Environmental Planning Committee

Monday 7 August 2023
6.00pm

Agenda

Environmental Planning Committee

Agenda

Item No:	R3 Recommendation to Council
Subject:	**PROPOSED LOCAL PLANNING CONTROLS FOR ELECTRICITY SUBSTATIONS**
Author:	Jacquelyne Della Bosca, Executive Planner
Approvers:	Anne White, Manager Strategic Planning & Place Scott Pedder, Director Planning & Place
File No:	22/113556
Purpose of the Report:	To respond to a Council resolution requesting staff to review measures to address the visual impact of electrical infrastructure in new development, such as substations.
Alignment to Delivery Program:	Strategy 4.1: Encourage and plan for sustainable, high quality planning and urban design outcomes.

Recommendation:

THAT:

A. The report on local planning controls for electricity substations be received and noted.

B. Council resolves to exhibit *Draft Woollahra Development Control Plan 2015 (Amendment No.23)* as contained at **Attachment 1** of the report to the Environmental Planning Committee of 7 August 2023.

C. This Council resolution (initiated by a Notice of Motion) is now closed.

Executive Summary:

This report responds to a Council resolution from 14 February 2022, initiated by a Notice of Motion (NOM) requesting staff to consider planning controls to address the visual impact of electricity infrastructure on the streetscape.

This report focuses on customer substations. Customer substations are required if Ausgrid identifies that the electricity supply to a new development site needs to be upgraded to support the new use, such as a new residential flat building or mixed use development. This type of electricity infrastructure requires development consent and can be addressed at the development application (DA) stage. These substations are bulky and can be visually intrusive particularly when located directly along the street frontage of the property boundary.

Staff recommend that Council amends the *Woollahra Development Control Plan 2015* (Woollahra DCP 2015) to include specific provisions for electricity substations so that when a customer substation is required, it is located and/or concealed so that it is not visible from the street. The Draft DCP provisions will support and complement existing provisions in the Apartment Design Guide which state that "*substations…. and other service requirements to be located in basement car parks or out of view*".

The proposed amendments are set out in *Draft Woollahra DCP (Amendment No. 23)* at **Attachment 1** with a recommendation that Council endorse the Draft DCP for the purposes of public exhibition.

Discussion:

What is an electricity substation?

The Ausgrid definition of a substation is:

"*A substation is part of an electrical generation, transmission, and distribution system. Generally, substations transform voltage from high to low (can be the reverse). Electric power may flow through several substations between a generating plant and a customer, and the voltage may change in several steps*."
(Ausgrid, Electrical Safety Rules Document No. ESR2022/1, October 2022)

Large electricity substations convert sub-transmission voltages of 33kV & greater, and small distribution substations convert high voltage to low voltage for supply to customers. When a new development is being proposed Ausgrid may require a small distribution substation to be installed if the existing electricity supply cannot meet the load required for the use, or proposed use. For example this may occur when a new residential flat building or mixed use development is proposed and the existing electricity supply needs to be upgraded to accommodate the proposed new development. The customer substation can take the form of a kiosk or chamber substation.

- A **kiosk substation** (also known as a pad-mounted substation) is defined by Ausgrid as "*a totally enclosed, free-standing, self-contained substation not designed for bodily entry and which is generally operated from door openings*." Kiosk substations are usually supplied and installed as a complete assembly. The dimensions of the kiosk vary depending on the load/capacity, but the kiosk is generally around L3600m x W1800 x H1800m, with minimum setbacks then applied around the kiosk.

- A **chamber substation** is a chamber which is dry and completely isolated from the rest of the building with walls, floor, ceiling and doors that meets minimum fire resistance levels. Chamber substations make take the form of surface chamber substations which are located no more than 2m above the level of the vehicular entry or pedestrian entry to the substation, elevated chamber substations generally located 2m-6m above the level of the roadway, upper-level chamber substations generally located 6m above the level of the roadway, and basement chamber substations.

Figure 1: Kiosk substation: address unknown *Source: Ausgrid*

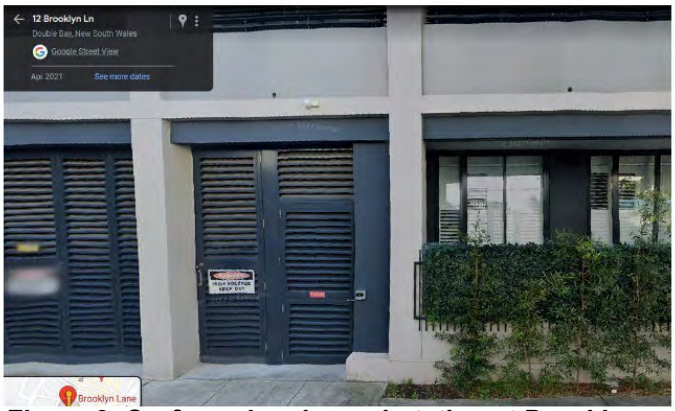

Figure 2: Surface chamber substation at Brooklyn Lane, Double Bay *Source: Google streetview*

A kiosk substation is relatively easy to install, and costs significantly less than a chamber substation, and is therefore generally preferred by applicants for residential flat building (RFB) developments, see **Figure 1** above.

Chamber substations have a higher load capacity than kiosks and are typically installed in larger mixed use or commercial developments. The chamber substation is generally located in the ground floor of the building façade or in a basement level. However, it can be located in other parts of the building. Chamber substations tend to be an effective solution in our business centres where properties are built to the boundary, see **Figure 2** above.

Council's concerns with customer substations

Within the Woollahra LGA land is being redeveloped for more intensive uses, such as residential flat building and mixed use developments. Sometimes Ausgrid identifies that the electricity supply to a development site needs to be upgraded to support the new use, and requires installation of a customer substation.

The substation must meet Ausgrid's technical requirements which address matters such as function, access and safety etc. Of significance, for both kiosk and chamber substations, Ausgrid personnel must have 24 hour access seven days a week through a dedicated easement, and no public or occupant access is permitted through this access way. Because of the access and easement requirements, customer substations tend to be located directly along or near the street property boundary.

Council has raised concern that some recent developments requiring a customer substation have located the substation directly along the street frontage in a visually intrusive manner, and this has an adverse impact to the amenity of the streetscape and adjoining neighbours. Below at **Figure 3** is an example of a kiosk substation in O'Sullivan Road, Rose Bay, which is unsympathetically located and creates a detrimental impact on the streetscape.

Figure 3: Intrusive kiosk substation on O'Sullivan Road, Rose Bay

Woollahra DCP 2015 currently includes objectives and controls to address the impacts of site facilities, but these do not include specific reference to electricity infrastructure such as customer substations.

On 14 February 2022, and in response to a Notice of Motion (NOM), Council resolved as follows:

> *THAT Council undertake a review of, and prepare a report to Council, on measures that can be taken in its planning instruments (including any amendment to its current Development Control Plan or Local Environmental Plan, amongst others) to ensure that all development in the municipality that requires, or may foreseeably require, the installation of an electricity substation or some form of upgraded electrical infrastructure ("infrastructure"):*

1. *properly incorporates this infrastructure in its design and caters for this infrastructure on the development site; and*
2. *ensures that such infrastructure is located away from neighbouring properties and/or is sufficiently set back from neighbouring properties; and*
3. *ensures that such infrastructure is situated, as far as possible, away from the street and/ or public domain such that it is not visible from the street; and*
4. *ensures that such infrastructure is enclosed or sited in a visually unobtrusive way, with proper fencing, enclosure and/or landscaping measures.*

Scope of matters addressed in this report

This report addresses substations proposed to be installed to facilitate supply requirements that is a consequence of the redevelopment of a site, i.e. a **customer substation**, and requires Council consent as part of the DA process.

These customer substations are distinguished from other electricity distribution installations and works that are identified as development permitted without consent under the *State Environmental Planning Policy (Transport and Infrastructure) 2021*, Division 5 Electricity transmission or distribution. In these occasions, Council is required to be notified of the work and invited to make a submission. However, Council consent is not required for Ausgrid substations and other installations required for its electricity transmission or distribution network, such as electricity switching stations and feeder pillars.

Ausgrid technical standards for substations

Ausgrid is the main electricity distributor across Sydney, the Central Coast and the Hunter region and is responsible for the management and operation of its electricity supply network. To ensure that Ausgrid's electricity infrastructure network operates effectively Ausgrid publishes standards and guidelines which set the safety rules, standards and technical procedures for network design and modification. The Ausgrid standards for the siting and installation of substations are set out in the following Ausgrid Network Standards:

- NS113 S*ite selection and construction design requirements for chamber substations*
- NS141 *Site selection and site preparation standards for kiosk type substations*.

The Network Standards define the minimum requirements for the design, construction, and maintenance of the Ausgrid network assets. If Council decides to introduce planning provisions for substations, the provisions should not be inconsistent with the Ausgrid network standards.

A summary of the key standards relevant to the preparation of a Draft DCP is provided at **Attachment 2.** The complete version of the Ausgrid network standards are available to view on the Ausgrid website at:

https://www.ausgrid.com.au/ASPs-and-Contractors/Technical-documentation/Network-Standards

Planning mechanisms to address substations

Council has requested that staff identify opportunities to enhance the planning controls to address the visual impact of customer substations. In response staff sought legal advice on how best to progress. Provided under separate cover as confidential attachments is a summary of the key paragraphs from the legal advice (**Attachment 3)** and the full copy of that advice (**Attachment 4**).

The key matters to consider from the legal advice are that customer substations should be addressed under the provisions of the Apartment Design Guide and in the Design Verification Statement (DVS) which is submitted with the DA. It is not necessary to include additional provisions in the Woollahra DCP 2015. However, the DCP provisions could provide an extra prompt to the applicant that the substation is to be addressed at the DA stage, and also provide matters for consideration in any modification application.

Staff have also reviewed how other councils address customer substations. It was identified that some councils include the following essential services clause in their LEP:

> *Essential services*
> *Development consent must not be granted to development unless the consent authority is satisfied that any of the following services that are essential for the development are available or that adequate arrangements have been made to make them available when required—*
> *(a) the supply of water,*
> *(b) the supply of electricity,*
> *(c) the disposal and management of sewage,*
> *(d) stormwater drainage or on-site conservation,*
> *(e) suitable vehicular access.*

This LEP clause is a model local clause and is not mandatory for councils to include in their LEP. Staff found that most LEPs for inner and middle ring Sydney metropolitan councils do **not** contain the essential services LEP clause, this includes the Waverley, Sydney, North Sydney, Mosman and the Inner West LEPs. Whilst some councils including Randwick, Bayside and Georges River do have the essential services clause, their staff have advised that the LEP clause is not used to address the impacts of customer substations.

Furthermore, staff at Bayside and Georges River councils identify that they address the amenity and location of utility services such as substations through DCP provisions and conditions of consent.

Council's Development Assessment Manager has confirmed that the essential services LEP clause is not necessary for addressing the visual impact of substations in the Woollahra LGA. In particular, he finds that:

- The provision of an essential services clause in the LEP is overly onerous as it will apply to all DAs.
- There is sufficient strength in the *Apartment Design Guide* and Design Verification Statement provisions set out in SEPP 65 to address the Council's concerns, particularly Objective 3C-2 *Amenity of the public domain is retained and enhanced.*
- Proposed amendments to the Woollahra DCP 2015 will complement and support the *Apartment Design Guide*.

Taking into consideration the above advice, planning staff recommend that Council does not seek to amend the Woollahra LEP 2014 to include a clause on essential services, as this approach is:

- not necessary given that Council's concerns could be resolved through changes to the Woollahra DCP 2015 changes rather than an LEP amendment, e.g. for the DA process to better consider potential utilities requirements upfront, and to more rigorously apply the Apartment Design Guide in the assessment of DAs pursuant to SEPP 65.
- not used by other Sydney metropolitan councils, and is more relevant and useful to councils that deal with land release areas and greenfield sites.

In conclusion, staff support an amendment to the Woollahra DCP 2015 as this is a reasonable and proportional approach to address the visual impact of substations in the Woollahra LGA at the DA stage.

Proposed amendments to Woollahra DCP 2015

Having regard to Council's resolution, the Ausgrid network standards and the Apartment Design Guide, staff identify that the Woollahra DCP 2015 could be amended to insert provisions for electricity substations to include new controls. The proposed changes are summarised below:

- An electrical substation is to be suitably located, screened and/or concealed so it is not visible from the street, or any other adjoining public place. Council's preference is for a basement chamber substation. Any screening or enclosure to conceal the substation is to be visually unobtrusive and suitably integrated with the development, including the fencing and landscape design.

- The substation is to be located away from neighbouring properties or sufficiently screened from neighbouring properties.

- The location and design of the electricity substation must be considered and integrated with the landscaping of the proposed development, and must ensure that:
  a) Vegetation does not overhang or encroach within the substation site.
  b) The substation is installed outside of the mature growth root zone of any trees to be retained, or proposed to planted, to prevent roots damage to underground cables.

- All other electricity infrastructure is to be suitably located, screened and/or concealed to minimise visual impact on the streetscape. Where a pillar is required in addition to the substation, the pillar should be co-located with the substation.

These draft provisions would apply to all residential and business zoned land (including heritage conservation areas) which will require a number of amendments to various chapters of Woollahra DCP 2015 as set out in Table 1 below.

Table 1: Overview of proposed changes to Woollahra DCP 2015

DCP chapter	Scope of draft amendments
Part B: General Residential • B3 General Development Controls (section B3.7.3 Site facilities) ***Part D: Business Centres*** • D3 General Controls for Neighbourhood and Mixed Use Centres (section D3.10 Site facilities)	• Amend the Introduction to address site facilities in a broad and general manner and reinforce that DA plans are to show proposed locations and arrangements for site facilities including customer substations. • Insert new objectives and controls to address the impact of customer substations.
Part C: Heritage Conservation Areas • C1 Paddington HCA (section C1.5.11 Satellite dishes, aerials, air-conditioning units and other site facilities) • C2 Woollahra HCA (section C2.5.13 Site facilities and aerial devices) • C3 Watsons Bay HCA (section C3.3.9 Site facilities and aerial devices)	• Insert new controls to address the impact of customer substations.

Part D: Business Centres • D4 Edgecliff Centre (section D4.2.3 Objectives and controls) • D5 Double Bay Centre (section D5.6.8 Parking and servicing) • D6 Rose Bay Centre (section D6.6.9 Site facilities)	• Insert new controls to address the impact of customer substations.

The draft DCP provisions seek to ensure that applicants consider where and how a substation is located on site so that it is visually unobtrusive and suitably integrated with the development. The draft provisions are not overly prescriptive, so as to facilitate design solutions that are suitable for the site and consistent with the Ausgrid network standards. This is a reasonable and practical approach to addressing visual impacts that recognises accessibility, functionality and safety are key priorities for electricity services.

The proposed DCP amendment is at **Attachment 1** *Draft Woollahra DCP 2015 (Amendment No.23).*

Options:

As a consequence of this report Council may resolve to:

1. Endorse *Draft DCP Amendment No. 23* at **Attachment 1** for the purpose of placing it on public exhibition (This is the staff recommendation)
2. Request staff to amend *Draft DCP Amendment No. 23* at **Attachment 1** before it is placed on public exhibition
3. Not make any changes to Woollahra DCP 2015

Community Engagement and / or Internal Consultation:

The draft amendments to Woollahra DCP 2015 as proposed at **Attachment 1** were prepared in consultation with Council's Planning and Place Department (Development Control, Strategic Planning and Heritage Team) Engineering Services (Asset Management Team and Development Assessment Team) based on advice provided by Council's lawyers and staff at Ausgrid. Council staff also reached out to architects who regularly practice in the Woollahra LGA to seek practitioner feedback.

If Council supports the proposed amendments to Woollahra DCP 2015, the next step is exhibit *Draft DCP Amendment No. 23*.

The process for exhibiting a Draft DCP is set out in the *Environmental Planning and Assessment Act 1979*, the E*nvironmental Planning and Assessment Regulation 2000*, and the *Woollahra Community Participation Plan 2019.* The Draft DCP must be publicly exhibited for a minimum of 28 days. Public notice will be given in the Wentworth Courier each week of the exhibition and on Council's website. Ausgrid will also be notified. The outcome of the public exhibition will be reported to a future meeting of Council.

Policy Implications:

Should Council resolve to progress the draft DCP, there will be policy implications as Woollahra DCP 2015 will be amended. Council's DA Guide will also be amended to support the DCP and include reference to the *Apartment Design Guide* and SEPP 65 Design Verification Statement to reflect and highlight the requirements relating to electricity substations.

Financial Implications:

Should Council resolve to progress the draft DCP, there will be financial implications to facilitate the public exhibition.

Resourcing Implications:

Should Council resolve to progress the draft DCP, staff resources will be associated with managing the public exhibition and preparing a post-exhibition report to a meeting of Council.

Conclusion:

In response to Council's resolution from 14 February 2022 staff propose amendments to the Woollahra DCP 2015 to address the visual impact of customer electricity substations associated with new development.

The *Draft Woollahra Development Control Plan 2015 (Amendment No. 23)* seeks to provide a reasonable and practical solution to minimising impacts while also recognising that the supply of electricity is an essential service and the substation siting, design and accessibility needs to comply with the Ausgrid network standards. The proposed DCP provisions will also complement and support the existing amenity provisions for substations in the *Apartment Design Guide*.

Staff recommend that Council resolve to exhibit the *Draft Woollahra Development Control Plan 2015 (Amendment No. 23)* as contained in **Attachment 1**.

Attachments

1. Draft Woollahra Development Control Plan 2015 (Amendment No. 23)
2. Summary of Ausgrid Network Standards
3. Summary of legal advice from Lindsay Taylor Lawyers *(circulated under separate cover)* - **Confidential**
4. Legal advice from Lindsay Taylor Lawyers *(circulated under separate cover)* - **Confidential**

Draft Woollahra Development Control Plan 2015
(Amendment 23)

Prepared Date:	July 2023
Adopted:	*TBC*
Commenced:	*TBC*
Division/Department:	Strategic Planning and Place
HPE CM Record Number:	22/221669

Contents

Woollahra Development Control Plan 2015 (Amendment No 23)

Part 1 Preliminary

1.1 Background

When land is redeveloped for more intensive uses, such as a residential flat building or a mixed use development, sometimes the electricity authority (Ausgrid) may require installation of an electricity substation to upgrade the supply to support the new use. This is called a "customer substation".

The customer substation will be a kiosk or chamber substation.

- A kiosk substation (also known as a pad-mounted substation) is defined by Ausgrid as "*a totally enclosed, free-standing, self-contained substation not designed for bodily entry and which is generally operated from door openings.*" Kiosk substations are usually supplied and installed as a complete assembly. The dimensions of the kiosk vary depending on the load/capacity, but the kiosk is generally around L3600m x W1800 x H1800m, with minimum setbacks then applied around the kiosk.
- A chamber substation is a chamber which is dry and completely isolated from the remainder of the building with walls, floor, ceiling and doors that meets minimum fire resistance levels (i.e. minimum FRL of 180/180/180 where the substation contains oil-filled equipment, or 120/120/120 where there is no oil-filled equipment.) Chamber substations make take the form of surface chamber substations, elevated chamber substations, upper-level chamber substations and basement chamber substations.

These substations are bulky and can be visually intrusive and have an adverse impact on the amenity of the streetscape and adjoining neighbours.

On 14 February 2022 Council adopted the notice of motion (NOM):

> *THAT Council undertake a review of, and prepare a report to Council, on measures that can be taken in its planning instruments (including any amendment to its current Development Control Plan or Local Environmental Plan, amongst others) to ensure that all development in the municipality that requires, or may foreseeably require, the installation of an electricity substation or some form of upgraded electrical infrastructure ("infrastructure"):*
>
> 1. *properly incorporates this infrastructure in its design and caters for this infrastructure on the development site; and*
> 2. *ensures that such infrastructure is located away from neighbouring properties and/or is sufficiently set back from neighbouring properties; and*
> 3. *ensures that such infrastructure is situated, as far as possible, away from the street and/ or public domain such that it is not visible from the street; and*
> 4. *ensures that such infrastructure is enclosed or sited in a visually unobtrusive way, with proper fencing, enclosure and/or landscaping measures.*

This draft development control plan seeks to amend the *Woollahra Development Control Plan 2015* (Woollahra DCP 2015) to update and strengthen the DCP sections that address site facilities, by introducing objectives and controls to specifically address the location and visual impact of electricity substations and other electricity infrastructure.

1.2 Name of plan

This plan is the *Woollahra Development Control Plan 2015 (Amendment No 23)*.

1.3 Objectives of the plan

The objectives of the plan are to:

a) Minimise the visual impact of electricity infrastructure on the streetscape.

b) Ensure electricity substations are located, screened and/or concealed so the substation is not visible from the streetscape or any other adjoining public place.

c) Ensure that the design quality of the development is not compromised by the visual impact of the substation.

d) To protect the amenity of adjoining residential dwellings.

e) To ensure that vegetation does not interfere with functioning of the substation.

1.4 Land to which this plan applies

This plan applies to land within the Woollahra Municipality where the following chapters of the Woollahra DCP 2015 apply:

- Chapter B3 - General Development Controls
- Chapter C1 - Paddington Heritage Conservation Area
- Chapter C2 - Woollahra Heritage Conservation Area
- Chapter C3 - Watsons Bay Heritage Conservation Area
- Chapter D3 - General Controls for Neighbourhood and Mixed Use Centres
- Chapter D4 - Edgecliff Centre
- Chapter D5 - Double Bay Centre
- Chapter D6 - Rose Bay Centre

1.5 Relationship of this plan to the Act, Regulation and other plans or environmental planning instruments

This plan has been prepared under Part 3, Division 3.6 of the *Environmental Planning and Assessment Act 1979* and Part 2, Division 2 of the *Environmental Planning and Assessment Regulation 2000*.

Woollahra Local Environmental Plan 2014 (Woollahra LEP 2014) applies to land to which this plan applies. In the event of an inconsistency between this plan and the Woollahra LEP 2014, the Woollahra LEP 2014 prevails.

1.6 Approval and commencement of this plan

This plan was approved by Woollahra Council on TBC and came into effect on TBC.

1.7 How this plan amends Woollahra DCP 2015

This plan amends Woollahra DCP 2015 in the manner set out in Part 2 of this plan.

Part 2 Amendments to Woollahra Development Control Plan 2015

This plan amends Woollahra DCP 2015 in the following manner:

Insertions – identified in blue and underlined
Deletions – ~~identified in red and strikethrough~~

Chapter A1 Introduction

2.1 Amendments to clause A1.1.9 Savings and transitional provisions relating to development applications

2.1.1 Insert at the end of the clause

This DCP (as commenced on 23 May 2015) continues to apply to development applications, applications to modify consents under section 4.55 of the EP&A Act and applications for review of determination under Division 8.2 Reviews of the EP&A Act that were made prior to but not determined before the commencement of Amendment No 23 to this DCP.

2.2 Amendments to clause A1.4 List of amendments

2.2.1 Insert at the end of the clause

Amendment	Date of approval and Commencement	Description of amendment
No 23	Date approved – TBC Date commenced - TBC	Amend Chapter A1 by inserting additional savings and transitional provisions. Amend Part B Chapter B3; Part C Chapters C1, C2 and C3; Part D Chapters D3, D4, D5 and D6, by modifying and amending various sections, controls and objectives to address the amenity impacts of electricity infrastructure, including particularly substations.

Chapter B3 General Development Controls

2.3 Amendments to section B3.7.3 Site facilities

2.3.1 Replace the introduction to more clearly articulate Council's broad expectations regarding all site facilities, and to include specific reference electricity substations

~~Some site facilities including fire safety systems, lift overruns, air-conditioning, mechanical ventilation, mail boxes, clothes drying areas and laundry facilities are essential or common features in contemporary residential development. Others such as radio aerials and satellite dishes are less frequently required.~~

~~The potential impacts of site facilities on the overall appearance of developments and the local streetscape must be considered. In particular, consideration must be given to the location, size and design of site facilities including hydrant and booster installations and mechanical plant equipment such as lift overruns, air-conditioning units and condensers, heating, ventilation and other mechanical systems that maintain or support the operations of a building.~~

Site facilities include those facilities or services that support and, or, maintain the operations of a building. All forms of development include site facilities. These include, but are not limited to:

- On-site services including storage, garbage areas, mail boxes, clothes drying areas, vent stacks, and telecommunication infrastructure
- Mechanical plant rooms and equipment and other building services such as pump rooms, lift overruns, air-conditioning units and condensers, heating, mechanical ventilation systems, ventilation duct outlets, including any pipes and conduits
- Essential services and infrastructure such as electricity substations, fire hydrant and booster installations.

Some site facilities can be visually intrusive and have an adverse impact on the amenity of the streetscape and adjoining neighbours. It is important that the location, size and design of site facilities is considered and planned for during the design phase of any proposed development so the facilities can be thoughtfully integrated into the built form and landscaping, and potential impacts addressed.

Development applications are to be accompanied by dimensioned plans, drawn to scale, showing proposed locations and arrangements for site facilities including, where applicable:

- mechanical plant rooms and lift-overruns
- enclosures and/or cabinets for fire hydrants, booster valve assembly installations, sprinkler valves and associated hydraulic equipment
- an electricity substation.

The need to modify an existing consent to provide for a site facility should be avoided, and is an approach not supported by Council. Section 4.55 modification applications will need to demonstrate compliance with the DCP including requirements for setbacks, deep soil landscaped area, and tree retention etc. Council will not permit site facilities on public land.

2.3.2 Insert new objectives, controls and notes for electricity substations and other electricity infrastructure after Objective O11 and Control C13

O12 To ensure that an electricity substation is not visible from the street, or any other adjoining public place.	C14 The substation is to be suitably located, screened and/or concealed. Council's preference is for a basement chamber substation.
O13 To ensure that any screening or enclosure to conceal the substation does not detract from the streetscape character or design quality of the development.	C15 Any screening or enclosure to conceal the substation is to be visually unobtrusive and suitably integrated with the development, including the fencing and landscape design.
O14 To protect the amenity of adjoining residential dwellings from substations.	C16 The substation is to be located away from neighbouring properties or sufficiently screened from neighbouring properties.
O15 To ensure that vegetation does not interfere with the functioning of the substation.	C17 The location and design of the electricity substation must be considered and integrated with the landscaping of the proposed development, and must ensure that: a) Vegetation does not overhang or encroach within the substation site. b) The substation is installed outside of the mature growth root zone of any trees to be retained, or proposed to planted, to prevent roots damage to underground cables.
O16 To minimise the visual impact of other types of electricity infrastructure in the streetscape.	C18 All other electricity infrastructure is to be suitably located, screened and/or concealed. C19 Where a pillar is required in addition to the substation, the pillar should be co-located with the substation.

Notes:

- At the DA stage the applicant should demonstrate that they have engaged with Ausgrid and have a network capacity assessment undertaken for the proposed development.
- Where a substation is required, the substation should be identified on the DA plans and addressed in the *SEPP 65 Design Verification Statement* (also see Apartment Design Guide Objective 3C-2 Amenity of the public domain is retained and enhanced)
- The DCP requirements apply in addition to the Ausgrid Network Standards. Separate Ausgrid approval for the substation will be required.
- A dedicated access way/easement through the site to the substation will also need to be provided in accordance with the requirements of Ausgrid and Council.

Chapter C1 Paddington Heritage Conservation Area

2.4 Amendments to section C1.5.11 Satellite dishes, aerials, air-conditioning units and other site facilities

2.4.1 Insert new controls after Control C8, and renumber existing Control C9 accordingly

Electricity substations

C9 An electrical substation is to be suitably located, screened and/or concealed so it is not visible from the street, or any other adjoining public place. Council's preference is for a basement chamber substation. Any screening or enclosure to conceal the substation is to be visually unobtrusive and suitably integrated with the development, including the fencing and landscape design.

C10 The substation is to be located away from neighbouring properties or sufficiently screened from neighbouring properties.

C11 The location and design of the electricity substation must be considered and integrated with the landscaping of the proposed development, and must ensure that:
a) Vegetation does not overhang or encroach within the substation site.
b) The substation is installed outside of the mature growth root zone of any trees to be retained, or proposed to planted, to prevent roots damage to underground cables.

C12 All other electricity infrastructure is to be suitably located, screened and/or concealed to minimise visual impact on the streetscape. And where a pillar is required in addition to the substation, the pillar should be co-located with the substation.

Notes:

- At the DA stage the applicant should demonstrate that they have engaged with Ausgrid and have a network capacity assessment undertaken for the proposed development.
- Where a substation is required, the substation should be identified on the DA plans and addressed in the *SEPP 65 Design Verification Statement* (also see Apartment Design Guide Objective 3C-2 Amenity of the public domain is retained and enhanced)
- The DCP requirements for substations apply in addition to the Ausgrid Network Standards. Separate Ausgrid approval for the substation will be required.
- A dedicated access way/easement through the site to the substation will also need to be provided in accordance with the requirements of Ausgrid and Council.

Chapter C2 Woollahra Heritage Conservation Area

2.5 Amendments to section C2.5.13 Site facilities and aerial devices

2.5.1 Insert new controls and notes after Control C9

C10 An electricity substation is to be suitably located, screened and/or concealed so it is not visible from the street, or any other adjoining public place. Council's preference is for a basement chamber substation. Any screening or enclosure to conceal the substation is to be visually unobtrusive and suitably integrated with the development, including the fencing and landscape design.

C11 The electricity substation is to be located away from neighbouring properties or sufficiently screened from neighbouring properties.

C12 The location and design of the electricity substation must be considered and integrated with the landscaping of the proposed development, and must ensure that:
a) Vegetation does not overhang or encroach within the substation site.
b) The substation is installed outside of the mature growth root zone of any trees to be retained, or proposed to planted, to prevent roots damage to underground cables.

C13 All other electricity infrastructure is to be suitably located, screened and/or concealed to minimise visual impact on the streetscape. Where a pillar is required in addition to the substation, the pillar should be co-located with the substation.

Notes:

- At the DA stage the applicant should demonstrate that they have engaged with Ausgrid and have a network capacity assessment undertaken for the proposed development.
- Where a substation is required, the substation should be identified on the DA plans and addressed in the *SEPP 65 Design Verification Statement* (also see Apartment Design Guide Objective 3C-2 Amenity of the public domain is retained and enhanced)
- The DCP requirements for substations apply in addition to the Ausgrid Network Standards. Separate Ausgrid approval for the substation will be required.
- A dedicated access way/easement through the site to the substation will also need to be provided in accordance with the requirements of Ausgrid and Council.

Chapter C3 Watsons Bay Heritage Conservation Area

2.6 Amendments to section C3.3.9 Site facilities and aerial devices

2.6.1 Insert new controls and notes after Control C4

C5 An electricity substation is to be suitably located, screened and/or concealed so it is not visible from the street, or any other adjoining public place. Council's preference is for a basement chamber substation. Any screening or enclosure to conceal the substation is to be visually unobtrusive and suitably integrated with the development, including the fencing and landscape design.

C6 The electricity substation is located away from neighbouring properties or sufficiently screened from neighbouring properties.

C7 The location and design of the electricity substation must be considered and integrated with the landscaping of the proposed development, and must ensure that:
a) Vegetation does not overhang or encroach within the substation site.
b) The substation is installed outside of the mature growth root zone of any trees to be retained, or proposed to planted, to prevent roots damage to underground cables.

C8 All other electricity infrastructure is to be suitably located, screened and/or concealed to minimise visual impact on the streetscape. Where a pillar is required in addition to the substation, the pillar should be co-located with the substation.

Notes:

- At the DA stage the applicant should demonstrate that they have engaged with Ausgrid and have a network capacity assessment undertaken for the proposed development.
- Where a substation is required, the substation should be identified on the DA plans and addressed in the *SEPP 65 Design Verification Statement* (also see Apartment Design Guide Objective 3C-2 Amenity of the public domain is retained and enhanced)
- The DCP requirements for substations apply in addition to the Ausgrid Network Standards. Separate Ausgrid approval for the substation will be required.
- A dedicated access way/easement through the site to the substation will also need to be provided in accordance with the requirements of Ausgrid and Council.

Chapter D3 General Controls for Neighbourhood and Mixed Use Centres

2.7 Amendments to section D3.10 Site facilities

2.1.1 Replace the introduction to more clearly articulate Council's broad expectations regarding all site facilities, and to include specific reference electricity substations

~~Site facilities include fire safety systems, lift overruns, air-conditioning, mechanical ventilation, mail boxes, storage areas, garbage collection areas, clothes drying areas and laundry facilities, aerials and the like.~~

~~The potential impacts of site facilities on the overall appearance of developments and the local streetscape need to be considered. In particular, consideration must be given to the location, size and design of site facilities that can be visually bulky, as is commonly the case with fire hydrant and boosters and mechanical plant equipment such as lift overruns, air-conditioning units and condensers, heating, ventilation and other mechanical systems that maintain or support the operations of a building.~~

Site facilities include those facilities or services that support and, or, maintain the operations of a building. All forms of development include site facilities. These include, but are not limited to:

- On-site services including storage, garbage areas, mail boxes, clothes drying areas, vent stacks, and telecommunication infrastructure
- Mechanical plant rooms and equipment and other building services such as pump rooms, lift overruns, air-conditioning units and condensers, heating, mechanical ventilation systems, ventilation duct outlets, including any pipes and conduits
- Essential services and infrastructure such as electricity substations, fire hydrant and booster installations.

Some site facilities can be visually intrusive and have an adverse impact on the amenity of the streetscape and adjoining neighbours. It is important that the location, size and design of site facilities is considered and planned for during the design phase of any proposed development so the facilities can be thoughtfully integrated into the built form and landscaping, and potential impacts addressed.

Development applications are to be accompanied by dimensioned plans, drawn to scale, showing proposed locations and arrangements for site facilities including, where applicable:

- mechanical plant rooms and lift-overruns
- enclosures and/or cabinets for fire hydrants, booster valve assembly installations, sprinkler valves and associated hydraulic equipment
- an electricity substation.

The need to modify an existing consent to provide for a site facility should be avoided, and is an approach not supported by Council. Section 4.55 modification applications will need to demonstrate compliance with the DCP including requirements for setbacks, deep soil landscaped area, and tree retention etc. Council will not permit site facilities on public land.

2.1.2 Insert new controls, objectives and notes for substations and other electricity infrastructure after Objective O10 and Control C12

O11 To ensure that an electricity substation is not visible from the street, or any other adjoining public place.	C13 The substation is to be suitably located, screened and/or concealed. Council's preference is for a basement chamber substation.
O12 To ensure that any screening or enclosure to conceal the substation does not detract from the streetscape character or design quality of the development.	C14 Any screening or enclosure to conceal the substation is to be visually unobtrusive and suitably integrated with the development, including the fencing and landscape design.
O13 To protect the amenity of adjoining residential dwellings from the impact of substations.	C15 The substation is to be located away from neighbouring properties or sufficiently screened from neighbouring properties.
O14 To ensure that vegetation does not interfere with the functioning of the substation.	C16 The location and design of the electricity substation must be considered and integrated with the landscaping of the proposed development, and must ensure that: a) Vegetation does not overhang or encroach within the substation site. b) The substation is installed outside of the mature growth root zone of any trees to be retained, or proposed to planted, to prevent roots damage to underground cables.
O16 To minimise the visual impact of other types of electricity infrastructure in the streetscape.	C17 All other electricity infrastructure is to be suitably located, screened and/or concealed. C18 Where a pillar is required in addition to the substation, the pillar should be co-located with the substation.

Notes:

- At the DA stage the applicant should demonstrate that they have engaged with Ausgrid and have a network capacity assessment undertaken for the proposed development.
- Where a substation is required, the substation should be identified on the DA plans and addressed in the *SEPP 65 Design Verification Statement* (also see Apartment Design Guide Objective 3C-2 Amenity of the public domain is retained and enhanced)
- The DCP requirements apply in addition to the Ausgrid Network Standards. Separate Ausgrid approval for the substation will be required.
- A dedicated access way/easement through the site to the substation will also need to be provided in accordance with the requirements of Ausgrid and Council.

Chapter D4 Chapter Edgecliff Centre

2.8 Amendments to section D4.2.3 Objectives and controls

2.1.3 Insert new controls, objectives and notes for substations and other electricity infrastructure after Objective O19 and Control C29

O20 To ensure that an electricity substation is not visible from the street, or any other adjoining public place.	C30 The substation is to be suitably located, screened and/or concealed. Council's preference is for a basement chamber substation.
O21 To ensure that any screening or enclosure to conceal the substation does not detract from the streetscape character or design quality of the development.	C31 Any screening or enclosure to conceal the substation is to be visually unobtrusive and suitably integrated with the development, including the fencing and landscape design.
O22 To protect the amenity of adjoining residential dwellings from the impact of substations.	C32 The substation is to be located away from neighbouring properties or sufficiently screened from neighbouring properties.
O23 To ensure that vegetation does not interfere with the functioning of the substation.	C33 The location and design of the electricity substation must be considered and integrated with the landscaping of the proposed development, and must ensure that: a) Vegetation does not overhang or encroach within the substation site. b) The substation is installed outside of the mature growth root zone of any trees to be retained, or proposed to planted, to prevent roots damage to underground cables.
O24 To minimise the visual impact of other types of electricity infrastructure in the streetscape.	C34 All other electricity infrastructure is to be suitably located, screened and/or concealed. C34 Where a pillar is required in addition to the substation, the pillar should be co-located with the substation.

Notes:

- At the DA stage the applicant should demonstrate that they have engaged with Ausgrid and have a network capacity assessment undertaken for the proposed development.
- Where a substation is required, the substation should be identified on the DA plans and addressed in the *SEPP 65 Design Verification Statement* (also see Apartment Design Guide Objective 3C-2 Amenity of the public domain is retained and enhanced)
- The DCP requirements apply in addition to the Ausgrid Network Standards. Separate Ausgrid approval for the substation will be required.
- A dedicated access way/easement through the site to the substation will also need to be provided in accordance with the requirements of Ausgrid and Council.

Chapter D5 Double Bay Centre

2.9 Amendments to section D5.6.8 Parking and servicing

2.1.4 Insert new controls and notes after Control C6

C6 An electricity substation is to be suitably located, screened and/or concealed so it is not visible from the street, or any other adjoining public place. Council's preference is for a basement chamber substation. Any screening or enclosure to conceal the substation is to be visually unobtrusive and suitably integrated with the development, including the fencing and landscape design.

C7 All other electricity infrastructure is to be suitably located, screened and/or concealed to minimise visual impact on the streetscape. Where a pillar is required in addition to the substation, the pillar should be co-located with the substation.

Notes:

- At the DA stage the applicant should demonstrate that they have engaged with Ausgrid and have a network capacity assessment undertaken for the proposed development.
- Where a substation is required, the substation should be identified on the DA plans and addressed in the *SEPP 65 Design Verification Statement* (also see Apartment Design Guide Objective 3C-2 Amenity of the public domain is retained and enhanced)
- The DCP requirements for substations apply in addition to the Ausgrid Network Standards. Separate Ausgrid approval for the substation will be required.
- A dedicated access way/easement through the site to the substation will also need to be provided in accordance with the requirements of Ausgrid and Council.

Chapter D6 Rose Bay Centre

2.10 Amendments to section D6.6.9 Site facilities

2.1.5 Insert new controls and notes after Control C5

C6 An electricity substation is to be suitably located, screened and/or concealed so it is not visible from the street, or any other adjoining public place. Council's preference is for a basement chamber substation. Any screening or enclosure to conceal the substation is to be visually unobtrusive and suitably integrated with the development, including the fencing and landscape design.

C7 All other electricity infrastructure is to be suitably located, screened and/or concealed to minimise visual impact on the streetscape. Where a pillar is required in addition to the substation, the pillar should be co-located with the substation.

Notes:

- At the DA stage the applicant should demonstrate that they have engaged with Ausgrid and have a network capacity assessment undertaken for the proposed development.
- Where a substation is required, the substation should be identified on the DA plans and addressed in the *SEPP 65 Design Verification Statement* (also see Apartment Design Guide Objective 3C-2 Amenity of the public domain is retained and enhanced)
- The DCP requirements for substations apply in addition to the Ausgrid Network Standards. Separate Ausgrid approval for the substation will be required.
- A dedicated access way/easement through the site to the substation will also need to be provided in accordance with the requirements of Ausgrid and Council.

Attachment 2 – Summary of Ausgrid Network Standards

NS141 Site selection and site preparation standards for kiosk substations

Network Standard *NS141 Site Selection and Site Preparation Standards for Kiosk Type Substations* sets out the requirements for site selection and site preparation for kiosk distribution substations for reticulation of electricity to all types of premises, including commercial and multiple dwelling residential developments. It applies to footpath sites and off-street locations.

A summary of key standards relevant to off-street locations is provided in **Table 1** below. The full version of the standard is published on the Ausgrid website at https://cdn.ausgrid.com.au/-/media/Documents/Technical-Documentation/NS/NS141.pdf?rev=51f38415822b4a7ca52badf42d13c8fa&hash=04D8275DD0366A38581EDE7E85051764

Table 1:
Summary of siting requirements for substations in Ausgrid Network Standard NS141 *Site Selection and Site Preparation Standards for Kiosk Type Substations*

• S7.1 Kiosk substations should not be installed in the following areas, unless Ausgrid determines that there is no reasonable alternative: areas prone to stormwater run-off, areas subject to declared 1in100 year (or less) floods
• S7.1 Kiosk substations are not to be installed within buildings, on building roofs, in chambers, or in covered parking areas or garages. Kiosk substations are not normally permitted in building alcoves or under roofed or partly roofed areas unless the surroundings and installation satisfy specific Ausgrid requirements. All proposals must be approved by Ausgrid before planning proceeds.
• 2.26 The top of the kiosk base shall be not more than 2 metres above or below the access roadway level or street footpath level adjacent to the kiosk site.
• S7.2.1 Off-street locations The minimum site dimension requirements for the types of kiosk substations covered by this Network Standard are as indicated in Annexure A.
• S7.5 Avoiding services and encroachments - For off-street locations, services such as drains, sewers, pipes and wiring, must not pass through or under the kiosk substation overall site area.
• S7.6 Protection from vehicles in off-street locations - Kiosks must be protected from damage by vehicles in areas classified as high risk for vehicle impact, such as adjacent to driveways, etc.
• S7.7 Landscaping for off-street locations - The finished surface of the substation site may be blue metal, lawn grass, pine bark woodchips, pavers or mowing strips. Screening vegetation must not interfere with access to the substation for both personnel and equipment. Trees, shrubs, or plants, other than lawn grass, are not permitted on the substation site.
• S7.8 Fencing around off-street locations - Where it is intended to fence around off-street locations, attention must be given to the following issues: ○ Earth potential rise, under fault conditions, which may be transferred along a metallic fence. This may require wood fence posts in the vicinity of the kiosk, or in some cases the whole section of fence may need to be non-metallic. Each substation shall be treated on its own merits with advice sought early in the project design from Ausgrid as required. ○ kiosks should be “fenced out” of the property not “fenced in”.

- attention needs to be given to the distance between fence and kiosk to prevent people jumping from the top of one to the other.

- S7.9 Substation tenure for off-street locations - In all off-footpath kiosk site locations an easement shall be provided at the development stage.
  - For high/medium density residential developments, the kiosk substations siting is for one edge of the overall substation site boundary to be at the front road boundary of the development.
  - For industrial or commercial developments, the preferred siting for kiosk substations is for one edge of the overall substation site boundary to be at the front road boundary of the development. Where the kiosk site is not located adjacent to a public roadway, an easement will be required for the kiosk site and an easement and right-of-way for cable and personnel access.

- S8.0 Access requirements-
  - Kiosk sites must have unimpeded access for Ausgrid personnel and vehicles, directly from a public street, for 24 hours per day, 7 days per week.
  - A heavy truck with a vehicle-mounted crane is needed to install or remove the kiosk and equipment. Access routes, where required, must be suitable under all weather conditions and constructed to withstand the loading. The access route should be a minimum of 4 metres wide, have a minimum of 4 metres headroom and be continuous from the property boundary to the kiosk site.
  - Access from the street to the kiosk site must not be fenced or enclosed, unless approval is given in writing by Ausgrid and the conditions listed in the approval are complied with on an ongoing basis by the site owner/customer.

- S10 Fire segregation - The siting of kiosk substations must comply with the requirements of all relevant authorities (including fire control authorities) in relation to segregation from buildings, structures, etc
- 11.3 Kiosk substations shall be separated from building air intake and exhaust openings and natural ventilation openings by separation distances that meet the requirements of all relevant authorities and Australian Standards.
- 11.5For L and K type kiosks:
  - Pathways and/or fire escape routes shall not encroach upon the kiosk easement and may require a greater separation to ensure the route is not impacted in the event of a kiosk fire;
  - Kiosk substation housings shall be separated from building ventilation system air intake and exhaust duct openings, by not less than 6 metres (measured by shortest string line between housing and duct).
  - Any portion of a building within 3 metres in any direction from the housing of a kiosk substation shall have a Fire Resistance Level (FRL) of not less than 120/120/120, unless it is sheltered by a non-ignitable blast-resisting barrier
  - Openable or fixed windows or glass blockwork or similar, irrespective of their fire rating, are not permitted within 3 metres in any direction from the housing of a kiosk substation, unless they are sheltered by a non-ignitable blast resisting barrier;

NS113 Site selection and construction design requirements for chamber substations

Network Standard *NS113 Site selection and construction design requirements for chamber substations* sets out the requirements for site selection and site preparation for chamber substation installations and refurbishment of existing chamber substations having ratings up to 4.5 MVA. The chamber substations referred to in this Network Standard apply to surface chamber substations, elevated chamber substations, upper-level chamber substations, basement chamber substations, chambers for control of high voltage customer connections, and control point chambers associated with upper-level chamber substations.

A summary of key standards relevant to off-street locations is provided in **Table 2** below. The full version of the standard is published on the Ausgrid website at https://www.ausgrid.com.au/-/media/Documents/Technical-Documentation/NS/NS113.pdf

Table 2:
Summary of siting requirements for substations in Ausgrid Network Standard *NS113 Site selection and construction design requirements for chamber substations*

6.0 Types of chamber substations

- Surface chamber substations are located at or above ground level. For a surface chamber substation the highest point of the floor of the substation chamber shall be not more than 2000mm above the lowest finished surface level of the roadway or footpath from the point where personnel and equipment access is gained. The substation transformer access doors are to be located such that they have a 120mm minimum and up to 600mm maximum rise up from outside of the chamber.
- Elevated chamber substations may be installed where there are no technically viable alternatives, and require specific written approval of Ausgrid. Approval must be obtained prior to proceeding with design. Elevated chamber substations have a floor level that is between 2000mm and 6000mm above the lowest point of the adjacent street or roadway level from where personnel and equipment access is gained.
- Upper-level chamber substations must have a control point with a secure dedicated access at or near the lowest point of the adjacent street or roadway level from where personnel and equipment access is gained. This allows switching of the supply to a higher level chamber from street level. Upper-level chamber substations must be approved in writing by Ausgrid prior to commencement of design. Upper-level chamber substations have a floor level that is more than 6000mm above the lowest point of the adjacent street or roadway level from where personnel and equipment access is gained.
- Basement chamber substations may be permitted where there are no technically viable alternatives, and only with the written approval of Ausgrid, and must be approved in writing by Ausgrid prior to commencement of design. The chamber substation is to be at the first useable level below constructed final ground level. In all cases, the chamber floor level of a basement chamber substation is not to exceed 4.3 metres below ground level of the adjacent finished level of the footpath or roadway from where personnel or equipment access is gained.
- Chambers for control of High Voltage Customer connections must be approved in writing by Ausgrid. High Voltage Customer (HVC) connections provide a connection point where Ausgrid agrees to make supply available to the customer at high voltage. Ausgrid's space and equipment requirements will be negotiated on a case by case basis. No customer metering or any other customer equipment is permitted to be installed in the chamber for control of HVC connections.
- A control point chamber is required when a chamber substation is considered by Ausgrid to be remote from direct unimpeded personnel access from the street, such

as upper-level chamber substations. The Control Point Chamber must comply with the same requirements of surface, elevated or basement substations as appropriate.
• The substation, the required access ways, conduit routes, ventilation ducts and cable risers as appropriate must in general be provided in accordance with NS143 Easements, Leases and Right of Way, Ausgrid's Policy for ASP/1 Premises Connections and the associated lease or easement memoranda • The substation, the required access ways, conduit routes, ventilation ducts and cable risers as appropriate must be located in areas which are free of any other building, structure or services excluding services or conduits directly related, required and approved by Ausgrid for the chamber substation. • 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 Ausgrid, 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
7.3 Prohibited locations or areas • Chamber substations shall not be installed in the following areas without protection against flooding, unless Ausgrid determines that there is no reasonable alternative: o • areas prone to stormwater run-off or ponding; o • areas subject to declared 1 in 100 year floods; o • areas less than one metre above the mean high water mark; • The Substation and the access route to the substation must not be within an area or location that is likely to contain any portion of another building other than the building in which the substation is housed, which is not sheltered by a non-ignitable blast resisting barrier and which is within 3 metres in any direction from the ventilation openings of a chamber substation. The blast resisting barrier is required to have an FRL of not less than 120/120/120 and a blast resistance of 2kPa. Refer to Clauses 9.6.8, 14.1 and 14.7 for further information.
8.0 Access requirements 8.1.1 General • Ausgrid personnel must have 24 hour access seven days a week, through dedicated access ways which must be at least 1200mm wide. Doorways must be 1000mm wide when the door is in the open position. • No public or occupant access must be through the Ausgrid dedicated access ways. This includes periods of emergency evacuation when Ausgrid or fire fighting personnel may require unhindered access into the chamber substation and associated access ways. • There must not be any requirement to move any material or traverse around any item or persons in or at the entry/exit points of the access ways. 8.1.2 Prohibited locations • Access ways must not be located in areas where access may be obstructed by persons, vehicles, equipment, material storage areas, site usage, enclosed or partially enclosed car parks, loading docks, similar facilities or any other possible impediments. • Access to chamber substations must not involve or permit access into or through other parts of the building. The exception is for upper-level chamber substations which require the registration of a ROW through common areas

- Access is prohibited where egress or access is into or through enclosed or courtyard locations other than those dedicated to the substation.

8.1.3 Prohibited items

- Except for services, facilities or installations directly associated with the substation; no other services, facilities or installations are permitted within a dedicated access way. Eg, Services for the building such as drains, sewers, water services, electrical and communications cables etc, must not pass through the substation chamber or its associated access passageways and ventilation ducts.

8.1.4 Construction and loadings

- All access ways which involve access by stairs or passageway must be constructed from the same material as the substation chamber. This is to include the stairs, floors, support structures, walls and roofs or ceilings.
- Substation openings, access ways and building openings in the vicinity of any chamber substation openings, must comply with all BCA fire resistant construction requirements and fire segregation requirements.

8.1.5 Fire and blast rating

- The dividing wall between any access way or corridor and the substation chamber must be fire and blast rated to the same levels as the substation chamber.
- Unless noted otherwise and approved by Ausgrid in writing the minimum structural component ratings are FRL 180/180/180 where the substation contains oil filled equipment, or 120/120/120 where there is no oil filled equipment, and a 2kPa blast rating.

8.1.6 Personnel access doors

- All chamber substation personnel access doors must provide a minimum clear opening of 2400mm high and 1000mm wide when the door is in the fully open position.
- Outside the Sydney CBD, external personnel access doors may be either solid core pressed metal folded type construction with fire rating of at least -/180/30. Alternatively a louvered personnel door or combined transformer and personnel louvered door may be used as shown on drawing 43140 provided the use of such doors in the particular application complies with all other Ausgrid requirements and the BCA, and only one combined transformer and personnel louvered access door is permitted per substation.

8.2 Personnel access requirements

8.2.1 General

- Each substation chamber must be provided with two separate dedicated access ways for personnel.At each substation both access ways must originate, and allow access from: an area which is non-trafficable by vehicles in a public street or, an open, uncovered, unenclosed, outer area, that is acceptable to Ausgrid and in compliance with the BCA.
- Within all chamber substations personnel access doors must be positioned to enable unimpeded access from all locations within the chamber area which require normal operations and inspection.

- 8.2.2 Surface chamber substations
- For surface chamber substations outside the CBD of Sydney, each access way may consist of:
    - A doorway opening directly from the substation chamber to a public street or open, uncovered,unenclosed, outer area, acceptable to Ausgrid and in compliance with the BCA.
    - an adjoining access passageway that leads to a doorway which opens to a public street or open, uncovered, unenclosed, outer area, acceptable to

Ausgrid and in compliance with the BCA. There is no need for a door between the substation and the access passageway. ○ a combined transformer and personnel louvered door as shown on drawing 43140, however only one such access way is permitted per substation. • 9.2 Transformer access doors are generally to be used for ventilating surface chamber substations and as such are to be constructed as weatherproof aluminium louvres as shown on drawing 43140.
• 8.2.3 Elevated chamber substations • All elevated chamber substations are to have two separate dedicated access ways to the substation chamber. • It is preferred that each access way is through a separate doorway at street level in an external wall or walls, each door leading into a separate access chamber and stairway, up to another access chamber, with doorway leading into the substation chamber. Where that is not physically practicable., Ausgrid will permit the first access way through a separate doorway at street level in an external wall or walls, leading into a separate access chamber and stairway, up to another access chamber, with doorway leading into the substation chamber. The second access way is through a separate doorway at street level in an external wall or walls, leading into a separate access chamber and shaft with ladder (compliant with AS 1657: Fixed platforms, walkways, stairways and ladders - Design, construction and installation), up to another access chamber, with doorway leading into the substation. • All doors, access chambers and stairways are to be fire rated to at least -/180/30. The stairs must be constructed in reinforced cast in-situ concrete, steel or precast concrete stairs are not acceptable. • 9.3 Elevated substations are generally located on the outside face of the building due to ease of heavy equipment access. The outside wall is to be fully louvered. If the chamber is not located on an outside face ventilation ducts generally are to be provided.
• 8.2.4 Upper-level chamber substations • ONLY in the case of upper-level chamber substations may access be gained through a building, foyer, loading dock or parking areas within the building. Unimpeded, 24 hour, seven day a week access by Ausgrid personnel is required for upper-level chamber substations. A right of way must be created. • All access way stairs covered by the ROW must be constructed of cast in-situ reinforced concrete; steel or precast concrete stairs are not acceptable • Personnel doors must achieve an FRL of 2 hours or be equal to the substation structure if the substation is rated at more than 120/120/120. • 9.3 Upper-level substations are generally located on the outside face of the building due to ease of heavy equipment access. The outside wall is to be fully louvered. If the chamber is not located on an outside face ventilation ducts generally are to be provided.
• 8.2.5 Basement chamber substations • Generally personnel access to basement chamber substations must: ○ Provide two separate dedicated means of access from an access roadway. ○ Be located in areas which provide unimpeded 24 hour seven day a week access by Ausgrid personnel. ○ Not be located where the access is off or through foyers, alarmed or secured areas, loading docks, storage areas, enclosed car parks, courtyard type areas or enclosed or partly enclosed areas or similar facilities or installations. ○ Comply with BCA fire resistant construction requirements and fire segregation requirements regarding building and ventilation openings in the vicinity of basement substation or substation ventilation openings.

- It is preferred that each access way is through a separate doorway which is located at street level in an external wall of the building. Each door opens into an access chamber which leads to a descending stairway. At the foot of the stairway is another access chamber containing the doorway into the substation chamber. Alternate options for access will only be permitted if this is not physically practicable.
- All doors, access chambers and stairways are to be fire rated to of at least -/180/30. The stairs must be constructed in reinforced cast in-situ concrete, steel or precast concrete stairs are not acceptable.
- 9.4.1 Basement chamber substations require dedicated inlet and outlet ventilation ducts, each entering the substation chamber in a specified location and each terminating on the outside of the building.

11.4.2 Construction - general

- In all cases the concrete cover to the reinforcing of the wall sections must not be less than 50mm.
- All wall structures must be certified by a practicing structural engineer for FRL of 180/180/180 where the substation contains oil-filled equipment, or 120/120/120 where there is no oil-filled equipment, and structural integrity to support expected loads.
- All walls must be designed to withstand a live loading from the substation side of not less than 2kPa uniformly distributed.
- Where the walls of the substation and associated chambers form the external wall of a building or where these walls are exposed to the elements, the substation walls are to be separated from an outer wall by a drained cavity of not less than 50mm.
- All substation walls and walls of pits which form part of the substation chamber built below ground level against natural excavation or where a retaining wall is used to retain natural excavation are to have a drained cavity of not less than 50mm formed on the outside of the substation wall.

14.0 Fire protection

- Fire rating of buildings near substation ventilation openings
- In addition to the requirements of Clauses 12.1 and 12.2, exterior parts of buildings within 3 metres in any direction from substation ventilation openings, including duct openings and louvered panels, must have an FRL of not less than 180/180/180 where the substation contains oil-filled equipment or 120/120/120 where there is no oil-filled equipment and be constructed of non-combustible material.