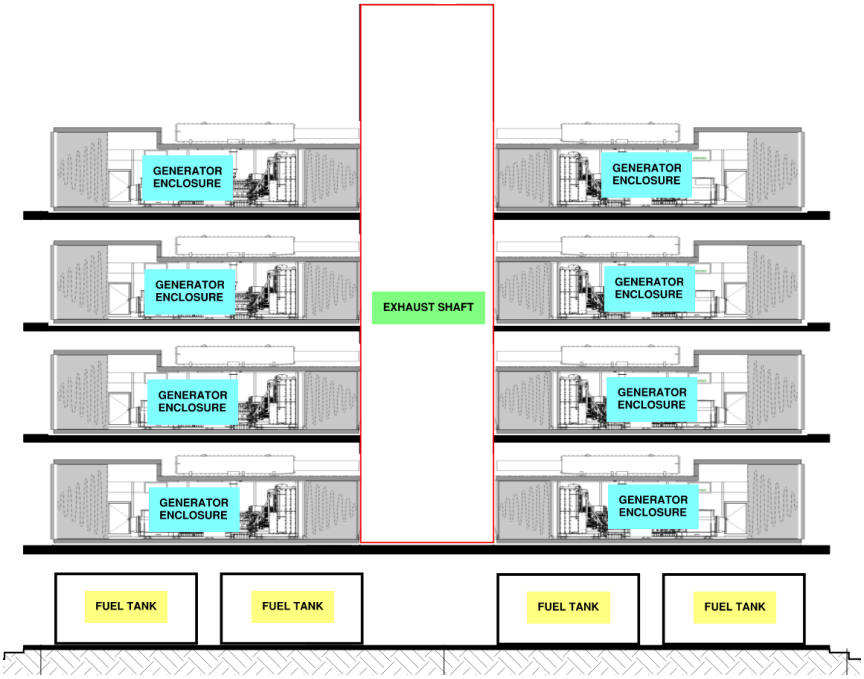

Figure 5-3: Quadruple Stacked Generator Gantry Section

5.3.1 Fuel Storage Requirements

The individual double skinned storage is provided via a dedicated on-ground storage tank per genset. The following table summarises the sizing of the fuel storage for each Building:

Item	Quantity	Comment
Fuel Consumption Rate / Generator	806 l/hr	Based on MTU 20V4000 DS4000 at full load
Backup Time Required	24 hours	
Consumed Fuel per Generator	19,350 litres	
Total fuel Storage Capacity per Generator	22,700 litres	Safe fill level, custom tank to AS 1940
Total no. of Generators	188	
Total Fuel Storage	4,454,750 litres	

The tanks would be custom made, where the tank design is to suit the available space, with final dimensions subject to further detailed design.

5.3.2 AS 1940 Separation Distances

AS 1940 outlines separation distance requirements dependent on the size and type of tank. The design utilises 240 minute fire rated tanks, with a separation requirement of 600mm between each tank as per clause 5.7.6 (b) for above ground horizontally arranged tanks.

On site protected places are defined in Section 1.4.47 of AS1940 as: "*A building where people are employed within the property boundary, including offices, warehouses, manufacturing or processing areas, amenities and other dangerous goods stores where quantities exceed minor storage.*"

The data centre buildings would be considered protected places, with the following separation distances required from the individual double bunded fuel tanks, as per Table 5.4 of AS 1940:

- For C1 Combustible liquids tanks >20kL and <40kL: 4.0 m

5.4 Testing Procedures

The Generators will each be tested to ensure they are functional in the event of a utility failure. Initially all generators as they are installed at the proposed site will undergo commission testing which involves several hours that the generator will run (this is anticipated to be conducted in stages, as backup generators are installed). After the generator(s) are installed and commissioned, regular testing will occur for all generators. For a breakdown of the proposed generator testing across the site, refer to Table 6 below.

Table 6: Proposed Generator Testing Regime

			Tests per Building per Year			
Test Type	**Period**	**Duration**	**SYD01A**	**SYD01B**	**SYD01C**	**SYD01D**
Run Test	Monthly	5	12	12	12	12
Off-load Run Test	Quarterly	10				
Load Bank Testing - 70% Load	Annual	60				
Post Load Test	Cooldown Period	10				
Total Runtime per Yearly test		170				
Total cumultive Runtime (mins)		8160				
Total cumultive Runtime (hours)		136				

Generators are tested by connection to a load bank (equipment that utilizes electric power for testing purposes). It is assumed at this stage that four generators (two per building) would be tested at any one time, with each building provided with only two (2) load bank at any one time. Tests are to be conducted concurrently to reduce the overall testing duration and achieve a cumulative total of not more than the 200 hour exemption limit.

The testing regime is based on the vendor's agreed annual maintenance requirements. If a local power outage requires the generators to operate in emergency mode, the operating hours will be counted toward the annual requirement. Where appropriate, scheduled maintenance may be deferred to the following year to account for hours already accumulated under load.

6 Conclusion

This report has provided an overview of the proposed diesel backup power system which will support the 450MW of load through 188 no. 3.1MW generators. These generators will be tested at commissioning for several hours each, and subsequently once every few months for several hours at a time. Housing these generators inside acoustic-rated enclosures will mitigate risks of excessive noise pollution in the area. Limiting testing to the frequency mentioned within this report will reduce overall emissions and fuel usage at the site.

While other technologies have been considered for backup power generation, none are suitable for this site due to multiple constraints. The primary challenges include limited market availability, insufficient infrastructure to support increased electrical demands, and restricted on-site space, which makes alternative solutions impractical for addressing medium-term utility power outages.

The backup power generation system has been proposed to offer the most practical and effective solution for the proposed site. This ensures that the state-significant development can begin delivering services promptly, while minimizing disruption to the surrounding community and environment.

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