

## Oran Park Primary School

Electrical Infrastructure Report

# Document Control Sheet

Title	Infrastructure Assessment Report
Project	Oran Park Primary School
Description	Electrical Services Report
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## 1. Executive Summary

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JHA has carried out a comprehensive infrastructure investigation for Electrical and Data Services, in particular cable routes and infrastructure capacity for the existing Oran Park Primary School.

The school is proposing to carryout refurbishment and extension works to existing buildings. Such works include new internal power & lighting services throughout the extension and air-conditioning to spaces as required by the EFSG.

This report is to summarise our site visit findings and investigation of the existing Electrical and Telecommunication infrastructure in Oran Park Primary School and to communicate potential infrastructure augmentation and upgrade works required for the extension.

## 2. Existing Electrical Infrastructure

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JHA Consulting Engineers have investigated and assessed existing electrical infrastructure which exists at the Oran Park Primary School. The purpose of the assessment is to ascertain whether existing electrical infrastructure can support the proposed extension works.

### 2.1 SUBSTATION

The school is currently solely fed from the onsite substation (ID No. 32635) located in the front of Block D Canteen Building and along the property boundary of South Circuit. The electricity network is within Endeavour Energy's jurisdiction and the school's National Meter Identifier (NMI) number of is 43111565015.



*Figure 1: Existing Kiosk Substation S.32635*

## 2.2 EXISTING SUPPLY

The incoming supply to the Main Switchboard (MSB) is a 3 phase 800A supply (underground LV Mains from the onsite substation S32635). The maximum current rating of the switchboard is limited to 800A/phase by the Utility Service Protection Device.

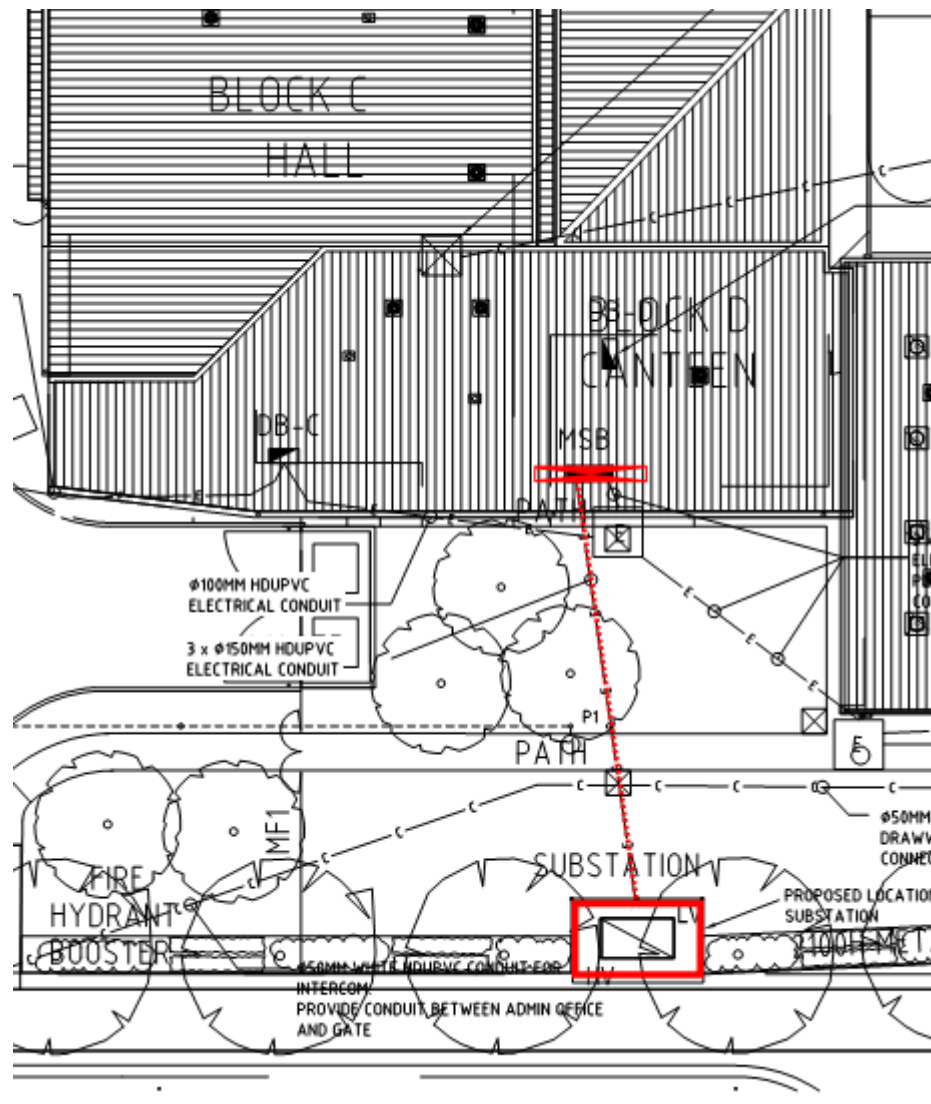


Figure 2: Existing Supply

## 2.3 EXISTING SITE MAINSWITCHBOARD

The existing site MSB is currently housed in an electrical cupboard and located in Block D Canteen Building. The existing site MSB currently services the entire Primary School. The switchboard was built in July of 2013 and it is in a well-maintained condition.



Figure 3: Existing Site MSB

## 2.4 EXISTING SITE MAXIMUM DEMAND

JHA have assessed existing actual site maximum demand by installation of a load monitor at the existing site Main Switchboard. The load monitor was installed during 01/12/2016 – 12/12/2016 by ANE Electrical.

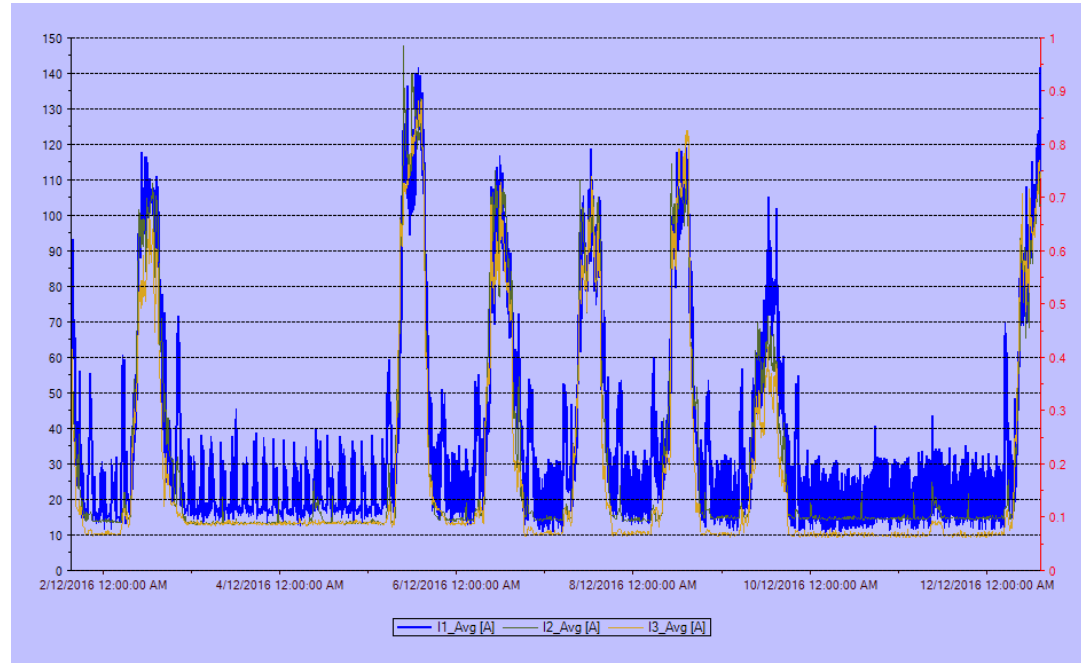


Figure 3: Load Monitoring Result Average Current

Measurements show the existing site maximum demand is currently at 147.7 A/phase during times between 01/12/2016 – 12/12/2016.

Note, we observed the period of which these measurements were taken were during hot weather, therefore it is assumed majority of the A/C plant would have been turned on. However it is also likely some A/C plant may not be turned on during this period (this is of course subject to school area usage). Despite the above, the measurement is used as a guide to indicate the approximate peak load at the existing Oran Park Primary school.

## 2.5 PROPOSED ADDITIONAL LOAD

The extension and refurbishment works will include air-conditioning to such spaces and new internal power & lighting services. As a result, the site electrical demand will increase significantly.

JHA have carry out preliminary maximum demand calculations for the extension works based on the current schematic plans. The increased load has been estimated based on the average VA/sqm across the area of extension. Below is a summary of the load calculations.

Summary:

Metered Usage (Peak)	147.7 A/phase
New Additional load	340 A/phase
New Total Maximum Demand	487.7 A/phase

Table 1: Maximum Demand Calculation Summary

## Authority Infrastructure:

As the proposed new site maximum demand is estimated around 487.7A/ph, the existing incoming supply (3 phase 800A supply) is sufficient to accommodate the additional load required by the expansion and the refurbishment works. Therefore, no upgrade works are required for the existing incoming supply.

## 2.6 PROPOSED SITE RETICULATION

A high level site reticulation plan including trenching and service pits to provide power from existing infrastructure (MSB) to the school extension area has been prepared for consideration, and to assist the master planning as shown in figure below.

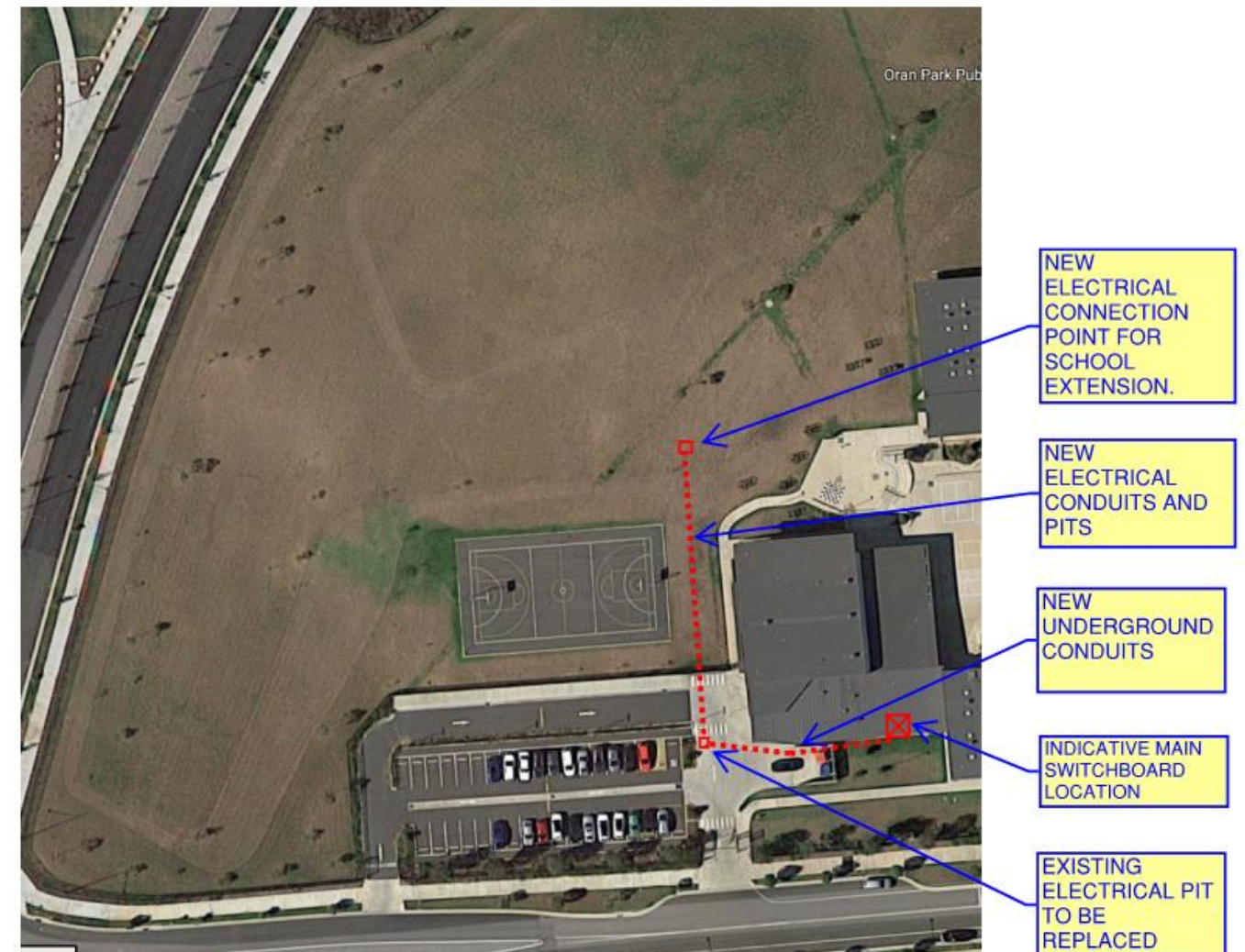


Figure 4: Proposed Site Reticulation for Electrical

### 3. Existing Telecommunications Services

#### 3.1 EXISTING SERVICES

The existing campus distributor is located in the main comms room in Block B Library building. Each building has its own dedicated communication building distributor rack with a tie link back to the campus distributor in a star like fashion (The Campus distributor being the centre).

Figure below indicates the location of existing campus distributor and communication services lead-in pit. Currently there appears to be no major existing telecommunications services within the site that will need to be decommissioned and/or diverted as a result of the proposed extension.

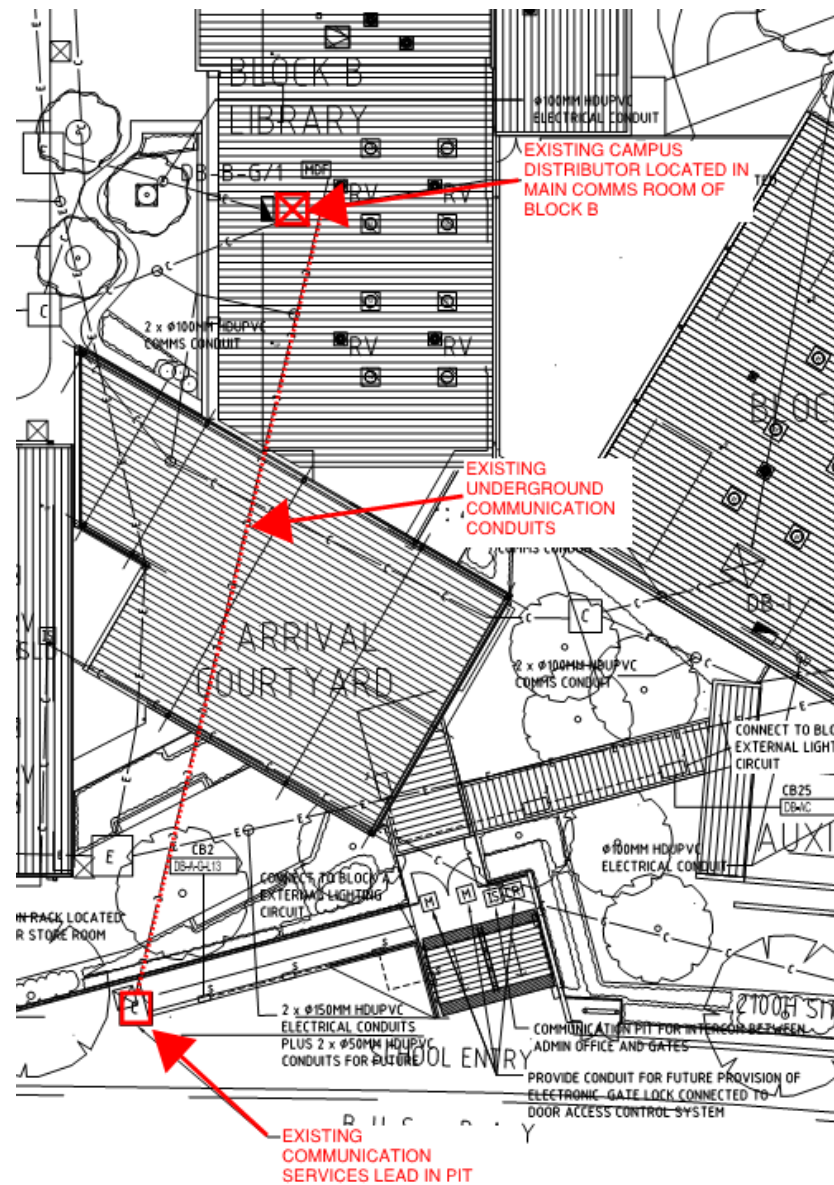


Figure 5: Existing Campus Distributor

#### 3.2 PROPOSED SITE RETICULATION

A high level site reticulation plan including trenching and service pits to provide communication services from existing infrastructure to the school extension area has been prepared for consideration, and to assist the master planning as shown in figure below.

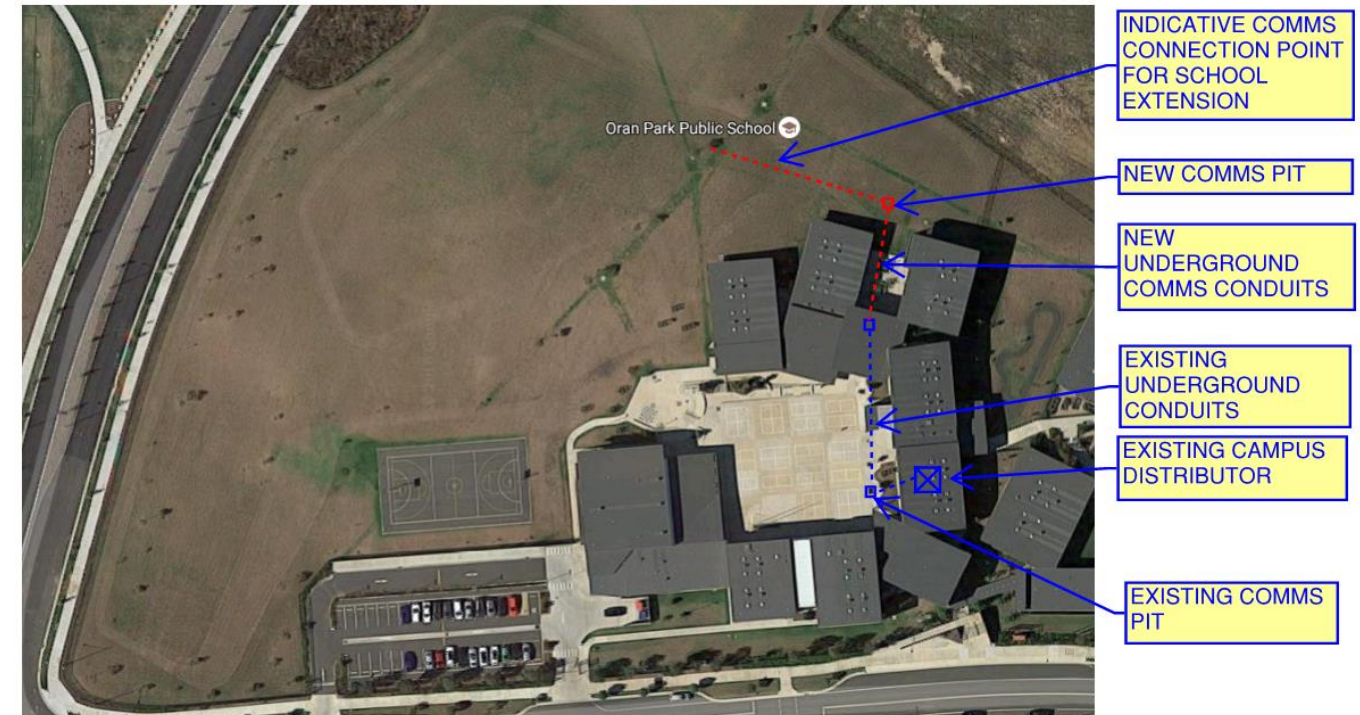


Figure 6: Proposed Site Reticulation for Communication