

## 1. Scope

This standard provides information on reserves / easements for 11 and 22kV kiosk substations to be used in CitiPower and Powercor networks.

## 2. General

Size of the kiosk substation reserve / easement is based on the following considerations:

- 2.1. As per AS2067(2016) - Table 6.1 Clearances for outdoor transformers, the following clearances are required from the sides of kiosk to the edge of the kiosk reserve / easement unless a fire risk assessment (FRA) is conducted:
  - 2.1.1. For kiosk with 1000L of oil and below, a minimum clearance of 3m is required.
  - 2.1.2. For kiosk with greater than 1000L of oil, a minimum clearance of 7.5m is required.
- 2.2. A FRA was conducted as a joint effort between all Victorian Distribution Businesses. The recommendation clearances from the FRA are:
  - 2.2.1. For 500kVA kiosk and below, a minimum clearance of 1.8m.
  - 2.2.2. For kiosk greater than 500kVA, a minimum clearance of 2m.
- 2.3. CitiPower and Powercor have adopted the 2m clearance from the sides of the kiosk to the edge of the kiosk reserve / easement for future proofing purposes.
- 2.4. 650mm operating space is maintained from the opened door to the edge of the reserve / easement.

## 3. New, Replacement and Upgrades Works

- 3.1. For new kiosk installations:
  - 3.1.1. The final kiosk installation shall comply with a 2m clearance from the edge of the kiosk to the reserve/easement boundary.
  - 3.1.2. Kiosk reserve/easement sizes shall comply with Table 2 below.
- 3.2. For kiosk replacements (e.g. 315kVA to 315kVA) and upgrade works (e.g. 315kVA to 500kVA)
  - 3.2.1. Kiosks 500kVA and below:**
    - The final kiosk installation shall comply with a 1.8m clearance from the edge of the kiosk to a combustible building surface.

### 3.2.2. Kiosks above 500kVA:

- The final kiosk installation shall comply with a 2m clearance from the edge of the kiosk to a combustible building surface

- 3.3. In the event that these clearances cannot be maintained, fire mitigation measures must be put into place.

The preferred option is a fire wall with a 2 hour fire rating (FRL 120/120/120 as per the building code of Australia).

Masonry fire walls are deemed to comply with FRL 120/120/120 if they are constructed in accordance with AS 3700 and are either;

- Double clay brick on a concrete footing or
- 150mm thick solid concrete blocks

If this option cannot be achieved please contact the Technical Standards Group.

- 3.4. Table 1 below summarises the clearance requirements for new installations, like for like and upgrades projects:

Installation Type	Kiosk Rating	Clearance required from kiosk	Comments
New	25kVA – 2MVA	2m to reserve/easement boundary	Kiosk reserve/easement sizes as per table 2
Replacement or Upgrade	500kVA and Below	1.8m to a combustible building surface	If clearance not met, fire mitigation measures must be put in place
	Above 500kVA	2m to a combustible building surface	If clearance not met, fire mitigation measures must be put in place

Table 1 – Kiosk Installation Clearance Requirements

## 4. Earthing

- 4.1. A minimum separation of 750mm between the kiosk and equipotential grid is maintained on the parallel and rear sides (non-operating sides) of square type kiosk and 1.5m between the front (operating end) and the earth grid. In case of long kiosk 1.5m separation will also be maintained at the rear end from the earth grid.
- 4.2. A minimum separation of 450mm between the equipotential grid and the edge of reserve / easement is maintained.
- 4.3. For details on earthing arrangements, refer to Technical standard DG211.

## 5. Reserve / Easement Size

The following types of kiosk installations are used:

- 5.1. **Square type 1** – The front of the kiosk is located 50mm from the road reserve as shown in fig 1. Kiosk transformers have both HV and LV compartments accessible from the front (i.e. side by side). Kiosk doors open on road reserve. The minimum kiosk reserve/easement requirements are given in table 2.
- 5.2. **Square type 2** – Kiosk substations are installed in reserves located in parks etc. as shown in fig 2. The front of the kiosk is not located at the road reserve. Kiosk transformers have both HV and LV compartments accessible from the front (i.e. side by side). Kiosk doors open in kiosk reserve/easement. The minimum kiosk reserve / easement requirements are given in table 2.
- 5.3. **Square type 1 with 2 hour fire rated wall** – Kiosk transformers have both HV and LV compartments accessible from the front (i.e. side by side). Kiosk has two hour fire rated walls with minimum FRL 120/120/120 at the rear and parallel sides and its doors open on road reserve/easement as shown in fig 3. Firewall height shall be a minimum of 2500mm. The minimum Kiosk reserve/easement requirements are given in table 2.
- 5.4. **Square type 2 with 2 hour fire rated wall** – Kiosk transformers have both HV and LV compartments accessible from the front (i.e. side by side). Kiosk has two hour fire rated walls with minimum FRL 120/120/120 at the rear and parallel sides and its doors open in kiosk reserve/easement as shown in fig 4. Firewall height shall be a minimum of 2500mm. The minimum Kiosk reserve/easement requirements are given in table 2.
- 5.5. **Long Kiosk (existing sites only)** – Kiosk substations are installed in reserves/easements located in parks, etc. Kiosk transformers have HV and LV compartments accessible from the front and the rear ends respectively. Kiosk doors open in kiosk reserve / easement as shown in fig 5. The minimum kiosk reserve/easement requirements are given in table 2.

Kiosk enclosure of fig 1 and fig 3 being close to the road reserve will not be acceptable in CitiPower area where due to the amount of other services within the footpath, the required clearances from the earthing system to other services will not be achievable, and where Councils will not accept substation doors swinging across the property boundary.

For health and safety reasons, reserve/easements with 2 hour fire rated walls are only permitted for instances where firewalls are supported by the surrounding building foundation. Standalone fire walls are not acceptable. This is to ensure firewall integrity throughout the kiosk's lifespan.

## 6. Kiosk Substation to Fire Hydrant Clearances

As per AS2419.1 (2017) – Clause 3.5.3.1, external fire hydrants must be greater than 10 metres away from any high voltage electrical distribution equipment such as transformers (kiosks).

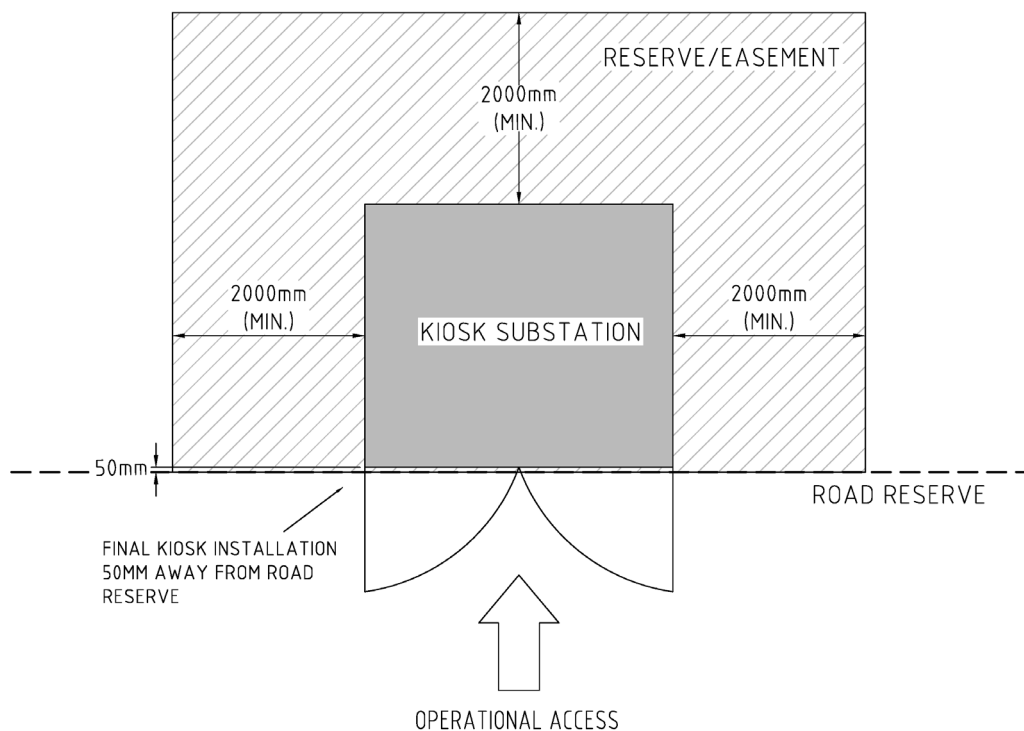


Figure 1 – Square Type 1 Kiosk

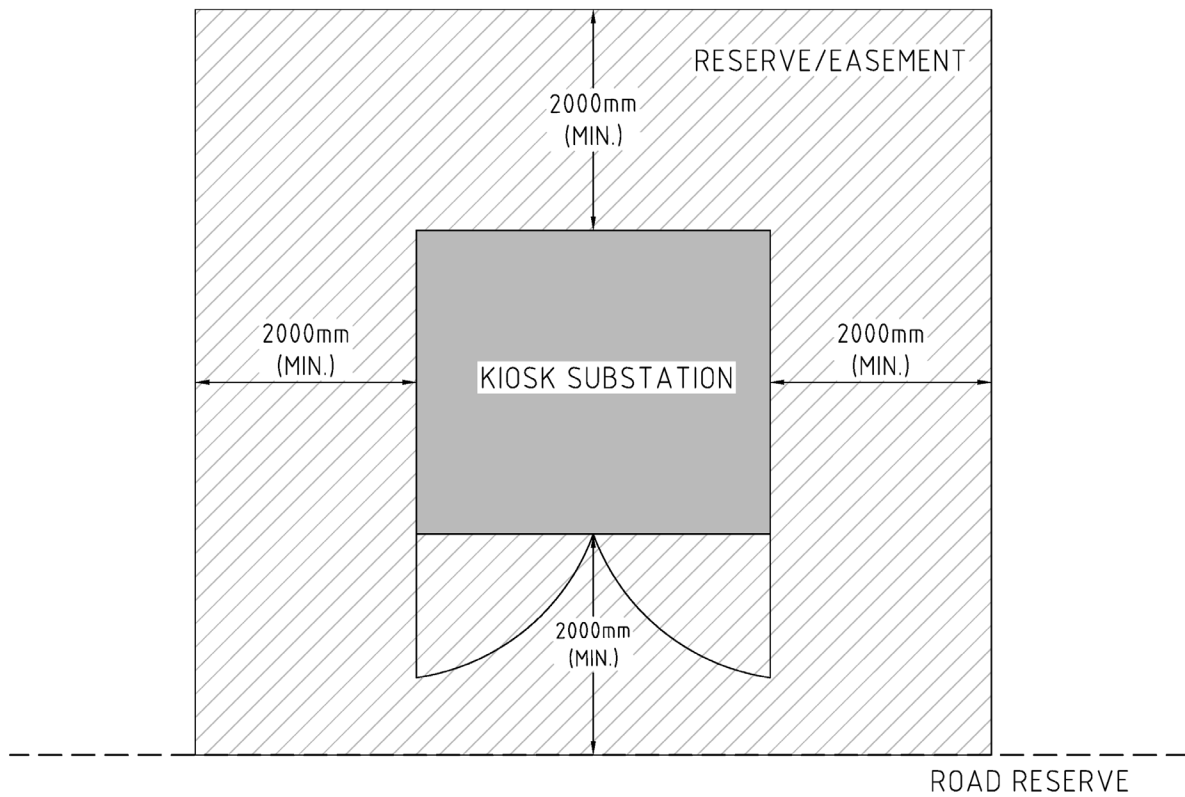


Figure 2 – Square Type 2 Kiosk

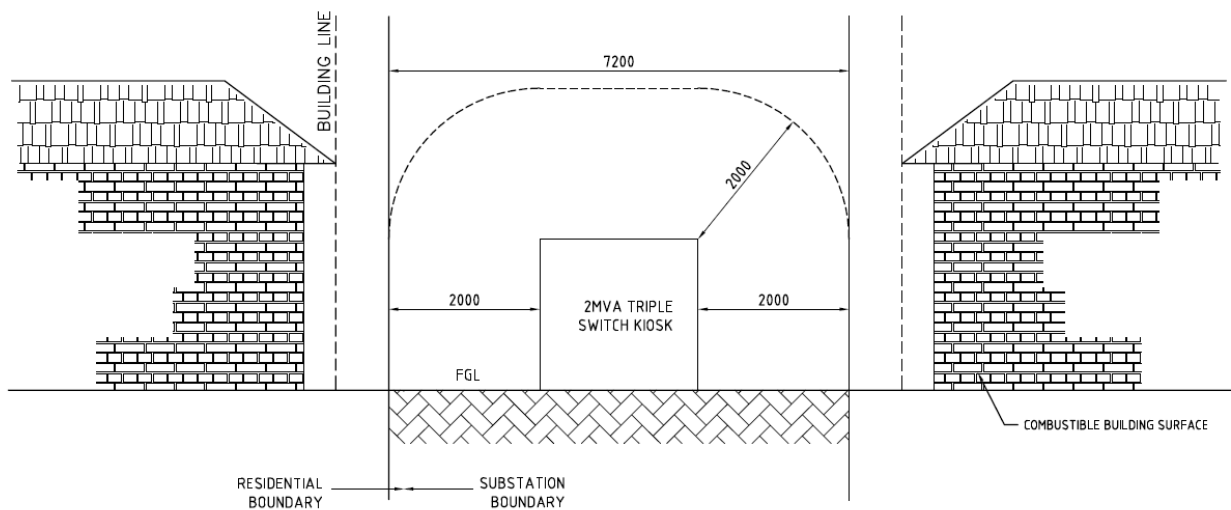


Figure 3 – Elevation view of Type 1 & 2 Kiosk Reserves

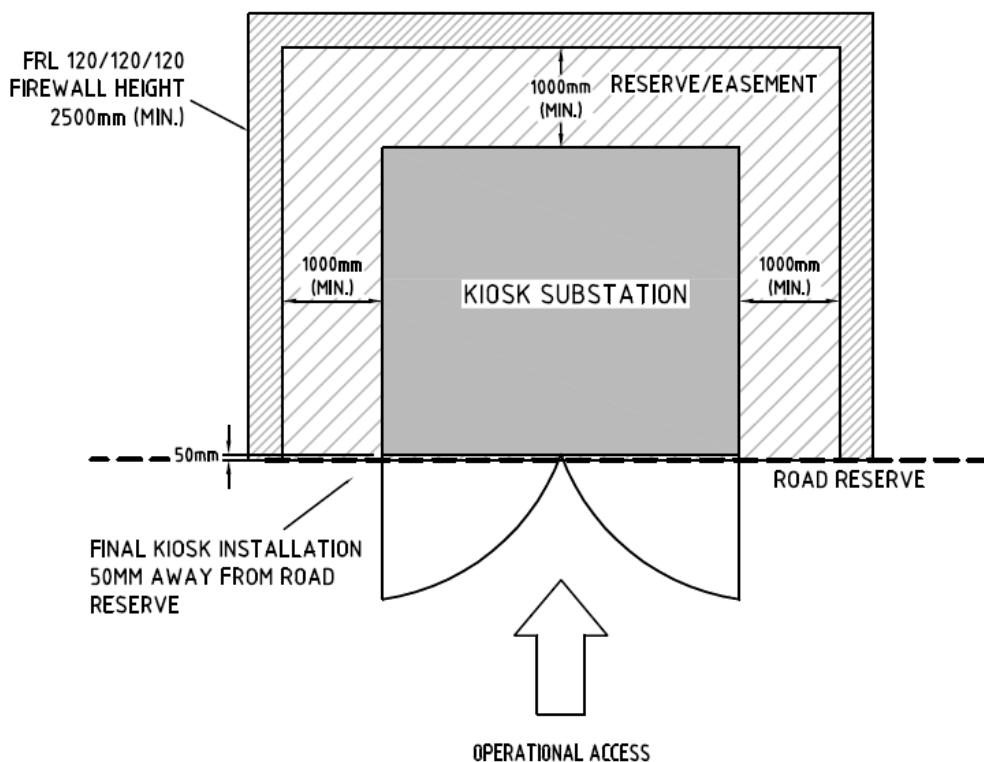


Figure 4 – Square Type 1 with Two Hour Fire Rated Wall

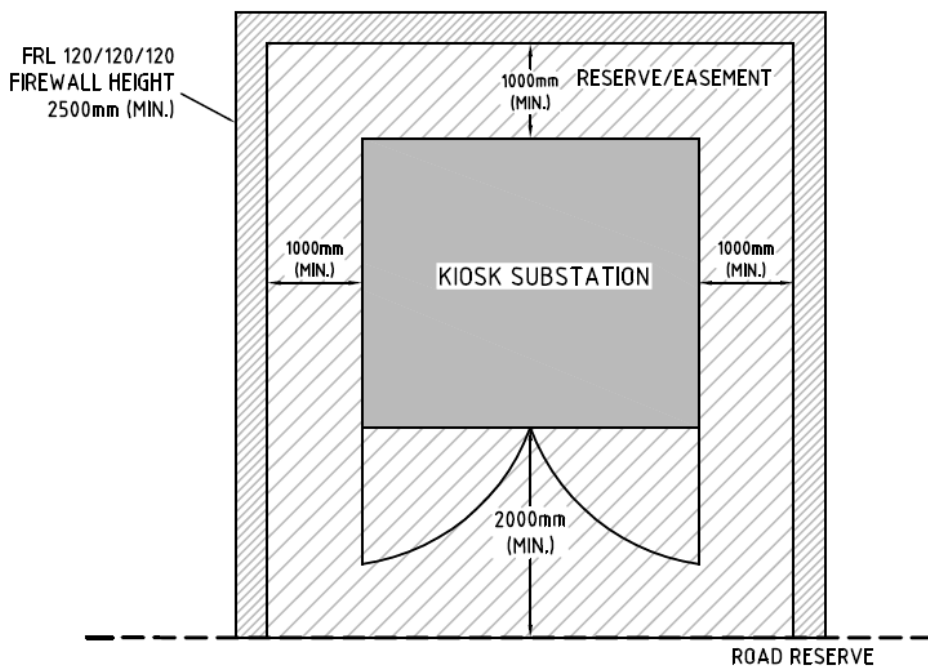


Figure 5 – Square Type 2 with Two Hour Fire Rated Wall

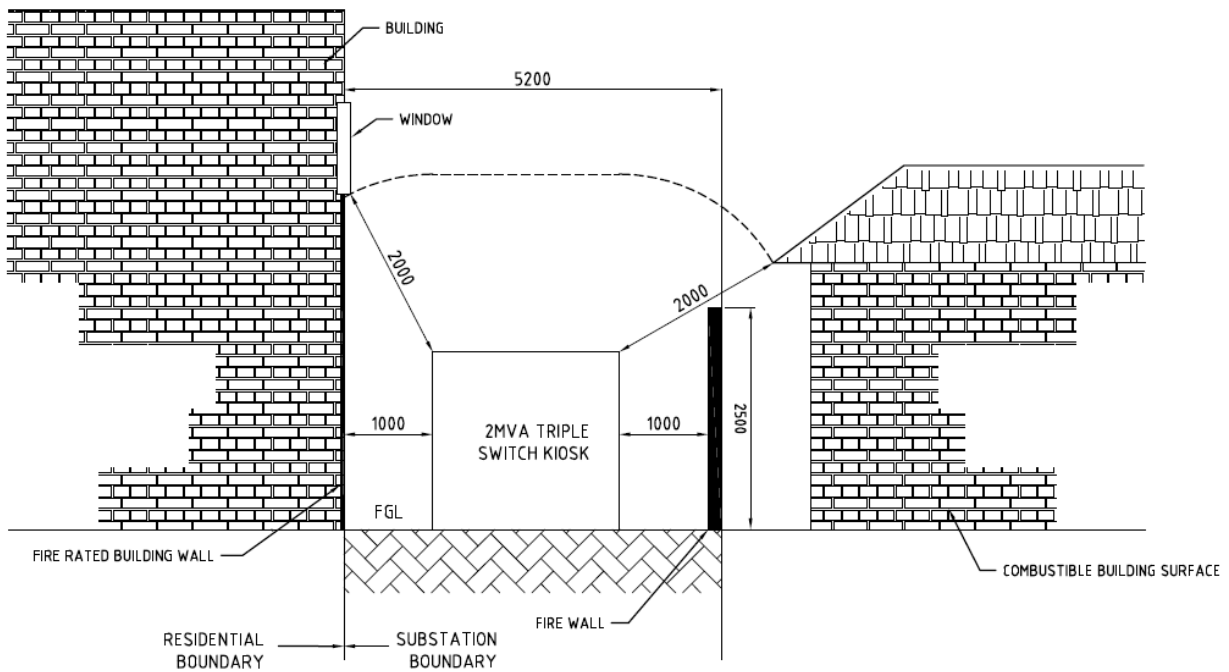


Figure 6 – Elevation for scenarios requiring Firewalls

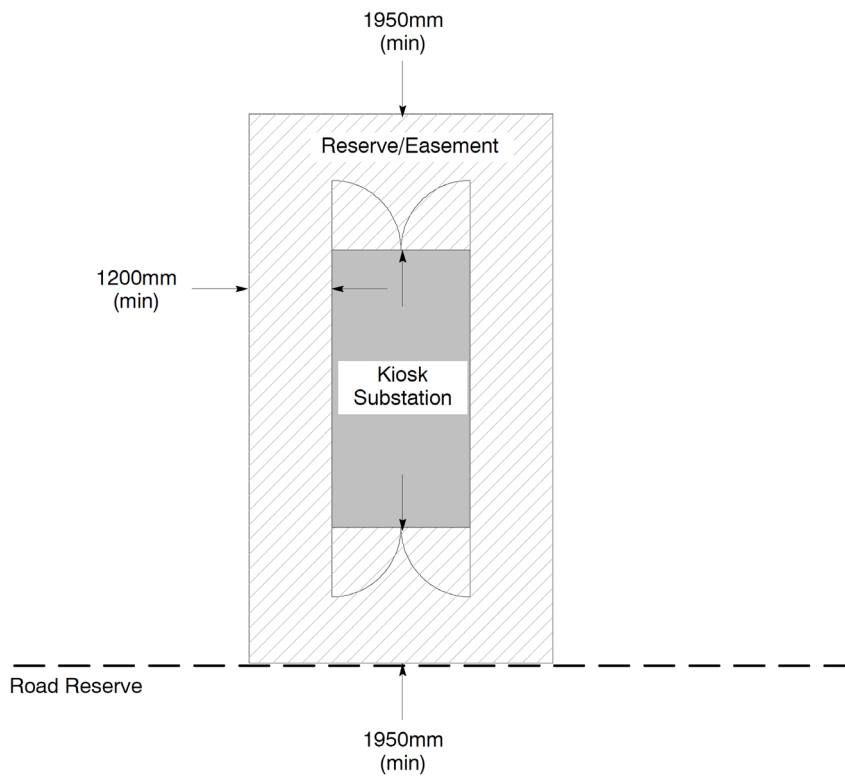


Figure 7 – Long Kiosk (Existing Sites Only)

Phase	Rating kVA	Reserve Size	
		Width (mm)	Depth (mm)
<b>Square type 1</b>			
SWER	25, 50	5400	3300
1	25, 50		
3	63, 100		
3	160 – 2000	7200	4800
<b>Square type 1 with 2 hour fire rated wall</b>			
3	160 – 2000	5200	4200
<b>Square type 2</b>			
3	160 – 2000	7200	7200
<b>Square type 2 with 2 hour fire rated wall</b>			
3	160 – 2000	5200	5200
<b>Long Kiosk (existing sites only)</b>			
3	300 – 2000	4400	7900

Table 2 – Kiosk Reserve / Easement Requirements

Note:

- Largest 100 kVA kiosk dimensions which complies with 2m clearance (W x D): 1320mm x 1200mm
- Largest 2 MVA kiosk dimensions which complies with 2m clearance (W x D): 3100mm x 2600mm