Umow Lai

Alexandria Park Community School

Infrastructure Management Plan

Report No SDOE0102 RP002
Date Dec 2017

engineering sustainable environments

REPORT AUTHORISATION

PROJECT: **ALEXANDRIA PARK COMMUNITY SCHOOL**
INFRASTRUCTURE MANAGEMENT PLAN

REPORT NO: **SDOE0102 RP002**

Date	Rev	Comment	Prepared by	Checked by	Authorised by
14/08/17	A	Issue for Comment	GJ / FEK	PJ	PJ
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EXECUTIVE SUMMARY

This Infrastructure Management Plan has been prepared by Umow Lai on behalf of the NSW Department of Education (the 'Applicant'). It accompanies an Environmental Impact Statement (EIS) prepared in support of State Significant Development Application SSD 17_8373 for the redevelopment of 'Alexandria Park Community School' at 7-11 Park Road, Alexandria (the 'Site'). The EIS seeks development consent for the following works:

The redevelopment of the Alexandria Park Community School ('the School') will address issues of capacity for schools in the inner city areas of Sydney and is also driven by the population growth resulting from the large number of residential developments that are transforming the former industrial precincts of Zetland, Waterloo and Alexandria.

The new school has been briefed to accommodate up to 1,000 primary school students and up to 1,200 secondary school students on one campus in an integrated and fully connected school building.

Specifically, this project includes:

- Demolition of all existing buildings on-site, including the temporary pop-up schools;
- Remediation of specific areas of the site containing contaminated fill;
- Construction of multiple school buildings of up to five stories, arranged along the western and southern parts of the site comprising:
    - Classroom home bases;
    - Collaborative learning spaces;
    - Specialist learning hubs;
    - Learning support spaces;
    - Offices for teachers and administrative staff;
    - Library; and
    - Student canteen.
- Construction of a sports hall and multiple outdoor sports courts;
- An all-weather multipurpose synthetic sports field;
- Informal play spaces and Covered Outdoor Learning Space or COLA;
- A community centre;
- A pre-school for 39 children;
- Site landscaping including green links, community garden and open space;
- Construction of a new on-site car park and associated vehicular access point off Belmont Street; and
- Augmentation and construction of ancillary infrastructure and utilities as required.

Delivery of the project will be undertaken in sequential phases to maintain an operational school on the Park Road Campus and will involve enabling works separate to this application followed by three main construction phases for the new building and external works.

The purpose of this report is to provide an assessment of the proposal as described above and detailed within the EIS.

Specifically, this report provides recommendations regarding available infrastructure and required upgrade works for the following services;

- Water Supply
- Sewer Drainage
- Natural Gas Supply
- Electrical Supply
- Communications Services

The proposed development has been assessed against all relevant standards/guidelines, including the following:

- Sydney Water Regulations
- Jemena Natural Gas Regulations
- AusGrid Regulations
- City of Sydney
- SEARs Application number SSD-8373, relevant clauses;

13. Utilities

- *Prepare an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation requirements of the development for the provision of utilities including staging of infrastructure*

The Hydraulic Infrastructure Assessment has identified the following key findings/conclusions and recommendations:

- A new water main connection is proposed to meet the increased fire service and domestic water demand associated with the new school facilities as well as provide a more accessible location for the metering equipment and valves.
- The existing authority sewer main that crosses the site will be diverted to remain clear of the new buildings or built over in accordance with Sydney Water *Building over Assets* Guidelines.
- A new sewer main connection will be made to the diverted sewer main to service the increases demand from the new facilities.
- The existing Natural Gas (NG) meter and regulator assembly will be relocated to a new location within the site.
- Should any contamination of groundwater be observed during planning and construction appropriate treatment systems will be provided to the collection system.

The Electrical Infrastructure Assessment has identified the following key findings/conclusions and recommendations:

- The existing substation provided as part of the temporary school works has sufficient capacity to serve the new school development. No upgrade is anticipated to be required to the site power supply.

- New telecommunications incoming cabling and termination equipment will be required. The new incoming cabling shall have capacity to serve the final design of the new school.

CONTENTS

1.0 SITE LOCATION AND CONSTRUCTION PHASING

1.1 SITE LOCATION

The subject site (the site) is located at 7 Park Rd, Alexandria. The site has a total area of 27,600m^2 The site is bounded to the north by Buckland St, to the East by Park road. The southern and western boundaries are against the neighbouring properties, the location and configuration of the existing site is shown below.

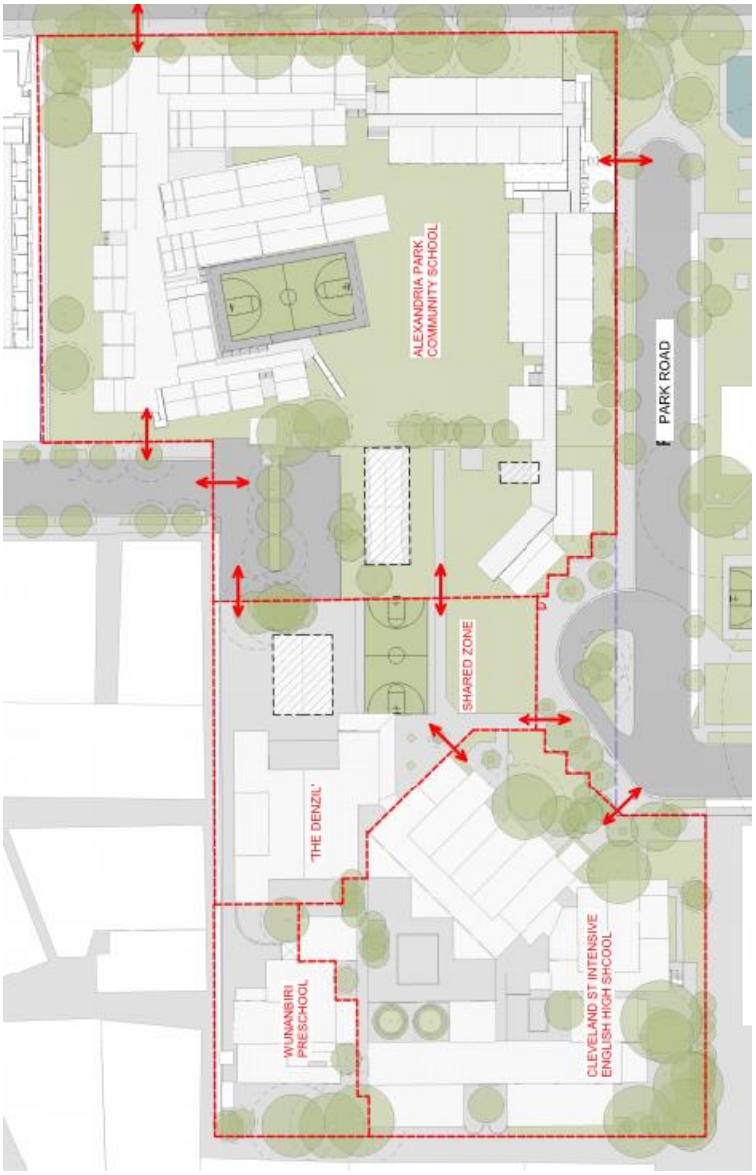


Figure 1 *Existing APCS Site and Configuration*

1.2 APCS Construction Phasing Strategy

Delivery of the project will be undertaken in sequential phases to maintain an operational school on the Park Road Campus and will involve enabling works separate to this application followed by three main construction phases for the new building and external works. These phases are defined as follows:

- Enabling Works – Construction of 2 temporary demountable schools on Buckland Street side of the school (not part of this application);
- Phase 1 – Demolition of the existing Park Road building and construction of the southern part of the new building, including new COLA and associated external works;
- Phase 2 – Demolition of Pop up School 1 and construction of the remaining part of the new building, carpark and two outdoor sport courts;
- Phase 3 – Demolition of Pop up School 2 and construction of the new synthetic sports field and completion of the entry forecourt.

2.0 WATER SUPPLY

2.1 EXISTING CONNECTIONS

APCS is currently supplied with a 50mm connection from the Power Avenue water main that services the existing school buildings and a 32mm connection from the Belmont St water main that is currently not in use. The existing mains connections are provided with an appropriate level of backflow prevention.

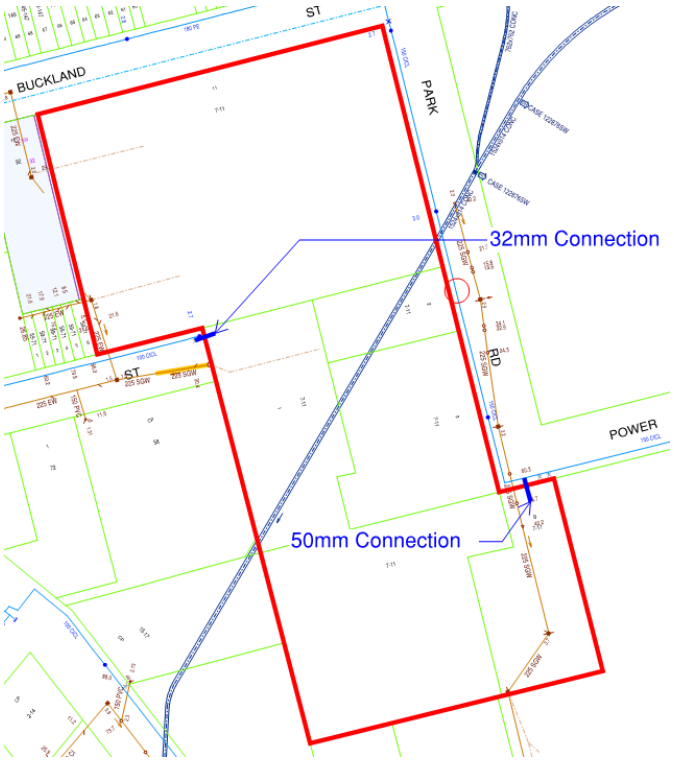


Figure 2 *Existing Site and Configuration*

2.2 PROPOSED DEMAND

The capacity of the water main within Park Rd is in excess of 50l/s.

The anticipated total daily potable water consumption is 48,000L.

2.3 PROPOSED WATER INFRASTRUCTURE

A new water main connection is proposed to meet the demand for the new school facilities. The proposed 100mm connection will extend from the 150mm CICL water main with Park Rd. A Water Services Coordinated (WSC) has been engaged and is undertaking preliminary assessment of the water demand to prepare submission to Sydney Water to obtain a Feasibility Letter to determine the final water authority requirements.

3.0 SEWER DRAINAGE

3.1 EXISTING SEWER CONNECTIONS

The existing APCS site is provided with a number of sewer connections to the existing Sydney Water sewer main that crosses the sites south eastern portion.

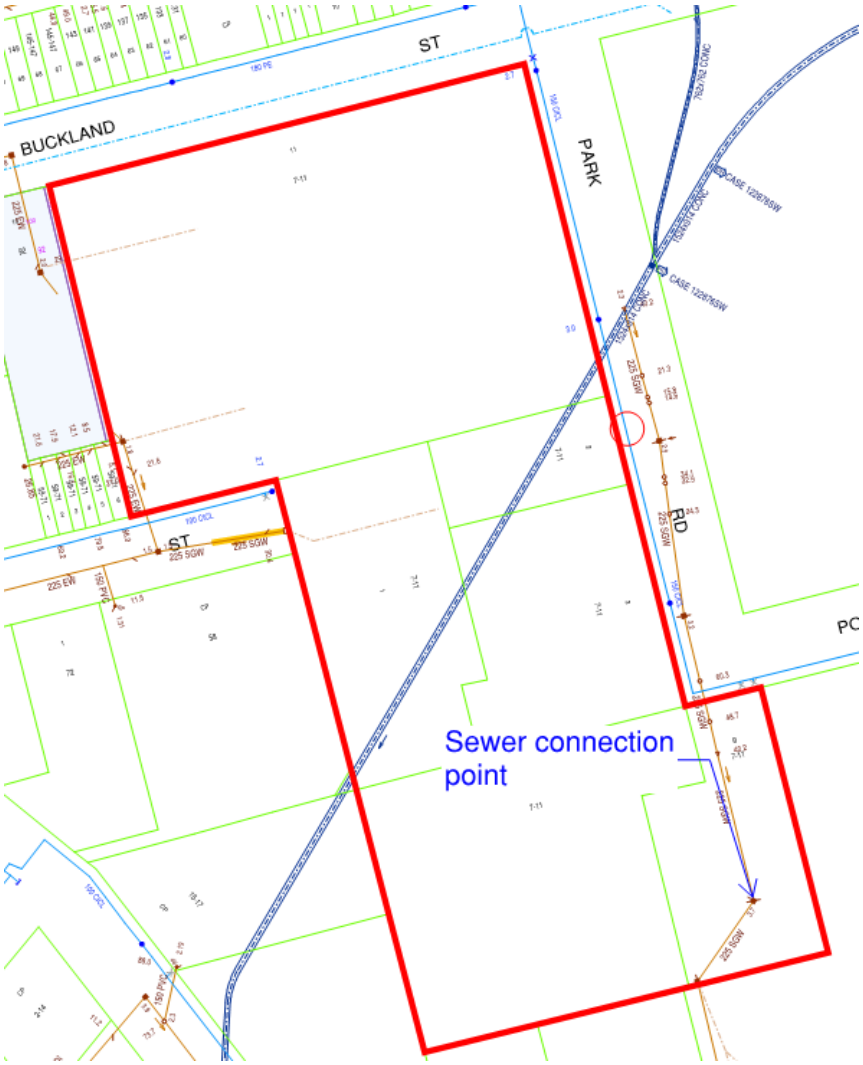


Figure 3 *Existing Site and Configuration*

3.2 PROPOSED SEWER INFRASTRUCTURE DEMAND

The current proposed final combined population of students and staff at APCS is approximately 2,400 people. Using standard conversion rates, APCS has an Equivalent Population (EP) of 480 people, the projected demands on the authority sewer network are summarised in the table below.

Table 1 *Projected Sewer Infrastructure Load*

Average Dry Weather Flow	Peak Dry Weather Flow	Peak Wet Weather Flow
1.1l/s	4.3l/s	4.3l/s

3.3 PROPOSED SEWER INFRASTRUCTURE WORKS

The existing Sydney225mm Salt Glazed Ware (SGW) is proposed to be diverted to run clear of any footings or build over from the new APCS buildings. New sewer connections will be provided to serve the new APCS buildings, the proposed connection to the diverted Sydney Water sewer main is to be in the southeast corner of the site.

Alternatively the option of building over the existing sewer will be investigated.

A Water Services Coordinated (WSC) has been engaged and is undertaking preliminary assessment of the sewer diversion to prepare submission to Sydney Water to obtain a Feasibility Letter to determine the final water authority requirements.

4.0 NATURAL GAS SUPPLY

4.1 EXISTING GAS CONNECTIONS

An existing Jemena 100mm 1050kPa secondary main and a 32mm 210kPa distribution main are present within Belmont St, as indicated below

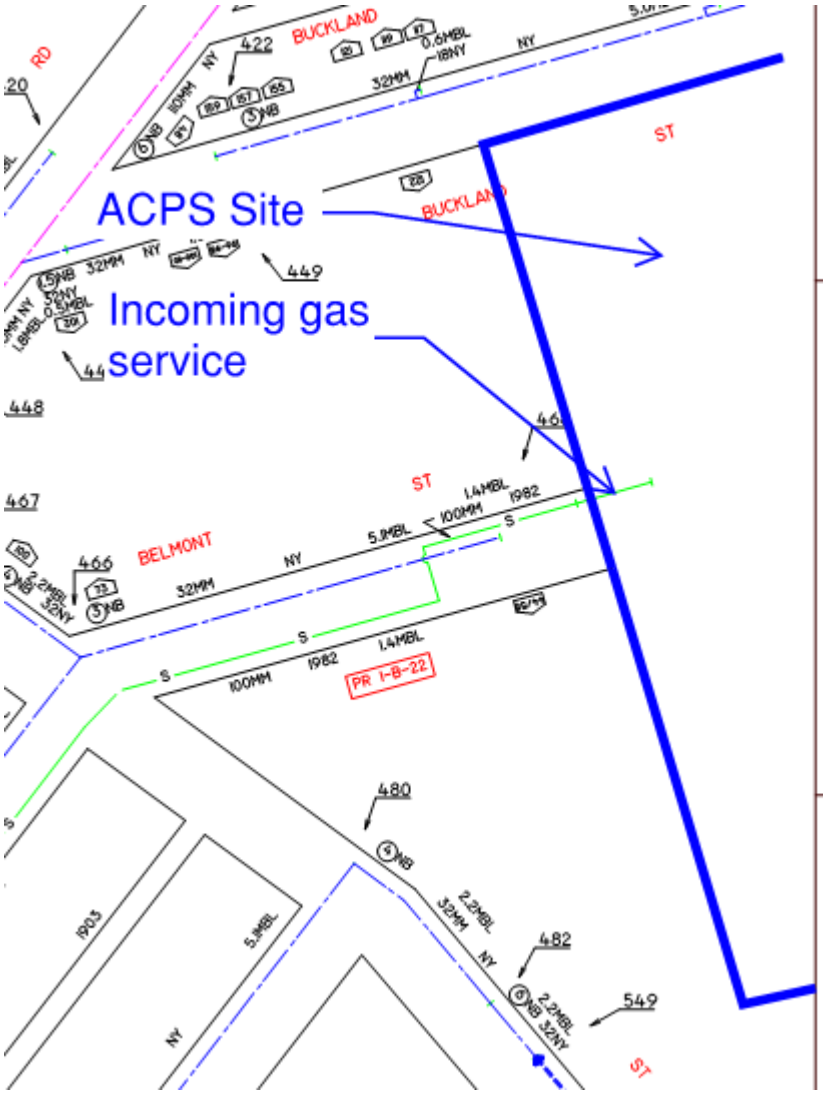


Figure 4 *Belmont St Gas Mains*

APCS has a single connection to the Belmont St main, maps of the existing authority infrastructure indicate that the school site is connected to the 1050kPa secondary main. The gas meter enclosure contains an existing regulator assembly – it is currently assumed that gas is reticulated throughout the site at no more than 100kPa and further regulated closer to the end points of use to pressures within the 1.1kPa to 2.75kPa range.

4.2 NATURAL GAS DEMAND

The existing gas supply contracted maximums for APCS have been requested from Jemena and have not been received at the time of writing.

The proposed development MHQ demand is yet to be finalised as the mechanical system demand is yet to be fully developed. The new school facilities will introduce a higher gas demand in large part due to the addition of gas fired hydronic heating systems throughout the school, once this load has been determined the new gas demands will be provided to Jemena for negotiations..

4.3 PROPOSED INFRASTRUCTURE WORKS

A new meter and regulator assembly will be required to accommodate the increased NG demand.

Negotiation with Jemena will be required to determine the network requirements for the increased gas supply, a formal application will be lodged when the projected gas demands have been determined and negotiations with Jemena are completed.

5.0 ELECTRICAL SUPPLY AND TELECOMMS

Electrical and communications services carriers have been contacted and development plans have been discussed.

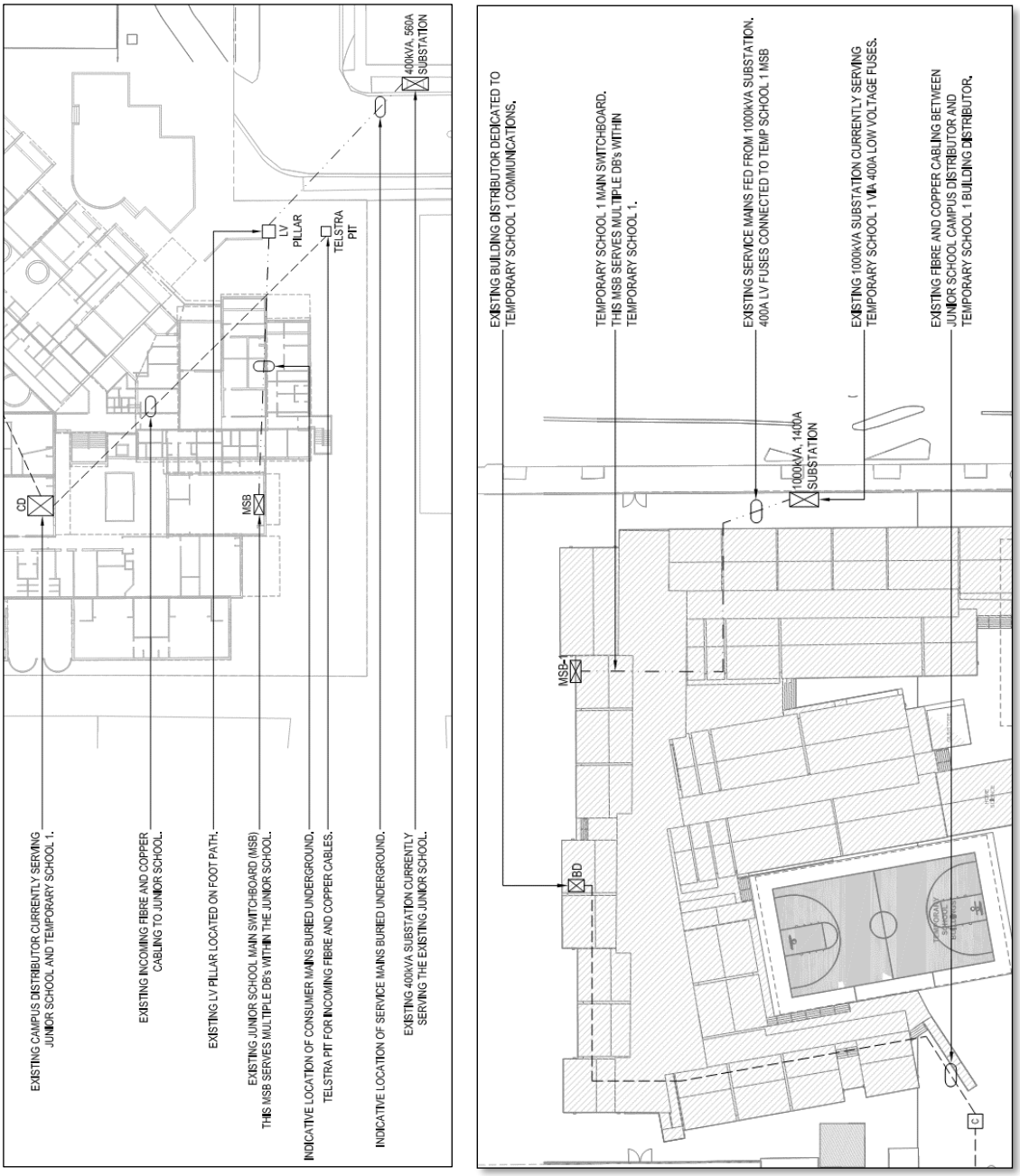
5.1 EXISTING ELECTRICAL AND TELECOMMUNICATIONS CONNECTIONS

An existing consumer mains is present between the 400kVA kiosk substation located on Park Rd and the low voltage pillar which then feeds the existing junior school as indicated below. This feed shall remain until the Site Main Switchboard is available for the permanent site.

An existing consumer mains is present between the 1000kVA kiosk substation located on Belmont St and the MSB for Temporary School 1 as indicated below. This feed shall remain until 75% of the permanent school is complete.

Existing copper and fibre cabling are present between the telecomms pit located on Park Rd and the existing Campus Distributor located within the junior school as indicated below. This shall remain until the new Campus Distributor is constructed were a transition process will take place.

Existing copper and fibre cabling are present between the existing Campus Distributor and building distributor located within Temporary School 1 as indicated below. This shall remain until the new Campus Distributor is constructed were a transition process will take place.



5.2 PROJECTED MAXIMUM DEMAND

The maximum demand electrical load for the development is projected to be approximately 1122 Amps The following table indicates the maximum demand calculation based on the latest architectural plans.

In accordance with the EFSG, the required site demand is to include 20% spare capacity. This results in a total site demand of 1234 A

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Maximum Demand (MD)

Project: Alexandria Park Community School Redevelopment
Project Number: SDOE0102
Date: 22.05.2017
Stage: Concept Design

Alexandria Park Community School Redevelopment			
Stage No.	**Total Area (m^2)**	**Total kVA**	**Total Amps**
Stage 1	7358	221	307
Stage 2	11609	358	499
Stage 3	4269	146	203
Outdoor	6173	80	112
Total Project	29409	805	1122

Table 1 *– Electrical Maximum Demand Estimation*

5.3 AUSGRID NETWORK CAPACITY

5.3.1 Power Supply

No site constraints regarding mains supply have been identified at this stage. The site substation that has recently been installed on the Buckland Street includes a 1400A breaker dedicated to the APCS School.

5.4 TELECOMMUNICATIONS

5.4.1 New Telecommunications Connection

A new Campus Distributor Room for the permanent school will be provided with sufficient capacity to serve the proposed development.

New fibre optic and copper cabling will be installed between the incoming Telstra pit located on Park Rd and the new campus distributor located within the Campus Distributor Room.