



JONES NICHOLSON PTY LTD
CONSULTING ENGINEERS

ELECTRICAL INFRASTRUCTURE REPORT

7-9 Gibbons Street Redfern

For Lawson Square Pty Ltd

**Prepared in co-ordination with
Candalepas Architects**

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1.0 INTRODUCTION

Jones Nicholson has been engaged to plan and co-ordinate the electrical and communications incoming supplies, infrastructure and spatial requirements for the proposed commercial and residential development.

The Candalepas Associates' floor plans were reviewed and electrical spatial requirements co-ordinated in the course of completing these works.

The building comprises of:

- 8 levels of basement,
- Ground floor comprising of retail tenancies, loading dock and waste storage facilities
- A supermarket on level 1
- Level 2 – commercial tenancies
- Levels 3 to 17 – residential apartments

The building will comprise of the following electrical systems

- Electrical sub station
- Main Switchboard and electrical power reticulation to AS 3000 and Energy Australia's requirements
- Communications – Incoming Telstra services and reticulation to each commercial tenancy and residential unit
- Smoke Detection and Occupancy warning speakers to AS 1670 (as required by BCA Table E2.2a).
- The Fire Indicator Panel is to be located within a fire control room (as the building is over 50 metres in height) as per BCA Section E1.8)
- Lighting throughout including emergency and exit signs to AS 2293 (as required by BCA section E4.2)
- MATV for free to air and pay TV
- Security access control system for entry to the building and moving around the different areas

As outlined in DGR item 10, Jones Nicholson have completed initial applications and correspondence have been made to both Energy Australia/level 3 designer and Telstra in regard to this development. The supply authorities have confirmed that there is sufficient capacity in the local area (High Voltage and Telstra infrastructure) to support this development. When the DA is issued, these applications can be further progressed with the respective authority and more detailed co-ordination completed in regard to the incoming supply requirements.

The Director General's requirements were reviewed and no extraordinary requirements were noted or found that would impact on the electrical infrastructure and spatial requirements other than the normal spatial requirements for any development of this nature.

The SEPP No 65 Design Quality of Residential Flat Developments does outline efficient use of energy in Principle No 5 and this should be taken into account during the design of the project. The requirements of BCA section J6 will assist in meeting this "Design Quality Principle". The efficient use of energy will also be co-ordinated with the project specific sustainability requirements, Basix requirements and NSW flat design code, part 3 – Energy Efficiency.

2.0 ELECTRICAL INFRASTRUCTURE

2.1 EXISTING ELECTRICAL INFRASTRUCTURE

The anticipated electrical load for the new development is in the order of 1600 Amps per phase.

An application for connection has been made with Energy Australia. The existing electrical supply and associated switchboard and infrastructure is not sufficiently sized to support the load of the new development and as such the existing is proposed to be removed and a new incoming electrical supply, main switchboard and associated infrastructure installed as a part of this development.

The existing aerial power cables and power poles in Gibbons Street and the existing lighting pole in Marian Street are all located on or adjacent to the kerb line. AS3000 (table 3.8) requires aerial cables to have a minimum horizontal separation from a building of 2 metres. As the new building will be set back from the kerb by approximately 5 metres the existing cables and poles are not expected to be impacted upon by the development.

The existing aerial cables are all low voltage (ie 240 or 415 Volts) and as the new development will need to be supplied with a high voltage supply to a sub station, no new connections are expected to the existing aerial cables.

2.2 SUBSTATION

As mentioned above, the anticipated electrical load for the building is in the order of 1600 Amps per phase or 1200kVA and as such an onsite sub station will be required. Based on the proposed layout and site utilization, an indoor sub station is expected to best accommodate the power supply for the building.

The proposed sub station room is currently located on the Ground floor with access onto Gibbons Street and Marian Street. It is expected that the high voltage supply to the sub station will enter the building through in ground conduits from Marian Street and it is anticipated that the high voltage will be supplied from either the southern end of Gibbons Street (ie corner of Margaret Street) or from Regent Street via Marion Street. The exact arrangement of high voltage reticulation will be known when a level 3 designer is commissioned and the sub station/high voltage design commenced.

The substation transformer access doors are to be located such that they have a 120mm minimum and 600mm maximum rise up from outside of the chamber.

Any services including, but not limited to, stormwater or subsoil drains, sewers, gas water, fire services, air-conditioning installations, electrical or communications cables, conduits or pipe work other than those specified by Energy Australia, must not pass through or encroach into the substation site area or its required or associated access, services passageways, ventilation duct or cable riser clearances.

Columns, beams, footings or any part of any other building or structure shall not encroach on the clearances referred to in this Network Standard, within any portion of the substation or associated access or services passageways area or any space required for ventilation ducts

Energy Australia personnel must have 24 hour access seven days a week, through dedicated access ways which must be at least 1200 mm wide. Doorways must be 1000mm wide when the door is in the open position

Unless noted otherwise and approved by Energy Australia in writing the minimum structural component ratings are FRL 180/180/180 and 2kPa blast rating

The transformer access door onto Marian Street is to provide an opening which is full height (i.e. minimum clear height of 3100 mm high) and minimum clear width of 1700 mm, with the door in the fully open position

2.3 SMOKE DETECTION AND FIRE CONTROL ROOM

The Fire Indicator Panel is to be located within a fire control room on Ground Floor of the building. The room shall be located (as per the current architectural drawings) with one door from the front entrance of the building and another one direct from a public place or fire isolated passageway which leads to a public place. The fire control room shall have a construction FRL of 120/120/120.

All services, pipes, ducts and the like that are not part of the Fire Control Room are not to pass through it.

The Fire Control room shall contain the following

- Fire Indicator Panel
- A telephone connected directly to an external telephone line
- A whiteboard (or blackboard) of minimum size 1200mm wide x 1000mm high
- A pin board of minimum size 1200mm wide x 1000mm high
- Colour coded durable tactical fire plans
- A raked plan table of a size suitable for laying out the above plans.

The Fire Control room shall have a minimum size of 8m² with a clear space of 1.5m² in front of the FIP. If the building security systems or lift annunciator panels are also located within the rooms the room shall be a minimum of 10m² in size with 1.5m² free space in front of each control or indicator panel.

The fire control room shall have a construction FRL of 120/120/120.

Location of fire control room is to not involve changes in level which in aggregate exceed 300mm.

2.4 TELECOMMUNICATIONS

The incoming telecommunications supply is expected to enter the building from the existing Telstra pits on corner of Gibbons Street and Marian Street. The communications cables will then reticulate to the communications MDF/cupboard on cabletray through the basement 1 level.

2.5 MATV

The MATV system will incorporate an analogue/digital free to air antenna on the roof and a Pay TV satellite dish which will be reticulated to all levels of the building through a network of co-axial cables.

3.0 SPATIAL REQUIREMENTS.

The following table outlines the electrical spatial requirements for the project.

Item	Location	Space Required	Special Requirements
Sub Station	Ground Floor	7.5m X 6.5m. 3.2m head height	2 hour fire rated and requires 2 separate doors opening onto the street. A minimum of 1m space under slab required for incoming HV cables. EA may require some different items and will advise as soon as these are known.
Main Switchboard	Basement 1	8.0m x 2.4m	2 hr fire rated and 2 separate egress doors as far apart as possible.
Communications Cupboard	Basement 1 southern end	2 door cupboard typically 1700mm wide x 500mm deep.	
Electrical Riser cupboard	Each floor from Ground to level 16	2 door cupboard typically 1900mm wide x 600mm deep.	Each cupboard should be located at the same location from floor to floor to assist in cable reticulation up through the building.
FIP	Fire Control Room	1 metre of wall space with 1.5m2 clear space in front	Fire control room to be minimum of 8m2 and shall be located with one door from the front entrance of the building and another one direct from a public place or fire isolated passageway which leads to a public place. The fire control room shall have a construction FRL of 120/120/120. Location fo fire control
Fire Control Room	Ground Floor	8m2	Fire control room shall be located with one door from the front entrance of the building and another one direct from a public place or fire isolated passageway which leads to a public place. The fire control room shall have a construction FRL of 120/120/120. Location of fire control room is to not involved changes in level which in aggregate exceed 300mm.

Lighting zone	Commercial Floors	100mm of space above the ceiling for lighting and below any mechanical ducts or pipework	

All dimensions are internal