ELECTRICAL SERVICES REVIEW

FOR

ST PATRICK'S COLLEGE, STRATHFIELD
SCIENCE & LEARNING BUILDING

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Project Title: St Patrick's College, Strathfield
Project Number: 19307

Revision History

Rev No.	Date	Description	By	Checked	Approved
A	02.03.20	Original Issue	PM	JC	PM

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1.1 GENERAL

This report describes the required electrical services at the proposed Science & Learning Building at St Patrick's College, Strathfield, and an assessment of the existing electrical services at the site.

1.2 EXISTING SUPPLY TO SITE

We have confirmed that there are currently 3 supplies to the school site, which are as follows:

1. Substation and main switchboard to the North of the site (which was original supply) and is near capacity so we don't see any change to this. See figure 1 (top of image).

2. The newer substation near the ARTS building on south east corner (the one we are interested in) and this has a 1200A capacity and this currently uses less than 150A. The protection was limited (initially set) to 630A (from 1200A) but as the new building is expected to be around 400A then it still fits within the 630A. See Figure 1 (bottom of image)

3. A small overhead supply from the street to the pool, and this uses around 150A. We suspect that this supply may need to be relocated to the ARTS main switchboard as part of the works as Ausgrid may request a supply consolidation, but we will confirm this as part of the detailed design process. See Figure 1 (it is not noted but the pool is blue square on the bottom right of the image)

1.3 EXPECTED MAXIMUM DEMAND

We have done a review on the expected power demand for the proposed building based on the current site layout

Table 1 shows the current and future potential electrical load requirements, based on maximum demand calculations we have carried out for the site. The existing capacity is shown as 630A, but this is based on the current service protective device setting as the switchboard (and we understand the supply from the substation is 1200A.

Table 1 – Estimated power capacity

Existing Capacity	630A
Existing Estimated Load	150A
Expected maximum demand	400A

Based on our power assessments, it appears that there would be adequate capacity in the existing supply to the site from the substation near the ARTS building on the south east corner of the site. (see figure 2)

The main switchboard that is fed from this kiosk substation is located in the adjacent ARTS building, and this has adequate capacity to supply the proposed new building. (see existing ARTS switchboard in figure 3)

A suitable cable route will need to be confirmed as part of the detailed design to get from the existing main switchboard in the ARTS building to the new building, but we expect that this will most likely run around the outside of the ARTS Building and run parallel to Francis Street, then head west towards the new building.

A new main DB cupboard will be provided in the basement of the proposed new Science and Learning building, and this main DB will feed switchboards located on each level of the building, and mechanical services switchboard located on the top level. There will be an electrical services riser in the building to

allow the backbone cabling to each DB, and this riser also house the DB on each level, so it is a very efficient electrical distribution system throughout the building.

1.4 PV SOLAR SYSTEM

It is intended that a new PV solar system will be provided as part of this new building development and that it will be located on the top level over the plant area. The expected size is around 15kW, based on available space for PV solar panels.

1.5 COMMUNICATIONS SERVICE TO SITE

There is a main communications room located in the main admin building in the school, and this main communications room feeds all other buildings on the site. (see figure 4 for existing main comms rack)

It is intended that a backbone communications link is taken from this main communications room, through the admin building and north across towards the proposed new Science and Learning building.

A new main comms room will be provided in the basement of the proposed new Science and Learning building, and this comms room will house the comms racks that will feed all communications outlets in the new building.

1.6 DRY FIRE SERVICES

A smoke detection and occupant warning system will be provided for this building with the fire brigade panel located in the main entry on ground level. This will connect back to the existing main schools fire indictor panel, which is connected to an approved fire monitoring station.

1.7 CCTV, SECURITY AND ACCESS CONTROL

An Inner Range security and access control system is used at the school and it is intended that this system is installed in the proposed new building.

The main security panels (expander panels) will be installed in the main comms room in the basement of the new building and these will be connected back to the existing school security system via the new communication network to be provided as described earlier.

A networked CCTV system will also be provided as part of the proposed new building works with the coverage general around the perimeter of the building and at building entry points.

1.8 PA SERVICES

There is an existing PA system throughout the school, and it is intended that this will be extended to the proposed new Science and Learning building. This PA will be used also for period bells and bells/alerts for security lockdown and the like.

There is also an existing PA system (not sure if it is operational) on the existing covered seating area on the south side of the oval, so provision has been made for a new PA system on the new tiered seating as part of the proposed new building.

1.9 EXTERNAL LIGHTING

New external lighting will be provided to allow safe access to and around the proposed new building. Whilst there is existing lighting to the tennis courts where the new building will be located, the relocated tennis courts located adjacent to and on the roof of the proposed new building are not intended to be lit.

Any new external lighting will be compliant with AS4282 in relation to light spill.

Figure 1 - Existing Power Supplies to the Site

1. *Northern supply – Top of the image*
2. *Southern Supply – Bottom of the image*

Figure 2 – Existing Kiosk substation (Southern supply)
ARTS Building is in the background

Figure 3 – Existing ARTS Main Switchboard (MSB)
There is adequate spare capacity at this switchboard for the new building

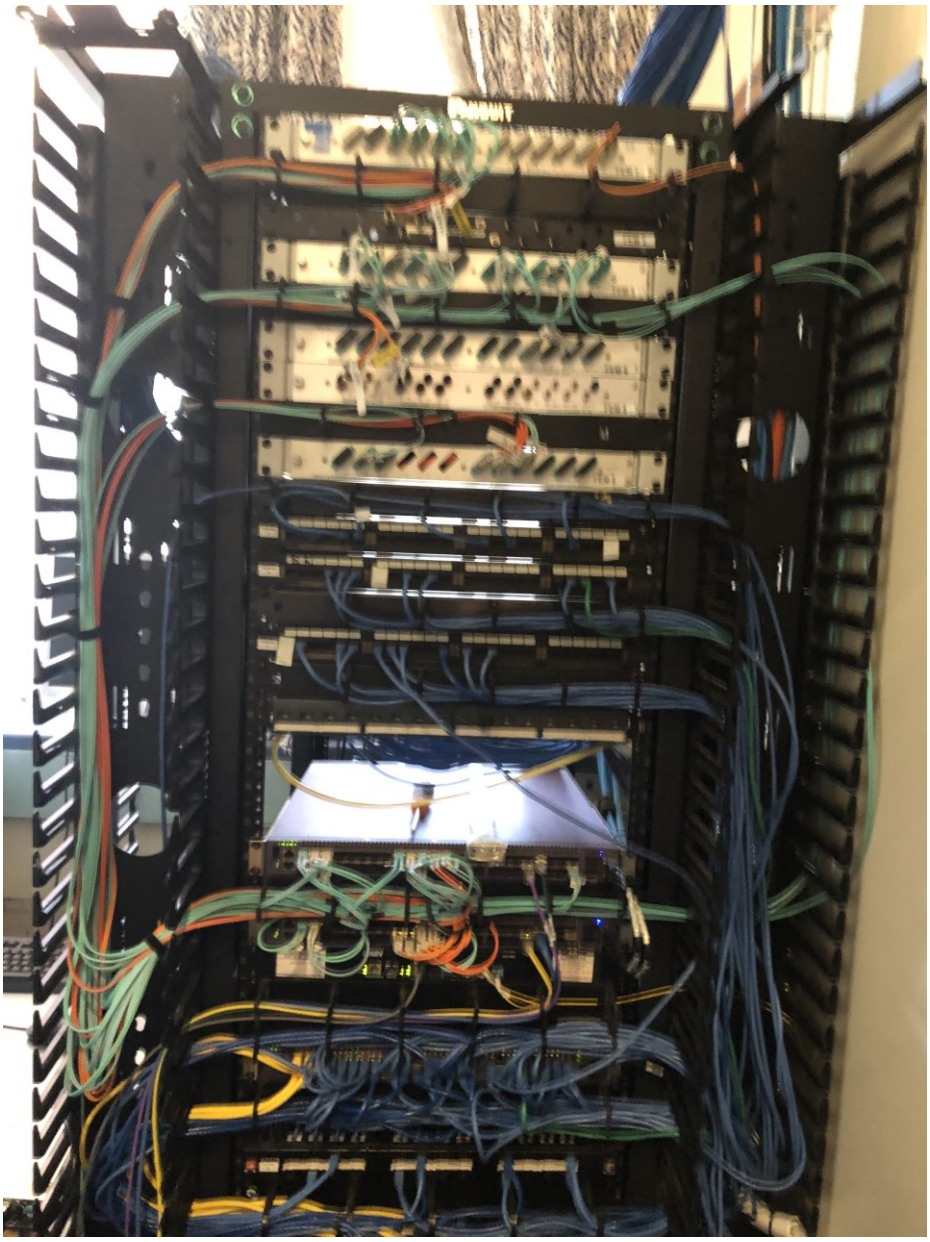

Figure 4 – Existing main communications rack in admin building.
New fibre backbone to new building will connect into this rack at the top