Infrastructure Requirements & Utilities Report

PROJECT ATLAS DATA CENTRE

Client:
Goodman Property Services (Aust) Pty Ltd

Revision:
A

Date:
4/17/2026

LCI
ARTELIA GROUP

REPORT INFORMATION

Project	Project ATLAS Data Centre
Title	Infrastructure Requirements & Utilities Report
Client	Goodman Property Services (Aust) Pty Ltd
Revision	A
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Prepared By	LCI Consultants Sydney Office Level 8, 73 Miller Street North Sydney, NSW 2060
ABN / ACN	92 124 107 973 / 124 107 973
Author	LCI Consultants

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1 Preface

1.1 Executive Summary

The Infrastructure Requirements & Utilities Report has been prepared by LCI Consultants on behalf of Goodman property Services to accompany a State Significant Development Application (SSDA) for the construction and ongoing operation of a data centre facility and associated Offsite Enabling Infrastructure (OEI) at 10 Roberts Road, Eastern Creek within the Blacktown Local Government Area ("LGA"). The site is legally described as Lot 553 in Deposited Plan DP1110447. This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project (SSD-101067971) dated the 16th of January 2026. This report provides an assessment of the proposed development's impact on surrounding utility infrastructure and service provider assets and outlines the necessary on-site and off-site infrastructure upgrades required, along with the arrangements to ensure timely implementation, staging and ongoing correspondence with utility providers.

2 Introduction

2.1 Introduction

A State Significant Development Application (SSDA) has been prepared to support a data centre at 10 Roberts Road, Eastern Creek (the **site**) and associated offsite enabling infrastructure.

The proposal will include:

- Site preparation works including demolition, bulk excavation and removal of existing structures on the site, tree and vegetation clearing and bulk earthworks.
- Construction, fit-out and 24/7 operation of a Data Centre
- Offsite enabling infrastructure
- 2 Data Centre Buildings
    - Building 1 – 2 Levels + rooftop plant
    - Building 2 – 3 Levels + rooftop plant
- Ancillary office, EOT and amenity
- Provision of required utilities including:
    - diesel storage tanks
    - water tanks
    - substations on site
- Vehicle access for 20m articulated vehicles (semi-trailers)
- Associated landscaping and site servicing
- Installation of site services and drainage infrastructure

This Infrastructure Requirements & Utilities Report has been prepared by LCI Consultants on behalf of Goodman Property Services (Goodman Property Services (Aust) Pty Ltd, the **applicant**) to address the Secretary's Environmental Assessment Requirements (SEARs) and accompanying cover letter issued for the Project Atlas Data Centre (SSD- 101067971) dated 26 January 2026.

This report identifies and assesses the site utilities infrastructure requirements, the impacts on existing infrastructure and service providers, as well as the delivery and staging plan for the project.

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 16 January 2026 issued for the SSDA (**SSD- 101067971**). Specifically, this report has been prepared to respond to the SEARS requirement issued below.

Table 1: SEARS Compliance

Project SEAR SSD-101067971	Section of report
Infrastructure Requirements and Utilities	
an infrastructure delivery, management and staging plan that includes:	
• an assessment of impacts of the development on existing utility infrastructure and service provider assets surrounding the site	3.1.2, 3.1.3, 3.3.2
• a detailed written and/or graphical description of infrastructure required on the site, including the electrical substation/s and on-site switch yard/s	3.1.6, 3.1.7, 3.3.3, 3.4.1
• details of the existing capacity of the site to service the proposed development and any extension or augmentation, property tenure or staging requirements for the provision of utilities, including arrangements for electrical network requirements, drinking water, wastewater and recycled water (where required)	3.1.6, 3.1.7, 3.3.3
• the following information relating to potable water / wastewater consumption and energy use:	3.1
○ staging of the development, showing the yearly demand, average daily demand, maximum hourly demand and high demand days (e.g. 95th percentile)	3.1.6 (Table 4)
○ the expected daily usage over a year and/or the expected monthly average daily usage over a year, including seasonal variation	3.1.6 (Table 5)
○ a 24/7 water and energy consumption profile based on a typical 'high demand' day	3.1.6 (Table 4)
○ allocation of supply sources, specifying water sources (e.g. potable and recycled) and their respective volumes, and energy sources (e.g. grid electricity, on-site generation and renewable power purchase agreement) and their respective contributions	3.1.6, 3.1.7, 3.2
○ a description of the measures which would be implemented to ensure water and energy supply resilience and operational continuity during network constraint periods, including any additional on-site water and energy storage or contingency arrangements	3.1.6, 3.1.7, 3.2, 3.3.4
• a description of how any upgrades will be coordinated, funded and delivered on time and be maintained to facilitate the development	3.1.1, 3.1.4, 3.3.3
• identification of any existing infrastructure or easements on or off the site which may be impacted by construction or operation of the development and details of measures to be implemented to address any impacts	3.1.2, 3.1.3, 3.3.2
• details and demonstration that adequate provision of water tanks and fire hydrants for the purposes of fire fighting has been provided on-site.	3.1.6 (Table 6)

2.3 The Site

The proposed Data Centre is located at 10 Roberts Road, Eastern Creek, legally referred to as Lot 553 DP1110447 with Offsite Enabling Infrastructure (OEI) proposed across Lot 21 DP1246626, Lot 20 DP1157491, and Lot 22 DP1246626 to connect to TransGrid's Sydney West Substation & Switchyard (refer to Figure 1 below). The site is located on Country of the Dharug people within the local government area of Blacktown.

The Data Centre site has a land area of approximately 168,574m^2.

The site is identified as part of the Eastern Creek Precinct Stage 3 within the Western Sydney Employment Area. It is located approximately 35km of the Sydney Central Business District (CBD) and 5.1 km from Rooty Hill Train Station.

The site has a site area of approximately 17 hectares and is bounded by industrial development and has a primary frontage of 400m to Roberts Road. The existing site contains an industrial warehouse and surrounding hard-stand areas.

Surrounding land uses in the vicinity include:

- Northeast: A range of mixed-use industry & commercial buildings
- Southeast: Data Centre and substation
- South, southwest and west: land primarily owned and operated by TransGrid Sydney
- Northwest: Commercial industry and the Industrial Harvest cafe

The site is zoned IN1 General Industrial within Chapter 2 Western Sydney Employment Area of State environmental Planning Policy (Industry and Employment) 2021 (IESEPP). The proposal is permissible with development consent in the IN1 zone as per the State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP).

A summary of key features for the site and surrounding context is also summarised in the Table below:

Table 2: Summary of Key Features

Item	Description
Site Area	Data Centre – 168,574m^2
Ownership	Goodman
Legal Description	Data Centre - Lot 553 DP1110447 OEI - Lot 21 DP1246626, Lot 20 DP1157491, and Lot 22 DP1246626

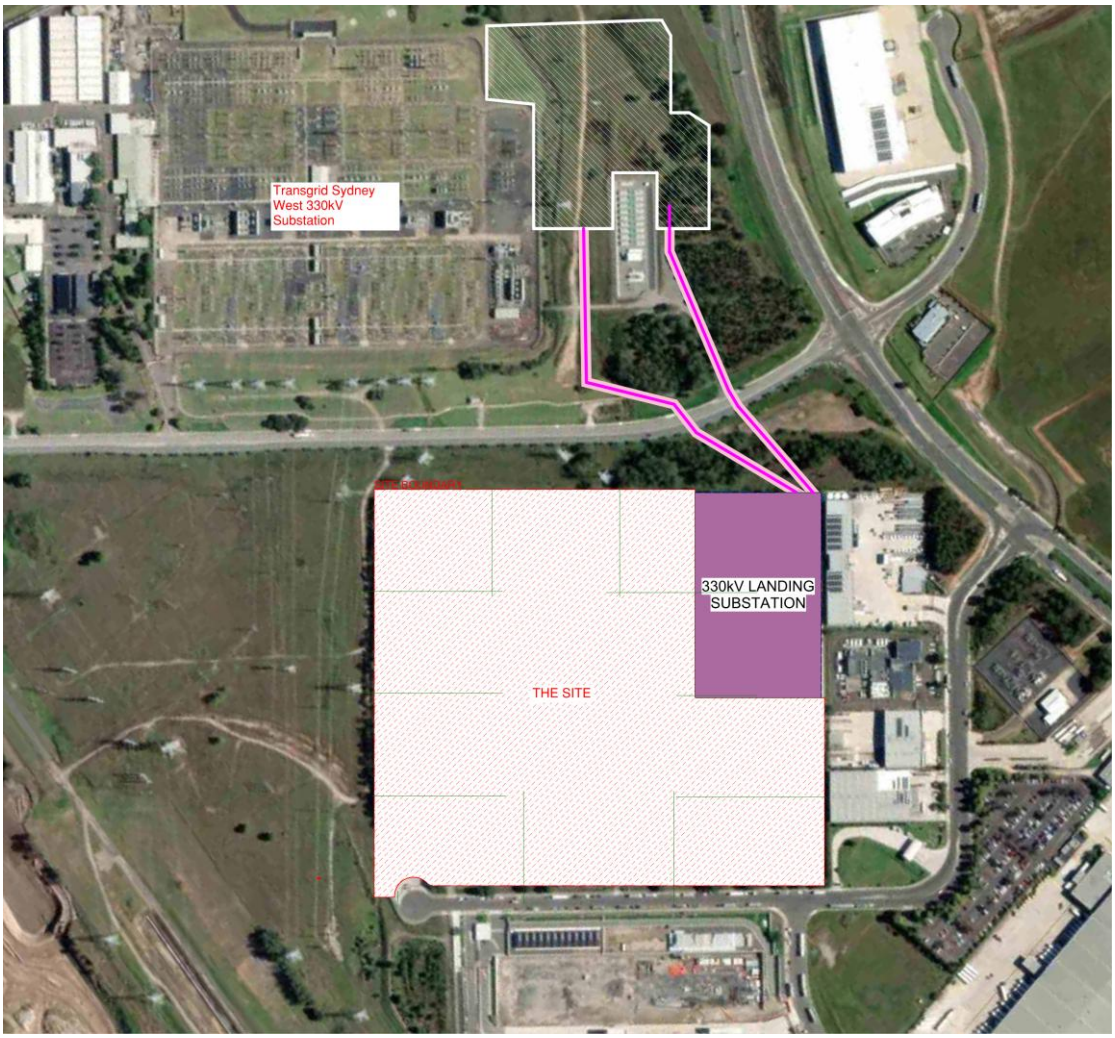


Figure 2-1: Site Plan (Source: Grimshaw Architects)

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 data centre development relates to Lot 553 in Deposited Plan 1110447 and comprises an area of approximately 168,574sqm.
Proposed Use	Data centre with ancillary office space.
Project Description	▪ Site preparation and bulk earthworks. ▪ Construction of two (2) three and two-storey data centre buildings, with a maximum height of 14.04 and 24.84 metres respectively, and a combined total gross floor area (GFA) of approximately 99,130 sqm including technical data halls, office and administrative areas, and ancillary circulation space. ▪ Onsite parking of 150 parking spaces, comprising a total of 3 accessible parking spaces.

	▪ Landscaping and associated public domain works. ▪ 249 generators for backup power. ▪ Extension and augmentation of physical infrastructure and utilities, as required including new on-site substation towards the East of the lot and water storage tanks integrated within the site footprint.
Total Gross Floor Area	99,130 sqm
Building Height	14.04 and 24.84 metres for Building 1 & 2 respectively
Data Halls	29 data Halls
Landscape Area	Refer to Landscape Report
Car Parking	150 car spaces including 3 DDA space
Bicycle Spaces	13 spaces (across both buildings)
Utilities	Provision of required utilities including: ▪ 249 x diesel generators ▪ 16 x water tanks for industrial water. ▪ 2 x above-ground water tank for fire water ▪ 330/33kV switching station
Power Consumption	500 MVA (site ultimate)
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.

2.5 Stakeholder Engagement

Stakeholder consultations with all relevant stakeholders is currently ongoing, with key elements documented in this report.

3 Infrastructure Requirements

3.1 Hydraulic and Fire Infrastructure Connections

3.1.1 Governing Authorities Requirements – Hydraulic and Fire Services

Sydney Water operate the potable water and wastewater supply within this precinct. The wastewater authority that operates in this area is also Sydney Water. Sydney Water permits potable water supply and fire water supply connection for each site. Further, Sydney Water permits a sewer connection for each site.

3.1.2 Existing Sewer Assets

An existing Ø300mm Sydney Water Sewer Main enters the site in the South-East corner located on Robert Road. The pipe enters approximately 4m into the site, it is not anticipated that this pipe will require any protection works as it is located outside the proximity of any proposed building or inground works. A Water Services Coordinator will

be engaged in the future design stages to coordinate the Building Plan Approval and the required works with Sydney Water. Refer to Figure 3-1 for the location of Sydney Water sewer mains and site sewer connection.

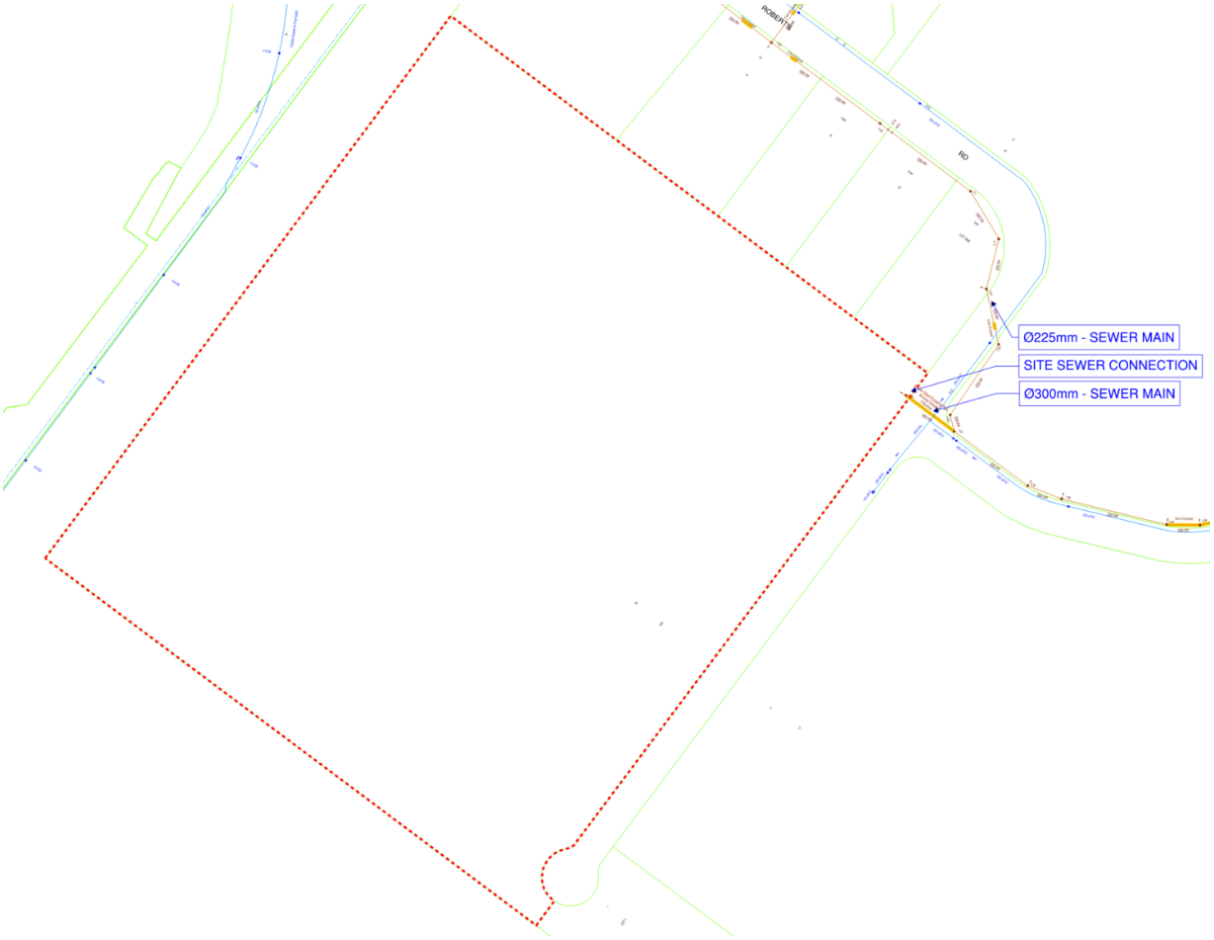


Figure 3-1: Sydney Water Before You Dig Australia (BYDA) Sewer Map

3.1.3 Existing Potable Water Assets

An existing Ø200mm Ductile Iron Polymeric Lined Sydney Water reticulation main is located on Roberts Road. The development has a proposed flow rate of 113L/s, it is to be confirmed if the Ø200mm water main will be suitable to serve the site.

There are no utility water services reticulating through the site and therefore it is not anticipated that any protection or re-routing works for the water supply will be required for this project.

Refer to the figure below for the map of the location of Sydney Water networks.

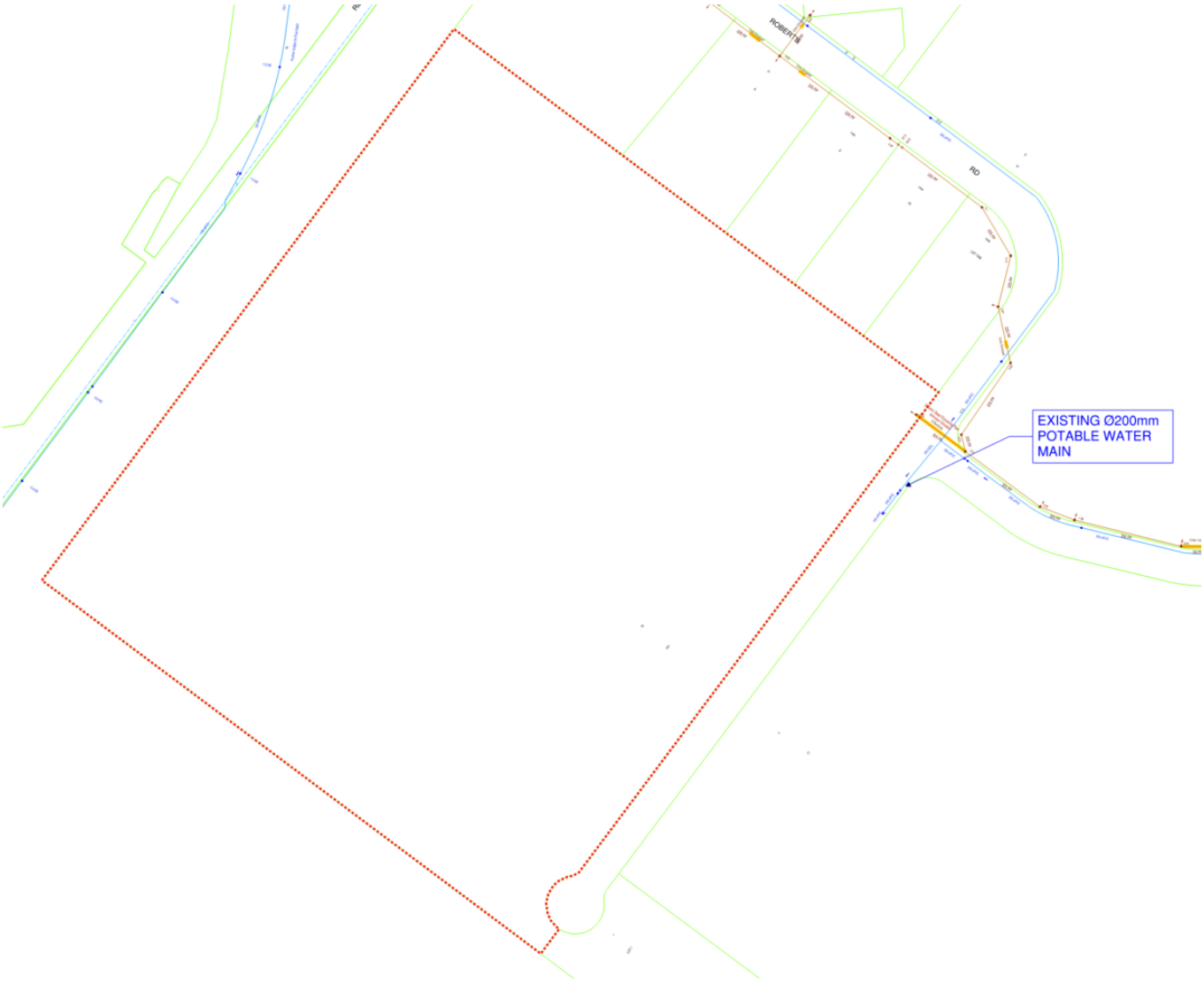


Figure 3-2 Sydney Water Before you Dig Australia (BYDA) Water Map

3.1.4 Potable Water Main Pressure & Flow Statement

Refer below for the Sydney Water pressure & flow statement for the Ø200mm Ductile Iron Polymeric Lined in Roberts Road. The statement indicated a maximum permissible flow within the main of 118L/s @ 18m head.

Attention: Safeer Husain Date: 13/10/2025

Pressure & Flow Application Number: 2247744
Your Pressure Inquiry Dated: 2025-10-07
Property Address: 10 Roberts Road, Eastern Creek 2766

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

ASSUMED CONNECTION DETAILS

Street Name: Roberts Road	Side of Street: East
Distance & Direction from Nearest Cross Street	Corner with Capicure Drive
Approximate Ground Level (AHD):	75 metres
Nominal Size of Water Main (DN):	200 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	65 metre head
Minimum Pressure	43 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	43
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	10 15 20 25 30 40 50 60	42 42 41 41 40 39 37 35
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	10 15 20 25 30 40 50 60	42 42 41 41 40 39 37 35
Maximum Permissible Flow	118	18

(Please refer to reverse side for Notes)

Figure 3-3 Pressure & flow statement for 200mm Sydney Water Ductile Iron Polymeric Lined on Roberts Road

3.1.5 Sydney Water Applications

Feasibility Application

At the time of issuing this report, a Water Services Coordinator has been engaged for the project directly through the client, and the Feasibility Application was submitted to Sydney Water. The feasibility advice issued to the Applicant addressing providing as general guidance only and reflecting system conditions and requirements at the time of issue. The advice did not constitute approval and does not allocate or reserve any system capacity for the proposed development.

The Sydney Water Feasibility Application included the full part site water demand and sewer discharge rates. The intent of submitting this application is to gain preliminary advice from Sydney Water regarding whether the nearby utility services have the capability to meet the demand of this site and what contributions, upgrades, or extension works may be required.

The feasibility advice is indicative in nature and was based on the current understanding of the servicing authority's infrastructure and capacity. It is noted that available system capacity may be fully utilised prior to the issue of development consent, and as such, the servicing requirements applicable to any approved development may differ from those outlined in the feasibility advice.

Should development consent be granted by the relevant consent authority, the Applicant will be required to apply separately for a Section 73 Certificate. This application must be lodged through a Water Servicing Coordinator and will be subject to the requirements, system capacity, and policies in place at the time of assessment. A new application and associated fees will apply.

Section 73 Application

The Section 73 Application has not been submitted at the time of issuing this report. The application will be submitted once the SSDA is lodged. The results of the feasibility application will form the basis of the information and requirements of the Section 73 Application. The purpose of the Section 73 Application will be to ascertain what flow rates and discharge rates the Sydney Water network can provide the site and to gain the Notice of Requirements, which will lay out the required works that will need to be completed prior to applying for the Section 73 Compliance Certificates

Building Plan Approval

The Building Plan Approval has not been submitted at the time of issuing this report. The application will be submitted once the SSDA is approved. A Water Services Coordinator is currently being engaged to facilitate the Building Plan Approval and associated works. As shown in Section 2.1.2 there are existing Sydney Water Sewer assets located within the site that will be near construction works. It is anticipated that this project will require an out-of-scope building plan approval as the existing sewer assets on site will likely need to be redirected or protected. The Water Services Coordinator will confirm the extent of required works in future design stages.

3.1.6 Water and Sewer Demand Breakdown

A detailed breakdown of the water and sewer demands for this development is outlined below. The site shall have domestic water usage which serves amenities within the office/administrative portions of the data centre and serves irrigation and general cleaning. The site has industrial water usage which is water that feed the mechanical cooling system for evaporative cooling purposes. Please refer to below for the breakdown of the site water demand and sewer discharge:

- **Development Staging and Water Demand**

Water demand has been assessed for each stage of development, including the ultimate development scenario. The assessment considers average day demand, maximum hour demand, high-demand days, and peak day demand (1 in 10 year), consistent with Sydney Water servicing assessment criteria.

Table 4: Staging Water Demand

Development Stage	IT Load (MW)	Average Day Demand (kL/day)	Maximum Hour Demand (kL/hr)	High Demand Day (95th Percentile) (kL/day)	Maximum Daily Demand – Peak Day (1 in 10 Year) (kL/day)
Stage 1	48	2069	440	2758	2913
Stage 2	120	5172	1099	6895	7283
Stage 3	180	7759	1648	10343	10924
Stage 4	216	9310	1978	12411	13109
Stage 5	348	15000	3187	19996	21120
Ultimate Development	348	15000	3187	19996	21120

- **Water supply contingency**

The evporative cooling systems for each Data Center has a very high instantaneous water demand requirement. Inorder to reduce the instantaneous water demand which the site will require from the respective water suppliers network, the design team has decided to provide on-site buffer storage for each building which is dedicated for the evaporative cooling equipment and will allow water to be drawn off at a faster rate than is permitted from the Sydney Water Network. This has the benefit of reducing the demand on the water network while still achieving the water load requirements of the Data Center. Refer to Table 5 for storage tank capacities where it is outlined that the water storage volume as designed is greater than the required peak daily demand.

Table 5 Storage Tank Capacity - Staged

Stage	Power Demand (MW)	Storage Capacity (ML)
Stage 1	48	3.38
Stage 2	120	8.44
Stage 3	180	12.66
Stage 4	216	15.19
Stage 5	348	24.48
Ultimate Development	348	24.48

NOTE: The site currently provides 16 × 1.53 ml of water storage in accordance with the current water demand requirements. This is subject to change pending final water supplier requirements. goodman is currently coordinating with Sydney water and CONEXA to confirm site water supply connections.

- **Annual Water Demand Profile – Ultimate Development**

An annual water demand profile has been prepared for the ultimate development to demonstrate seasonal variability and overall system loading. Monthly average daily demand has been adopted as it is generally sufficient for Sydney Water servicing assessment unless otherwise requested.

Table 6: Annual Water Demand Profile

Month	Average Daily Demand (kL/day) – Potable	Average Daily Demand (kL/day) – Industrial Water [Recycled]	Average Daily Discharge (kL/day)
Daily Average	7	14,993	2,708
Daily Average Dec - Feb	7	13,383	2,414
Daily Average March	7	12,189	2,200
Daily Average April	7	10,564	1,907
Daily Average May	7	9,752	1,761
Daily Average June	7	6,747	1,222
Daily Average July	7	6,503	1,176
Daily Average August	7	6,503	1,176
Daily Average Sept	7	8,940	1,615
Daily Average October	7	10,402	1,907
Daily Average November	7	11,377	2,054

NOTE: The above represents the total site water demand and discharge. The proportion of supply from each water source is subject to confirmation by the respective service providers and may vary accordingly. Sydney Water has provided initial advice but has not yet confirmed whether it will supply the full site water demand. In addition, Conexa has been engaged by Goodman Group and is yet to confirm the provision of industrial water to the site.

Accordingly, the final allocation of water sources remains undetermined, with ongoing coordination between Conexa and Sydney Water. Following formal lodgement of the SSDA, a Section 73 application will be submitted, which will confirm the available water servicing and allocation options for the project.

- **Fire Water Demand Profile**

Please note, fire water is not listed within the usage table above as usage of fire water is strictly reserved for the event of a fire for sprinkler & fire hydrant use. The water supply for the fire protection systems shall be in accordance with NCC 2022, AS2118.1-2017 and AS2419.1-2021. Where NFPA 13 & NFPA 855 2022 are more stringent than the Australian standards, provisions for NFPA (2022) will apply. In addition, the evaluation of any water supply shall consider the anticipated peak concurrent domestic and industrial water demands for a fully constructed campus in accordance with the client's fire protection design guidelines.

The sprinkler and hydrant system shall be provided with an acceptable water supply (single supply), as per NCC 2022 for buildings with an effective height not exceeding 25m. The system water supply for the wet fire protection services shall be sourced from two separate storage tanks. The duration and the capacity of the storage tanks shall be the combination of the sprinkler system requirements and the fire hydrant system requirements.

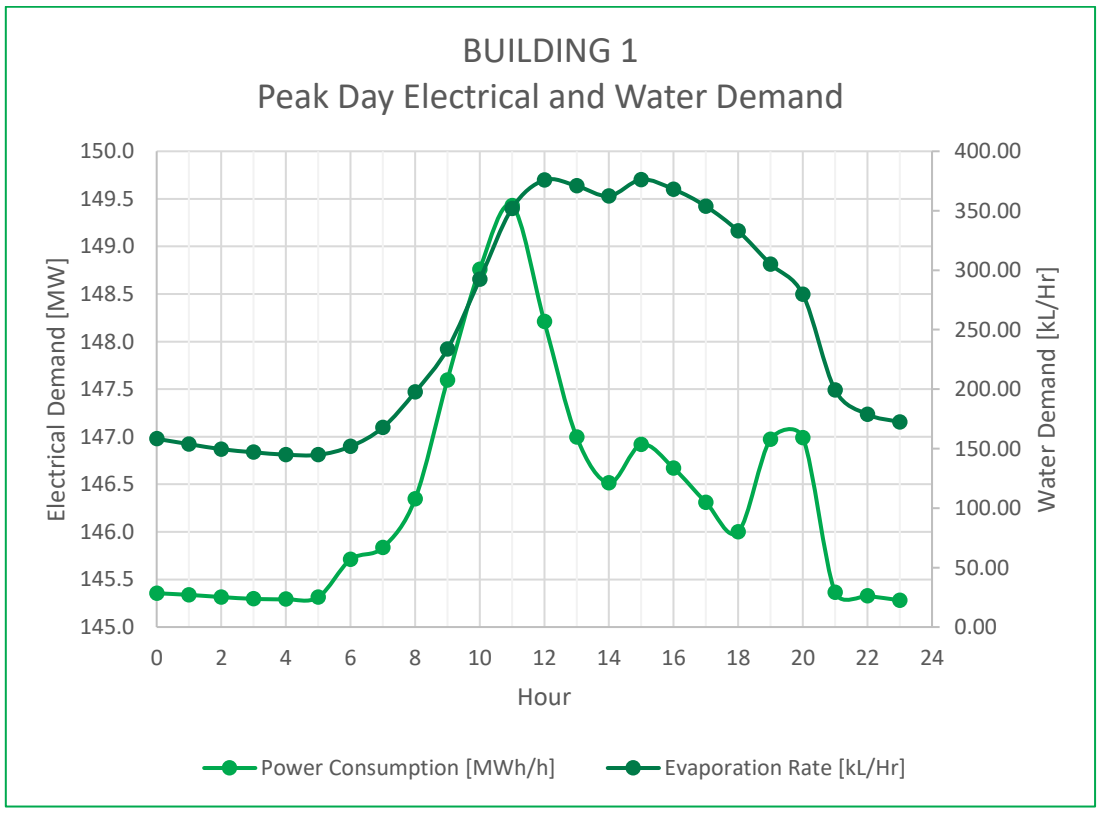
The combined fire water demand for the site is 77.8 L/s as shown in table below.

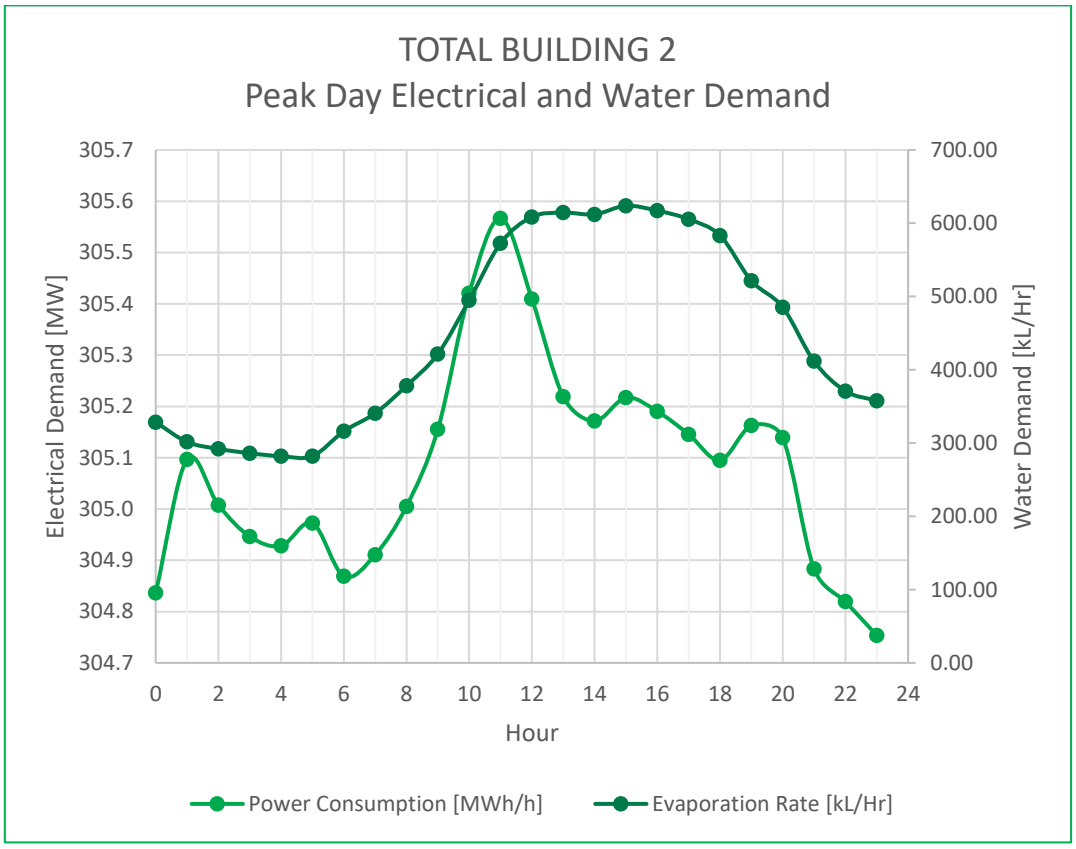
The required fire water storage capacity for the site is 2 x 348kL Tanks

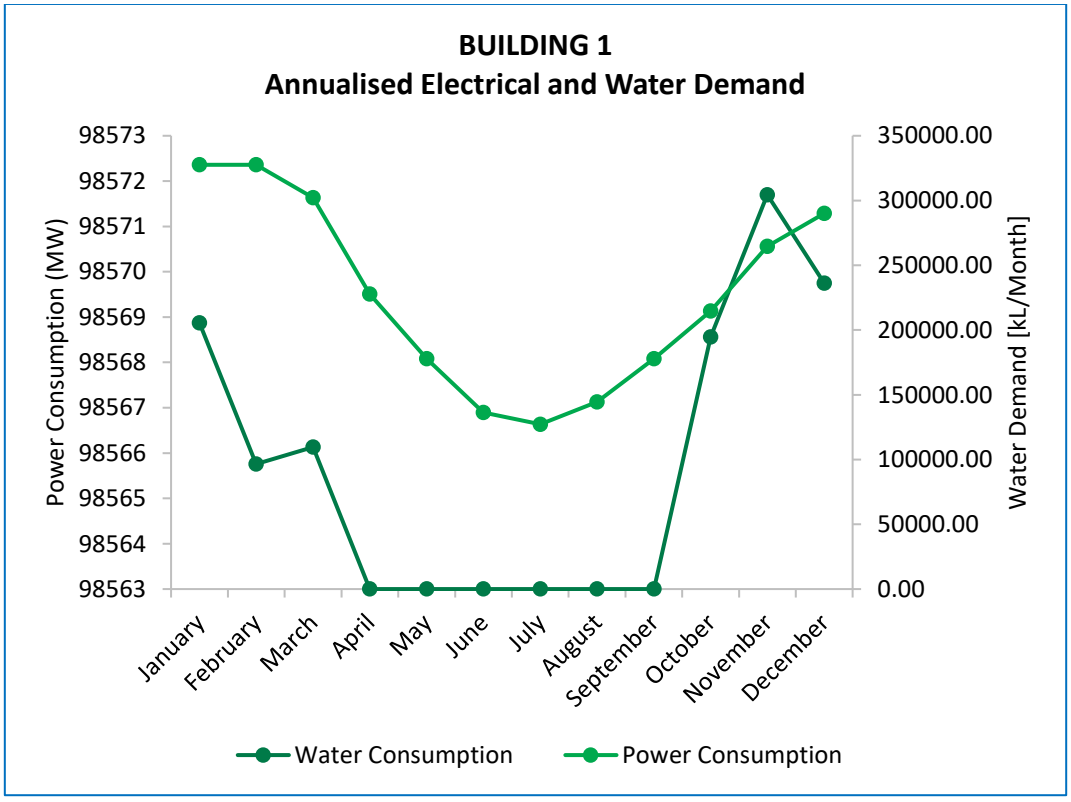
Table 7: Fire Water Demand

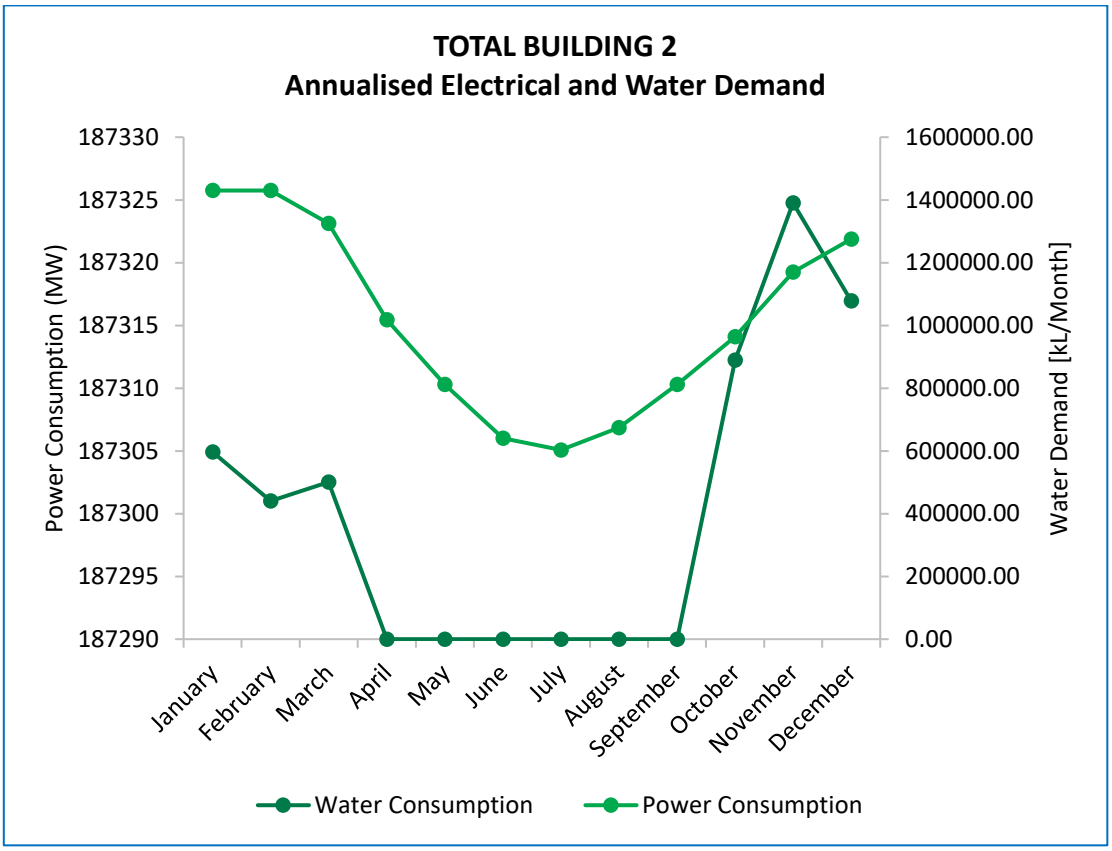
SYSTEM	WATER DEMAND (L/s)
Fire Sprinkler System	47.8 (Per NFPA 855)
Fire Hydrant System	30.0 (Per Appendix C of AS2419.1-2021)
Minimum Fire Water Demand	77.8

Please refer to the below graphs highlighting water usage for the site for peak day and seasonal




TOTAL BUILDING 2
Peak Day Electrical and Water Demand
Electrical Demand [MW]
Water Demand [kL/Hr]
Hour
Power Consumption [MWh/h]
Evaporation Rate [kL/Hr]


BUILDING 1
Annualised Electrical and Water Demand
Power Consumption (MW)
Water Demand [kL/Month]
January
February
March
April
May
June
July
August
September
October
November
December
Water Consumption
Power Consumption



3.1.7 Proposed Connections and Recommendations

Preliminary assessments have been undertaken to determine the appropriate sizing of the proposed water and sewer connections for the site. The proposed arrangements are outlined below:

- **Sewer Connection:**

- The proposed sewer connection will require works to the existing Ø300 mm Sydney Water sewer main.
- The site will utilise the existing connection. Additional works, including adjustments to connection levels and associated infrastructure modifications to the existing sewer manhole, will be required.

Refer to below for the proposed site sewer connection location.

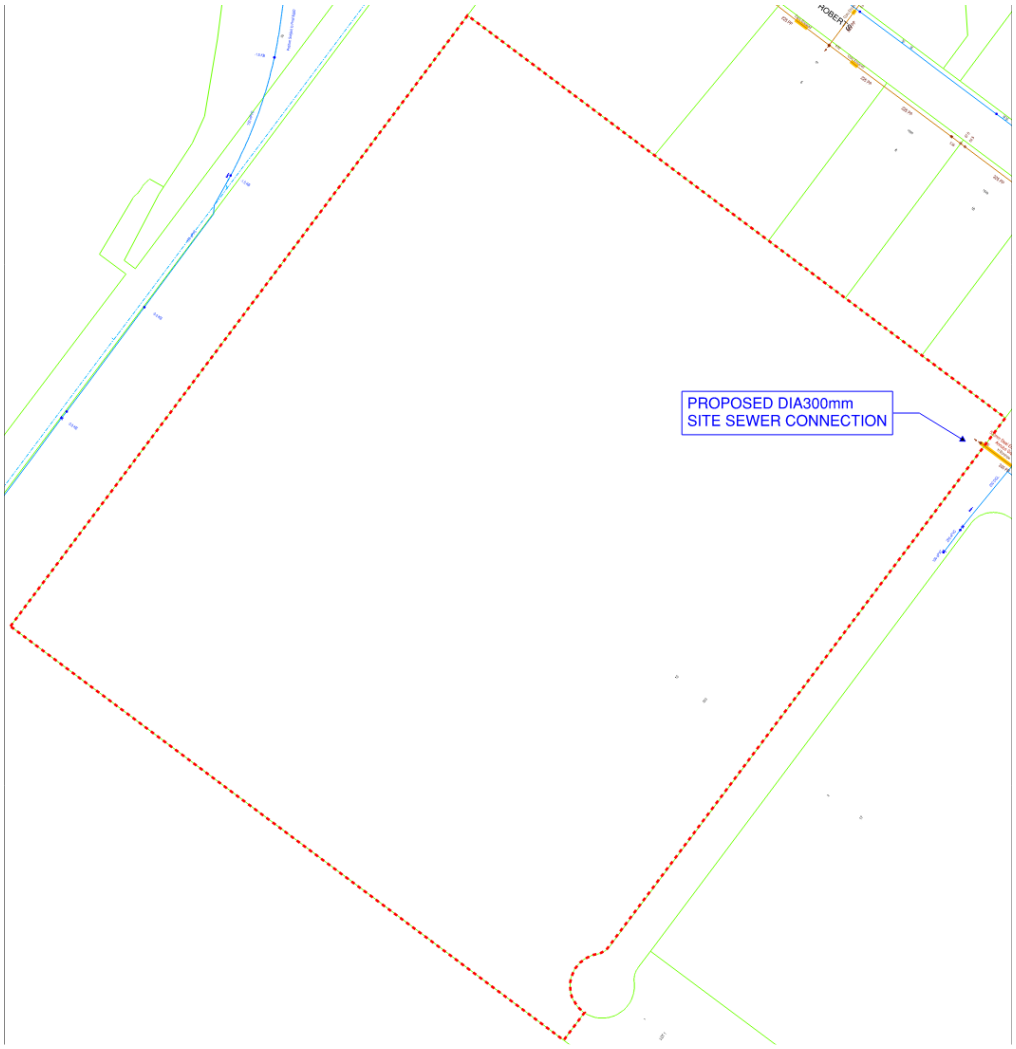


Figure 3-4: Proposed Sewer Connection to Sydney Water Asset

- **Water Connection:**
  - The proposed water connection comprises multiple options, including connections to Sydney Water mains and CONEXA (private recycled water provider).
  - Final confirmation of the water servicing strategy will be established during subsequent design stages.
  - Based on LCI's assessment, the estimated required connection pressures are for 45 m head, as outlined below.

Table 8: Connection Parameters

Equipment	Pressure Loss (Meters Head)	Unit
Water Meter	2	
RPZD	12	
Tank Head Hight	12.45	
Tank Motorised Valve	1.5	
Residual pressure	5	
Ø200mm HDPE @ 600m below ground	12	
Supply Pressure required @ 77IL	44.95	m
	440.9595	kPa

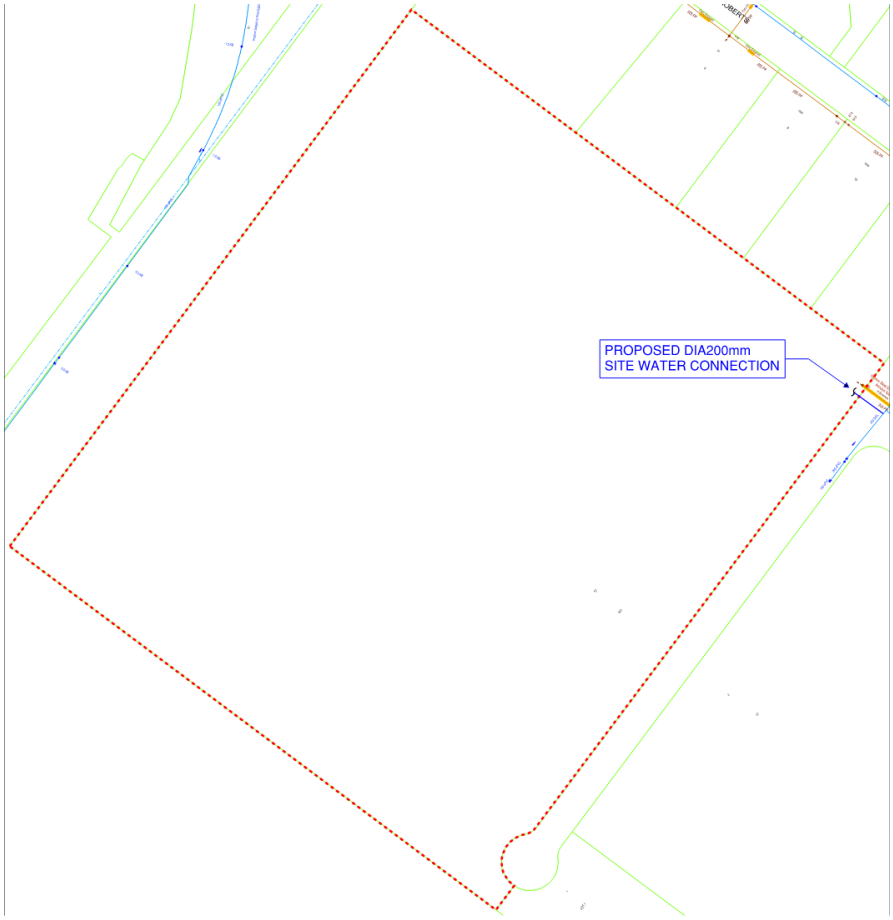


Figure 3-5 Proposed Water Connection to Sydney Water Asset

3.2 Water Sensitive Urban Design

Reduce Water Consumption

The project will identify opportunities to reduce water consumption and potential uses for non-potable water.

The cooling system is designed to take advantage of a waterside economy cycle / free cooling via hybrid coolers, bypassing chiller operation to reduce energy consumption. When ambient conditions allow, the hybrid coolers and chillers can operate in dry mode, further minimising water usage.

The project will also adopt highly efficient water fixtures with WELS ratings and appliances for use.

Recycled water and Reuse

The proposed development will generate a significant non-potable water demand. The demand considered for this sizing analysis consists of the following:

- Mechanical water storage tank top-up

It has been determined from the rainwater harvesting model and analysis that due to the high water demand of the evaporative cooling equipment particularly during periods of low rainfall, tank sizes larger than 300kL do not yield a significant increase in the amount of rainwater being used and therefore the recommendation is for a 300kL rainwater harvesting tank to be specified for the project.

Increasing the catchment area that is discharging to the tank does yield an improvement in the amount of rainwater being utilised throughout the year, but it significantly increases the amount of rainwater overflowing out of the tank.

Due to the increased capital expenditure requirement of the additional roof catchment, it is the recommendation of LCI that half the roof catchment be discharged to the tank, and the other half is discharge direct to the stormwater network.

Results from 300kL rainwater harvesting tank and half of roof catchment model below:

Rainwater Used (kL): 28,553
Potable Water Used (kL): 3,310,754
Rainwater Overflow (kL): 12,947

Strategic Water Metering

Building-level and sub-metering will be provided to monitor and record the water consumption of the overall development, as well as irrigation systems, water fixtures and water use for the mechanical systems.

3.3 Electrical

3.3.1 Introduction

The proposed development site is within the authority of the Endeavour Energy network, with the Sydney West 330kV Transgrid substation located approximately 0.5km to the West and is the proposed connection point for the site.

Preliminary discussions have already commenced between the client and Transgrid, with a connection enquiry response received from the utility, highlighting the requirements for an application to connection.

The allocation of Energy sources will be as follows:

Grid (with generator back up) - **500MVA** (site ultimate capacity)

Photovoltaic (PV) - **1.2MW**

Green Power purchase agreement for base build only (NON-IT LOAD): **142MW**

3.3.2 Existing

There are currently Endeavour Energy buried assets on the Southeastern side of the site, along Roberts Road, with an Endeavour Energy Substation 25472, which supplies the current site, situated within the property boundary. There are major aerial services running along the Southern section of the site over Old Wallgrove Road from the adjacent substation. The current proposal is for easements to be created for all underground and overhead services (if required by Transgrid) and are anticipated to be unaffected by the project works.

To the west of the site, at a distance of approximately 0.5km, is the Transgrid Sydney West 330kV substation, which is the proposed connection point for the development.

Refer to the image below which highlights the existing Endeavour Energy assets currently within the vicinity of the project site.

Figure 3-6: Left: Endeavour Energy Assets DBYD (Roberts Road), Right: Endeavour Energy Substation on site

3.3.3 Proposed

It is proposed that the new development will be supplied via two (2) underground 500MVA feeders connected to the nearby 330kV Transgrid Sydney West Substation. This proposed underground feeder will reticulate from the easement at the West of the site and into the 330kV GIS switchroom located within the Substation Yard, to the Northeast of the site. The final location and arrangement of the incoming 330kV feeder is subject to further design development and coordination with Transgrid. The 330kV switchroom shall be owned and operated by Transgrid. It is anticipated that only a portion of the site load is required for the initial phase of the project and shall progressively ramp up to a site ultimate total of 500MVA. Refer to Figure 3-7 below for the location of the Transgrid Sydney West substation (final connection point pending design development and further coordination).

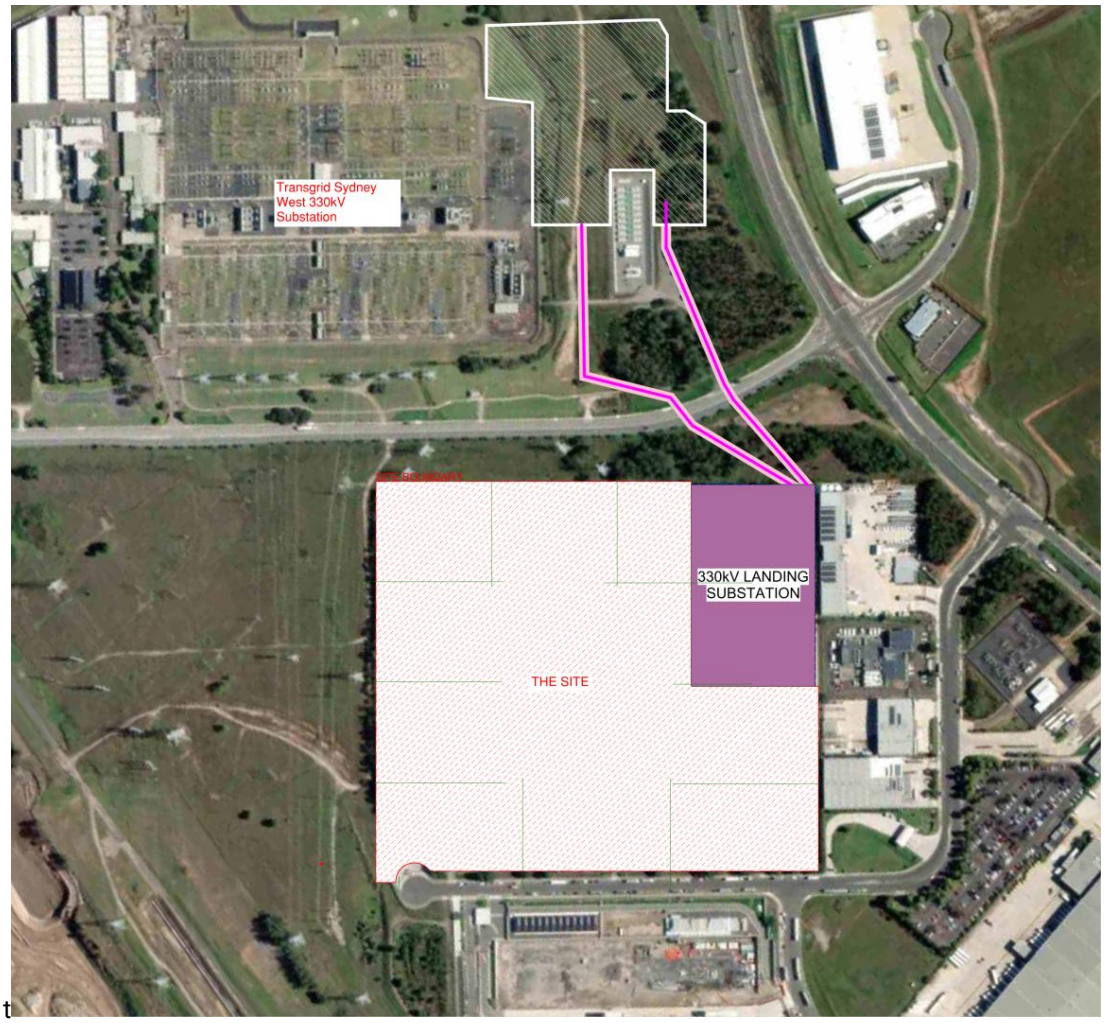


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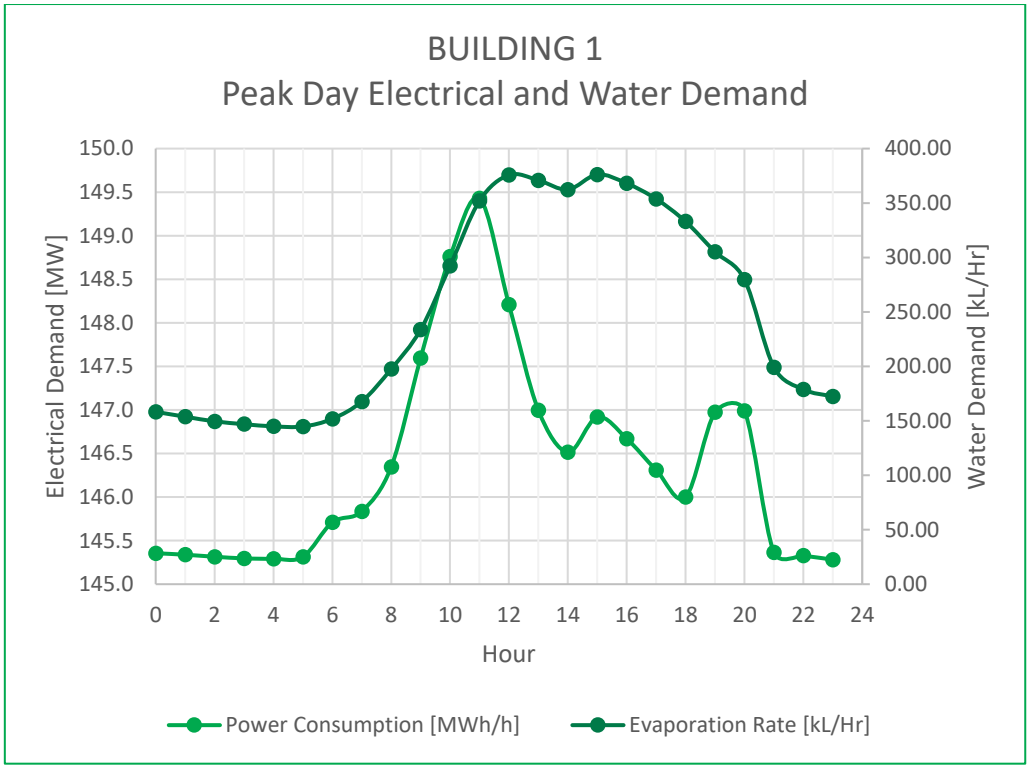
Figure 3-7 330kV Transgrid Substation location relevant to project site (Source: Grimshaw Architects)

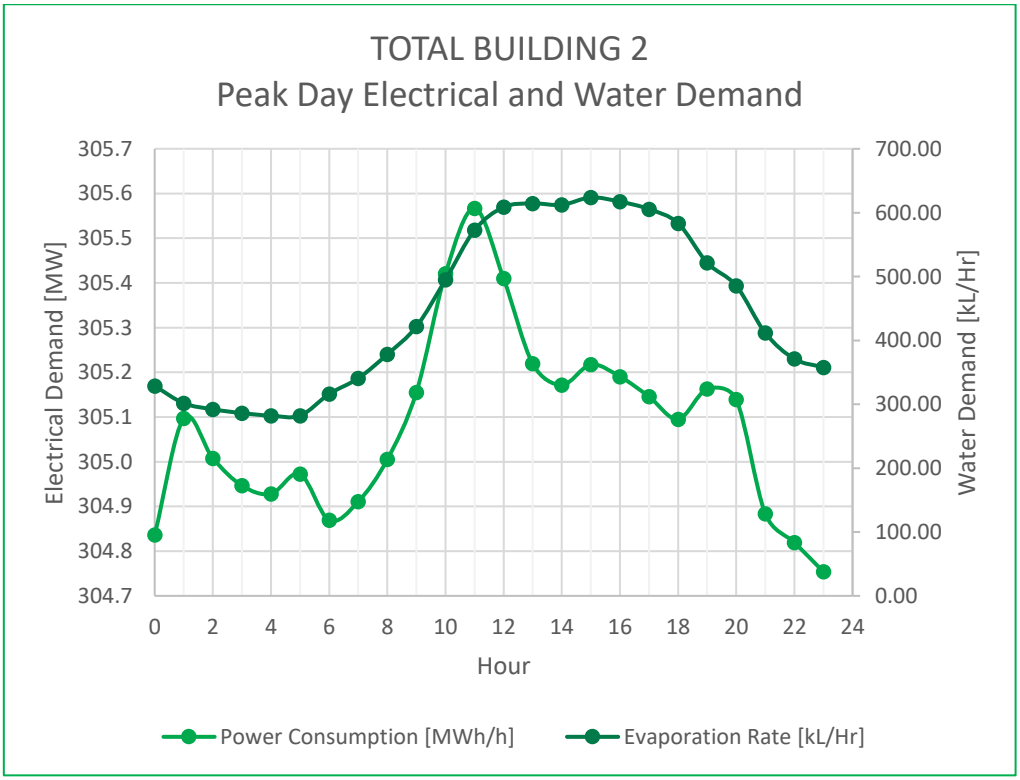
Within the site, (4) 330/33kVA transformers to step down the voltage to 33kV, which in turn supply a total of four (4) x 33kV switchboards. The two (2) proposed Data Centre buildings and the remainder of the site are supplied from these 33kV switchboards. The services downstream of the 330/33kV Transformers will be privately owned and operated by the client and not managed by Transgrid.

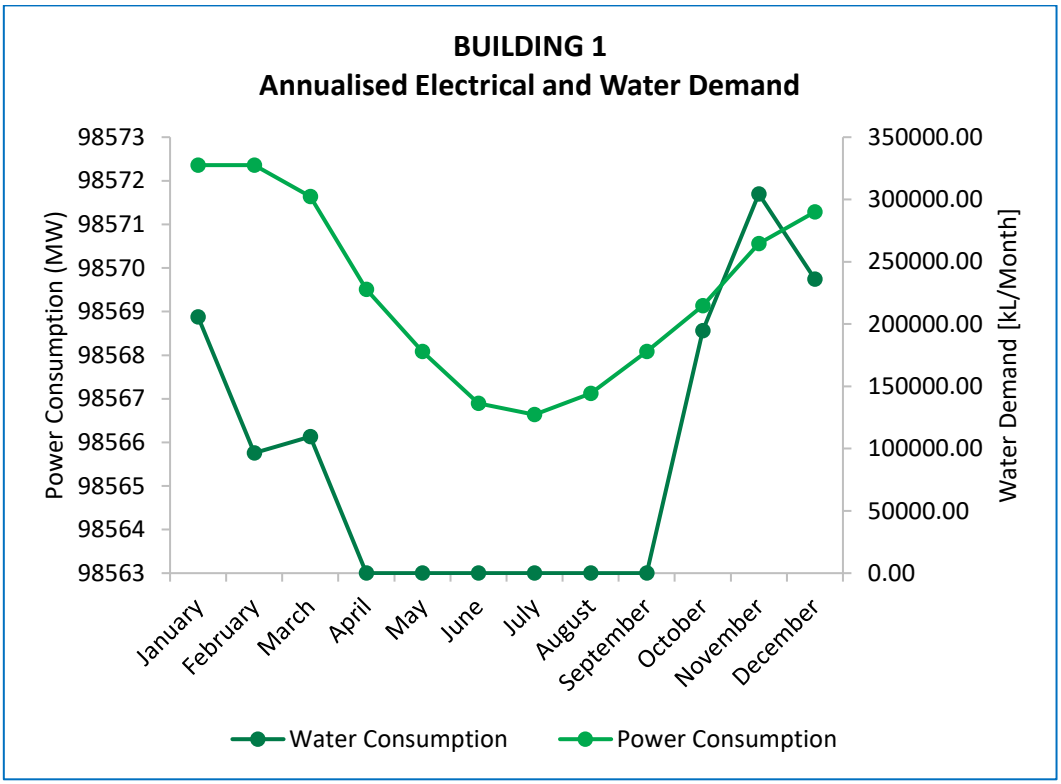
Each data centre building receives supplies from the 33kV switchboards located just outside of the substation yard, which will supply multiple 33kV switchboards within each building.

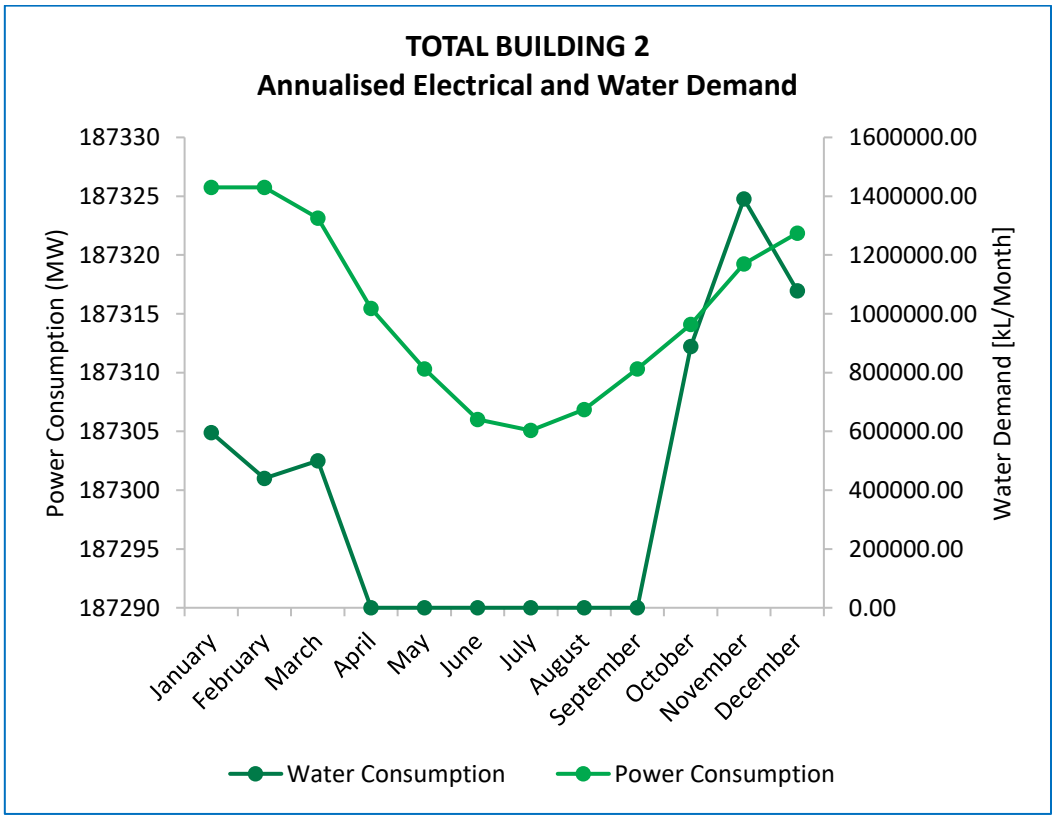
The 33kV network within each building will be arranged in a ring topology, supplying multiple ring main units and 33kV/0.415kV dry type transformers.

Please refer to the below graphs highlighting water usage for the site for peak day and seasonal






BUILDING 1
Annualised Electrical and Water Demand
Power Consumption (MW)
98573
98572
98571
98570
98569
98568
98567
98566
98565
98564
98563
Water Demand [kL/Month]
350000.00
300000.00
250000.00
200000.00
150000.00
100000.00
50000.00
0.00
January
February
March
April
May
June
July
August
September
October
November
December
Water Consumption
Power Consumption


TOTAL BUILDING 2
Annualised Electrical and Water Demand
Power Consumption (MW)
187330
187325
187320
187315
187310
187305
187300
187295
187290
Water Demand [kL/Month]
1600000.00
1400000.00
1200000.00
1000000.00
800000.00
600000.00
400000.00
200000.00
0.00
January
February
March
April
May
June
July
August
September
October
November
December
Water Consumption
Power Consumption

Site Continuity

The diesel generators will become available should there be networks constraints to support the datacentre load. The UPS will support the critical loads during this transition period from utility network to back up power supply. The site is proposed to have 24-hour fuel storage available to maintain operational continuity.

3.3.4 Back-up Power Supplies

Low voltage diesel generators will be provided on the site to support the site loads during mains power failure events. These generators are designed to operate in standby in the event of a power outage only.

The site is proposed to consist of a total of 246 x 2,800kWe and 3 x 1000kWe 415V diesel generators, with each generator housed within a prefabricated generator enclosure with noise attenuation and an internal day tank designed to comply with AS1940. The generators are proposed to be installed within dedicated gantry structure(s) in a 'stacked' arrangement, with the plant area central to the site utilized to house the bulk 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. 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 a dedicated pump enclosure(s).

The proposed generators are as follows:

- **Building 1:** 90 x 2800kWe 0.45kV, 1 x 1000kWe 0.415kV containerised diesel generators.
- **Building 2:** 156 x 2800kWe 0.45kV, 2 x 1000kWe 0.415kV containerised diesel generators.

The above generator sizes are estimates only, with the final sizing pending further development and coordination.

3.3.5 Alternate Back-up Power Supplies

As part of the design development process, the project team 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.

Alternative technologies which have been considered in some form are described below.

- **Lithium-ion Batteries:** Whilst lithium-ion batteries are a proven technology and widely used for energy storage, they are unable to provide backup power at the scale required. The final site electrical demand is approximately 450 megawatts, with a 24 hour back up availability. 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 failure to the site. Current proposed 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.

- **Alternative Fuel Generators (Hydrogen):** One of the more promising technologies is the substitution of diesel with hydrogen as a fuel source for generators. A large benefit of this is that the infrastructure downstream of the engine is essentially the same as a typical diesel generator. However, the engines

would require a reliable source of fuel in large quantities. The current market or industry does not offer any known supplier which could cater for the demand. Additionally, the size of each engine would need to be equivalent to the current diesel engines, which cannot be procured in the required scale at this stage. Another issue to consider is the safety implication of introducing such an energy dense, explosive fuel which must be stored under pressure. A benefit of diesel fuel is that it is not flammable, but combustible under the classification of AS1940. This means it is relatively difficult to ignite.

Refer to the Backup Generation Report provided as part of the SSDA submission for further details on backup generation options and selections.

3.3.6 Onsite Fuel Storage

To supplement the containerised generator day tanks, the site contains two (2) centralized bulk fuel storage and associated fuel delivery system to provide a total of 24 hours fuel storage (with an additional redundant tank) for all generators operating at 100% load. This will consist of:

- **Building 1 Generators:** 14 x ~110kL above-ground fuel storage tanks.
- **Building 2 Generators:** 23 x ~110kL above-ground fuel storage tanks.

3.4 Information and Communication Technology

3.4.1 Telecommunications Lead-Ins

Multiple carrier point-of-entries (POEs) into the campus are proposed at the Northen, Southern, Eastern and Western corners of the development. Multiple POEs are required for capacity and resiliency. Alternate carriers may be also used for capacity and resiliency.

These POEs act as a telecommunications pathway demarcation point between the private property and the telecommunications carriers. Telecommunications carriers will meet and connect into these POEs for regional connectivity between the campus and other major telecommunications facilities including exchanges, gateways, other data centres etc. There is a total of 4no. proposed POEs at the development, with 2no. along Roberts Road (POE #1 & #2), 1no. along the northeast boundary adjacent to Old Wallgrove Road (POE #3) and 1no. along the southeast boundary (POE #3) as shown in Figure 3-8. The pathways are provided via underground telecommunications pit and pipe. This lead-in pipe is owned by the carrier up until the POE at the property boundary. A sub-duct may then be provided with a carrier cable contained within it. This is routed via the private pathways to the appropriate termination point within the campus.

Some Telecommunications pathways are adjacent to easements, and the client's Telecommunications Team will coordinate these pathways in conjunction with utilities providers outside of the property boundary.

Figure 3-8 Point-of-Entries for Telecommunications

Carrier connectivity usually ties into already available infrastructure routed along the roads near-by. To meet resiliency or capacity requirements, runs of new conduit pathways may be made between the existing carrier pit and pipe within the road reserve, and to the point of demarcation/POEs. External reticulation to the POEs will require careful carrier planning. This is typically handled by the telecommunications carriers on application for connection.

All the internal reticulation between the POEs to the building structure is via private infrastructure consisting of telecommunication vaults and communications conduits spanning between these vaults. These pathways will be sized to minimise subsequent on-site excavation activities during the life of the facility.

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MELBOURNE
Level 17/242 Exhibition St,
Melbourne, VIC 3000
P: (03) 9230 5600

SYDNEY
Level 8/73 Miller St,
North Sydney, NSW 2060
P: (02) 9157 0570

BRISBANE
Level 1/293 Queen St,
Brisbane City, QLD 4000
P: (07) 3831 3300

PERTH
Level 9/108 St Georges Tce,
Perth, WA 6000
P: (08) 9242 5857

CANBERRA
Level 2/1 Farrell Pl,
Canberra, ACT 2601
P: (02) 9157 0570

ADELAIDE
Level 4/91 King William St
Adelaide, SA, 5000
P: (08) 7078 8896