BEECROFT ROAD ASSESSMENT OF SUPPLY REPORT

REVISION B

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APD Job Number: N_APD02934
Client Project:

PREPARED FOR

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1. INTRODUCTION

This report details APD's analysis of 220-240 Beecroft Road, Epping for required electrical works associate with

- Expected demand for 442 dwellings and commercial spaces.
- Moving 2 kiosk substation to desired location and supplying new development
- Proposed entrance to the development
- Approximately 356 car spaces

as per Ausgrid and Australian Standards.

2. SCOPE OF WORK

The scope of works has been provided by LANDCOM.

3. TABLE OF DIAGRAMS

4. ANALYSIS

4.1. Expected Demand

APD have reviewed the design documents from client and have made below calculations as per Ausgrid and Australian standards.

Type of Occupancy	Area (m2)	Energy Demand kVA/m2	kVA	Remarks
General Retail shop	700	0.1	70	
Carparks	13573	0.015	204	
Units	442 (No.)	3.5	1547	
Lift 11 nos.			132	
		Total	1953	
			2717	Amps per phase

The total expected demand for 220-240 Beecroft Road, Epping is approximately 1953. Calculations base of total GFA of 39,000m^2 from data provided by client.

4.2. Relocation of existing kiosk substation

There are two existing kiosk substation S6129 Ray Carlingford No. 2 and S5702 Ray Carlingford No. 1 on site.

The low voltage feeder shown in the Ausgrid WebGIS for the kiosk substations at site are as below.

S6129 Ray Carlingford No. 2
Feeder 1 : Sub 5702 (N/O)
Feeder 2 : 4-6 Ray Rd & 242 Beecroft Rd
Feeder 3: WDNO

S5702 Ray Carlingford No. 1
Feeder 1 : North West Rail Link MSB-2
Feeder 2 : Sub 6129

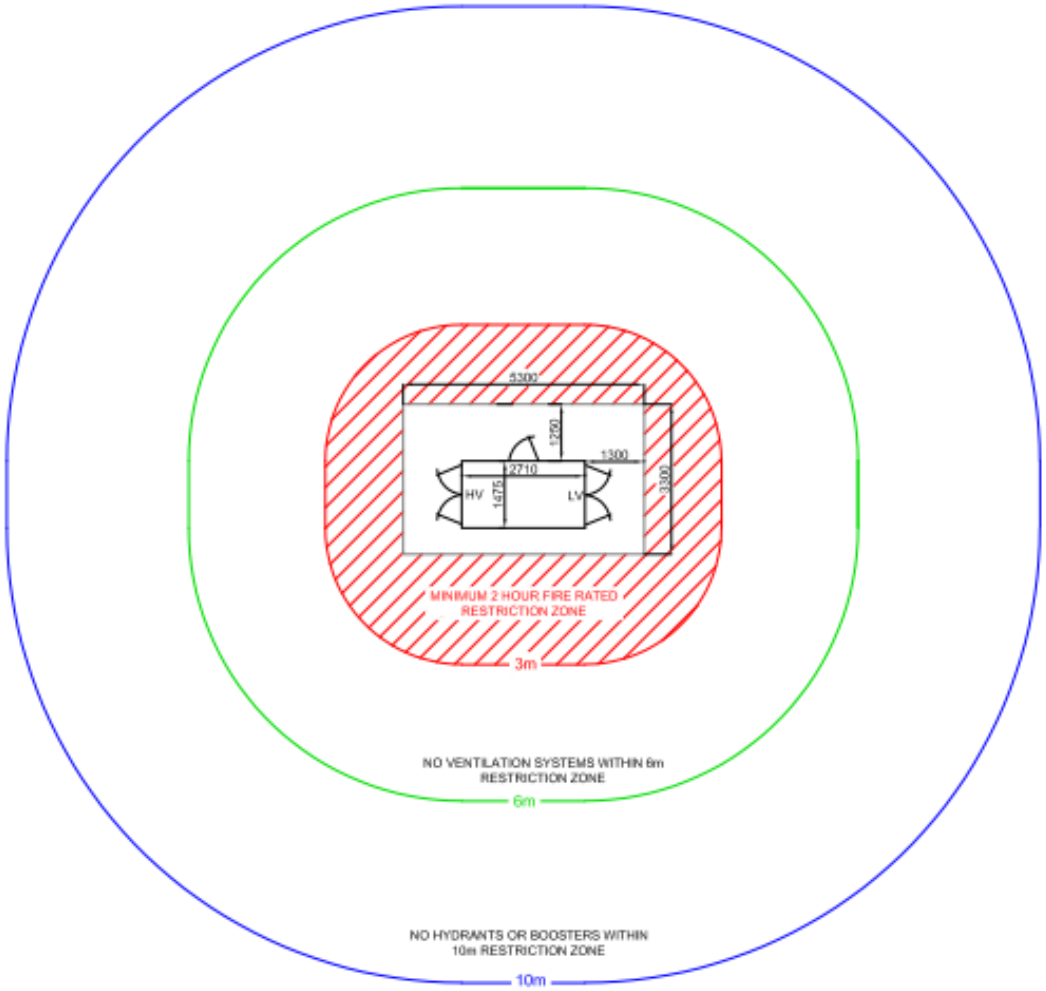
Whilst Ausgrid's WebGIS indicates that these substations only provide power to the existing site, the existing kiosk substations need to be inspected to verify if any of the existing low voltage feeder supplies need to be maintained once the substations are decommissioned. This is to be done during the detailed design of the relocation.

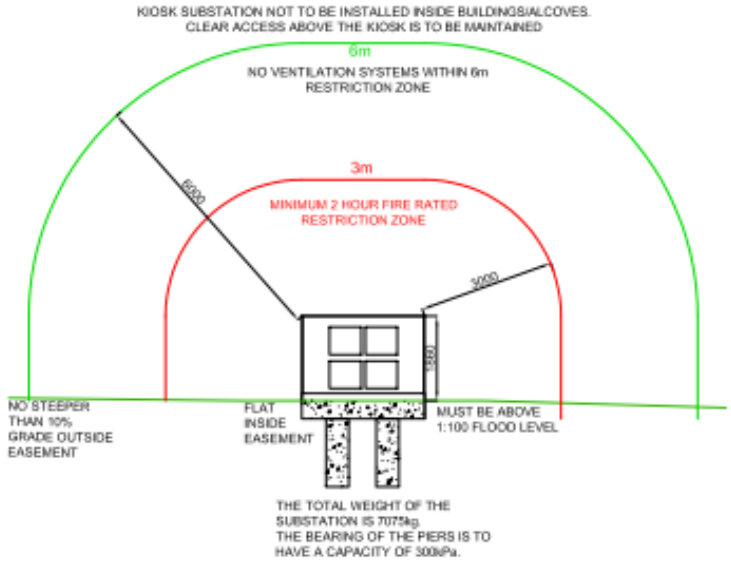
Both of the substations will need to be removed once the existing supplies are decommissioned, prior to demolition and bulk excavation commencing. The 11kV cables to the existing substations should be de-energised to a point outside the site.

New substations would be established at locations chosen to meet the design of the building and the Ausgrid kiosk substation spatial requirement .

Typically, the Electrical Design process for this type of project will take at least 6 months and the decommissioning works would take a further 4 months. Construction works to energisation of the new substations will take approximately 6 months from kiosk site availability. The Ausgrid standard connection process is shown below in Fig 2.

Fig 1: Typical kiosk substation spatial requirements for Ausgrid





4.3. Proposed entrances to the development

Ausgrid has underground and overhead assets (underground cables and overhead wiring and street lights) in both Beecroft and Ray Roads.

Beecroft Rd:

Ausgrid assets will be affected by the construction of the slip lane and entrance in Beecroft Road and these will most likely need to be relocated.

These consist of :

- 2 off 11kV underground cables and their associated pilot cables which will need to be relocated for the length of the slip lane (approx. 150m)
- 2 off wood poles, 4 spans (200m) of 2 strands low voltage aerial bundled cable and 2 off street lights. These could be undergrounded, sharing a trench with the 11kV cables. Note: there are overhead communications wires on these poles which would also need to be relocated.

The extent of the works required for proposed entrance development can be ascertained in conjunction with the design of the building. The depth of excavation for the construction and the location of the re-aligned kerb of the slip lane will determine the amount of relocation required.

Ray Rd:

The current proposed driveway location does not appear to affect Ausgrid assets.

Typically, the Electrical Design process for this type of project will take at least 6 months and the relocation works would take a further 4 months to energisation. The Ausgrid standard connection process is shown below in Fig 2.

4.4. Recommendation

As per the above load calculation, 2 x 1000 kVA substations would be required for the new development. However, as the load calculation is very close to the maximum capacity of 2 x 1000kVA substations we recommend further detailed load calculation to be carried out during the Ausgrid electrical application stage. The detail load calculation need to taking account special electrical load required for retail environments, pumps and any other electrical requirements not considered above.

If the load is above the capacity of the 2 x 1000kVA substations then there are a number of options to increase the capacity:

- Increase one or both substations to a 1500kVA
- Install a third 1000kVA substation.
- Incorporate a 2 x 1500kVA chamber substation into the building.

The decision on which option is selected should be made in conjunction with the designer of the building electrical reticulation as the size and location of the substations will affect the size and number of cables and Main Switchboards. This has the potential to escalate costs substantially if not co-ordinated well.

Also as there are some non-negotiable requirements regarding the kiosk substation location and arrangement, it would be advisable that the location for kiosk substation allocated as per Ausgrid requirements in the early phases of design.

Further work will be required to facilitate the relocation of Ausgrid cables at the Beecroft Road entrance. Once the depth of any excavation in this area has been determined, then the extent of the relocation works can be defined

Fig 2: The typical time frame of the design work as per Ausgrid standard connection process