Building Regulation, BCA,
Fire, Access and Energy Consultants

To:	Colin McDonald
Project:	Lots 107, 63 & 10 Clunies Ross Street, Greystanes.
Report:	BCA Assessment Report
Reference No:	111585-BCA-r02
Date:	29th May 2020
Client Contact:	Colin McDonald
Email:	cmacdonald@aliro.com.au
From:	Hayden David
Direct:	(02) 8484 4008
Email:	hdavid@bcalogic.com.au

DOCUMENT CONTROL

Revision	Date	Description	
111585-BCA-r01	06.03.2020	Preliminary BCA & Access Assessment Report	
111585-BCA-r02	29.05.2020	Final BCA & Access Assessment Report.	
		Prepared by	Verified by
		Hayden David Accredited Certifier Grade A3, No. BPB2890 Building Regulations Consultant	Matthew McNamara Accredited Certifier Grade A1, No. BPB0263 Manager of Building Regulations
			

Table of Contents

EXECUTIVE SUMMARY

This document provides an assessment of the architectural design drawings for the proposed multi-industrial warehouse estate development at Lots 107, 63 & 10 Clunies Ross Street, Greystanes., against the Deemed-to-Satisfy provisions of the Building Code of Australia (BCA) 2019, Volume 1.

Part 5 'Matters for Further Consideration' of this report outlines the identified BCA compliance issues that require further information or consideration and/or assessment as Performance Solutions.

Any Performance Solution will need to be detailed in a separate report and must clearly indicate methodologies for achieving compliance with the relevant BCA Performance Requirements.

Item	Description	BCA Provision
Performance Solutions Required		
1.	The development provides appropriate means of access for fire fighting vehicles to the surrounds of each building by the provisions of a perimeter access road 6m wide and no furthest point of the far edge of the road being located 18m from the exterior of the building. The performance solution is to alter this 18m maximum setback requirement in several locations around the estate and to not provide 'continuous' full perimeter access road coverage to one of the buildings – All Buildings.	DtS Provision - C2.3(a), (b), & (c) and C2.4(b) Performance Requirement – CP9
2.	To permit extended travel throughout each building in lieu of 20m and 40m compliant distances and permit the distance between alternative exits to exceed 60m in length – All Warehouses portions of all buildings.	DtS Provision - D1.4 & D1.5 Performance Requirement – DP4 & EP2.2
3.	Exit and Directional Signs to be positioned greater than 3m above the floor surface below – All Warehouse areas of each building.	DtS Provisions – E4.5 & E4.6 Performance Requirement – EP4.2
4.	The construction of the roof and external walls is such that they will prevent the penetration of water that could cause unhealthy or dangerous conditions or loss of amenity to occupants and undue dampness or deterioration of building elements.	No DtS Provisions – FP1.4 Performance Provisions Only
Building Code of Australia Compliance Matters to be Addressed		
1.	Types of Construction Required	DtS Provision – C1.1 & SpecC1.1
2.	Performance of External Walls in a Fire	DtS Provision – C1.11
3.	Requirement for Open Spaces & Vehicle Access	DtS Provision – C2.4
4.	Exit Travel Distances	DtS Provision – D1.4
5.	Travel via Fire Isolated Exits	DtS Provision – D1.7
6.	Enclosure of Space Under Stairs & Ramps	DtS Provision – D2.8
7.	Fire Isolated Passageways	DtS Provision – D2.11
8.	Swinging of Doors & Operation of Latch	DtS Provision – D2.20 & D2.21
9.	Signs on Doors	DtS Provision – D2.23
10.	Access to Building	DtS Provision – D3.2

Item	Description	BCA Provision
11.	Parts of Building to be Accessible	DtS Provision – D3.3
12.	Accessible Parking	DtS Provision – D3.5
13.	Fire Hydrants	DtS Provision – E1.3
14.	Fire Hose Reels	DtS Provision – E1.4
15.	Sprinklers	DtS Provision – E1.5
16.	Exit Signs	DtS Provision – E4.3
17.	Facilities in Class 3 to 9 Buildings	DtS Provision – F2.3
18.	Accessible Sanitary Facilities	DtS Provision – F2.4

Annexure B to this report provides a detailed assessment of the proposal against ALL relevant Deemed-to-Satisfy Provisions of the BCA.

1 BASIS OF ASSESSMENT

Location and Description

The building development, the subject of this report, is located at Lots 107, 63 & 10 Clunies Ross Street, Greystanes. The development proposes the consolidation of five (5) separate lots into a single allotment. The single lot will house a commercial/industrial warehousing estate consisting of seven (7) sole occupancy unit (SOU's) warehouses and one (1) café building. Included in the proposal is on-site parking for each building, internal access roads between buildings for truck/car use, and ancillary fire services throughout.

Purpose

The purpose of this report is to assess the current design proposal against the Deemed-to-Satisfy Provisions of BCA 2019, and to clearly outline those areas (if any) where compliance is not achieved, where areas may warrant redesign to achieve strict BCA compliance or where areas may be able to be assessed against the relevant performance criteria of BCA 2019. Such assessment against relevant performance criteria will need to be addressed by means of a separate Performance Based Fire Safety Engineered Assessment Report to be prepared under separate cover.

Building Code of Australia

This report is based on the Deemed-to-Satisfy Provisions of the National Construction Code Series Volume 1 – Building Code of Australia, 2019 Edition (BCA) incorporating the State variations where applicable. Please note that the version of the BCA applicable to new building works is the version applicable at the time of the lodgement of the Construction Certificate application to the Accredited Certifying Authority. The BCA is updated generally on a three-yearly cycle, starting from the 1st of May 2016.

Limitations

This report does not include nor imply any detailed assessment for design, compliance or upgrading for:

(a) the structural adequacy or design of the building;

(b) the inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and

(c) the design basis and/or operating capabilities of any proposed electrical, mechanical or hydraulic fire protection services.

This report does not include, or imply compliance with:

(a) the National Construction Code – Plumbing Code of Australia Volume 3

(b) the Disability Discrimination Act 1992 including the Disability ((Access to Premises – Buildings) Standards 2010 – unless specifically referred to), (Note: The provision of disabled access to the subject development has been assessed against the deemed to satisfy provision of Part D3 and F2.4 of BCA2019 only);

(c) Demolition Standards not referred to by the BCA;

(d) Work Health and Safety Act 2011;

(e) Requirements of Australian Standards unless specifically referred to;

(f) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Telecommunications Supply Authority, Water Supply Authority, Electricity Supply Authority, Work Cover, Roads and Maritime Services (RMS), Local Council, ARTC, Department of Planning and the like; and

(g) Conditions of Development Consent issued by the Local Consent Authority.

Design Documentation

This report has been based on the design plans and specifications listed in Annexure A of this Report.

Definitions

Critical radiant flux

Critical radiant flux (CRF) means the critical heat flux at extinguishment (CHF in kW/m2) as determined by AS ISO 9239.1.

Effective height

Effective height means the vertical distance between the floor of the lowest storey included in a determination of rise in storeys and the floor of the topmost storey (excluding the topmost storey if it contains only heating, ventilating, lift or other equipment, water tanks or similar service units).

Exit

Exit means–

(h) Any, or any combination of the following if they provide egress to a road or open space—

An internal or external stairway.

A ramp.

A fire-isolated passageway.

A doorway opening to a road or open space.

(i) A horizontal exit or a fire-isolated passageway leading to a horizontal exit.

Fire compartment

Fire compartment means—

(a) the total space of a building; or

(b) when referred to in—

the Performance Requirements — any part of a building separated from the remainder by barriers to fire such as walls and/or floors having an appropriate resistance to the spread of fire with any openings adequately protected; or

the Deemed-to-Satisfy Provisions — any part of a building separated from the remainder by walls and/or floors each having an FRL not less than that required for a fire wall for that type of construction and where all openings in the separating construction are protected in accordance with the Deemed-to Satisfy Provisions of the relevant Part.

Fire-resistance level (FRL)

Fire-resistance level (FRL) means the grading periods in minutes determined in accordance with Specification A2.3, for the following criteria—

(a) structural adequacy; and

(b) integrity; and

(c) insulation,

and expressed in that order.

Note: A dash means that there is no requirement for that criterion. For example, 90/–/– means there is no requirement for an FRL for integrity and insulation, and –/–/– means there is no requirement for an FRL.

Fire-source feature

Fire-source feature means—

(a) the far boundary of a road, river, lake or the like adjoining the allotment; or

(b) a side or rear boundary of the allotment; or

(c) an external wall of another building on the allotment which is not a Class 10 building

Fire wall

Fire wall means a wall with an appropriate resistance to the spread of fire that divides a storey or building into fire compartments

Flammability index

Flammability Index means the index number as determined by AS 1530.2.

Group number

Group number means the number of one of 4 groups of materials used in the regulation of fire hazard properties and applied to materials used as a finish, surface, lining, or attachment to a wall or ceiling.

Horizontal exit

Horizontal exit means a required doorway between 2 parts of a building separated from each other by a fire wall.

Non-combustible

Non-combustible means—

(a) applied to a material — not deemed combustible as determined by AS 1530.1 — Combustibility Tests for Materials; and

(b) applied to construction or part of a building — constructed wholly of materials that are not deemed combustible

Performance Requirement

Performance Requirement means a requirement which states the level of performance which a Performance Solution or Deemed-to-Satisfy Solution must meet.

Performance Solution

Performance Solution means a method of complying with the Performance Requirements other than by a Deemed-to-Satisfy Solution.

Sole-occupancy unit

Sole-occupancy unit means a room or other part of a building for occupation by one or joint owner, lessee, tenant, or other occupier to the exclusion of any other owner, lessee, tenant, or other occupier and includes—

(a) a dwelling; or

(b) a room or suite of rooms in a Class 3 building which includes sleeping facilities; or

(c) a room or suite of associated rooms in a Class 5, 6, 7, 8 or 9 building; or

(d) a room or suite of associated rooms in a Class 9c building, which includes sleeping facilities and any area for the exclusive use of a resident.

2 BUILDING DESCRIPTION

For the purposes of the Building Code of Australia (BCA) the development may be described as follows.

United Buildings (Part A7)

Buildings are deemed united when two or more buildings adjoining each other are connected and used as one building.

Building's 03, 04 and 05 are considered to be a United building having three (3) warehouse/ office tenancies (sole occupancy units) by virtue of a shared common fire isolated exit route and given that warehouse Building 05 is above Building 04.

Rise in Storeys (Clause C1.2)

Warehouse buildings 01, 02, 06, & 07 all are considered to have a Rise In Storeys (RIS) of two (2).

United 'Building' 03, 04, & 05 is considered as having a RIS of four (4).

Note: Where average internal height of the Class 7 or 8 warehouse is >6m, is counted as two (2) storeys for the purposes of Clause C1.2.

Classification (Clause A6.0)

Each building has been classified as follows:

Note: Any reference throughout this report to a Class 7b warehouse may equally be taken to refer to a Class 8 factory use/ tenancy.

Table 1. Building Classification – Warehouse 1

Class	Level	Description
5 & 7b	Ground Floor.	- Office '01' Space - Warehousing used for bulk storage of goods/materials.
5	First Floor.	- Office '01' Space

Table 2. Building Classification – Warehouse 2

Class	Level	Description
5 and 7b	Ground Floor.	- Office '02' Space - Warehousing used for bulk storage of goods/materials.
5	First Floor	- Office '02' Space

Table 3. Building Classification – Warehouse 3, 4, & 5

Class	Level	Description
5 & 7b ~~6~~	Ground Floor (Warehouses tenancies 03 & 04)	- Office '03' & '04' Space - Warehousing '03' & '04' used for bulk storage of goods/materials.
5	First Floor (Warehouses tenancies 03 & 04)	- Office '03' & '04' Space
5 & 7b	Second Floor (Warehouse tenancy 05)	- Office '05' Space - Warehousing '05' used for bulk storage of goods/materials.
5	Third Floor (Warehouse tenancy 05)	- Office '05' Space

Table 4. Building Classification – Warehouse 6

Class	Level	Description
5 and 7b	Ground Floor.	- Office '06' Space - Warehousing used for bulk storage of goods/materials.
5	First Floor.	- Office '06' Space

Table 5. Building Classification – Warehouse 7

Class	Level	Description
5 and 7b	Ground Floor.	- Office '07' Space - Warehousing used for bulk storage of goods/materials.
5	First Floor.	- Office '07' Space

Table 6. Building Classification – Café

Class	Level	Description
6	Ground Floor.	- Café

Effective Height (Clause A1.0)

The four storey Warehouse 03, 04, & 05 United building has an effective height of 14.6 metres.

All other buildings have an effective height less than 12m as it relates to the BCA.

Note: The definition of the effective height of a building changed on 1 May 2016. Any Construction Certificate **submitted after this date** will need to comply with the new definition.

Type of Construction Required (Table C1.1)

Each build is assessed as required the following level of fire resisting construction type:

(a) Warehouse and Office 01 – Type C

(b) Warehouse and Office 02 – Type C

(c) Warehouse and Office 03, 04, and 05

(d) Warehouse and Office 06 – Type C

(e) Warehouse and Office 07 – Type C

Type A being the most fire resistant. Type C is the least fire resistant.

Floor Area and Volume Limitations (Table C2.2)

The warehouse buildings are proposed to be constructed as Large Isolated Buildings under C2.3(a) or (b), and accordingly are not subject to maximum compartment sizes and volume limitations under this clause. The café proposed to be constructed is, however, subject to maximum floor area and volume limits being: -

Class 6	Maximum Floor Area	2,000m^2
	Maximum Volume	12,000m^3

Fire Compartments

The following fire compartments have been calculated assumed:

1. Warehouse 01 and Office 01 as being a single fire compartment.

Estimated	Floor Area	>19,400m^2
	Volume	>800,000m^3

2. Warehouse 02 and Office 02 as being a single fire compartment.

Estimated	Floor Area	>25,000m^2
	Volume	>430,000m^3

3. Warehouse 03, 04, & 05 is considered as a single compartment/building subject to C2.3 (c) Deemed to Satisfy (DtS) requirements.

Estimated	Floor Area	>35,500m^2
	Volume	>515,000m^3

4. Warehouse 06 and Office 06 as being a single fire compartment.

Estimated	Floor Area	>9,500m^2
	Volume	>145,000m^3

5. Warehouse 07 and Office 07 as being a single fire compartment.

Estimated	Floor Area	>8,000m^2
	Volume	>125,000m^3

Exits

Exit locations for the relevant buildings are illustrated below:

1. Warehouse & Office 01 –

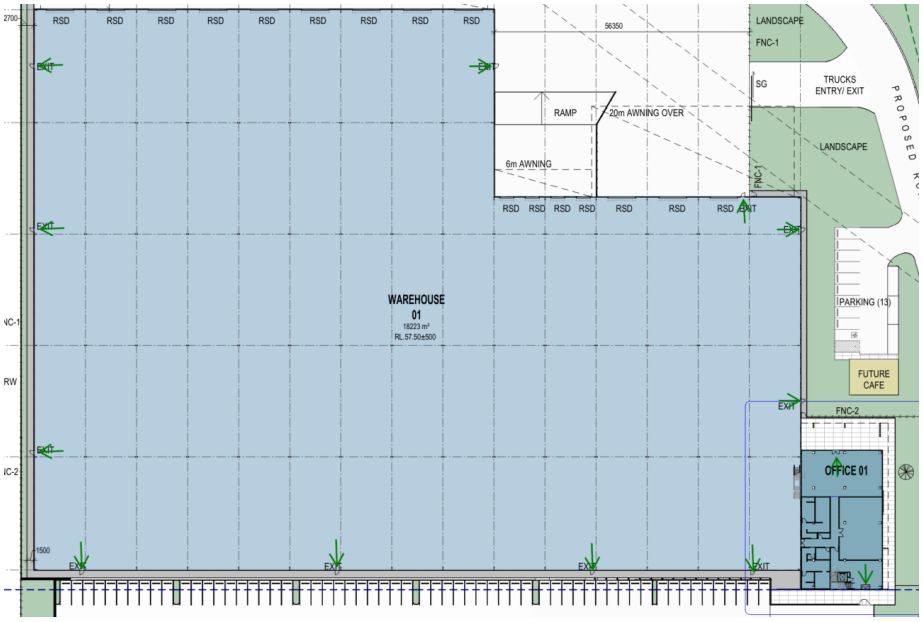


Figure: Ground Floor Office and Warehouse (1) exits

Figure: Office 1 First Floor exits

2. Warehouse & Office 02 –

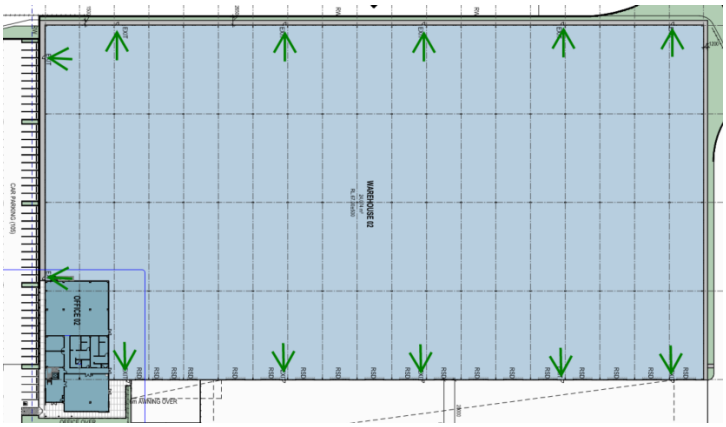


Figure: Warehouse (2) Ground Floor exits

Figure: Office Ground Floor exits

Figure: Office First Floor exits

3. United Warehouse Building 03, 04, & 05 –

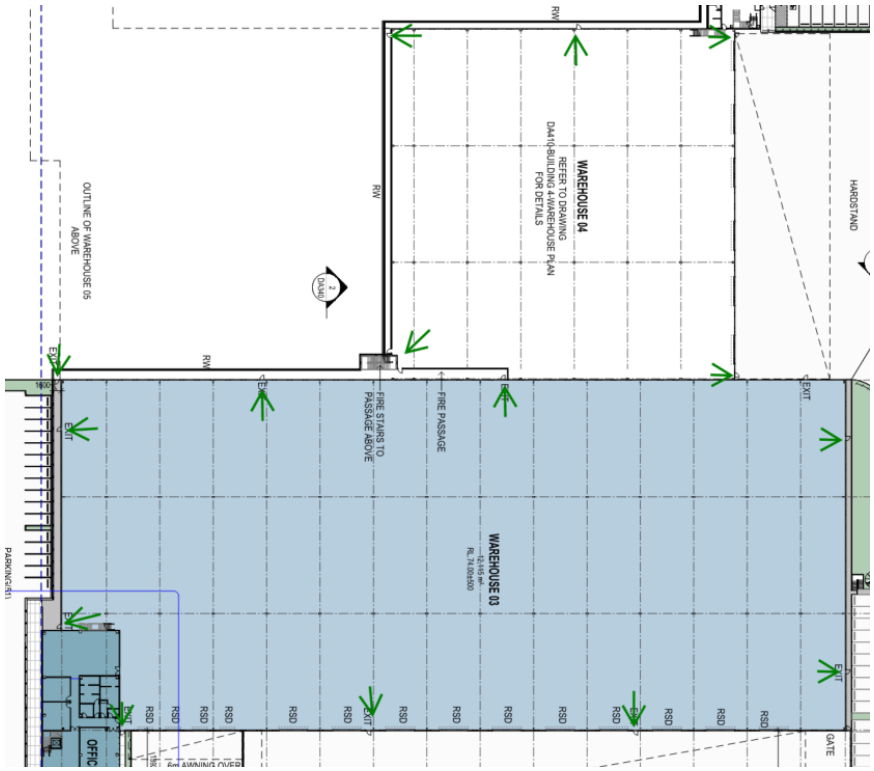


Figure Warehouse 03 & 04 Ground Floor exits

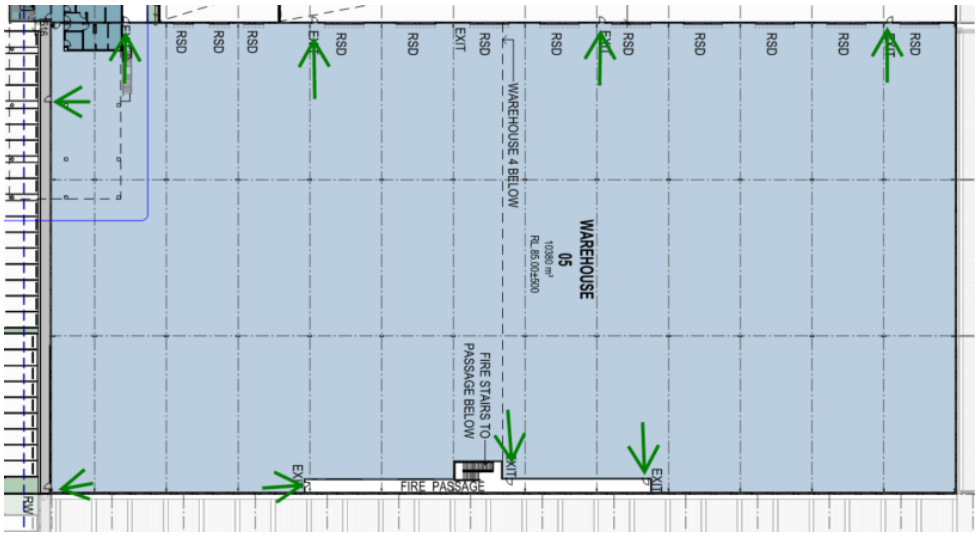


Figure: Warehouse 05 exits

Figure: Office 3 Ground and First Floor exits

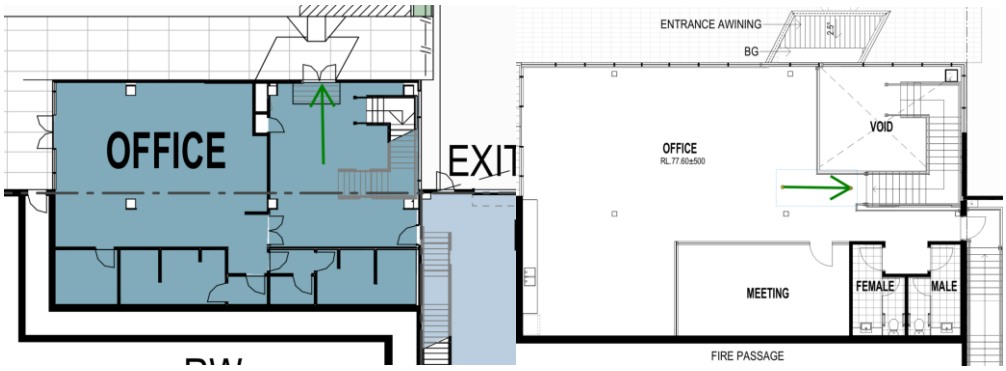


Figure: Office 04 Ground and First Floor exits

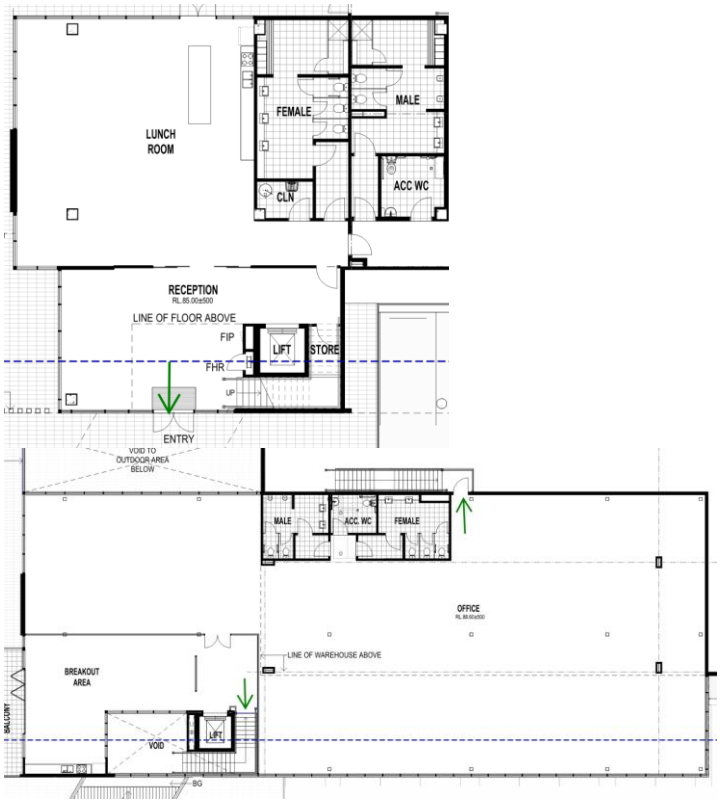


Figure: Office 5 Ground and First Floor exits

4. Warehouse & Office 06 –

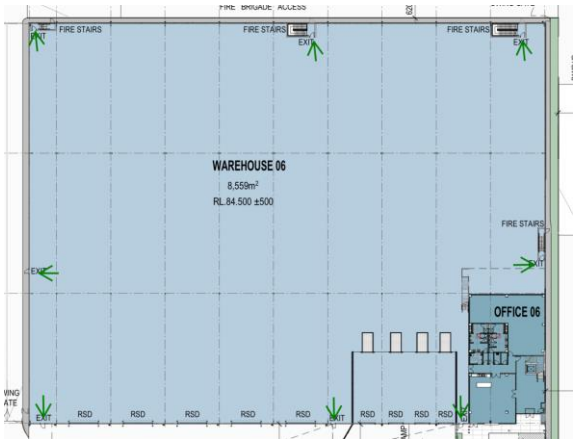


Figure: Warehouse 06 Ground Floor exits

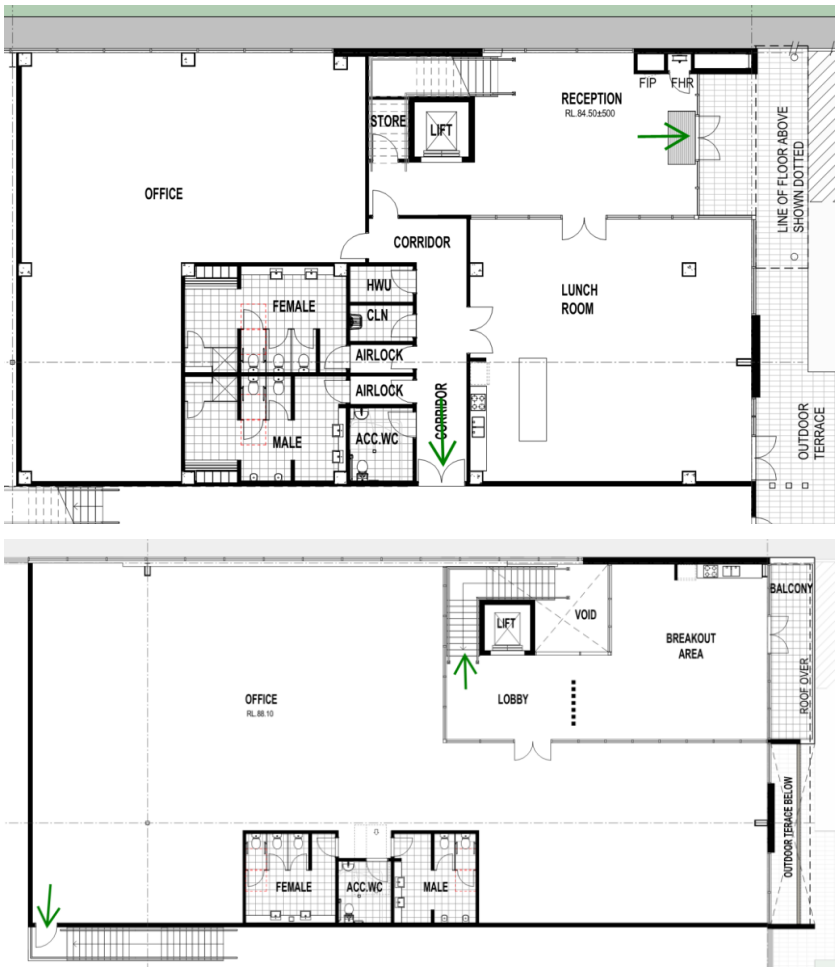


Figure: Office 6 Ground and First Floor exits

5. Warehouse & Office 07 –

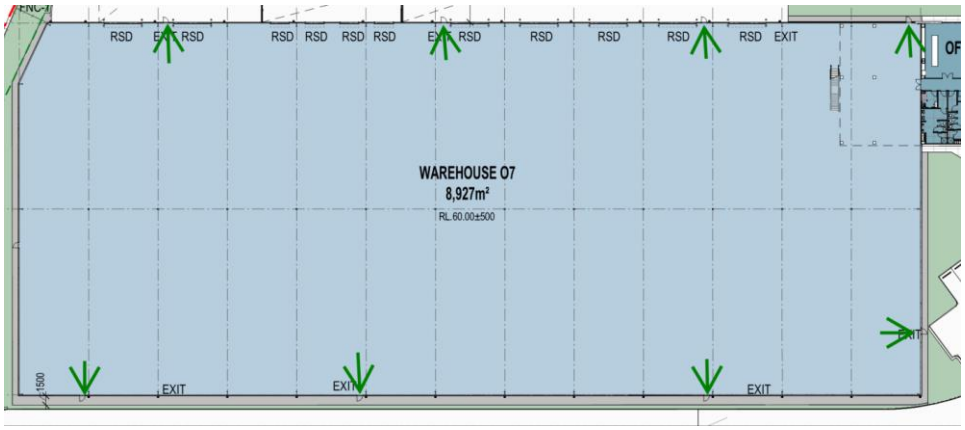


Figure: Warehouse 7 Ground Floor exits

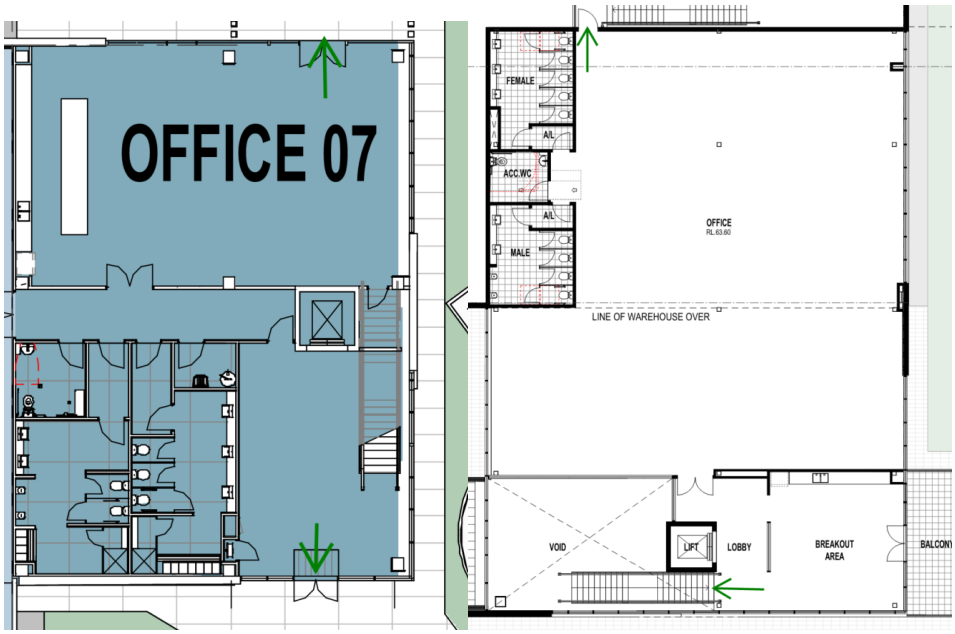


Figure: Office 7 Ground and First Floor exits

Climate Zone (Clause A1.0)

The buildings are located within Climate Zone 6.

Location of Fire-source features

It is noted that given the spacing between all buildings, and considering their setbacks from each boundary line, none of the buildings are exposed to any fire source feature. However, the closest fire source feature for the basis of this assessment is identified below:

North: The side boundary of the allotment.

South: The side boundary of the allotment.

East: The far boundary of Clunies Ross Street.

West: The rear boundary of the allotment entering onto Fundation Place.

A fire-source feature is defined in Part A1.0 – Schedule 3 of the BCA as–

(f) the far boundary of a road, river, lake or the like adjoining the allotment; or

(g) a side or rear boundary of the allotment; or

(h) an external wall of another building on the allotment which is not a Class 10 building.

A building element is exposed to a *fire-source feature* if any of the horizontal straight lines between that part and the *fire-source feature*, or vertical projection of the feature, is not obstructed by another part of the building that–

has an FRL of not less than 30/–/–; and

is neither transparent nor translucent.

3 ESSENTIAL FIRE SAFETY MEASURES

The following fire safety measures are required to be installed in the warehouse Buildings 01, 02, 06 and 07 (Table 7 below) and in the United warehouse Building 03, 04 & 05 (refer to Table 8 below).
These tables may be required to be updated as the design develops and options for compliance are confirmed.

Table 7. Essential Fire Safety Measures – Warehouse Buildings 01, 02, 06, & 07

Item	Essential Fire and Other Safety Measures Warehouse Buildings 01, 02, 06, & 07	Standard of Performance
Fire Resistance (Floors – Walls – Doors – Shafts)		
1.	Fire doors	**BCA2019 D2.8** (Enclosure of Space under Stairs) AS1905.1: 2015
General		
2.	Fire control centres & rooms > Class 6,7,8,9 >18,000m^2 > Fire Control Centre (Warehouse Buildings 01 and 02)	**BCA2019 E1.8, Spec E1.8** (Fire Control Centres)
3.	Large Isolated Building **Class 5 and 7/8 <18 000m^2 and 108 000m^3** (Warehouse Buildings 06 & 07) > Sprinkler system complying with Specification E1.5; and > Perimeter vehicular access complying with C2.4(b). **Class 5 and 7/8 >18 000m^2 and 108 000m^3** (Warehouse Buildings 01 & 02) > Sprinkler system complying with Specification E1.5; and > Perimeter vehicular access complying with C2.4(b); and > an automatic smoke exhaust system in accordance with Specification E2.2b; **or** > an automatic smoke and heat vents in accordance with Specification E2.2c; Further, if the ceiling height of the *fire compartment* is more than 12 m, > an automatic smoke exhaust system in accordance with Specification E2.2b	**BCA2019 C2.3** (Large Isolated Building) **BCA Specification E1.5 Sprinklers** **BCA2019 Table E2.2a** **Spec E2.2b Smoke Exhaust System**
4.	Perimeter emergency vehicle access > Vehicle Access (C2.4 (b)	**BCA2019 C2.4**
5.	Portable fire extinguishers	**BCA2019 E1.6** AS 2444–2001
6.	Fire blankets	AS 2444–2001

General Egress		
7.	Evacuation Training	AS 3745:2010
8.	Path of travel for stairways, passageway and ramps	EP&A Reg. 2000 Clauses 184-186
9.	Swing of Exit Doors	**D2.20** (Swinging Doors)
10.	Warning & operational signs	**BCA2019 D2.23 (**Signs on Fire Doors) **BCA2019 D3.6** (Braille Exit Signs) **BCA2019 E3.3** (Lift Signs) **BCA2019 Spec E1.8** (Fire Control Centres)
Electrical Services		
11.	Automatic fire detection & alarm: > Smoke exhaust system activation; or > Smoke and heat vent activation	**BCA2019 E2.2**, NSW Table E2.2a, Spec E2.2b – Clause 8; or Spec E2.2c – Clause 2(a)
12.	Emergency lighting	**BCA2019 E4.2, E4.4** AS/NZS 2293.1:2018
13.	Exit signs	**BCA2019 E4.5** (Exit Signs) **BCA2019 E4.6** (Direction Signs) **BCA2019 E4.8** (Design and Operation - Exits) AS/NZS 2293.1:2018
14.	System Monitoring	**BCA2019 E2.2, Table E2.2a, Spec E2.2a** AS 1670.3:2018 Monitoring Required for any: > Any Sprinkler System > For smoke exhaust systems and smoke-and-heat vents
Hydraulic Services		
15.	Automatic fire suppression systems > General Sprinklers	**BCA2019 E1.5** AS 2118.1:2017 (Sprinklers)
16.	Fire hydrant systems > NSW Storz Couplings > Ring Main required (LIB) > On-site water storage	**BCA2019 E1.3** AS 2419.1:2005
17.	Hose reel systems (Warehouse portions only)	**BCA2019 E1.4** AS 2441:2005

Mechanical Services		
18.	Mechanical air handling systems 1. Automatic Smoke Exhaust System 2. Auto-shutdown of Air-handling System. > (Clause E2.2(b)) - Any system that recycles air from one fire compartment to another, or operates in a manner that may spread smoke and does not operate as a smoke control system as per AS 1668.1:2015; > miscellaneous exhaust are systems installed as per Section 5 and 6 of AS 1668.1:2015;	**BCA2019 E2.2, Table E2.2a** **Spec E2.2a, Spec E2.2b** AS 1668.1:2015 (Amdt 1) **Note: 5.5.3 Override control** To enable manual control by attending emergency services personnel, fans that are not required to shut down on initiation of fire mode in the car park shall be provided with a control switch at the designated building entry point. **Note:** Signage should be located at the car park entry indicating the location of the control switches.

Notes:

(An air-handling system which does not form part of a smoke hazard management system in accordance with Table E2.2a or Table E2.2b and which recycles air from one *fire compartment* to another *fire compartment* or operates in a manner that may unduly contribute to the spread of smoke from one *fire compartment* to another *fire compartment* must—

(i) ((be designed and installed to operate as a smoke control system in accordance with AS 1668.1:2015; or

(ii)

(A) incorporate smoke dampers where the air-handling ducts penetrate any elements separating the *fire compartments* served; and

(B) be arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke detectors complying with clause 7.5 of AS 1670.1:2018; and

for the purposes of this provision, each *sole-occupancy unit* in a Class 2 or 3 building is treated as a separate *fire compartment*.

Miscellaneous air-handling systems covered by Sections 5 and 6 of AS 1668.1:2015 serving more than one *fire compartment* (other than a carpark ventilation system) and not forming part of a smoke hazard management system must comply with that Section of the Standard.

A smoke detection system must be installed in accordance with Clause 5 of Specification E2.2a to operate AS 1668.1:2015 systems that are provided for zone smoke control and automatic air pressurisation for fire-isolated exits.

Table 8. Essential Fire Safety Measures – United Warehouse Building 03, 04, & 05

Item	Essential Fire and Other Safety Measures United Warehouse Building 03, 04 & 05	Standard of Performance
Fire Resistance (Floors – Walls – Doors – Shafts)		
1.	Construction Joints	**BCA2019 C1.1, Spec C1.1** **BCA2019 C3.16** AS 1530.4:2014 & AS 4072.1:2005
2.	Fire doors	**BCA2019 C3.8** (Openings in Fire Isolated Exits) **BCA2019 D2.8** (Enclosure of Space under Stairs) AS1905.1: 2015
3.	Fire seals protecting openings in fire resisting components of the building	**BCA2019 C3.15** (Openings for service installations) **BCA2019 C3.16** (Construction joints) **BCA2019 Spec C3.15** AS1530.4:2014 & AS4072.1-2005
General		
4.	Fire control centres & rooms > Class 6,7,8,9 >18,000m^2 > Fire Control Centre	**BCA2019 E1.8, Spec E1.8** (Fire Control Centres)
5.	Large Isolated Building **Class 5 and 7/8 >18 000m^2 and 108 000m^3** (United warehouse Building 03, 04 & 05) > Sprinkler system complying with Specification E1.5; and > Perimeter vehicular access complying with C2.4(b); and > an automatic smoke exhaust system in accordance with Specification E2.2b; **or** > an automatic smoke and heat vents in accordance with Specification E2.2c; Further, if the ceiling height of the *fire compartment* is more than 12 m, > an automatic smoke exhaust system in accordance with Specification E2.2b	**BCA2019 C2.3** (Large Isolated Building) **BCA Specification E1.5 Sprinklers** **BCA2019 Table E2.2a** **Spec E2.2b Smoke Exhaust System**
6.	Perimeter emergency vehicle access > Vehicle Access (C2.4 (b)	**BCA2019 C2.4**
7.	Portable fire extinguishers	**BCA2019 E1.6**

		AS 2444–2001
8.	Fire blankets	AS 2444–2001
General Egress		
9.	Evacuation Training	AS 3745:2010
10.	Path of travel for stairways, passageway and ramps	EP&A Reg. 2000 Clauses 184-186
11.	Swing of Exit Doors	**D2.20** (Swinging Doors)
12.	Warning & operational signs	**BCA2019 D2.23 (**Signs on Fire Doors) **BCA2019 D3.6** (Braille Exit Signs) **BCA2019 E3.3** (Lift Signs) **BCA2019 Spec E1.8** (Fire Control Centres)
Electrical Services		
13.	Automatic fire detection & alarm: > Smoke exhaust system activation; or Smoke and heat vent activation	**BCA2019 E2.2**, NSW Table E2.2a,
14.	Emergency lighting	**BCA2019 E4.2, E4.4** AS/NZS 2293.1:2018
15.	Exit signs	**BCA2019 E4.5** (Exit Signs) **BCA2019 E4.6** (Direction Signs) **BCA2019 E4.8** (Design and Operation - Exits) AS/NZS 2293.1:2018
16.	System Monitoring	**BCA2019 E2.2 , Table E2.2a,Spec E2.2a** AS 1670.3:2018 Monitoring Required for any: > Any Sprinkler System > For smoke exhaust systems and smoke-and-heat vents
Hydraulic Services		
17.	Automatic fire suppression systems > General Sprinklers	**BCA2019 E1.5** **BCA2019 E1.5a** AS 2118.1:2017 (Sprinklers)

18.	Fire hydrant systems > NSW Storz Couplings > Ring Main required (LIB)	**BCA2019 E1.3** AS 2419.1:2005
19.	Hose reel systems (Warehouse portions only)	**BCA2019 E1.4** AS 2441:2005
Mechanical Services		
20.	Mechanical air handling systems 3. Automatic Smoke Exhaust System 4. Auto-shutdown of Air-handling System. > (Clause E2.2(b)) - Any system that recycles air from one fire compartment to another, or operates in a manner that may spread smoke and does not operate as a smoke control system as per AS 1668.1:2015; > miscellaneous exhaust are systems installed as per Section 5 and 6 of AS 1668.1:2015; > miscellaneous exhaust are systems installed as per Section 5 and 6 of AS 1668.1:2015. 5. Fire Isolated Exit Pressurisation System	**BCA2019 E2.2, Table E2.2a, Table E2.2b** **Spec E2.2a, Spec E2.2b** AS 1668.1:2015 (Amdt 1) **Note: 5.5.3 Override control** To enable manual control by attending emergency services personnel, fans that are not required to shut down on initiation of fire mode in the car park shall be provided with a control switch at the designated building entry point. **Note:** Signage should be located at the car park entry indicating the location of the control switches.

Notes:

(An air-handling system which does not form part of a smoke hazard management system in accordance with Table E2.2a or Table E2.2b and which recycles air from one *fire compartment* to another *fire compartment* or operates in a manner that may unduly contribute to the spread of smoke from one *fire compartment* to another *fire compartment* must—

(iii) ((be designed and installed to operate as a smoke control system in accordance with AS 1668.1:2015; or

(iv)

(A) incorporate smoke dampers where the air-handling ducts penetrate any elements separating the *fire compartments* served; and

(B) be arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke detectors complying with clause 7.5 of AS 1670.1:2018; and

for the purposes of this provision, each *sole-occupancy unit* in a Class 2 or 3 building is treated as a separate *fire compartment*.

Miscellaneous air-handling systems covered by Sections 5 and 6 of AS 1668.1:2015 serving more than one *fire compartment* (other than a carpark ventilation system) and not forming part of a smoke hazard management system must comply with that Section of the Standard.

A smoke detection system must be installed in accordance with Clause 5 of Specification E2.2a to operate AS 1668.1:2015 systems that are provided for zone smoke control and automatic air pressurisation for fire-isolated exits.

4 FIRE RESISTANCE LEVELS

The following fire resistance levels (FRL's) are required for the various building elements, with a fire source feature being the far boundary of a road adjoining the allotment, a side or rear boundary or an external wall of another building on the allotment except a Class 10 structure.

Type A Construction – Required of United Warehouse Buildings 03, 04, & 05

Table 9. Type A Construction

Item	Class 5	Class 7b or 8
Loadbearing External Walls (including columns and other building elements incorporated therein) - Less than 1.5m to a *fire- source feature* - 1.5 – less than 3m from a *fire-source feature* - 3m or more from a *fire source feature*	120/120/120 120/90/90 120/60/30	240/240/240 240/240/180 240/180/90
Non-Loadbearing External Walls - Less than 1.5m to a *fire-source feature* - 1.5 – less than 3m from a *fire-source feature* - 3m or more from a *fire-source feature*	-/120/120 -/90/90 -/-/-	-/240/240 -/240/180 -/-/-
External Columns - Loadbearing - Non-loadbearing	120/-/- -/-/-	240/-/- -/-/-
Common Walls & Fire Walls	120/120/120	240/240/240
Stair and Lift Shafts required to be fire-resisting - Loadbearing - Non-loadbearing	120/120/120 -/120/120	240/120/120 -/120/120
Internal walls bounding sole occupancy units - Loadbearing - Non-loadbearing	120/-/- -/-/-	240/-/- -/-/-
Internal walls bounding public corridors, public lobbies and the like: - Loadbearing - Non-loadbearing	120/-/- -/-/-	240/-/- -/-/-
Ventilating, pipe, garbage and like shafts: - Loadbearing - Non-loadbearing	120/90/90 -/90/90	240/120/120 -/120/120
Other loadbearing internal walls, beams trusses and columns	120/-/-	240/-/-
Floors	120/120/120	240/240/240
Roofs[1]	120/60/30	240/90/60

[1] *The roof need not comply with any FRL's due to the sprinkler protection of the entire building.*

Type C Construction – Required of Warehouse Buildings 01, 02, 06, & 07 & Café Building

Table 10. Type C Construction

Item	Class 5	Class 6	Class 7b or 8
External Walls - Less than 1.5m to a *fire- source feature* - 1.5 – less 3m from *fire- source feature* - 3m or more from a *fire- source feature*	90/90/90 60/60/60 -/-/-	90/90/90 60/60/60 -/-/-	90/90/90 60/60/60 -/-/-
External Column not incorporated in an external wall - Less than 1.5m to a fire source feature - 1.5 – less 3m from fire source feature; - 3m or more from a fire source feature	90/-/- 60/-/- -/-/-	90/-/- 60/-/- -/-/-	90/-/- 60/-/- -/-/-
Common Walls and Fire Walls	90/90/90	90/90/90	90/90/90
Internal walls bounding sole occupancy units	-/-/-	-/-/-	-/-/-
Internal walls bounding public corridors, hallways and the like	-/-/-	-/-/-	-/-/-
Internal walls bounding a stair if required to be fire rated	60/60/60	60/60/60	60/60/60

Note: An external wall that is required to have an FRL need only be tested from the outside to satisfy the FRL requirement.

5 MATTERS FOR FURTHER CONSIDERATION

General

Assessment of the Architectural design documentation against the Deemed-to Satisfy Provisions of the Building Code of Australia, 2019 (BCA) has revealed the following areas where compliance with the BCA may require further consideration and/or may involve assessment as Performance Based (Fire Engineered) Performance Solutions. Any Performance Solutions will be required to clearly indicate methodologies for achieving compliance with the relevant Performance Requirements.

Dimensions and Tolerances

The BCA contains the minimum standards for building construction and safety, and therefore generally stipulates minimum dimensions which must be met. BCA Logic's assessment of the plans and specifications has been undertaken to ensure the minimal dimensions have been met.

The designer and builder should ensure that the minimum dimensions are met onsite and consideration needs to be given to construction tolerances for wall set outs, applied finishes and skirtings to corridors and bathrooms for example, tiling bed thicknesses and the like which can adversely impact on critical maters such as access for people with disabilities, stair and corridor widths and balustrade heights.

Performance Based Design – Performance Solutions

There are specific areas throughout the development where strict Deemed-to-Satisfy BCA Compliance will not be achieved by the proposed design and site constraints. These matters will need to be address in a detailed Fire Safety Engineering Report to be prepared for this development under separate cover.

It is noted that any Performance Solution constituting a *Category Two* Fire Safety Provisions as defined within the *Environmental Planning and Assessment Regulations 2000 (EP&A Regs),* for a building with a floor area in excess of 6,000m^2 requires the application for a Construction Certificate be referred to NSW Fire and Rescue for comment under Clause 144 of EP&A Regs. With respects to the current design, a Performance Solution addressing Performance Requirements CP9 and EP2.2 will constitute as a *Category Two* fire safety provision.

Table 11. Performance Solutions

Item	Description of Performance Solution	DTS Provision	Performance Requirements
1.	The construction of the external walls is such that they will prevent the penetration of water that could cause unhealthy or dangerous conditions or loss of amenity to occupants and undue dampness or deterioration of building elements.	No DtS Provisions	FP1.4
2.	The development provides appropriate means of access for fire fighting vehicles to the surrounds of each building by the provisions of a perimeter access road 6m wide and no furthest point of the far edge of the road being located 18m from the exterior of the building. The performance solution is to alter this 18m maximum setback requirement in several locations around the estate and to not provide 'continuous' full perimeter access road coverage to one of the buildings – All Buildings.	C2.3(a), (b), & (c) and C2.4(b)	CP9
3.	To permit extended travel throughout each building in lieu of 20m and 40m compliant distances and permit the distance between alternative exits to exceed 60m in length – All Warehouses portions of all buildings.	D1.4 & D1.5	DP4 & EP2.2

Item	Description of Performance Solution	DTS Provision	Performance Requirements
4	Exit and Directional Signs to be positioned greater than 3m above the floor surface below – All Warehouse areas of each building.	E4.5 & E4.6	EP4.2

PART C1 – Fire Resistance and Stability

5.1.1 C1.1 Type of Construction Required

- Warehouse & Office 01 –

The building is to be considered as a Large Isolated Building (LIB) as per Clause C2.3 (b), as a result, the construction type is to be determined solely by the buildings RIS. A construction type of C, the least fire resistant is to be applied throughout. The subject building is not considered to be exposed to any fire-source feature.

- Warehouse & Office 02 –

The building is to be considered as a LIB as per Clause C2.3 (b), as a result, the construction type is to be determined solely by the buildings RIS. A construction type of C is to be applied throughout. The subject building is not considered to be exposed to any fire-source feature.

- Warehouse & Office 03, 04, & 05 –

The building is to be considered as a United LIB as per Clause C2.3 (c), as a result, is to be treated as a single building with the construction type is to be determined solely by the buildings RIS. A construction type of A, the most fire resistant is to be applied throughout. The following minimum fire resistance levels are to be applied to the relevant construction items throughout:

(a) Each external wall of the combined warehouses is considered non-loadbearing and is not exposed to any fire-source feature. As a result, no FRL is deemed required for external walls. Although, where external walls are loadbearing, an FRL of 240/-/- is required.

(b) Internal steel columns are to satisfy an FRL of 240/-/- *(See illustration below).*

Note: Clause 3.7of SpecC1.1 Internal columns and walls: Concession for a building with an effective height of not more than 25 m and having a roof without an FRL in accordance with Clause 3.5, in the storey immediately below that roof, internal columns other than those referred to in Clause 3.1(f) and internal walls other than fire walls and shaft walls may have—

(a) in a Class 2 or 3 building: FRL 60/60/60; or

(b) in a Class 5, 6, 7, 8 or 9 building—

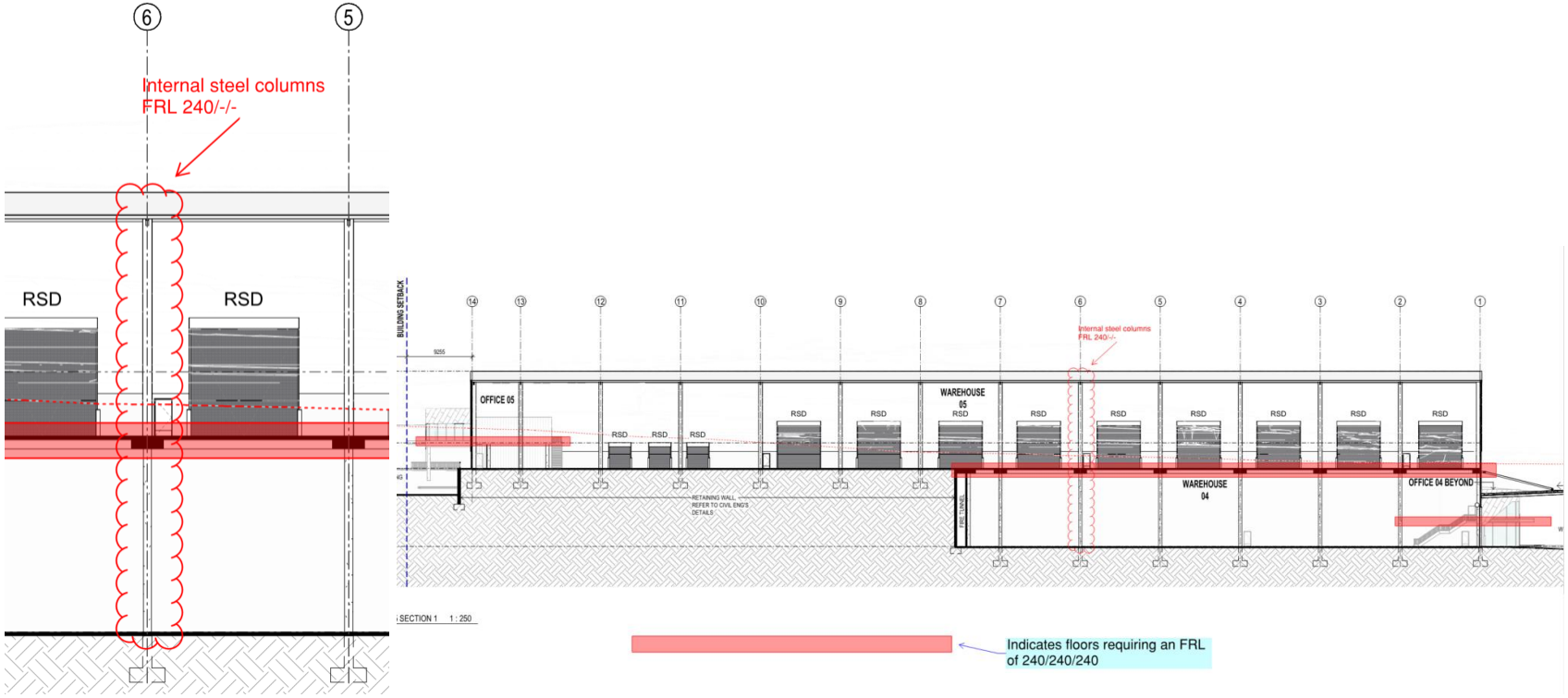
(i) with rise in storeys exceeding 3: FRL 60/60/60; or

(ii) with rise in storeys not exceeding 3: no FRL.

Supporting roofs The roof construction is able to have the concessionary Clause 3.5 of Spec C1.1 applied as the building will be sprinkler protected in accordance with Spec E1.5. This sees the roof construction only requiring non-combustible construction. As a result, the design is to ensure the translucent roof sheet covering intended to be used on the build satisfies the requirements of AS1530.1 for non-combustibility testing. *(See illustration below)*

(c) Floors throughout the combined building are to achieve a minimum FRL of 240/240/240. *(See Illustration below)*

(d) For the construction of the fire-isolated passageway – See Part 5.7.3 of the report.



Figures: Internal Steel Columns & Separating floors.

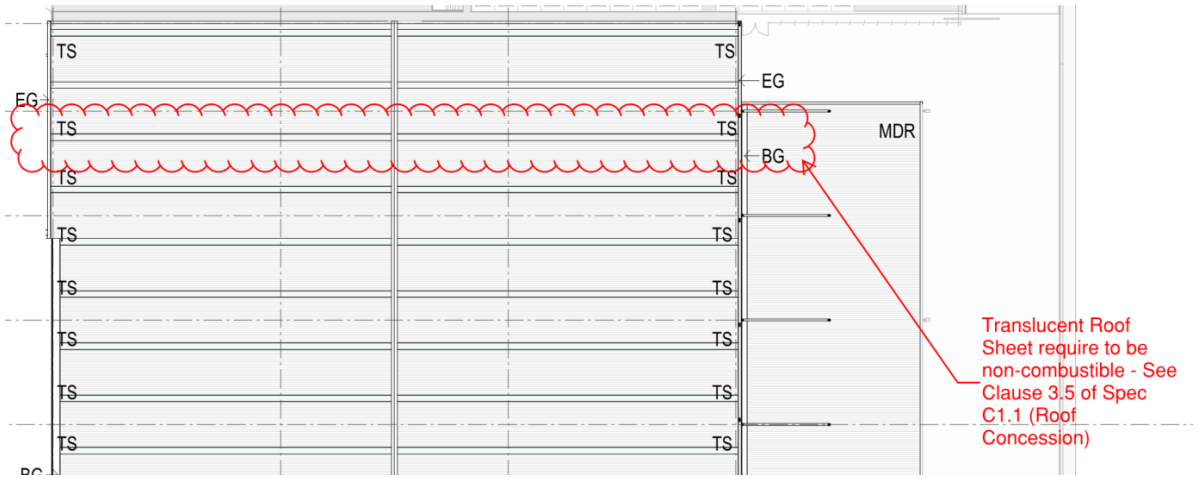


Figure: Roof covering to be non-combustible.

- Warehouse & Office 06 –

The building is to be considered as a LIB as per Clause C2.3 (b), as a result, the construction type is to be determined solely by the buildings RIS. A construction type of C is to be applied throughout. The subject building is not considered to be exposed to any fire-source feature.

- Warehouse & Office 07 –

The building is to be considered as a LIB as per Clause C2.3 (b), as a result, the construction type is to be determined solely by the buildings RIS. A construction type of C is to be applied throughout. The subject building is not considered to be exposed to any fire-source feature.

- Café Building –

The assumed single storey building is to be construction type of C is to be applied throughout. The subject building is not considered to be exposed to any fire-source feature.

5.1.2 C1.11 Performance of External Walls in a Fire

- Buildings01, 02, 06 and 07 –

Where the elevation plans indicate precast concrete panel nominated for use on ground level external walls of the warehouses, the wall systems design is to achieve compliance Specification C1.11 to prevent collapsing as complete panels outwards.

PART C2 – Compartmentation and Separation

5.1.3 C2.3 Large Isolated Buildings (LIB)

- Warehouse & Office 01 to 05 –

Given the buildings floor area and volumes exceed 18,000m^2 & 108,000m^3 the building is to be constructed as a LIB and is subjected to having a sprinkler system installed which satisfies the requirements of Specification E1.5 and AS2118.1. In addition, the building is to be provided with a perimeter access road in accordance with C2.4(b) requirements.

- Warehouse & Office 06 and 07 –

Given the buildings exceed 108,000m^3 in volume the buildings are to be constructed as LIBs and is subjected to having a sprinkler system installed which satisfies the requirements of Specification E1.5 and AS2118.1. In addition, the building is to be provided with a perimeter access road in accordance with C2.4(b) requirements.

5.1.4 C2.4 Requirement for Open Spaces & Vehicle Access

- Warehouse & Office 01 –

A technical non-compliance with the provision of the vehicle access road surrounding Warehouse 01, as illustrated below. The perimeter access road is required to have its furthest boundary of the road being no further than 18m from the exterior of the building. The current design sees the most disadvantaged point of the road boundary being 37m from the northern external walls of the building. In addition, the perimeter access road appears to be non-continuous in certain parts surrounding the building. A Fire Engineered Performance Solution is recommended to achieve compliance with Performance Requirement CP9.

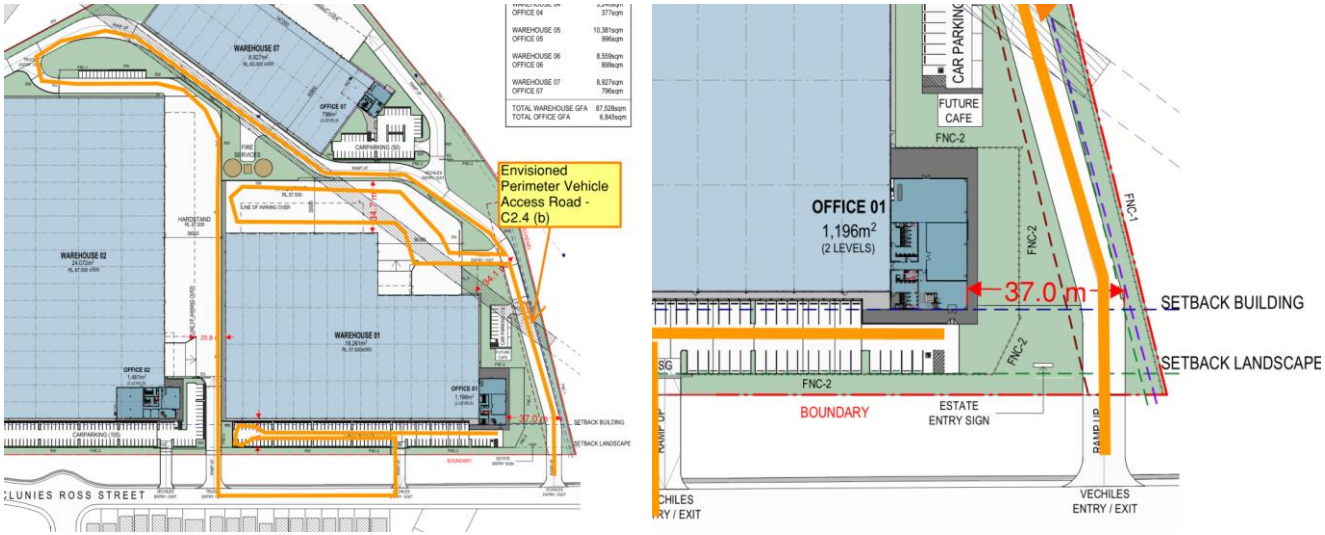


Figure: Warehouse 01 Perimeter Access road.

- Warehouse & Office 02 –

A technical non-compliance was observed with the provision of the vehicle access road surrounding Warehouse 02, of which, is illustrated below. The perimeter access road is required to have its furthest boundary of the road being no further than 18m from the exterior of the building. The current design sees the most disadvantaged point of the road boundary being 33m from the western external walls of the building. A Fire Engineered Performance Solution is recommended to achieve compliance with Performance Requirement CP9.

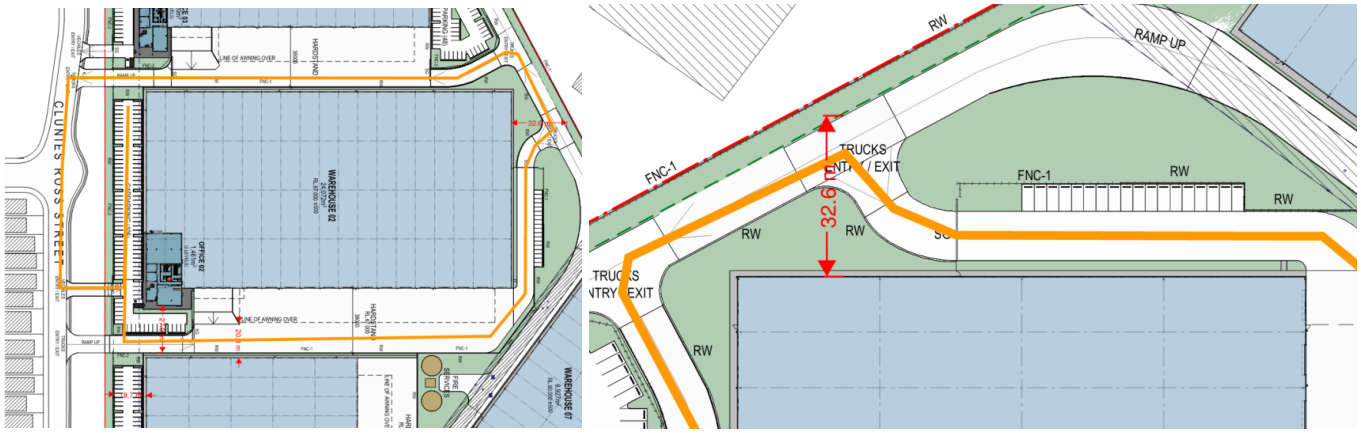


Figure: Warehouse 02 Perimiter Access road.

- Warehouse 03, 04, & 05 –

A technical non-compliance was observed with the provision of the vehicle access road surrounding Warehouse 03, 04, & 05, of which, is illustrated below. The perimeter access road is required to have its furthest boundary of the road being no further than 18m from the exterior of the building. The current design sees the most disadvantaged point of the road boundary being 72m from the south western external walls of the building. A Fire Engineered Performance Solution is recommended to achieve compliance with Performance Requirement CP9.

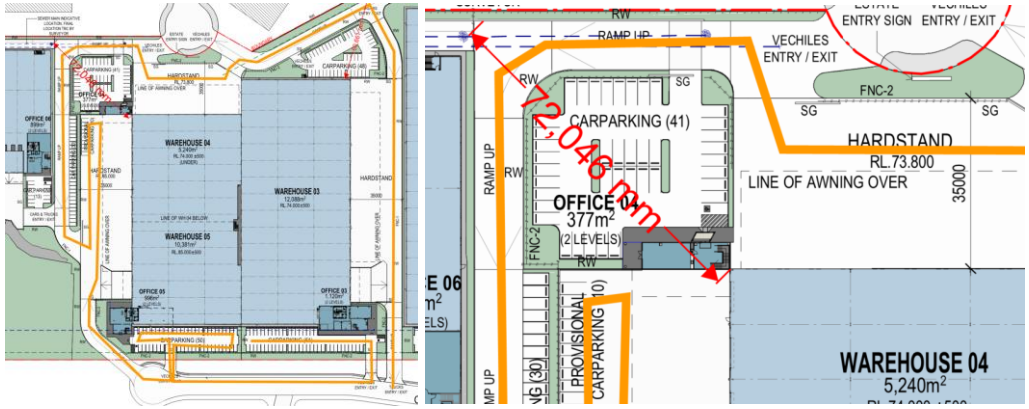


Figure: Warehouse 03, 04, & 05 Perimiter Access road.

- Warehouse & Office 06 –

A technical non-compliance was observed with the provision of the vehicle access road surrounding Warehouse 06, of which, is illustrated below. The perimeter access road is required to have its furthest boundary of the road being no further than 18m from the exterior of the building. The current design sees the most disadvantaged point of the road boundary being 38m from the eastern external walls of the building. A Fire Engineered Performance Solution is recommended to achieve compliance with Performance Requirement CP9.

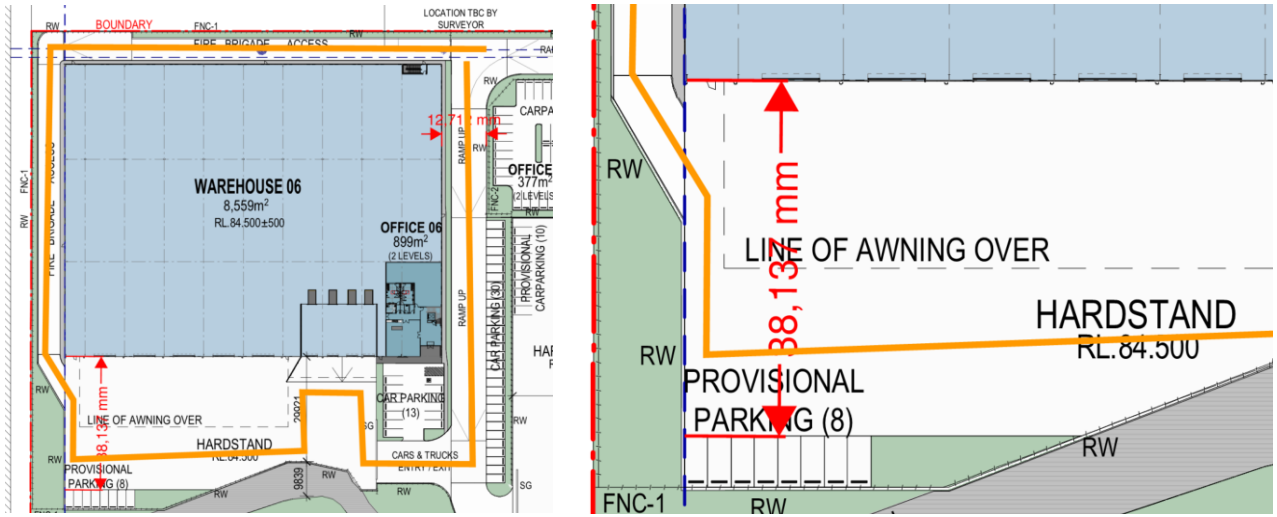


Figure: Warehouse 06 Perimiter Access road.

- Warehouse & Office 07 –

The location of the building toward the side boundary sees a non-compliance where the provision of the vehicle access road surrounding the building appear to be inadequate to allow for a fire fighting vehicle to access the site in a continuous forward motion. In this instance, the design sees insufficient coverage to the western exterior wall of the warehouse. See illustrated below. A Fire Engineered Performance Solution is required to achieve compliance with Performance Requirement CP9.

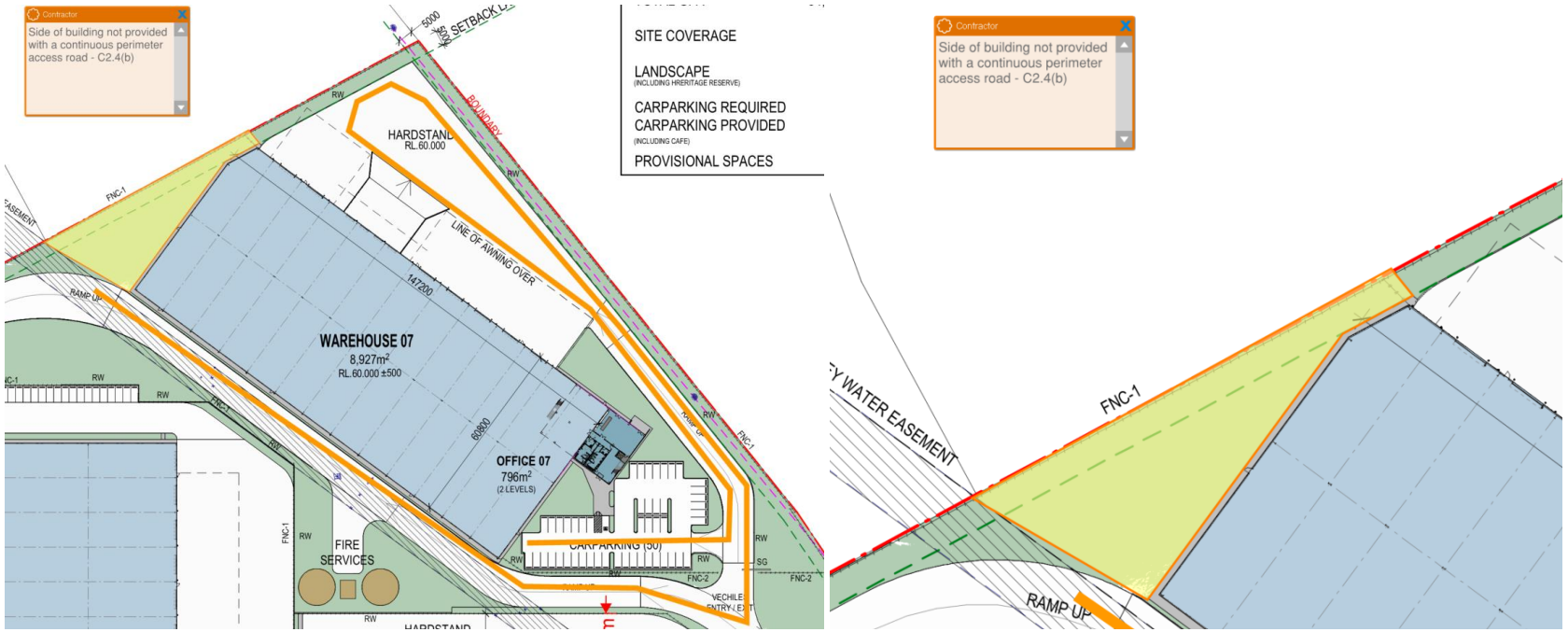


Figure: Warehouse 07 Perimeter Access road.

PART D1 – Provisions for Escape

5.1.5 D1.4 Exit Travel Distances

- Warehouse & Office 01 –

Without the benefit of tenancy storage racking aisle layouts, the base building design plan sees the maximum permissible travel distances to a single exit of 20m, or to a point of choice between two alternative exits allowing up to 40m, being exceeded within the floor space of the warehouse. Initial measurements indicate a worst-case scenario of 62m in lieu of 40m, as illustrated below. A Fire Engineered Performance Solution is required to achieve compliance with Performance Requirements DP4 and EP2.2.

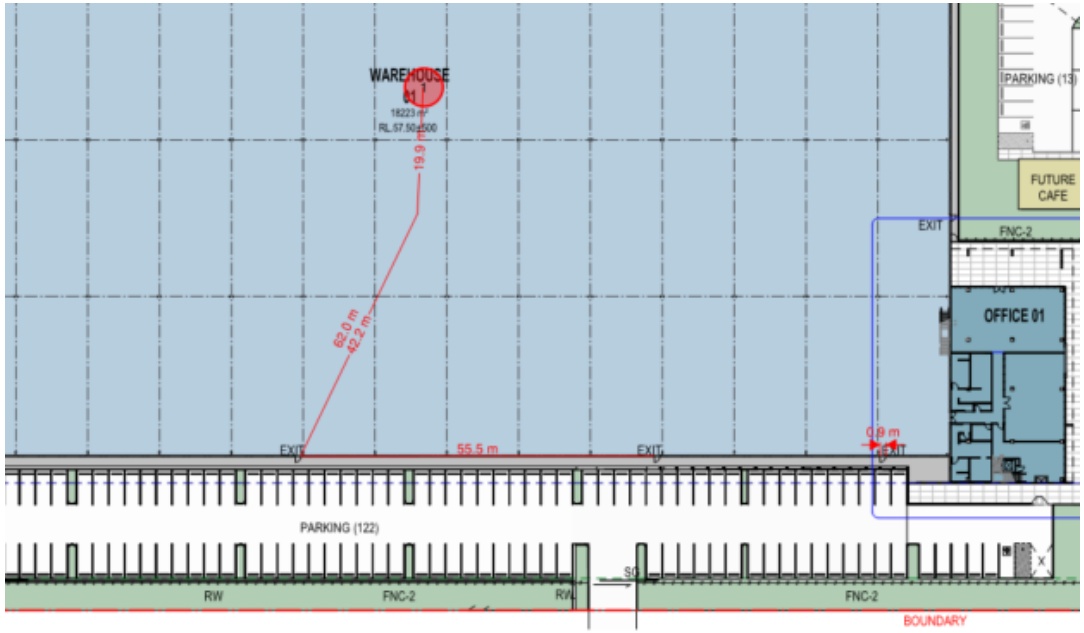


Figure: Extended travel distances.

- Warehouse & Office 02 –

Without the benefit of tenancy storage racking aisle layouts or office fixed furniture layouts, the base building the design plan sees the maximum permissible travel distances to a single exit of 20m, or to a point of choice between two alternative exits allowing up to 40m, being exceeded both in the warehouse and office space of the building. Initial measurements indicate a worst-case scenario of 63m in lieu of 40m being demonstrated in the warehouse, and 42m in lieu of 40m within the ground floor office area, as illustrated below. A Fire Engineered Performance Solution is required to achieve compliance with Performance Requirements DP4 and EP2.2.

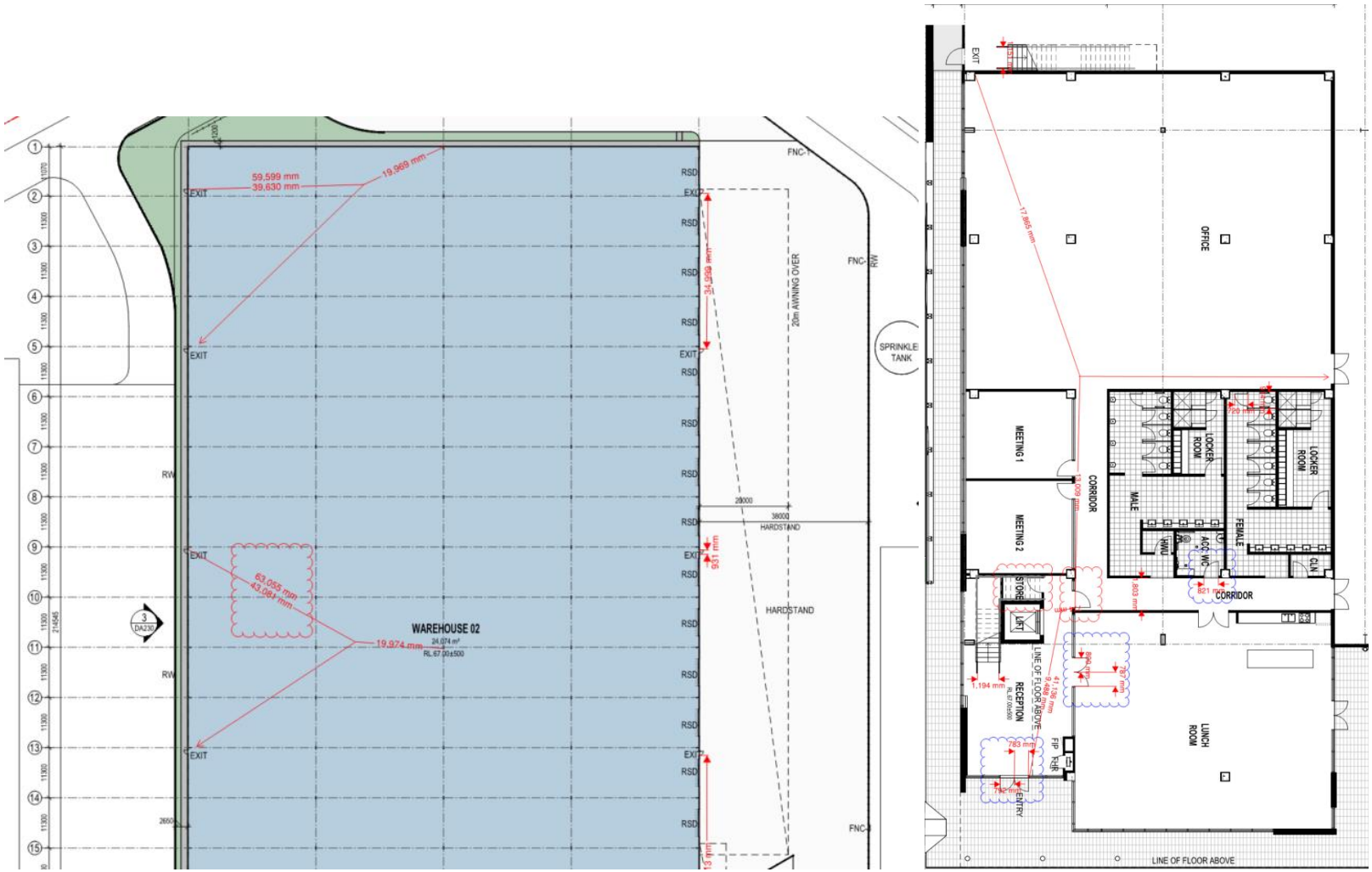


Figure: Extended travel distances.

- Warehouse & Offices 03, 04, and 05 –

Without the benefit of tenancy storage racking aisle layouts or office fixed furniture layouts, the base building The design plan sees the maximum permissible travel distances to a single exit of 20m, or to a point of choice between two alternative exits allowing up to 40m, being exceeded both in the warehouse and office space of the following SOU's:

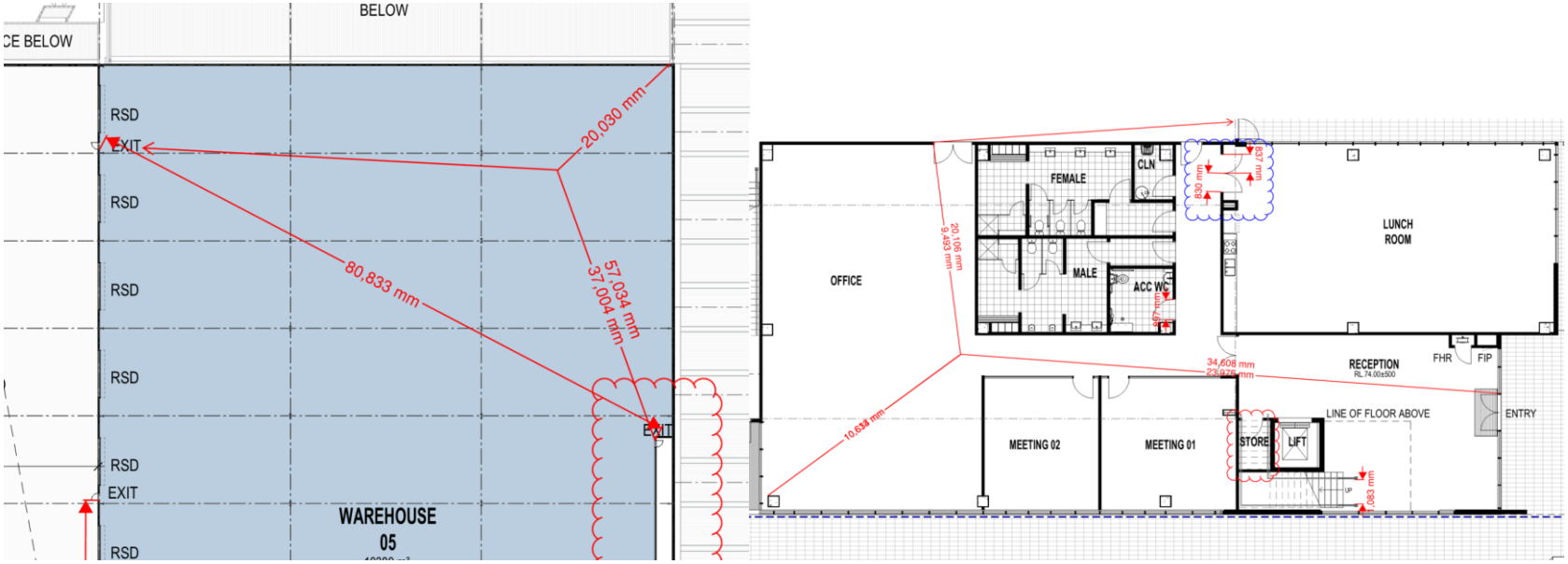
(a) While the design plans see generally more favourable egress provisions within warehouse 03, attributable to the provision of a fire isolated passageway facilitating additional egress routs for the occupants. It is expected that occupants travel distances will be further impacted when fixtures such as high bay racking/storage isles or plant is intended to be installed throughout the warehouse. Further detail is to be provided on fixture layouts.

(b) The design of warehouse 04 has occupants traveling 55m to an alternative exit in lieu of 40m.

(c) The design of warehouse 05 has occupants traveling 57m to an alternative exit in lieu of 40m.

(d) The design of office 03 has occupants reaching an alternative exit within 34m, though, a technical non-compliance is observed where the design plans indicate a distance travelled from the point of choice reaching up to 24m in lieu of 20m.

Fire Engineered Performance Solutions are required to achieve compliance with Performance Requirements DP4 and EP2.2.



Figures: Extended travel distances within warehouse 05 & office 03.

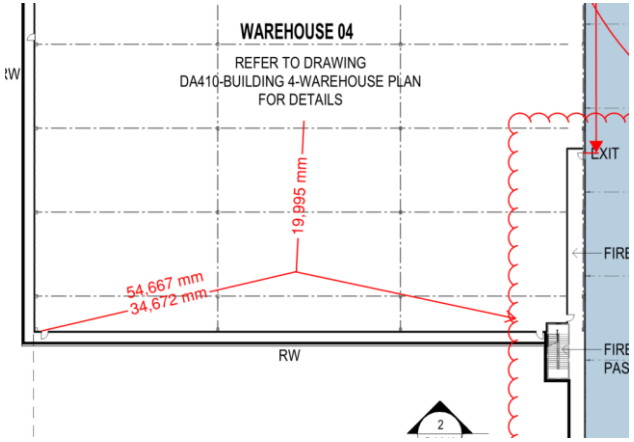


Figure: Extended travel distance warehouse 04.

- Warehouse & Office 06 –

The design plan sees the maximum permissible travel distances to a single exit of 20m, or to a point of choice between two alternative exits allowing up to 40m, being exceeded within the floor space of the warehouse. Initial measurements indicate a worst-case scenario of 53m in lieu of 40m, as illustrated below. A Fire Engineered Performance Solution is required to achieve compliance with Performance Requirements DP4 and EP2.

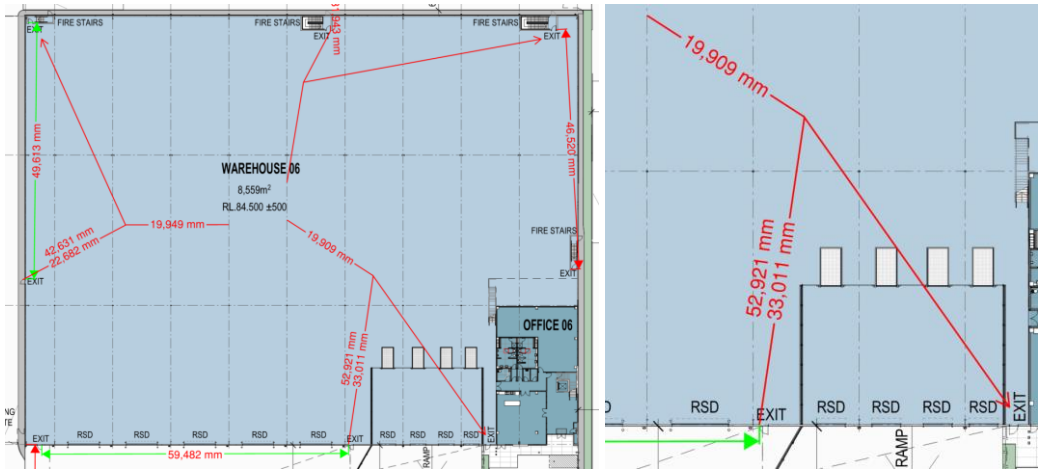


Figure: Extended travel distance warehouse 06.

- Warehouse & Office 07 –

The design plan sees the maximum permissible travel distances to a single exit of 20m, or to a point of choice between two alternative exits allowing up to 40m, being exceeded within the floor space of the warehouse. Initial measurements indicate a worst-case scenario of 49m in lieu of 40m, as illustrated below. A Fire Engineered Performance Solution is required to achieve compliance with Performance Requirements DP4 and EP2.2.

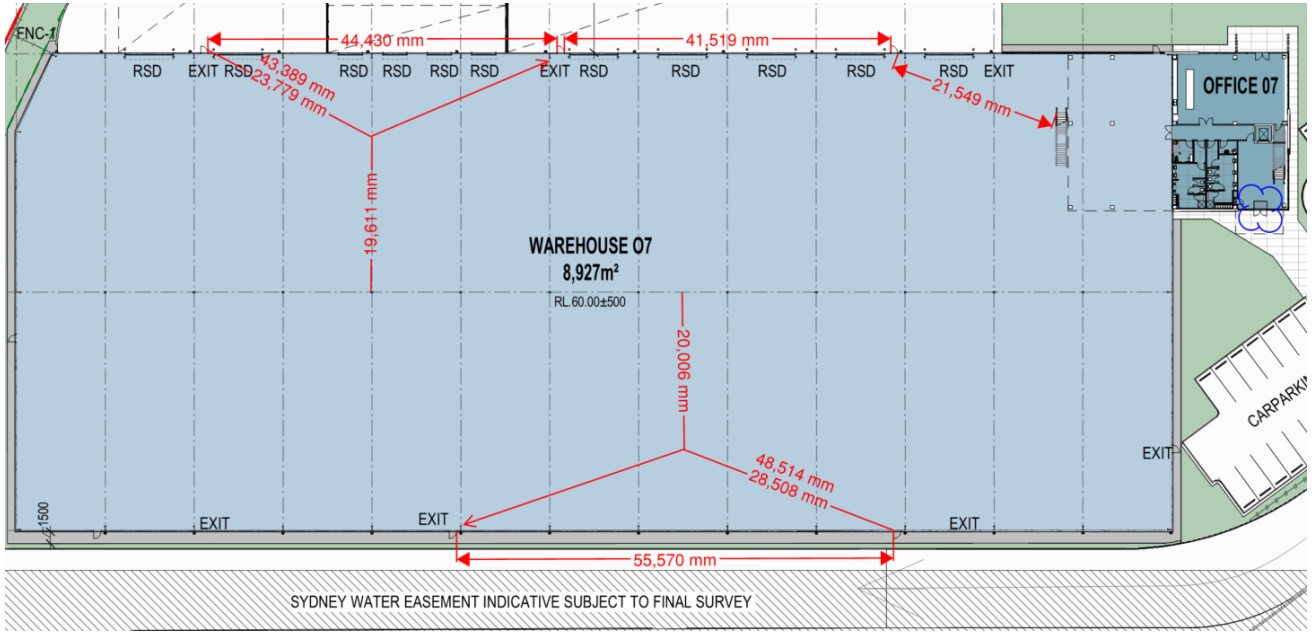


Figure: Extended travel distance warehouse 07.

5.1.6 D1.5 Distance Between Alternative Exits

- Warehouse & Office 01 –

A non-compliance was observed with the positioning of the two most western exits situated in both the north and south external walls of the warehouse. The distance measured between the two alternative exits is 101m. This is in lieu of a compliant distance being 60m for the relevant building classification. A Fire Engineered Performance Solution is required to satisfy Performance Requirement DP4 and EP2.2.

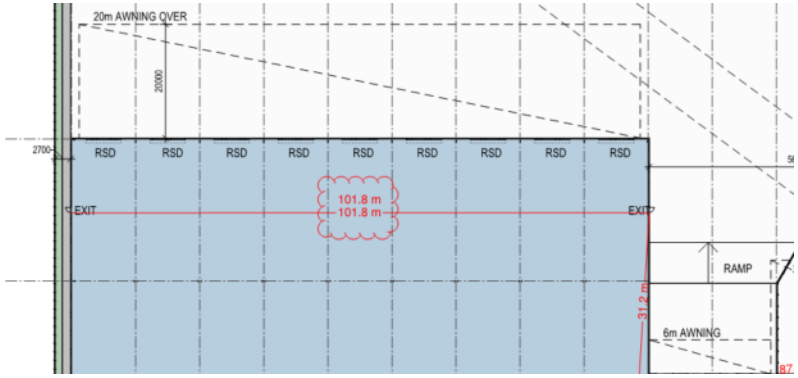


Figure: Distance between alternative exits.

- **Warehouse & Office 03, 04, & 05 –**

The following non-compliances were observed where distances between alterative exits exceeded 60m:

(a) Warehouse 03 62m in lieu of 60m,

(b) Warehouse 04 69m in lieu of 60m; and

(c) Warehouse 05 81m in lieu of 60m.

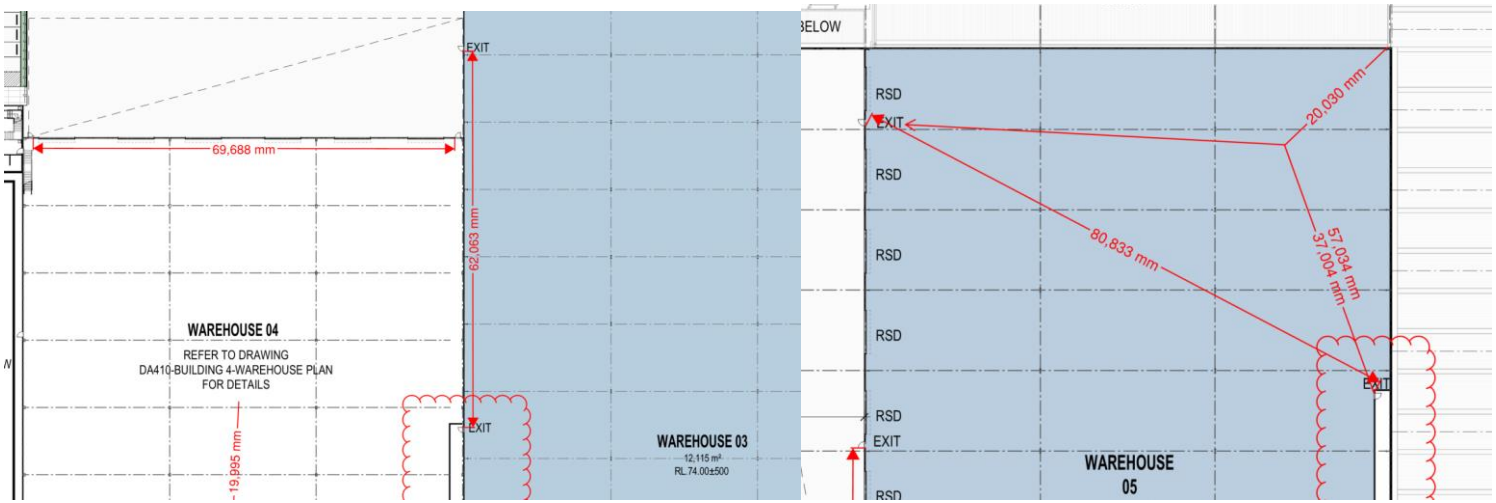


Figure: Distance between alternative exits.

5.1.7 D1.7 Travel via Fire Isolated Exits

- Warehouse & Office 03, 04, and 05 –

It is noted the design plans intend to utilise a fire isolated stair and passageway to connect the ground floor of warehouse 05 to the lower ground floor of warehouses 03 & 04. This will result in egress from all three SOU's discharging into a single common fire isolated passageway. Furthermore, where the fire isolated passageway has more than two door openings directly into it from a storey, the passageway requires either a smoke lobby in accordance with D2.6, or the passageway is to be pressurised in accordance with AS1668.1.

5.1.8 D1.13 Number of Persons Accommodated

- All Buildings –

With respects to each warehouse to be constructed, further detail is to be provided in relation to expected occupant population figures for each warehouse. The population numbers are to consider where ancillary plant or equipment is to be installed in each warehouse to support operational functions of each space.

PART D2 – Construction of Exits

5.1.9 D2.7 Installations in exits & Path of Travel

- All Buildings –

It is noted that no electrical distribution boards (EDBs) have not been indicated on the design plans. Consideration should be made where EDBs are installed in a required exit or in a path of travel to an exit. In the event that an EDB for the building is positioned as such, the installation is to be within a non-combustible covering and incorporate smoke seals, so as to not impede passage through to the exit in the event of an electrical fire.

5.1.10 D2.8 Enclosure of Space Under Stairs & Ramps

- Warehouse & Office 02, 03, 05, & 06 –

Where the design plans indicated storage underneath the required non-fire isolated stairs connecting the first & ground floors of the office space, is required to achieve an FRL not less than 60/60/60 on its enclosing walls and ceiling. In addition, the door fitted to the storage enclosure is to be a self-closing fire rated door with an FRL of -/60/30.

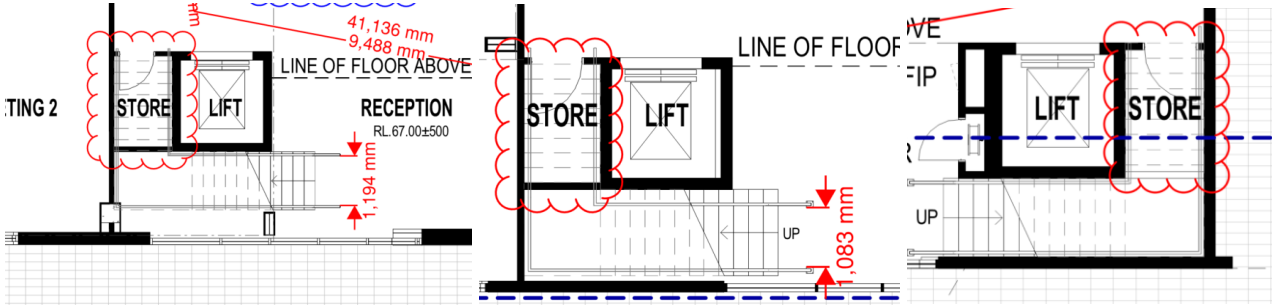


Figure: Storage enclosure under required non-fire isolated stairs.

5.1.11 D2.11 Fire Isolated Passageways

- Warehouse & Office 03, 04, & 05 –

Where the fire isolated passageway connects with a fire stair that is not required to be fire isolated as per Clause D1.3, the fire isolated passageways enclosing construction is to satisfy a fire-resistant level, when tested from the outside, achieving FRL 60/60/60.

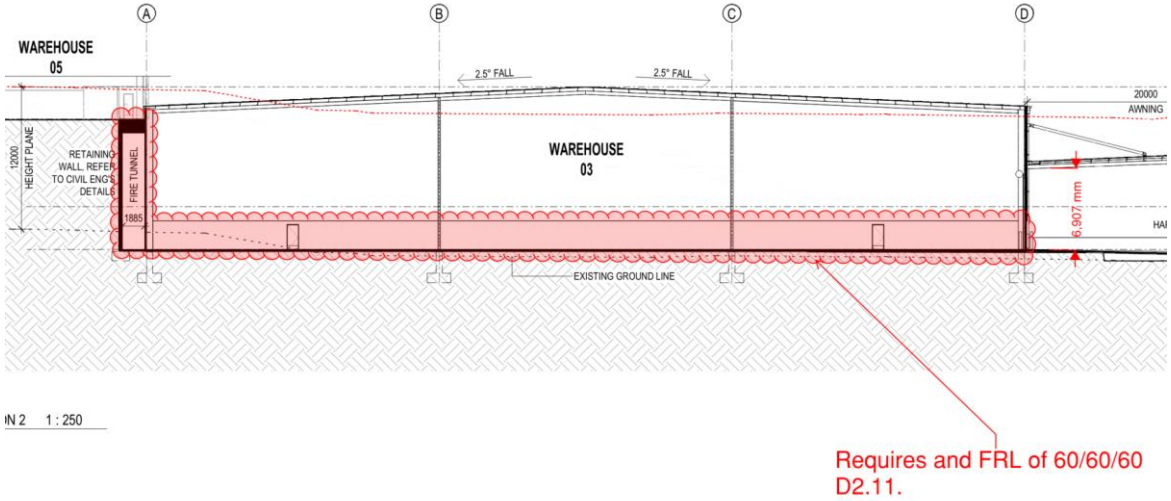


Figure: Fire isolated passageway requiring fire-resisting construction.

5.1.12 D2.16 Barriers to Prevent Falls

- All Buildings –

It is noted that each building will require fall protection throughout each first-floor office space. Fall prevention with each Class 5 components of the building is to demonstrate a balustrade achieving a minimum of 1m height above the finished floor level and contain no openings greater than 125mm. Where fall prevention is required within the Class 7b or 8 components of the building, the balustrade is to achieve a minimum 1m height above the finished floor level and openings are permitted to be no greater than 300mm. Alternatively, where the design wishes to utilise a three railing system for fall prevention within the warehouses, the first rail located directly above each stair nosing and landing, is not permitted to have any opening greater than 150mm. Openings between the second and third rails are not to exceed 460mm.

5.1.13 D2.18 Fixed Platforms, Walkways, Stairways & Ladders

- All Buildings –

Each building design is to consider the requirement for access measures to comply with AS1657 requirements where access is to be provided to access any plant or equipment situated within the building or where situated on the on the roof.

5.1.14 D2.20 Swinging of Doors, & D2.21 Operation of Latch

- All Buildings –

As a general note, the design is to ensure that the construction, operation and function of door hardware satisfy the requirements of the relevant DtS Clauses where a door serves as a required exit, forms part of a required exit, or is in the path of travel to a required exit.

- Warehouse & Office 02 –

The door discharging from the ground floor office space into the front foyer/entry is considered to be forming part of the required exit from the office area, and as such, is required to swing in the direction of egress.

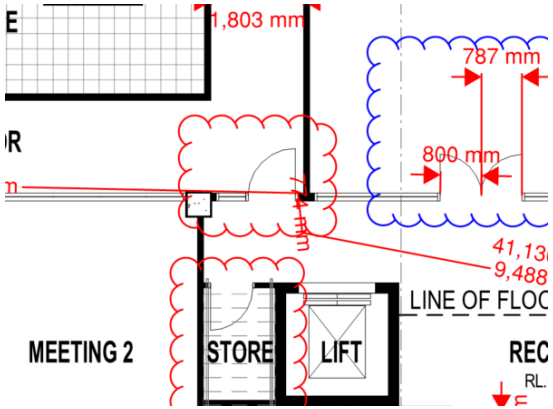


Figure: Door forming part of a require exit.

5.1.15 D2.23 Signs on Doors

- Warehouse & Office 03, 04, & 05 –

Each door that provides direct access to the fire isolated passageway from the floor space of each warehouse, is to incorporate signage either on or adjacent to the door. The signage is to be 25mm tall and read “FIRE DOOR, DO NOT OBSTRUCT, DO NOT KEEP OPEN”.

PART D3 – Access for People with a Disability

5.1.16 D3.1 General Building Access Requirements

- All Buildings –

Under the Disability Discrimination Act 1992 persons with a disability are not to be discriminated against, with respects to access to premises. Under the Disability (Access to Premises) Standard 2010 – “New” building works and “Affected Parts” of existing buildings, are required to provide suitable provisions for access for persons with a disability, as identified within DTS clause D3.1, Table D3.1.

In this instance, the proposed building works to the site are considered as “new works”, and as a result, are required to achieve compliance with respects to Part D3 of the BCA 2019 and its referenced standards in AS1428.1-2009. Table D3.1 of the BCA requires that access be provided to and within all areas normally used by the occupants, throughout every building.

5.1.17 D3.2 Access to Building

- Warehouse & Office 01 –

A non-compliance is observed with the clear width of the door openings at the principal pedestrian entry point of the ground floor office entry. A minimum clear opening of 850mm is to be provided.

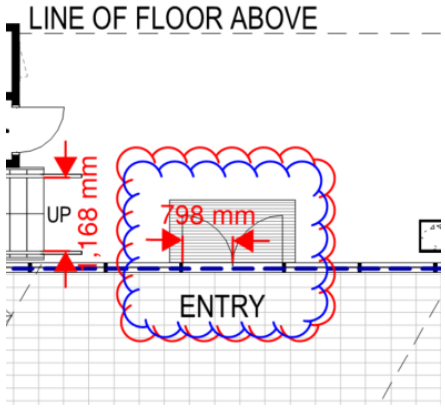


Figure: Access at principal pedestrian entry point to the site.

- Warehouse & Office 02 –

The minimum door clearance width at the principal pedestrian entry point, being from the office door, is to achieve a minimum 850mm clearance at a single door opening.

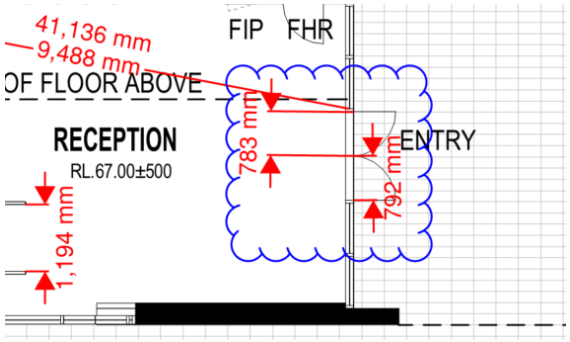


Figure: Principal Pedestrian entry point to the site.

- Warehouse & Office 03 & 04 –

The minimum door clearance width at the principal pedestrian entry point, being from the office door, is to achieve a minimum 850mm clearance at a single door opening.

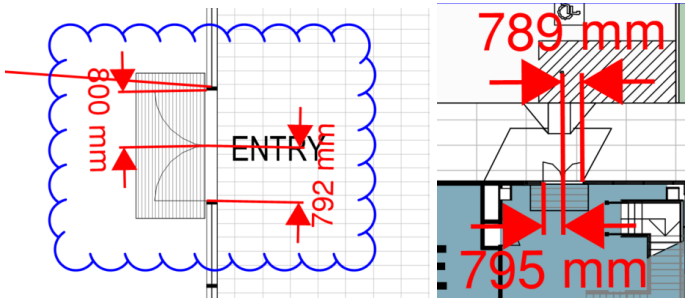


Figure: Principal Pedestrian entry point to the site.

- Warehouse & Office 06 –

The minimum door clearance width at the principal pedestrian entry point, being from the office door, is to achieve a minimum 850mm clearance at a single door opening.

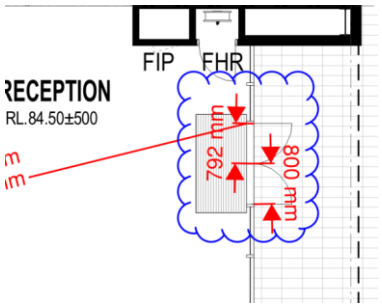


Figure: Principal Pedestrian entry point to the site.

- Warehouse & Office 07 –

The minimum door clearance width at the principal pedestrian entry point, being from the office door, is to achieve a minimum 850mm clearance at a single door opening.

5.1.18 D3.3 Parts of Building to be Accessible

- Warehouse & Office 01 –

The double door leaf providing access to the warehouse floor from the ground floor office space is to be provided with an 850mm clear door width at least one of the doors leafs.

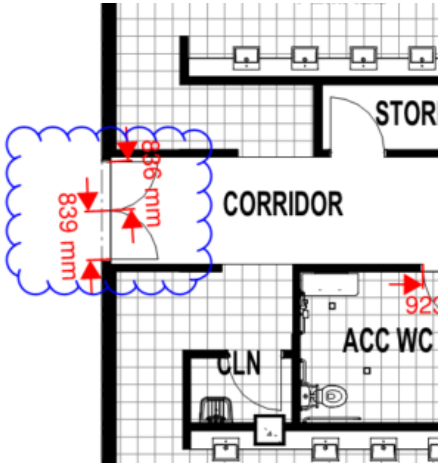


Figure: Door in the path of a continued accessible pathway.

- Warehouse & Office 02 –

The following doors below are in a continuous path of accessible travel, and as such, are to have a minimum 850mm clearance and demonstrate the appropriate clearances at the latch side from the relevant approach of travel to the door. (*See Clause 13 of AS1428.1*)

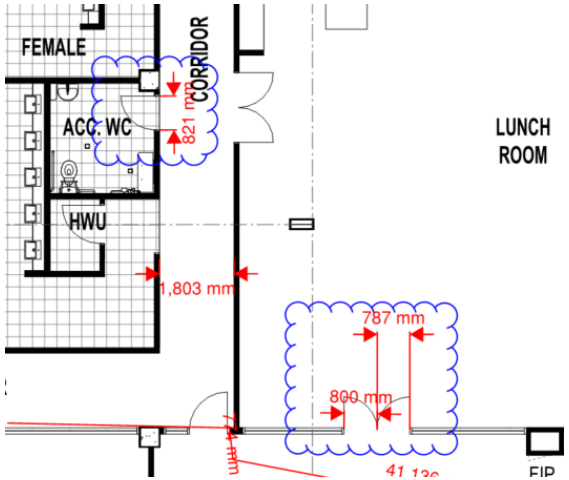


Figure: Examples of non-compliance door openings required to be accessible.

- Warehouse & Office 03 –

The following doors below are in a continuous path of accessible travel, and as such, are to have a minimum 850mm clearance and demonstrate the appropriate clearances at the latch side from the relevant approach of travel to the door. (See Clause 13 of AS1428.1)

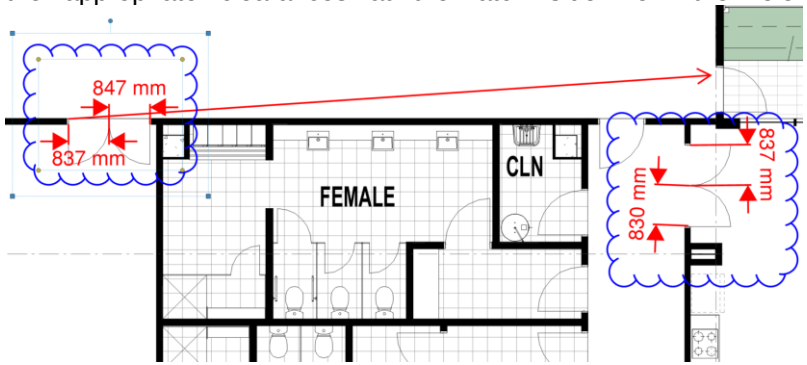


Figure: Doors in a continued path of accessible travel.

- Warehouse & Office 04 –

Disable access is to be provided to the Building 04 first floor office space by way of a passenger lift.

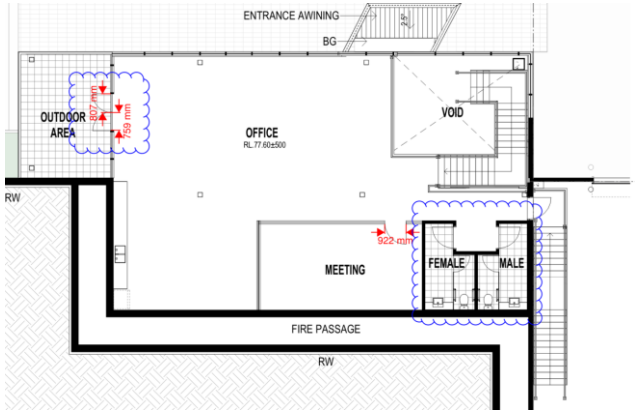


Figure: Disable access required of first floor office Warehouse 04.

- Warehouse & Office 06 –

The following doors below are in a continuous path of accessible travel, and as such, is to have a minimum 850mm clearance and demonstrate the appropriate clearances at the latch side from the relevant approach of travel to the door. (See Clause 13 of AS1428.1)

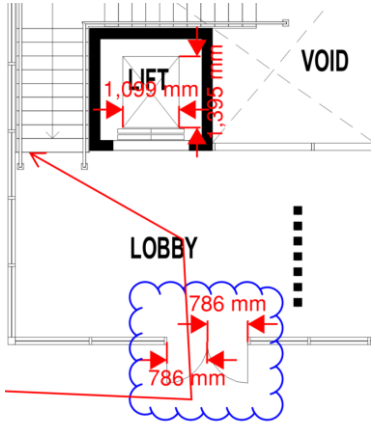


Figure: Doors in a continuous path of accessible travel.

- Warehouse & Office 07 –

The design is to ensure doors that are in a continuous path of accessible travel are to have a minimum 850mm clearance and demonstrate the appropriate clearances at the latch side from the relevant approach of travel to the door. (See Clause 13 of AS1428.1)

5.1.19 D3.5 Accessible Parking

- Warehouse & Office 01 –

Where plans nominated 122 on-site carparking spaces, a total number of two (2) accessible parking spaces is to be provided. The current space provided appears to comply with the requirements of AS2890.6.

- Warehouse & Office 02 –

Where plans nominate 105 on-site carparking spaces, a total number of two (2) accessible parking spaces is to be provided. The current space provided appears to comply with the requirements of AS2890.6.

5.1.20 D3.8 Tactile Indicators

- All Buildings –

It is noted that installation of Tactile Ground Surface Indicators (TGIS) will be required on the approach of both the required exit stairs of the Office & Warehouse. Installation is to satisfy AS1428.4.1 requirements.

5.1.21 D3.12 Glazing on Accessway

- All Buildings –

Glazing demarcations will be required where frameless or fully glazed panels can be mistaken as a doorway or opening.

PART E1 – Services & Equipment

5.1.22 E1.3 Fire Hydrants

- All Buildings –

Given the total floor are of each building exceeds 500m^2, a fire hydrant system complying with AS2419.1 is required throughout the site.

Note: Given the size of the site, the number of buildings and the expected number of hydrant attack and feed heads to be provided, it is expected that the hydrant system servicing the site will need to incorporate a booster assembly functioning through the use of a ring main system, with additional provisions for a 4 hour on-site water supply.

5.1.23 E1.4 Fire Hose Reels

- All Buildings –

Hose reels are required to be installed throughout all Class 7b or 8 Warehouses areas only. Class 5 Office areas are afforded a concession by the BCA for the removal of hose reel provisions. The system is required to satisfy AS2441 requirements.

5.1.24 E1.5 Sprinklers

- All Buildings –

It is noted that Part 2.6 of the report identifies all buildings (except the assumed single storey Café) having a floor area or volume in excess of 18,000m^2 & 108,000m^3, and as such, the report considers it necessary to treat all buildings as LIBs. Given this, all buildings, and their overhanging awnings are to be sprinkler protected throughout. The system is to be installed and operated to Specification E1.5 and AS2118.1. Furthermore, the design is to consider whether the system can achieve system coverage with future installations of any high bay racking storage system and/or production and assembly plant.

Note: Current design plans indicate on-site water supply & pump room. It is envisioned that these services will provide ancillary assistance to both the combined sprinkler and hydrant hydraulic systems serving the entire site.

5.1.25 E1.6 Portable Fire Extinguishers

- All Buildings –

Portable fire extinguishers are required for all Class A fire risks with each Class 5 Office area where hose reel coverage is not required. In addition, extinguisher coverage is required to the Class 7b or 8 Warehouses in accordance with Table E1.6 & AS2444 requirements.

5.1.26 E1.8 Fire Control Centres

- All Buildings –

All building are identified as either having a floor area in excess of 18,000m^2 and is therefore required to have the FIP positioned at the main entry point of the building. The Fire Control Centre is required to comply with Clauses 2 to 5 of Specification E1.8.

PART E2 – Smoke Hazard Management

5.1.27 E2.2 General Requirements

- Warehouse & Office 01 to 05 –

Each building is considered as a LIB under Clause C2.3 (b) or (c) with a floor area and volume in excess of 18,000m^2 & 108,000m^3, and is required to have provisions for an automatic smoke exhaust system in accordance with Specification E2.2b (if the ceiling height of the warehouses exceed 12m). Where ceiling heights may be under 12m, smoke and heat vents are a permitted alternative. Accordingly, Clause 8 of Specification E2.2b requires that smoke detection be installed throughout the building to activate the smoke exhaust in the event of a fire. Similarly, Clause 2(a) of Specification E2.2c requires that smoke detection be installed throughout the building to activate the smoke and heat vents in the event of a fire. Automatic smoke detection is to satisfy Specification E2.2a requirements.

Note: Alternative means of smoke management may be possible by way of a Fire Engineered Performance Solution.

- Warehouse & Office 06 & 07 –

Initial calculations indicate that while each building has a floor area less than 18,000m^2, the volume for each building is in excess of 108,000m^3, and as a result, both buildings are required to have provisions for an automatic smoke exhaust system in accordance with Specification E2.2b. In

addition, Clause 8 of Spec E2.2b requires that smoke detection be installed throughout the building to activate the smoke exhaust in the even of a fire. Automatic smoke detection is to satisfy SpecE2.2a requirements.

Note: Alternative means of smoke management may be possible by way of a Fire Engineered Performance Solution.

- Warehouse 03, 04, and 05 –

The design should note the requirement for stair pressurisation of fire isolated passageways as outlined as item 20 of Table 8 within Part 3 of the report which identifies the building list of Essential Fire Safety Measures required.

Part E3 – Lift Installations

5.1.28 E3.1 Lift Installations

- Warehouse & Office 01, 02, 03, 05, 06, & 07 –

It is noted that the lift located in the offices connecting the ground floor & first floor does not travel over an effective height of 12m. The lift installation is required to comply with Specification E3.1 & have appropriate warning signs in accordance with Clause E3.3.

PART E4 Visibility in an Emergency, Exit Signs & Warning Systems

5.1.29 E4.2 Emergency Lighting Requirements & 4.5 Exit Signs

- All Buildings –

It is noted that all buildings to be constructed on-site will require provisions for Emergency Lighting and Exit Signs in accordance with AS2293.1. Furthermore, where the installation of exit & directional signs is to be located > 3m above the floor surface below, is deemed as a technical non-compliance with the relevant Standard. As a result, it is expected that a Performance Solution would be required to satisfy Performance Requirement EP4.2.

PART F2 Sanitary & Other Facilities

5.1.30 F2.3 Facilities in Class 3 to 9 Buildings

- All Buildings –

Assumed population figures have been based off Clause D1.13 calculations for a Class 5 Office space and a Class 7b or 8 Factory space. When more accurate population figures can be supplied, as assessment of required sanitary facilities can be performed on the updated occupant figures.

- Warehouse & Office 01 –

The following non-compliances were observed with regards to the minimum number of male and female sanitary facilities:

(a) Expected population of Office occupants = 200 (100M/100F)

(b) Expected Population of Warehouse = 360 (180M/180F)

As a result of the above calculations, the following sanitary provisions are required:

- The building requires a total number of 33 pans (14M/19F), 5 urinals, and 28 wash basins (14M/14F).

- Warehouse & Office 02 –

The following non-compliances were observed with regards to the minimum number of male and female sanitary facilities:

(a) Expected population of Office occupants = 146 (73M/73F)

(b) Expected Population of Warehouse = 482 (241M/241F)

As a result of the above calculations, the following sanitary provisions are required:

- The building requires a total number of 37 pans (16M/21F), 8 urinals, and 32 wash basins (16M/16F).

- Warehouse & Offices 03, 04, & 05 –

The following non-compliances were observed with regards to the minimum number of male and female sanitary facilities:

(a) Expected population of Office occupants 03 = 112 (56M/56F)

(b) Expected population of Warehouse occupants 03 = 242 (121M/121F)

(c) Expected population of Office occupants 04 = 38 (19M/19F)

(d) Expected population of Warehouse occupants 04 = 105 (52M/52F)

(e) Expected population of Office occupants 05 = 100 (50M/50F)

(f) Expected population of Warehouse occupants 05 = 208 (104M/104F)

As a result of the above calculations, the following sanitary provisions are required:

- Warehouse 03 requires a total number of 21 pans (9M/12F), 5 urinals, and 18 wash basins (9M/9F).
- Warehouse 04 requires a total number of 8 pans (4M/4F), 3 urinals, and 8 wash basins (4M/4F).
- Warehouse 05 requires a total number of 19 pans (8M/11F), 5 urinals, and 16 wash basins (8M/8F).

- Warehouse & Office 06 –

The following non-compliances were observed with regards to the minimum number of male and female sanitary facilities:

(a) Expected population of Office occupants = 90 (45M/45F)

(b) Expected population of Warehouse occupants = 172 (86M/86F)

As a result of the above calculations, the following sanitary provisions are required:

- The building requires a total number of 16 pans (7M/9F), 4 urinals, and 14 wash basins (7M/7F).

- Warehouse & Office 07 –

The following non-compliances were observed with regards to the minimum number of male and female sanitary facilities:

(a) Expected population of Office occupants = 80 (40M/40F)

(b) Expected population of Warehouse occupants = 179 (90M/89F)

As a result of the above calculations, the following sanitary provisions are required:

- The building requires a total number of 16 pans (7M/9F), 4 urinals, and 14 wash basins (7M/7F).

5.1.31 F2.4 Accessible Sanitary Facilities

- Warehouse & Office 01 to 03, 05, & 06 –

The total number of accessible sanitary facilities appears adequate.

- Warehouse & Office 04 –

Where a sanitary bank is being provided throughout the first-floor office space, requires that an accessible sanitary compartment be provided at that level. Alternatively, a performance solution is required.

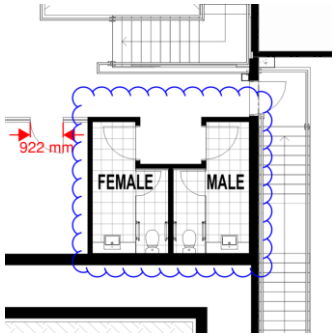


Figure: Accessible sanitary compartment required.

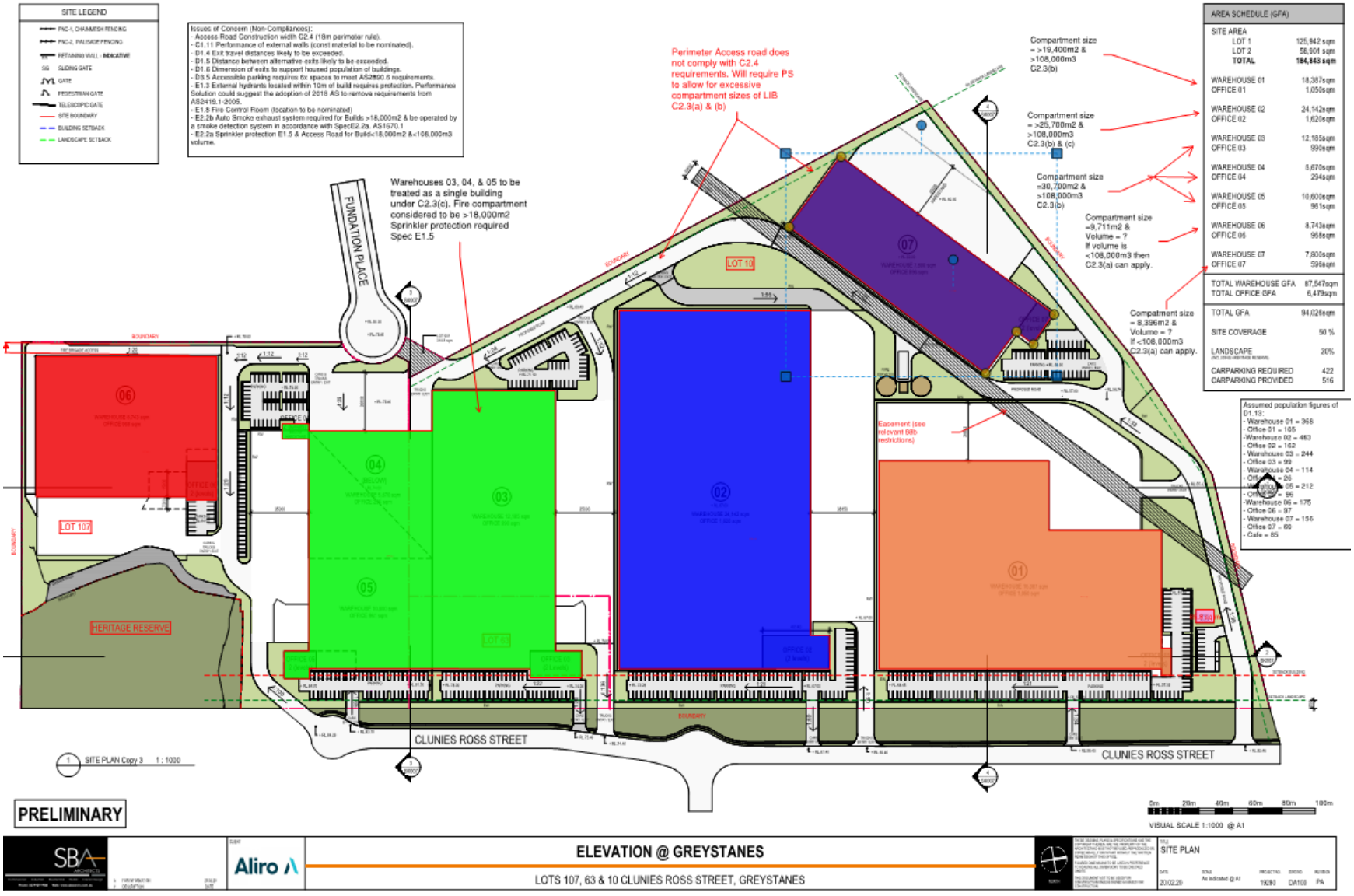


Figure 1: Identification of Large Isolated Buildings

6 STATEMENT OF COMPLIANCE

The architectural design documentation as referred to in Annexure A of the report has been assessed against the applicable provision of the Building Code of Australia, (BCA) as detailed by Annexure B and it is considered that such documentation can comply with that Code.

ANNEXURE A - DESIGN DOCUMENTATION

This report has been based on the following design documentation.

Table 12. Architectural Plans

Architectural Plans Prepared by			
Drawing Number	**Revision**	**Date**	**Title**
DA100	M	22.05.20	SITE PLAN
DA110	A	19.03.20	BUILDING 1 – WAREHOUSE PLAN
DA111	A	01.04.20	BUILDING 1 – GROUND FLOOR OFFICE PLAN
DA112	A	01.04.20	BUILDING 1 – LEVEL 1 OFFICE PLAN
DA120	A	19.03.20	BUILDING 1 – ROOF PLAN
DA130	A	09.04.20	BUILDING 1 – WAREHOUSE ELEVATIONS
DA131	A	09.04.20	BUILDING 1 – WAREHOUSE ELEVATIONS
DA132	A	09.04.20	BUILDING 1 – OFFICE ELEVATIONS
DA140	A	09.04.20	BUILDING 1 – WAREHOUSE SECTIONS
DA210	C	01.04.20	BUILDING 2 – WAREHOUSE PLAN
DA211	C	01.04.20	BUILDING 2 – GF OFFICE PLANS
DA212	C	09.04.20	BUILDING 2 – ROOF PLAN
DA230	C	09.04.20	BUILDING 2 – WAREHOUSE ELEVATIONS
DA231	C	09.04.20	BUILDING 2 – WAREHOUSE ELEVATIONS
DA232	C	09.04.20	BUILDING 2 – OFFICE ELEVATIONS
DA310	A	09.04.20	BUILDING 3 – WAREHOUSE PLAN
DA311	A	01.04.20	BUILDING 3 – GF OFFICE PLANS
DA312	A	01.04.20	BUILDING 3 – LEVEL 01 OFFICE PLAN
DA320	A	01.04.20	BUILDING 3 – ROOF PLAN
DA331	A	01.04.20	BUILDING 3 – WAREHOUSE ELEVATIONS
DA332	A	01.04.20	BUILDING 3 – OFFICE ELEVATIONS
DA340	A	01.04.20	BUILDING 3 – WAREHOUSE SECTIONS
DA410	B	01.04.20	BUILDING 4 – WAREHOUSE PLAN
DA411	B	01.04.20	BUILDING 4 – OFFICE PLANS
DA430	A	09.04.20	BUILDING 4 – WAREHOUSE ELEVATIONS
DA431	A	09.04.20	BUILDING 4 – OFFICE ELEVATIONS
DA510	B	01.04.20	BUILDING 5 – WAREHOUSE PLAN
DA511	A	01.04.20	BUILDING 5 – GF OFFICE PLANS
DA512	A	01.04.20	BUILDING 5 – LEVEL1 OFFICE PLANS
DA520	A	01.04.20	BUILDING 5 – ROOF PLAN
DA530	A	01.04.20	BUILDING 5 – WAREHOUSE ELEVATIONS
DA531	A	09.04.20	BUILDING 5 – WAREHOUSE ELEVATIONS
DA540	A	09.04.20	BUILDING 5 – WAREHOUSE SECTIONS
DA610	B	01.04.20	BUILDING 6 – WAREHOUSE PLAN
DA611	A	01.04.20	BUILDING 6 – GF OFFICE PLANS

Architectural Plans Prepared by			
Drawing Number	**Revision**	**Date**	**Title**
DA612	A	01.04.20	BUILDING 6 – LEVEL ONE OFFICE PLANS
DA620	B	01.04.20	BUILDING 6 – ROOF PLANS
DA640	A	09.04.20	BUILDING 6 – WAREHOUSE SECTIONS
DA710	B	01.04.20	BUILDING 7 – WAREHOUSE PLAN
DA712	A	01.04.20	BUILDING 7 – LEVEL 1 OFFICE PLAN
DA720	A	01.04.20	BUILDING 7 – ROOF PLAN
DA740	A	09.04.20	BUILDING 7 – WAREHOUSE SECTIONS

Annexure B – Detailed BCA 2019 Assessment

Outlined below is a detailed assessment of the warehouse Buildings 01, 02, 06, 07 and United Building 03, 04 & 05 design under the Deemed-to-Satisfy Provisions of the Building Code of Australia (BCA) including the State variations where applicable.

A detailed assessment of the Café building has not been undertaken as insufficient documentation exists at the time of this reporting.

All Deemed-to-Satisfy clauses that are applicable to the subject building have been referred to below, including a comment adjacent to each clause of the proposal's ability to satisfy each respective clause.

The abbreviations outlined below have been used in the following table.

N/A	Not Applicable. The Deemed-to-Satisfy clause is not applicable to the proposed design.
Complies	The relevant provisions of the Deemed-to-Satisfy clause have been satisfied by the proposed design.
CRA – Refer Annexure C	'COMPLIANCE READILY ACHIEVABLE'. It is considered that there is not enough information included in the documentation to accurately determine strict compliance with the individual clause requirements. However, with further design development, compliance can readily be achievable. This item is to be read in conjunction with the BCA Specification included within Annexure C of this report.
FI	Further Information is necessary to determine the compliance potential of the building design.
PS	Performance Solution with respect to this Deemed-to-Satisfy Provision is necessary to satisfy the relevant Performance Requirements.
DNC	Does Not Comply.
Noted	BCA Clause simply provides a statement not requiring specific design comment or confirmation.

DEEMED TO SATISFY CLAUSE ASSESSMENT

Table 1. Deemed to Satisfy Clause Assessment

Clause	Comment	Status

SECTION B: STRUCTURE		Type A Construction	Type C Construction
PART B1 – STRUCTURAL PROVISIONS			
B1.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
B1.1: Resistance to actions	The resistance of the building must be greater than the most critical action effect resulting from different combinations of actions, where the most critical action has been determined in accordance with this Part – Structural Engineer to certify at CC stage.	CRA – Refer Annexure C	CRA – Refer Annexure C
B1.2: Determination of individual actions	The magnitude of actions must be determined in accordance with this Clause – Structural Engineer to certify at CC stage.	CRA – Refer Annexure C	CRA – Refer Annexure C
B1.4: Determination of structural resistance of materials and forms of construction	The structural resistance of materials and forms of construction must be determined in accordance with this Clause – Structural Engineer, Architect and Manufacturers to certify at CC stage.	CRA – Refer Annexure C	CRA – Refer Annexure C
B1.5 Structural software	Structural software used in computer aided design of a building or structure within the geometrical limits of (b) of this Clause must comply with the ABCB Protocol for Structural Software. Structural Engineer to certify.	CRA – Refer Annexure C	CRA – Refer Annexure C
B1.6 Construction of buildings in flood hazard areas	A Class 2 or 3 building, Class 9a health care building, Class 9c aged-care building or Class 4 part of a building, in a flood hazard area (refer to Council maps) must comply the ABCB Standard for Construction of Buildings in Flood Hazard Areas.	N/A	N/A

SECTION C: FIRE RESISTANCE	Type A Construction	Type C Construction
PART C1 – FIRE RESISTANCE AND STABILITY		

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
C1.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
C1.1: Type of construction required	The building is required to be of the following Construction Type. Refer to Specification C1.1 requirements at the end of this Section.		CRA – Refer Annexure C
C1.2: Calculation of rise in storeys	Building 03, 04, and 05 has a rise in storeys of four (4). All other buildings have a rise in storeys of two (2).	CRA – Refer Annexure C	Noted
C1.3: Buildings of multiple classification	Informational	Noted	Noted
C1.4: Mixed Types of construction		Noted	CRA – Refer Annexure C
C1.5: Two Storey Class 2, 3 or 9c buildings		CRA – Refer Annexure C	N/A
C1.6: Class 4 Parts of building		N/A	N/A
C1.7: Open spectator stands and indoor sports stadium		N/A	N/A
C1.8: Lightweight construction	Lightweight construction used in a fire-rated application is to comply with Specification C1.8.	N/A	N/A
C1.9: Non-combustible building elements	(a) In a building required to be of Type A or B construction, the following building elements and their components must be *non-combustible*: (i) External walls and common walls, including all components incorporated in them including the facade covering, framing and insulation. (ii) The flooring and floor framing of lift pits. (iii) Non-loadbearing internal walls where they are required to be fire-resisting.	CRA – Refer Annexure C	N/A

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	(b) A shaft, being a lift, ventilating, pipe, garbage, or similar shaft that is not for the discharge of hot products of combustion, that is non-loadbearing, must be of *non-combustible* construction in— (i) a building required to be of Type A construction; and (ii) a building required to be of Type B construction, subject to C2.10, in— (A) a Class 2, 3 or 9 building; and (B) a Class 5, 6, 7 or 8 building if the shaft connects more than 2 storeys. (c) A loadbearing internal wall and a loadbearing *fire wall*, including those that are part of a loadbearing shaft, must comply with Specification C1.1. (d) The requirements of (a) and (b) do not apply to gaskets, caulking, sealants, termite management systems, Glass including laminated glass, thermal breaks associated with glazing systems and damp-proof courses. (e) The following materials, may be used wherever a *non-combustible* material is required: (i) Plasterboard. (ii) Perforated gypsum lath with a normal paper finish. (iii) Fibrous-plaster sheet. (iv) Fibre-reinforced cement sheeting. (v) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0. (vi) *Sarking-type materials* that do not exceed 1 mm in thickness and have a *Flammability Index* not greater than 5. (vii) Bonded laminated materials where—		

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	(A) each lamina, including any core, is *non-combustible*; and (B) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and (C) the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectively.		
C1.10: Fire hazard properties	Fire hazard properties of internal linings, materials and assemblies must comply with C1.10 of the BCA and Specification C1.10, including floor, wall and ceiling linings, air-handling ductwork, lift cars, insulation, *sarking-type materials* and attachments, or be considered *non-combustible*.	CRA – Refer Annexure C	CRA – Refer Annexure C
C1.11: Performance of external walls in fire	Concrete external walls that could collapse as complete panels (e.g. tilt-up and pre-cast concrete), in a building having a rise in storeys of not more than 2, must comply with Specification C1.11.	N/A	CRA – Refer Annexure C
C1.12: Non-combustible materials	Clause now deleted and relocated to C1.9.	Noted	Noted
C1.13: Fire-protected timber: Concession	*Fire-protected timber* in all building classifications may be used wherever an element is *required* to be *non-combustible*, provided— (a) the building is— (i) a separate building; or (ii) a part of a building— (A) which only occupies part of a *storey*, and is separated from the remaining part by a *fire wall*; or (B) which is located above or below a part not containing *fire-protected timber* and the floor between the adjoining parts is provided with an FRL not less than that prescribed for a *fire wall* for the lower *storey*; and (b) the building has an *effective height* of not more than 25 m; and	N/A	N/A

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	(c) the building has a sprinkler system (other than a FPAA101D or FPAA101H system) throughout complying with Specification E1.5; and (d) any insulation installed in the cavity of the timber building element *required* to have an FRL is *non-combustible*; and (e) cavity barriers are provided in accordance with Specification C1.13.		
C1.14: Ancillary elements	An ancillary element must not be fixed, installed or attached to the internal parts or external face of an external wall that is required to be *non-combustible* unless it is one of the following: (a) An ancillary element that is *non-combustible*. (b) A gutter, downpipe or other plumbing fixture or fitting. (c) A flashing. (d) A grate or grille not more than 2 m² in area associated with a building service. (e) An electrical switch, socket-outlet, cover plate or the like. (f) A light fitting. (g) A required sign. (h) A sign other than one provided under (a) or (g) that— (i) achieves a *group number* of 1 or 2; and (ii) does not extend beyond one storey; and (iii) does not extend beyond one *fire compartment*; and (iv) is separated vertically from other signs permitted under (h) by at least 2 storeys. (i) An awning, sunshade, canopy, blind or shading hood other than one provided under (a) that— (i) meets the relevant requirements of Table 4 of Specification C1.10 as for an internal element; and	CRA – Refer Annexure C	N/A

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	(ii) serves a storey— (A) at ground level; or (B) immediately above a storey at ground level; and (iii) does not serve an *exit*, where it would render the *exit* unusable in a fire. (j) A part of a security, intercom or announcement system. (k) Wiring. (l) A paint, lacquer or a similar finish. (m) A gasket, caulking, sealant or adhesive directly associated with (a) to (k).		
PART C2 – COMPARTMENT AND SEPARATION			
C2.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
C2.1: Application of Part	Informational - C2.2, C2.3 and C2.4 do not apply to a carpark provided with a sprinkler system complying with Specification E1.5 (other than an FPAA101D or FPAA101H system), an open-deck carpark or an open spectator stand.	Noted	Noted
C2.2: General floor area and volume limitations	The size of *fire compartments* in the building must not exceed that specified in Table C2.2.	N/A	N/A
C2.3: Large isolated buildings		CRA – Refer Annexure C	CRA – Refer Annexure C
C2.4: Requirements for open spaces and vehicular access		DNC	DNC
C2.5: Class 9a and 9c Buildings		N/A	N/A
C2.6: Vertical separation of openings in external walls	Type A Construction	Buildings Sprinkler Protected in	N/A

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	Note: The following applies to buildings that are not provided with an AS2118.1 or AS2118.4 sprinkler system installed throughout. Where the vertical projection of an opening in an external wall falls no further than 450 mm outside an opening in the storey next below, the openings must be provided with vertical separation complying with Clause C2.6, that is: • They must be protected with a 900mm high (FRL 60/60/60) spandrel extending at least 600mm above the separating slab, or • They must be provided with a 1.1m horizontal projection (FRL 60/60/60) also extending at least 450mm either side of the openings. The above does not apply to openings within the same stairway. For the purposes of this clause, opening means that part of the external wall of a building that does not have an FRL of 60/60/60 or greater.	accordance with SpecE1.5 – Complies	
C2.7: Separation by fire walls	• **Construction -** A *fire wall* must be constructed in accordance with the following: – Any openings in a *fire wall* must not reduce the FRL required by Specification C1.1 for the *fire wall*, except where permitted by the Deemed-to-Satisfy Provisions of Part C3. – Building elements, other than roof battens with dimensions of 75 mm x 50 mm or less or *sarking-type material*, must not pass through or cross the *fire wall* unless the required fire resisting performance of the *fire wall* is maintained. • **Separation of buildings –** A part of a building separated from the remainder of the building by a *fire wall* may be treated as a separate building for the purposes of the Deemed-to-Satisfy provisions of Sections C, D and E if it is constructed in accordance with (a) and the following:	N/A	N/A

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	(i) the *fire wall* extends through all storeys and spaces in the nature of storeys that are common to that part and any adjoining part of the building. (ii) The *fire wall* is carried through to the underside of the roof covering. (iii) Where the roof of one of the adjoining parts is lower than the roof of the other part, the *fire wall* extends to the underside of— (A) the covering of the higher roof, or not less than 6 m above the covering of the lower roof; or (B) the lower roof if it has an FRL not less than that of the *fire wall* and no openings closer than 3 m to any wall above the lower roof; or (C) the lower roof if its covering is *non-combustible* and the lower part has a sprinkler system complying with Specification E1.5. • **Separation of *fire compartments* –** A part of a building separated from the remainder of the building by a *fire wall* may be treated as a separate *fire compartment* if it is constructed in accordance with this clause and the *fire wall* extends to the underside of – – a floor having an FRL required for a *fire wall*; or – the roof covering.		
C2.8: Separation of classifications in the same storey	Where a storey has different classifications located alongside one another: • each building element in that storey must have the higher FRL prescribed in Specification C1.1 for that element for the classifications concerned; or • the parts must be separated in that storey by a *fire wall* having the higher FRL prescribed in Table 3; or	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	• where one part is a carpark complying with Table 3.9, 4.2 or 5.2 of Specification C1.1, the parts may be separated by a *fire wall* complying with the appropriate Table.		
C2.9: Separation of classifications in different storeys	Type A Floors separating storeys of different classifications must have an FRL of not less than that prescribed in Specification C1.1 for the classification of the lower storey. Type B or C The floor separating the Class 2, 3 or 4 part from the storey below must: (i) be a floor/ceiling system incorporating a ceiling which has a resistance to the incipient spread of fire to the space above itself of not less than 60 minutes; or (ii) have an FRL of at least 30/30/30; or (iii) have a fire-protective covering on the underside of the floor, including beams incorporated in it, if the floor is combustible or of metal. Note: Determination of Floor FRL's must also consider compliance with C2.7 whereby the floor must have the same FRL as the *fire wall* of the *fire compartment* below and D2.12 whereby roof as open space must have an FRL not less than 120/120/120.	CRA – Refer Annexure C	CRA – Refer Annexure C
C2.10: Separation of lift shafts	Applies to Lift connecting more than 2 storeys, or more than 3 if building is sprinklered, (other than lifts wholly in atrium). Type A Passenger lifts must be separated from the remainder of the building by enclosure in a fire rated shaft achieving an FRL prescribed by Table 3 of Specification C1.1. Emergency lifts must be in fire-rated shafts not less than FRL 120/120/120.	N/A	N/A

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	Type B Lift shaft walls, if load-bearing must have the relevant FRL prescribed by Table 4 of Specification C1.1 and if non-loadbearing, be of *non-combustible* construction. Emergency lifts An emergency lift must be contained within a fire-resisting shaft having an FRL of not less than 120/120/120.		
C2.11: Stairways and lifts in one shaft	A stairway and lift must not be in the same shaft if either the stairway or the lift is required to be in a fire-resisting shaft.	N/A	N/A
C2.12: Separation of equipment	Any of the following equipment located in the building must be separated from the remainder of the building: • lift motors and lift control panels; or • emergency generators used to sustain emergency equipment operating in the emergency mode; or • central smoke control plant; or • boilers; or • a battery system installed in the building that has a total voltage of 12 volts or more and a storage capacity of 200 kWh or more. Equipment need not be separated in if the equipment comprises: • smoke control exhaust fans located in the air stream which are constructed for high temperature operation in accordance with Specification E2.2b; or • stair pressurizing equipment installed in compliance with the relevant provisions of AS 1668.1; or • a lift installation without a machine room; or	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	• equipment otherwise adequately separated from the remainder of the building. Separation must be by construction having an FRL as required by Specification C1.1, but not less than FRL 120/120/120 with openings protected by self-closing fire doors having an FRL of not less than –/120/30. Separation of on-site fire pumps must comply with the requirements of AS 2419.1-2005.		
C2.13: Electricity supply system	• Any electrical substation located within the building must be separated from the remainder of the building by construction having an FRL of not less than 120/120/120, and doorways protected with self-closing fire doors having an FRL of not less than –/120/30. • A main switchboard which sustains emergency equipment operating in the emergency mode must be fire separated from any other part of the building by construction having an FRL of not less than 120/120/120 and have the doorway fitted with self-closing fire door having an FRL of not less than –/120/30. • Any electrical conductors located within the building that supply a substation or main switchboard for emergency equipment must comply with BCA clause C2.13. • Emergency equipment switchgear must be separated from non-emergency equipment switchgear by metal partitions designed to minimize the spread of a fault from the non-emergency equipment switchgear. Emergency equipment includes but is not limited to the following: – fire hydrant booster pumps; – sprinkler pumps; – hose reel pumps;	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	– air-handling systems designed to exhaust and control the spread of smoke; – emergency lifts; – control and indicating equipment; and – sound systems and intercom systems for emergency purposes.		
C2.14: Public corridors in Class 2 and 3 Buildings	Public corridors in Class 2 parts that exceed 40 m in length must be divided at intervals of not more than 40m with smoke-proof walls complying with Clause 2 of Specification C2.5.	N/A	N/A
PART C3 – PROTECTION OF OPENINGS			
C3.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
C3.1: Application of Part	(a) The Deemed-to-Satisfy Provisions of this Part do not apply to– (i) Control joints, weep holes and the like in external walls of masonry construction and joints between panels in external walls of pre-cast concrete panel construction if, in all cases they are not larger than necessary for the purpose; and (ii) *Non-combustible* ventilators for subfloor or cavity ventilation, if each does not exceed 45 000 mm^2 in face area and is spaced not less than 2 m from any other ventilator in the same wall; and (iii) Openings in the vertical plane formed between building elements at the construction edge or perimeter of a balcony or verandah, colonnade, terrace, or the like; and (iv) In a carpark–	Noted	Noted

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	(A) Service penetrations through; and (B) Openings formed by a vehicle ramp in, A floor other than a floor that separates a part not used as a carpark, providing the connected floors comply as a single *fire compartment* for the purposes of all other requirements of the Deemed-to-Satisfy Provisions of Sections C, D and E. (v) For the purposes of the Deemed-to-Satisfy Provisions of this Part, openings in building elements required to be fire-resisting include doorways, windows (including any associated fanlight), infill panels and fixed or openable glazed areas that do not have the required FRL. (b) For the purposes of the Deemed-to-Satisfy Provisions of this Part, openings, other than those covered under (a)(iii), between building elements such as columns, beams and the like, in the plane formed at the construction edge or perimeter of the building, are deemed to be openings in an external wall.		
C3.2: Protection of openings in external walls	Openings in an external wall that is required to have an FRL must be protected in accordance with C3.4 if the distance between the opening and the *fire-source feature* is: • less than 3 m from a side or rear boundary; or • less than 6 m from the far boundary of a road, river, lake or the like adjoining the allotment, if not located in a storey at or near ground level; or	N/A	N/A

<table>
<tr><th colspan="2">SECTION C: FIRE RESISTANCE</th><th>Type A Construction</th><th>Type C Construction</th></tr>
<tr><td></td><td>• less than 6 m from another building on the allotment that is not Class 10; and

if required to be protected under (a), not occupy more than 1/3 of the area of the external wall of the storey in which it is located unless they are in a Class 9b building used as an open spectator stand.

Where wall-wetting sprinklers are used, they must be located externally.</td><td></td><td></td></tr>
<tr><td>C3.3: Separation of external walls and associated openings in different fire compartments</td><td>The distance between parts of external walls and any openings within them in different fire compartments separated by a fire wall must not be less than that set out in Table C3.3, unless—

(a) those parts of each wall have an FRL not less than 60/60/60; and

(b) any openings protected in accordance with C3.4.

Table C3.3 DISTANCE BETWEEN EXTERNAL WALLS AND ASSOCIATED OPENINGS IN DIFFERENT FIRE COMPARTMENTS

<table><tr><th>Angle between walls</th><th>Min. Distance</th></tr><tr><td>0° (walls opposite)</td><td>6 m</td></tr><tr><td>more than 0° to 45°</td><td>5 m</td></tr><tr><td>more than 45° to 90°</td><td>4 m</td></tr><tr><td>more than 90° to 135°</td><td>3 m</td></tr><tr><td>more than 135° to less than 180°</td><td>2 m</td></tr><tr><td>180° or more</td><td>Nil</td></tr></table></td><td>N/A</td><td>N/A</td></tr>
</table>

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
C3.4: Acceptable methods of protection	Where protection is required, openings must be protected as follows: <u>Doorways:</u> (i) Internal or external wall-wetting sprinklers as appropriate used with doors that are self-closing; or (ii) –/60/30 fire doors that are self-closing. <u>Windows:</u> (i) Internal or external wall-wetting sprinklers as appropriate used with windows that are automatic closing or permanently fixed in the closed position; or (ii) –60/– fire windows that are automatically closing or permanently fixed in the closed position; or (iii) –/60/– automatic closing fire shutters. <u>Other openings:</u> (i) Excluding voids – internal or external wall-wetting sprinklers; or (ii) Construction having an FRL not less than –/60/– Fire doors, fire windows and fire shutters must comply with BCA Specification C3.4.	CRA – Refer Annexure C	CRA – Refer Annexure C
C3.5: Doorways in fire walls	Doorways in the *fire walls* must be protected by a self-closing fire door that achieves an FRL of not less than that required by Specification C1.1 for the *fire wall* except that each door must have an insulation level of at least 30.	N/A	N/A
C3.6: Sliding fire doors		N/A	N/A
C3.7: Protection of doorways in horizontal exits	A doorway that is part of a *horizontal exit* must be protected by a single fire door that has an FRL of not less than that required by Specification	N/A	N/A

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	C1.1 for the *fire wall* except that the door must have an insulation level of at least 30, or by one of the other options in Clause C3.7.		
C3.8: Openings in fire-isolated exits	Doorways that open to fire-isolated stairways, fire-isolated passageways or fire-isolated ramps, and are not doorways opening to a road or open space, must be protected by –/60/30 fire doors that are self-closing, or automatic-closing in accordance with (ii) and (iii) of Clause C3.8.	CRA – Refer Annexure C	N/A
C3.9: Service penetrations in fire-isolated exits	The fire isolated *exits* are not to be penetrated by any services **other** than: • electrical wiring associated with: – a lighting, detection, or pressurization system serving the *exit*; or – a security, surveillance or management system serving the *exit*; or – an intercommunication system or an audible or visual alarm system in accordance with D2.22; or – the monitoring of hydrant or sprinkler isolating valves. • ducting associated with a pressurisation system if it; (i) is constructed of material having an FRL of not less than –/120/60 where it passes through any other part of the building; and (ii) does not open into any other part of the building; or • water supply pipes for fire services.	CRA – Refer Annexure C	N/A
C3.10: Openings in fire-isolated lift shafts	• Lift landing doors are required to be fire doors with an FRL of -/60/- that comply with AS 1735.11-1986, and be set to remain closed except when discharging or receiving, passengers, goods or vehicles.	N/A	N/A

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	• Panels in the wall of the lift shaft must be backed by construction having an FRL of not less than –/60/60 if it exceeds 35 000 mm^2 in area.		
C3.11: Bounding Construction: Class 2, 3 and 4 Buildings	• The doorways between sole occupancy units and the public lobbies and any common / service rooms and the public lobbies (class 2 parts) must be protected by self–closing -/60/30 fire doors. tight fitting, solid core door not less than 35 mm thick (Type B & C) • In a Class 2 building where a path of travel to an exit does not provide a person seeking egress with a choice of travel in different directions to alternative exits and is along an open balcony, landing or the like and passes an external wall of– (i) another *sole-occupancy unit*; or (ii) a room not within a *sole-occupancy unit*, then that external wall must– (i) be constructed of concrete or masonry, or be lined internally with a fire-protective covering; and (ii) have any doorway fitted with a self-closing, tight-fitting solid core door not less than 35 mm thick; and (iii) have any windows or other openings– A. protected internally in accordance with C3.4; or B. located at least 1.5 m above the floor of the balcony, landing or the like.	N/A	N/A
C3.12: Openings in floors and ceilings for services	Where services pass through a floor which is required to achieve an FRL or a ceiling required to have a resistance to the incipient spread of fire, the service must be enclosed within a fire resisting shaft or fire protected in accordance with Clause C3.15.	CRA – Refer Annexure C	N/A
C3.13: Openings in shafts	Openings in shafts must be protected by:	N/A	N/A

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	a) if it is in a sanitary compartment – a door or panel which together with its frame, is *non-combustible* or has an FRL of not less than –/30/30; or b) a self-closing –/60/30 fire door or hopper; or c) an access panel having an FRL of not less than –/60/30; or d) if the shaft is a garbage shaft – a door or hopper of *non-combustible* construction.		
C3.15: Openings for service installations	Where services pass through an element which is required to achieve an FRL (other than an external wall or roof), the service must be fire protected in accordance with BCA Clause C3.15. Note: contractors should check with PCA to confirm compliance with their proposed fire stopping method.	CRA – Refer Annexure C	N/A
C3.16: Construction joints	Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation must be protected in a manner identical with a prototype tested in accordance with AS 1530.4 to achieve the required FRL.	CRA – Refer Annexure C	N/A
C3.17: Columns protected with lightweight construction to achieve an FRL	A column protected by lightweight construction to achieve an FRL which passes through a building element that is required to have an FRL or a resistance to the incipient spread of fire, must be installed using a method and materials identical with a prototype assembly of the construction which has achieved the required FRL or resistance to the incipient spread of fire.	CRA – Refer Annexure C	CRA – Refer Annexure C
SPECIFICATION C.1.1 – FIRE-RESISTING CONSTRUCTION			
2.0: General Requirements	Informational	Noted	Noted
2.1: Exposure to fire-source features	A building element is exposed to a *fire-source feature* if any of the horizontal straight lines between that part and the *fire-source feature*, or vertical projection of the feature, is not obstructed by another part of the building that–	Noted	Noted

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	(i) has an FRL of not less than 30/–/–; and (ii) is neither transparent nor translucent.		
2.2: Fire protection for a support of another part	Where a part of a building required to have an FRL depends upon direct vertical or lateral support from another part to maintain its FRL, that supporting part must have an FRL not less than that required by other provisions of this Specification; and if located within the same *fire compartment* as the part it supports have an FRL in respect of structural adequacy the greater of that required for the supporting part itself and for the part it supports.	CRA – Refer Annexure C	CRA – Refer Annexure C
2.3: Lintels	A lintel must have the FRL required for the part of the building in which it is situated unless it does not contribute to the support of a fire door, fire window or fire shutter and meets the requirements of Spec C1.1 clause 2.3 (a) & (b).	CRA – Refer Annexure C	CRA – Refer Annexure C
2.4: Attachments not to impair fire-resistance	The method of attaching or installing a finish, lining, ancillary element or service installation to a building element must not reduce the fire-resistance of that element to below that required.	CRA – Refer Annexure C	CRA – Refer Annexure C
2.5: General concessions	Structures on roofs — A *non-combustible* structure situated on a roof need not comply with the other provisions of this Specification if it only contains— (i) lift motor equipment; or (ii) one or more of the following: (A) Hot water or other water tanks. (B) Ventilating ductwork, ventilating fans and their motors. (C) Air-conditioning chillers. (D) Window cleaning equipment. (E) Other service units that are *non-combustible* and do not contain flammable or combustible liquids or gases.	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
2.6: Mezzanine floors: Concession		N/A	N/A
2.7: Enclosure of shafts	Fire-isolated shafts are required to be enclosed at the top and bottom of the shaft with fire rated construction having an FRL required for the walls of a non-load-bearing shaft in the same building, as per specification C1.1. This fire rating is required in two directions. The above does not apply to shafts extending beyond the roof covering, other than fire isolated stair and lift shafts and the bottom of *non-combustible* shafts laid directly on the ground.	N/A	N/A
2.8: Carparks in Class 2 and 3 Buildings		N/A	N/A
2.9: Residential Aged Care building: Concession		N/A	N/A
3.0: Type A fire-resisting construction	Noted	Noted	-
3.1: Fire-resistance of building elements	• The FRL's of all elements are to be in accordance with the FRL's detailed in the Table contained within Part 4.0 of this report. • External walls, common walls and the flooring and floor framing of lift pits must be *non-combustible*. (Note: insulation and sarking used must be *non-combustible*) • Internal walls required to be fire rated must extend to– (i) to the underside of the floor next above; or (ii) the underside of a roof complying with Table 3; or (iii) if under Clause 3.5 the roof is not required to comply with Table 3, the underside of the *non-combustible* roof covering and, except for roof battens with dimensions of 75 mm x 50 mm or less or *sarking-type material*, must not be crossed by timber or other combustible building elements; or	CRA – Refer Annexure C	N/A

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	(iv) a ceiling that is immediately below the roof and has a resistance to the incipient spread of fire to the roof space above itself of not less than 60 minutes. • Load bearing internal walls (including those part of a loadbearing shaft) and *fire walls* must be of concrete or masonry. • Non-loadbearing internal walls required to be fire rated, as well as non-load bearing lift, ventilating, pipe, garbage or similar shaft wall must be of *non-combustible* construction. **Note:** This includes *non-combustible* insulation. When an insulation material is not certified as *non-combustible*, this material will need to be the subject of a Fire Engineering Assessment at the CC stage. • The FRLs specified in Table 3 for an external column apply also to those parts of an internal column that face and are within 1.5m of a window and are exposed through that window to a *fire-source feature*. • It should also be noted that if Dincel material is to be used as an element where the BCA requires such element to be *non-combustible*, this material will need to be the subject of a Fire Engineering Assessment at the CC stage		
3.2: Concessions for floors	A floor need not comply with Table 3 if— (a) it is laid directly on the ground; or (b) in a Class 2, 3, 5 or 9 building, the space below is not a *storey*, does not accommodate motor vehicles, is not a storage or work area, and is not used for any other ancillary purpose; or (c) it is a timber *stage* floor in a Class 9b building laid over a floor having the *required* FRL and the space below the *stage* is not used as a dressing room, store room, or the like; or (d) it is within a *sole-occupancy unit* in a Class 2 or 3 building or Class 4 part of a building; or	CRA – Refer Annexure C	N/A

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	(e) it is an open-access floor (for the accommodation of electrical and electronic services and the like) above a floor with the *required* FRL.		
3.3: Floor Loading of Class 5 and 9b buildings: Concession	If a floor in a Class 5 or 9b building is designed for a live load not exceeding 3 kPa— (a) the floor next above (including floor beams) may have an FRL of 90/90/90; or (b) the roof, if that is next above (including roof beams) may have an FRL of 90/60/30.	N/A	N/A
3.4: Roof superimposed on concrete slab: Concession			N/A
3.5: Roof: Concession	A roof need not comply with Table 3 if its covering is *non-combustible* and the building— a) has a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5 installed throughout; or b) has a rise in storeys of 3 or less; or c) is of Class 2 or 3; or d) has an *effective height* of not more than 25 m and the ceiling immediately below the roof has a *resistance to the incipient spread of fire* to the roof space of not less than 60 minutes.	N/A	N/A
3.6: Roof lights	If a roof is *required* to have an FRL or its covering is *required* to be *non-combustible*, roof lights or the like installed in that roof must— a) have an aggregate area of not more than 20% of the roof surface; and b) be not less than 3 m from— (i) any boundary of the allotment other than the boundary with a road or public place; and	CRA – Refer Annexure C	N/A

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	(ii) any part of the building which projects above the roof unless that part has the FRL required of a *fire wall* and any openings in that part of the wall for 6 m vertically above the rooflight or the like are protected in accordance with C3.4; and (iii) any rooflight or the like in an adjoining *sole-occupancy unit* if the walls bounding the unit are required to have an FRL; and (iv) any rooflight or the like in an adjoining fire-separated section of the building; and c) if a ceiling with a *resistance to the incipient spread of fire* is *required*, be installed in a way that will maintain the level of protection provided by the ceiling to the roof space.		
3.7: Internal columns and walls: Concession	For a building with an *effective height* of not more than 25 m and having a roof without an FRL in accordance with Clause 3.5, in the *storey* immediately below that roof, internal columns other than those referred to in Clause 3.1(f) and *internal walls* other than *fire walls* and *shaft* walls may have— (a) in a Class 2 or 3 building: FRL 60/60/60; or (b) in a Class 5, 6, 7, 8 or 9 building— (i) with *rise in storeys* exceeding 3: FRL 60/60/60 (ii) with *rise in storeys* not exceeding 3: no FRL.	CRA – Refer Annexure C	N/A
3.8: Open spectator stands and indoor sports stadiums concession		N/A	N/A
3.9: Carparks		N/A	N/A
3.10: Class 2 and 3 buildings Concession		N/A	N/A

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
5.0: Type C fire-resisting construction	Noted	-	CRA – Refer Annexure C
5.1: Fire-resistance of building elements	The FRL's of all elements are to be in accordance with the FRL's detailed in the Table contained within Part 4.0 of this report. • An external wall that is required to have an FRL need only be tested from the outside to satisfy the FRL requirement. • Internal walls in a Class 2 or 3 building required to be fire rated must extend to– (i) to the underside of the floor next above if that floor has an FRL of at least 30/30/30 or a fire-protective covering on the underside of the floor; or (ii) the underside of a ceiling having a resistance to the incipient spread of fire to the roof space above itself of not less than 60 minutes; or (iii) the underside of the roof covering if it is *non-combustible* and, except for roof battens with dimensions of 75 mm x 50 mm or less or *sarking-type material*, must not be crossed by timber or other combustible building elements; or (iv) 450 mm above the roof covering if it is *combustible*; and • In a Class 2 or 3 building, except where within the one *sole-occupancy unit*, or a Class 9a health-care building, or a Class 9b building, a floor separating storeys, or above a space for the accommodation of motor vehicles or used for storage or any other ancillary purpose, and any column supporting the floor, must— (i) have an FRL of at least 30/30/30; or (ii) have a fire-protective covering on the underside of the floor including beams incorporated in it and around the column, if the floor or column is combustible or of metal; and	N/A	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		Type A Construction	Type C Construction
	• In a Class 9c building, a floor above a space for accommodation of motor vehicles or used for storage or any other ancillary purpose, and any column supporting the floor, must— (i) have an FRL of at least 30/30/30; or (ii) have a fire-protective covering on the underside of the floor including beams incorporated in it and around the column, if the floor or column is combustible or of metal.		
5.2: Carparks	Open deck and sprinkler protected carparks	N/A	N/A
SPECIFICATION C1.10 – FIRE HAZARD PROPERTIES			
1. Scope	Informational		-
2. Application	Informational		Noted
3. Floor linings and floor coverings	A floor lining or floor covering must have– a) a *critical radiant flux* not less than that listed in Table 2; and b) in a building not protected by a sprinkler system complying with Specification E1.5, a maximum smoke development rate of 750 percent-minutes; and c) a *group number* complying with Clause 6(b), for any portion of the floor covering that is continued more than 150 mm up a wall.	CRA – Refer Annexure C	CRA – Refer Annexure C
4. Wall and ceiling linings	a) A wall or ceiling lining system must comply with the *group number* specified in Table 3 and for buildings not fitted with a sprinkler system complying with Specification E1.5 have– (i) a *smoke growth rate index* not more than 100; or (ii) an *average specific extinction area* less than 250 m2/kg. b) A *group number* of a wall or ceiling lining and the *smoke growth rate index* or *average specific extinction area* must be determined in accordance with AS 5637.1.	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE			Type A Construction	Type C Construction
5.	Air-handling ductwork	Rigid and flexible ductwork must comply with the *fire hazard properties* set out in AS 4254 Parts 1 and 2.	CRA – Refer Annexure C	CRA – Refer Annexure C
6.	Lift cars	Materials used as— a) floor linings and floor coverings must have a *critical radiant flux* not less than 2.2; and b) wall and ceiling linings must be a Group 1 material or a Group 2 material in accordance with AS 5637.1.	CRA – Refer Annexure C	CRA – Refer Annexure C
7.	Other materials	Materials and assemblies not included in Clauses 3, 4, 5 or 6 must not exceed the indices set out in Table 4.	CRA – Refer Annexure C	CRA – Refer Annexure C
SPECIFICATION C1.11 – PERFORMANCE OF EXTERNAL WALLS IN FIRE				
1.	Scope	Informational	N/A	Noted
2.	Application		N/A	Noted
3.	General requirements for external wall panels		N/A	CRA – Refer Annexure C
4.	Additional requirements for vertically spanning external walls panels adjacent to columns		N/A	CRA – Refer Annexure C

SPECIFICATION C3.4 – FIRE DOORS, SMOKE DOORS, FIRE WINDOWS AND SHUTTERS				
1.	Scope	Informational	Noted	Noted
2.	Fire doors	Fire doorsets must comply with AS1905.1 and not fail by radiation through any glazed part during the period specified for integrity in the required FRL.	CRA – Refer Annexure C	CRA – Refer Annexure C
3.	Smoke doors	Smoke doors must be constructed so that smoke will not pass from one side of the doorway to the other and, if they are glazed, there is minimal danger of a person being injured by accidentally walking into them. Refer to Clause 3.2 of BCA Specification C3.4.	CRA – Refer Annexure C	CRA – Refer Annexure C
4.	Fire shutters	Fire shutters must comply with Clause 4 of BCA Specification C3.4.	CRA – Refer Annexure C	CRA – Refer Annexure C
5.	Fire windows	Fire window must be identical to the prototype which achieved the required FRL and be installed in the same manner and in an opening that is not larger than the tested prototype.	CRA – Refer Annexure C	CRA – Refer Annexure C
SPECIFICATION C3.15 – PENETRATION OF WALLS, FLOORS AND CEILINGS BY SERVICES				
1.	Scope	Informational	Noted	Noted
2.	Application		CRA – Refer Annexure C	N/A
3.	Metal pipe system		CRA – Refer Annexure C	N/A
4.	Pipes penetrating sanitary compartments		CRA – Refer Annexure C	N/A
5.	Wires and cables		CRA – Refer Annexure C	N/A
6.	Electrical switches and outlets		CRA – Refer Annexure C	N/A
7.	Fire-stopping		CRA – Refer Annexure C	N/A

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
PART D1 – PROVISION FOR ESCAPE			
D1.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
D1.1: Application of Part	The *Deemed-to-Satisfy Provisions* of this Part do not apply to the internal parts of a *sole-occupancy unit* in a Class 2 or 3 building or a Class 4 part of a building.	Noted	Noted
D1.2: Number of exits required	• Without passing through another *sole-occupancy unit*, every occupant of a storey or part of a storey must have access to an *exit* or at least 2 *exit*, if 2 or more are required.	CRA – Refer Annexure C	CRA – Refer Annexure C
D1.3: When fire-isolated stairways and ramps are required		N/A	N/A
D1.4: Exit travel distances	<u>Class 5 Office, Class 7b Warehouse</u> No point on a floor must be more than 20 m from an *exit*, or a point from which travel in different directions to 2 *exits* is available, in which case the maximum distance to one of those *exits* must not exceed 40 m. • no point on a floor must be more than 20 m from an *exit*, or a point from which travel in different directions to 2 *exits* is available, in which case the maximum distance to one of those *exits* must not exceed 40 m; and • in a Class 5 or 6 building, the distance to a single *exit* serving a storey at the level of access to a road or open space may be increased to 30 m.	DNC	DNC
D1.5: Distance between alternative exits	*Exits* that are required as alternative means of egress must be– (a) distributed as uniformly as practicable within or around the storey served and in positions where unobstructed access to at least 2 *exits* is readily available from all points on the floor including lift lobby areas; and (b) not less than 9 m apart; and	DNC	DNC

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	(c) not more than— (i) in a Class 2 or 3 building — 45 m apart; or (ii) in a Class 9a health-care building, if such required *exit* serves a patient care area — 45 m apart; or (iii) in all other cases — 60 m apart; and (d) located so that alternative paths of travel do not converge such that they become less than 6 m apart. Note: the distance between *exits* must be measured through the point at which travel two *exits* is available.		
D1.6: Dimensions of exits and paths of travel to exits	In a required *exit* or path of travel to an *exit*– • the unobstructed height throughout exits and paths of travel to *exits* must not be less than 2 m, except the unobstructed height of any doorway may be reduced to not less than 1980 mm; and • the unobstructed width of each *exit* or path of travel to an *exit*, except for doorways must be not less than 1m; • the unobstructed width of doorways must be not less than 750 mm, unless providing access for people with disabilities in which case the unobstructed width must be not less than 850 mm. • the required width of a stairway or ramp must be measured clear of all obstructions such as handrails. • the unobstructed width of a required *exit* must not diminish in the direction of travel to a road or open space.	CRA – Refer Annexure C	CRA – Refer Annexure C
D1.7: Travel via fire-isolated exits	• A doorway from a room must not open directly into a stairway that is required to be fire-isolated unless it is from – (i) a public corridor, public lobby or the like; or (ii) a *sole-occupancy unit* occupying all of a storey; or	CRA – Refer Annexure C	DNC

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	(iii) a sanitary compartment, airlock or the like. • D1.7 (b) - Each fire-isolated stairway or fire-isolated ramp must provide independent egress from each storey served and discharge directly, or by way of its own fire-isolated passageway— (i) to a road or open space; or (ii) to a point— (A) in a storey or space, within the confines of the building, that is used only for pedestrian movement, car parking or the like and is open for at least 2/3 of its perimeter; and (B) from which an unimpeded path of travel, not further than 20 m, is available to a road or open space; or (iii) into a covered area that— (A) adjoins a road or open space; (B) and is open for at least 1/3 of its perimeter; and (C) has an unobstructed clear height throughout, including the perimeter openings, of not less than 3 m; and (D) provides an unimpeded path of travel from the point of discharge to the road or open space of not more than 6 m. • D1.7 (c) - Where a path of travel from the point of discharge of a fire-isolated *exit* necessitates passing within 6 m of any part of an external wall of the same building, measured horizontally at right angles to the path of travel, that part of the wall must have— (i) an FRL of not less than 60/60/60; and (ii) any openings protected internally in accordance with C3.4, for a distance of 3 m above or below, as appropriate, the level of the path of travel, or for the height of the wall, whichever is the lesser.		

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	• D1.7 (d) If more than 2 access doorways, not from a sanitary compartment or the like open to a required fire-isolated *exit* in the same storey – – a smoke lobby in accordance with D2.6 must be provided; or – the *exit* must be pressurized in accordance with AS 1668.1 • A ramp must be provided at any change in level less than 600 mm in a *fire-isolated passageway* in a Class 9 building.		
D1.8: External stairways or ramps in lieu of fire-isolated exits		N/A	N/A
D1.9: Travel by non-fire-isolated stairways or ramps	• A non-fire-isolated stairway serving as a required *exit* must provide a continuous means of travel by its own flights and landings from every storey served to the level at which egress to a road or open space is provided. • In a Class 2, 3 or 4 building, the distance between the doorway of a room or *sole-occupancy unit* and the point of egress to a road or open space by way of a stairway or ramp that is not fire-isolated and is required to serve that room or *sole-occupancy unit* must not exceed 60m. 30m for Type C • In a Class 5, 6, 7, 8 or 9 building, the distance from any point on a floor to a point of egress to a road or open space by way of a required non-fire-isolated stairway or non-fire-isolated ramp must not exceed 80m. • In a Class 2, 3 or 9a building, a required non-fire-isolated stairway or non-fire-isolated ramp must discharge at a point not more than – (i) 15 m from a doorway providing egress to a road or open space or from a fire-isolated passageway leading to a road or open space; or (ii) 30 m from one of 2 such doorways or passageways if travel to each of them from the non-fire-isolated stairway or non-fire-	Complies	Complies

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	isolated ramp is in opposite or approximately opposite directions. • In a Class 5 to 8 or 9b building, a required non-fire-isolated stairway or non-fire-isolated ramp must discharge at a point not more than – (i) 20 m from a doorway providing egress to a road or open space or from a fire-isolated passageway leading to a road or open space; or (ii) 40 m from one of 2 such doorways or passageways if travel to each of them from the non-fire-isolated stairway or non-fire-isolated ramp is in opposite or approximately opposite directions. • In a Class 2 or 3 building, if 2 or more *exits* are *required* and are provided by means of internal non-*fire-isolated stairways* or non-*fire-isolated ramps*, each *exit* must— (i) provide separate egress to a road or *open space*; and (ii) be suitably smoke-separated from each other at the level of discharge.		
D1.10: Discharge from exits	• *Exits* must not be blocked at the point of discharge and where necessary, suitable barriers must be provided to prevent vehicles from blocking the *exit*. • If a required *exit* leads to open space, the path of travel to the road must have an unobstructed width of not less than 1m. min width of required exit if greater. • If an *exit* discharges to open space that is at a different level that the public road to which it is connected, the path of travel to the road must be by a ramp or other incline not steeper than 1:8, or a BCA compliant stairway. • The discharge points of alternative *exits* must be as far apart as practical	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
D1.11: Horizontal exits	*Horizontal exits* must not comprise more than half of the required *exits* from any part of a storey divided by a *fire wall*.	N/A	N/A
D1.12: Non-required stairways, ramps or escalators	An escalator, moving walkway or non-required non fire-isolated stairway or pedestrian ramp— (a) must not be used between storeys in— (i) a patient care area in a Class 9a health-care building; or (ii) a resident use area in a Class 9c building; and (b) may connect any number of storeys if it is— (i) in an open spectator stand or indoor sports stadium; or (ii) in a carpark or an atrium; or (iii) outside a building; or (iv) in a Class 5 or 6 building that is sprinklered throughout, where the escalator, walkway, stairway or ramp complies with Specification D1.12; and (c) except where permitted in (b) must not connect more than— (i) 3 storeys if each of those storeys is provided with a sprinkler system complying with Specification E1.5 throughout; or (ii) 2 storeys, provided that in each case, those storeys must be consecutive, and one of those storeys is situated at a level at which there is direct egress to a road or open space; and (d) except where permitted in (b) or (c), must not connect, directly or indirectly, more than 2 storeys at any level in a Class 5, 6, 7, 8 or 9 building and those storeys must be consecutive.	N/A	N/A

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
D1.13: Number of persons accommodated	Informational– The number of persons accommodated in a storey, room or mezzanine must be determined within consideration to the purpose for which it is used and the layout of the floor area by– (a) calculating the sum of the numbers obtained by dividing the floor area of each part of the storey by the number of square metres per person listed in BCA Table D1.13 according to the use of that part, excluding spaces set aside for— (i) lifts, stairways, ramps and escalators, corridors, hallways, lobbies and the like; and (ii) service ducts and the like, sanitary compartments or other ancillary uses; or (b) reference to the seating capacity in an assembly building or room; or (c) any other suitable means of assessing its capacity. Based on floor area and Table D1.13, the population numbers are as follows:	Noted	Noted
D1.14: Measurement of distances	Informational – The nearest part of an *exit* means in the case of— (a) a fire-isolated stairway, fire-isolated passageway, or fire-isolated ramp, the nearest part of the doorway providing access to them; and (b) a non-fire-isolated stairway, the nearest part of the nearest riser; and (c) a non-fire-isolated ramp, the nearest part of the junction of the floor of the ramp and the floor of the storey; and (d) a doorway opening to a road or open space, the nearest part of the doorway; and (e) a *horizontal exit*, the nearest part of the doorway.	Noted	Noted

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
D1.15: Method of Measurement	Informational	Noted	Noted
D1.16: Plant rooms, lift motor rooms and electricity network substations: concession	Informational – (a) A ladder may be used in lieu of a stairway to provide egress from— (i) a plant room with a floor area of not more than 100 m^2; or (ii) all but one point of egress from a plant room, a lift machine room or a Class 8 electricity network substation with a floor area of not more than 200 m^2. (b) A ladder permitted under (a)— (i) may form part of an *exit* provided that in the case of a fire-isolated stairway it is contained within the shaft; or (ii) may discharge within a storey in which case it must be considered as forming part of the path of travel; and (iii) for a plant room or a Class 8 electricity network substation, must comply with AS 1657.	CRA – Refer Annexure C	CRA – Refer Annexure C
D1.17: Access to lift pits	Access to the lift pit is assumed to be through the bottom landing doors as the pit is assumed to be less than 3m deep.	CRA – Refer Annexure C	CRA – Refer Annexure C
PART D2 – CONSTRUCTION OF EXITS			
D2.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
D2.1: Application of Part	Informational– Except for D2.13, D2.14(a), D2.16, D2.17(d), D2.17(e), D2.21 and D2.24, the Deemed-to-Satisfy Provisions of this Part do not apply to the internal parts of a *sole-occupancy unit* in a Class 3 building.	Noted	Noted

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	Except for D2.13, D2.14(a), D2.16, D2.17(d), D2.17 (e), D2.18 & D2.24, the deemed-to-satisfy Provisions of this Part do not apply to internal parts of the Class 2 *sole-occupancy units*.		
D2.2: Fire-isolated stairways and ramps	The fire isolated stairways must be constructed of *non-combustible* materials and constructed so that if there is local failure it will not cause structural damage to, or impair the fire-resistance of the shaft.	CRA – Refer Annexure C	N/A
D2.3: Non-fire-isolated stairways and ramps	Buildings more than 2 storeys Required stairs and ramps (including landings and any supporting building elements) must be constructed according to D2.2, or only of- (a) reinforced or prestressed concrete; or (b) steel in no part less than 6 mm thick; or (c) timber that— (i) has a finished thickness of not less than 44 mm; and (ii) has an average density of not less than 800 kg/m3 at a moisture content of 12%; and (iii) has not been joined by means of glue unless it has been laminated and glued with resorcinol formaldehyde or resorcinol phenol formaldehyde glue".	CRA – Refer Annexure C	CRA – Refer Annexure C
D2.4: Separation of rising and descending stair flights	If a stairway serving as an *exit* is required to be fire-isolated— (a) there must be no direct connection between— (i) a flight rising from a storey below the lowest level of access to a road or open space; and (ii) a flight descending from a storey above that level; and (b) any construction that separates or is common to the rising and descending flights must be (i) *non-combustible*; and	N/A	N/A

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	(ii) smoke proof in accordance with Clause 2 of Specification C2.5. OR Complies – there is no direct connection between the stairs rising from the basement levels and the stairs from the residential levels.		
D2.5: Open access ramps and balconies		N/A	N/A
D2.6: Smoke lobbies	A smoke lobby required by D1.7 must— (a) have a floor area not less than 6 m2; and (b) be separated from the occupied areas in the storey by walls which are impervious to smoke, and— (i) have an FRL of not less than 60/60/– (which may be fire-protective grade plasterboard, gypsum block with set plaster, face brickwork, glass blocks or glazing); and (ii) extend from slab to slab, or to the underside of a ceiling with a resistance to the incipient spread of fire of 60 minutes which covers the lobby; and (iii) any construction joints between the top of the walls and the floor slab, roof or ceiling must be smoke sealed with intumescent putty or other suitable material; and (c) at any opening from the occupied areas, have smoke doors complying with Clause 3 of Specification C3.4 except that the smoke sensing device need only be located on the approach side of the opening; and (d) be pressurised as part of the exit if the exit is required to be pressurised under E2.2.	FI	N/A
D2.7: Installations in exits and paths of travel	• Access to service shafts and services other than to fire-fighting or detection equipment must not be provided from a fire-isolated stairway or fire-isolated passageway.	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	• Gas or other fuel services must not be installed in a required *exit.* • Any electricity meters, distribution boards or ducts, or telecommunications distribution boards or equipment installed in corridors/hallways/lobbies or the like must be enclosed with *non-combustible* construction or a fire protective covering with doorways suitably sealed against smoke spread. • Electrical wiring may be installed in a fire-isolated *exit* if the wiring is associated with: – a lighting, detection, or pressurization system serving the *exit*; or – a security, surveillance or management system serving the *exit*; or – an intercommunication system or an audible or visual alarm system in accordance with D2.22; or – the monitoring of hydrant or sprinkler isolating valves.		
D2.8: Enclosure of space under stairs and ramps	The space under the fire-isolated stairways within the shaft must not be enclosed to form a cupboard or similar enclosed space. The space below a required non fire-isolated stairway (including an external stairway) or non-fire-isolated ramp must not be enclosed to form a cupboard or other enclosed space unless the enclosing walls and ceilings have an FRL of not less than 60/60/60 and the doorway is fitted with a self-closing –/60/30 fire door.	FI	FI
D2.9: Width of stairways and ramps	Informational– A *required* stairway or ramp that exceeds 2 m in width is counted as having a width of only 2 m unless it is divided by a handrail or barrier continuous between landings and each division has a width of not more than 2 m.	Noted	Noted

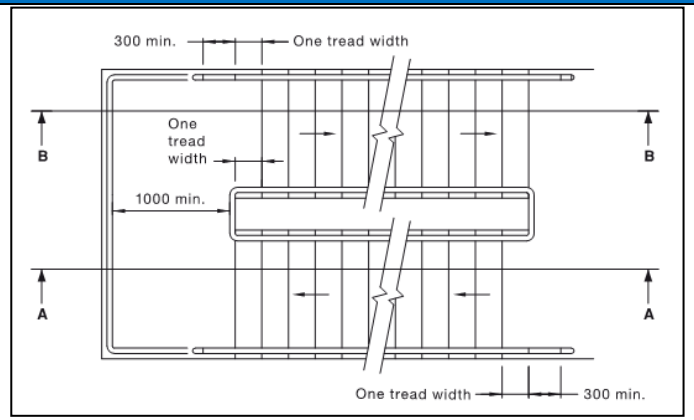
SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
D2.10: Pedestrian ramps	• A ramp serving as a required *exit* must— (i) where the ramp is also serving as an accessible ramp under Part D3, be in accordance with AS 1428.1; or (ii) in any other case, have a gradient not steeper than 1:8. • The floor surface of a ramp must have a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586.	N/A	N/A
D2.11: Fire-isolated passageways	The enclosing construction of a fire isolated passageway must have an FRL not less than that required for the fire isolated stair.	FI	N/A
D2.12: Roof as open space		N/A	N/A
D2.13: Goings and risers	Stairways must comply with the following: • stairways must have not more than 18 and not less than 2 risers in each flight; • goings must be between 240 mm and 355 mm within the residential units; • goings must be between 250 mm and 355 mm; • goings must be between 250 mm and 355 mm in other areas; • risers must be between 115 mm high and 190 mm high; • the slope relationship (2 x riser dimension + going dimension) must be within the range of 550-700; • the goings and risers must be constant (uniform) throughout each flight and the dimensions of goings (G) and risers (R) are considered constant if the variation between– (A) adjacent risers, or between adjacent goings, is no greater than 5 mm; and	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	(B) the largest and smallest riser within a flight, or the largest and smallest going within a flight, does not exceed 10 mm. • Risers must not contain any openings that would permit a 125 mm sphere to pass through. • each tread must have a non-slip finish or an adequate non-skid strip near the edge of the nosings; • treads must be of solid construction (not mesh or perforated) if the stairway is more than 10 m high or connects more than 3 storeys. • in a Class 9b building, not more than 36 risers in consecutive *flights* without a change in direction of at least 30° • In the case of a required stairway, no winders in lieu of a landing • Treads must have a surface or nosing strip with a slip-resistant classification not less than that listed in Table D2.14 when tested in accordance with *AS 4586-2013 Slip resistance classification of new pedestrian surface materials.*		

<table>
<tr><th>SECTION D: ACCESS AND EGRESS</th><th>Type A Construction</th><th>Type C Construction</th></tr>
<tr><td>D2.14: Landings</td><td>Landings must be not less than 750 mm long and have either a surface with a slip-resistance classification complying with Table D2.14 or a strip at the edge of the landing with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586.
<table>
<tr><th rowspan="2">Application</th><th colspan="2">Surface Condition</th></tr>
<tr><th>Dry</th><th>Wet</th></tr>
<tr><td>Ramp steeper than 1:14</td><td>P4 or R11</td><td>P5 or R12</td></tr>
<tr><td>Ramp steeper than 1:20 but not steeper than 1:14</td><td>P3 or R10</td><td>P4 or R11</td></tr>
<tr><td>Tread or landing surface</td><td>P3 or R10</td><td>P4 or R11</td></tr>
<tr><td>Nosing or landing edge strip</td><td>P3</td><td>P4</td></tr>
</table></td><td>CRA – Refer Annexure C</td><td>CRA – Refer Annexure C</td></tr>
<tr><td>D2.15: Thresholds</td><td>The threshold of a doorway must not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf unless–
a) in a building required to be accessible, the doorway–
(i) opens to a road or open space; and
(ii) is provided with a threshold ramp or step ramp in accordance with AS 1428.1; or
b) in other cases–
(i) the doorway opens to a road or open space, external stair landing or external balcony; and
(ii) the door sill is not more than 190 mm above the finished surface of the ground, balcony, or the like, to which the doorway opens.</td><td>CRA – Refer Annexure C</td><td>CRA – Refer Annexure C</td></tr>
</table>

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
D2.16: Barriers to prevent falls	Balustrades must be provided to stairs and balconies, driveway ramps etc where there is a fall of more than 1m. Balustrades must comply with the following: <u>Balustrade minimum heights</u> • 865 mm above stair nosings; • 865 mm above landings to a stair where the barrier is provided along the inside edge of the landing and does not exceed 500 mm in length; and • 1 m in all other locations. <u>Balustrade openings – fire-isolated stairs</u> • maximum openings of 300 mm; or • where rails are used– – a 150 mm sphere must not be able to pass through the opening between the nosing line of the stair treads and the rail or between the rail and the floor of the landing, balcony or the like; and – the opening between rails must not be more than 460 mm <u>Balustrade openings – other than fire-isolated stairs</u> • A 125 mm sphere must not be able to pass through any opening and for stairways, the 125 mm is measured above the nosing line of the stair treads. <u>Climbability – other than fire-isolated stairs</u> For floors more than 4m above the surface beneath, the balustrade must not incorporate any horizontal or near horizontal elements between 150 mm and 760 mm above the floor that could facilitate climbing.	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
D2.17: Handrails	Handrails to stairways must: • be located along at least one side of the ramp or flight (a flight being 2 or more risers); and • located along each side if the total width of the stairway or ramp is 2m or more; and • be fixed at a height of not less than 865 mm above the nosings of the stair treads and the floor surface of the ramp, landing, or the like; and • be continuous between stair flight landings and have no obstruction that will break a hand-hold. • be constructed to comply with clause 12 of AS 1428.1 (including handrails to the fire stairs). • Handrails in common areas (other than fire stairs) must also accord with D3.3. <u>Clause 12 of AS 1428.1-2009</u> A required *exit* (fire isolated or non-fire isolated) serving an area required to be accessible must be fitted with handrails in accordance with Clause 12 of AS1428.1. The handrail shall follow the angle of the nosings and be consistent height through the stair flight and any landings with no vertical sections at the landing. Compliance can be achieved via offset risers at the bottom of the flight in accordance with Figure 28 in AS1428.1-2009 or with larger landings to accommodate required handrail extensions.	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	 *Figure 28 in AS1428.1-2009*		
D2.18: Fixed platforms, walkways stairways and ladders	Plant areas may be accessed via stairs and ladders compliant with AS 1657-2013.	CRA – Refer Annexure C	CRA – Refer Annexure C
D2.19: Doorways and doors	• Sliding doors serving as *exit* doors must be openable manually under a force of not more than 110N. • *Exit* doors that are power operated must be able to be opened manually under a force of not more than 110 N if there is a malfunction or failure of the power source and if leading to road or open space, open automatically if there is a power failure or on the activation of a fire or smoke alarm anywhere in the *fire compartment* served by the door. • A power operated door in a path of travel to a required *exit* must be able to be opened manually under a force of not more than 110 N if there is a malfunction of the power source.	CRA – Refer Annexure C	CRA – Refer Annexure C
D2.20: Swinging doors	Swinging doors in a required *exit* must not encroach–	DNC	DNC

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	(i) at any part of its swing by more than 500 mm on the required 1m width of the *exit* and (ii) when fully open, by more than 100 mm on the required 1m *exit* width; and the measurement of encroachment in each case is to include door handles or other furniture or attachments to the door. A swinging door in a required *exit* must swing in the direction of egress unless– • it serves a building or part with a floor area not more than 200 m^2, it is the only required *exit* from the building or part and it is fitted with a device for holding it in the open position; or • it serves a sanitary compartment or airlock (in which case it may swing in either direction).		
D2.21: Operation of latch	All doors in a required *exit* or forming part of a required *exit* AND doors in a path of travel to a required *exit* must be readily openable without a key from the side that faces a person seeking egress, by– (i) a single hand downward action or pushing action on a single device which is located between 900mm and 1.1 m from the floor and if serving an area required to be accessible by Part D3 – A. be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and B. have a clearance between the handle and the back plate or door face at the centre grip section of the handle of not less than 35mm and not more than 45mm; or (ii) a single hand pushing action on a single device which is located between 900mm and 1.2m from the floor. (iii) where the latch operation device referred to in (ii) is not located on the door leaf itself—	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	(A) manual controls to power-operated doors must be at least 25 mm wide, proud of the surrounding surface and located— (aa) not less than 500 mm from an internal corner; and (bb) for a hinged door, between 1 m and 2 m from the door leaf in any position; and (cc) for a sliding door, within 2 m of the doorway and clear of a surface mounted door in the open position. (B) braille and tactile signage complying with Clause 3 and 6 of Specification D3.6 must identify the latch operation device. The above requirements do not apply to a door that – (i) serves only or is within a *sole-occupancy unit* in a Class 2 building; or (ii) serves a *sole-occupancy unit* in a Class 5, 6, 7 or 8 building with a floor area not more than 200m^2; or (iii) are fitted with a fail-safe device which automatically unlocks the door upon the activation of an AS 1670.1 detection system installed throughout the building and is readily openable when unlocked. All doors in a required *exit* or forming part of a required *exit* AND doors in a path of travel to a required *exit* must be readily openable– (i) without a key from the side that faces a person seeking egress; and (ii) by a single hand pushing action on a single device such as a panic bar located between 900mm and 1.2 m from the floor; and (iii) where a two-leaf door is fitted, the provisions of (i) and (ii) need only apply to one door leaf if the appropriate requirements of D1.6 are satisfied by the opening of that one leaf; and (iv) where the door is a door in a path of travel providing re-entry to the building from a balcony terrace or the like, it may be		

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	fitted with key-operated fastenings only, the tongues of which must be locked in the retracted position whenever the building is occupied by the public, so the door can yield to pressure.		
D2.22: Re-entry from fire-isolated exits	Doors of the fire-isolated *exits* must not be locked from the inside unless the door is fitted with a fail-safe device which automatically unlocks the door upon the activation of a fire alarm and – (i) on at least every fourth storey, the doors are not able to be locked and a sign is fixed on such doors stating that re-entry is available; or (ii) an intercommunication system, or an audible or visual alarm system, operated from within the enclosure is provided near the doors and a sign is fixed adjacent to such doors explaining its purpose and method of operation.	N/A	N/A
D2.23: Signs on doors	Signage in accordance with this clause is to be located on all fire and smoke doors stating “Fire Safety Door, Do Not Obstruct, Do Not Keep Open” and the discharge door from the fire isolated stairways are to state “Fire Safety Door – Do Not Obstruct” in capital letters not less than 20mm in height. Note: Fire signage in accordance with clause 183 of the Environmental Planning and Assessment Regulation 2000 is also required.	CRA – Refer Annexure C	N/A
D2.24: Protection of openable windows	a) Bedroom windows must be provided with protection if the floor below the window is 2m or more above the surface beneath. Change to ‘Windows in Class 9b early childhood centre’ if applicable. b) Where the lowest level of the window opening is less than 1.7m above the floor, a window opening covered by (a) must comply with the following: (i) The openable portion of the window must be protected with– A. a device to restrict the window opening; or	N/A	N/A

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	B. a screen with secure fittings. (ii) A device or screen required by (i) must– A. not permit a 125 mm sphere to pass through the window opening or screen; and B. resist an outward horizontal action of 250 N against the– aa. window restrained by a device; or bb. screen protecting the opening; and C. have a child resistant release mechanism if the screen or device is able to be removed, unlocked or overridden. c) A barrier with a height not less than 865 mm above the floor is required to an openable window– (i) in addition to window protection, when a child resistant release mechanism is required by (b)(ii)(C); and (ii) where the floor below the window is 4m or more above the surface beneath if the window is not covered by (a). d) A barrier covered by (c) except for (e) must not– (i) permit a 125 mm sphere to pass through it; and (ii) have any horizontal or near horizontal elements between 150 mm and 760 mm above the floor that facilitate climbing. e) A barrier *required* by (c) to an openable window in— (i) fire-isolated stairways, fire-isolated ramps and other areas used primarily for emergency purposes, excluding external stairways and external ramps; and (ii) Class 7 (other than carparks) and Class 8 buildings and parts of buildings containing those classes; must not permit a 300mm sphere to pass through it.		

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	Note: when considering the preferred option to comply with this clause consideration will need to be given to natural ventilation required under Clause F4.6.		
D2.25: Timber stairways: concession		N/A	N/A
PART D3 - ACCESS FOR PEOPLE WITH A DISABILITY			
D3.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
D3.1: General building access requirements	Access complying with AS 1428.1-2009 must be provided from the principal pedestrian entrance(s): <u>Class 2–</u> • to and within not less than 1 of each type of room or space for use in common by the residents; and • to the entrance doorway of each *sole-occupancy unit*. If no lift then 1 floor containing SOUs & each SOU on that level <u>Class 5, 6 & 7b</u> • to and within all areas normally used by the occupants. <u>Class 7a–</u> • to and within any level containing accessible carparking spaces. Refer to table for other classes	CRA – Refer Annexure C	CRA – Refer Annexure C
D3.2: Access to buildings	• Access complying with AS 1428.1-2009 must be provided to the building from the main points of pedestrian entry at the allotment boundary. • Another accessible building connected by a pedestrian link • Required accessible carparking on the allotment	DNC	DNC

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	• Compliant access must be provided through the main pedestrian entrance and not less than 50% of all pedestrian entrances; and • In a building with a total floor area of more than 500m^2, a pedestrian entrance which is not accessible must not be located more than 50m from an accessible pedestrian entrance. • Where a doorway on an accessway has multiple leaves, (except an automatic opening door) one of those leaves must have a clear opening width of not less than 850 mm.		
D3.3: Parts of buildings to be accessible	• Walkways and ramps must comply with clause 10 of AS 1428.1-2009. • Non-fire-isolated stairways must comply with Clause 11 of AS 1428.1-2009. • Fire-isolated stairways must comply with clause 11 (f) & (g) of AS 1428.1-2009. • Accessways must have passing spaces (1800 mm x 2000 mm) complying with AS 1428.1-2009 at maximum 20 m intervals on those parts of an accessway where a direct line of sight is not available. • Accessways must have turning spaces (1540 mm x 2070 mm) within 2m of the end of the accessway and at maximum 20 m intervals along the accessway. Note: Turning spaces must be provided clear of fixtures and fittings such as skirtings, general purpose outlets (GPOs), fire extinguishers etc. • An intersection of accessways satisfies the spatial requirements for a passing and turning space. Note lift concession for max 3 storey Class 5, 6, 7b & 8 if applicable Note: The Access to Premises Standards to not provide the concessions provided in sub-cluses (g) and (h) in this clause, hence compliance with the Access to Premises Standards will require the floor covering in the	DNC	DNC

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	accessible areas to strictly comply with Clause 7.4.1(a) of AS1428.1-2009.		
D3.4: Exemptions	Informational – The following areas are not required to be accessible: • an area where access would be inappropriate because of the particular purpose for which the area is used. • an area that would pose a health or safety risk for people with a disability. • any path of travel providing access only to an exempted area.	Noted	Noted
D3.5: Accessible car parking	The accessible car space must comply with AS 2890.6-2009 including signage requirements.	CRA – Refer Annexure C	DNC
D3.6: Signage	• Braille and tactile signage complying with Specification D3.6 and incorporating the international symbol of access, or deafness as appropriate, must identify each: – sanitary facility; and – any space with a hearing augmentation system; and – identify each door required by E4.5 to be provided with an *exit* sign and state “Exit” and “Level” and either: (aa) the floor level number; or (bb) a floor level descriptor; or (cc) a combination of (aa) and (bb) • Signage including the international symbol for deafness in accordance with AS 1428.1 must be provided within a room containing a hearing augmentation system identifying – – the type of hearing augmentation; and	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	– the area covered within the room; and – if receivers are being used and where the receivers can be obtained. • Signage to accessible sanitary facilities must identify if the facility is suitable for left or right handed use; and • Signage to identify an ambulant accessible facility in accordance with AS 1428.1 must be located on the door of the facility. • Where a pedestrian entrance is not accessible, directional signage incorporating the international symbol of access, in accordance with AS 1428.1 must be provided to direct a person to the location of the nearest accessible pedestrian entrance; • Where a bank of facilities is not provided with an accessible unisex sanitary facility, directional signage incorporating the international symbol of access in accordance with AS 1428.1 must be places at the location of the sanitary facilities that are not accessible, to direct a person to the location of the nearest accessible unisex facility. • in a building subject to F2.9, directional signage complying with Specification D3.6 must be provided at the location of each— (i) bank of sanitary facilities; and (ii) accessible unisex sanitary facility, other than one that incorporates an accessible adult change facility, to direct a person to the location of the nearest accessible adult change facility within that building.		
D3.7: Hearing augmentation		N/A	N/A
D3.8: Tactile indicators	a) For a building required to be accessible, tactile ground surface indicators must be provided to warn people who are blind or have a vision impairment that they are approaching— (i) a stairway, other than a fire-isolated stairway; and	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	(ii) an escalator; and (iii) a passenger conveyor or moving walk; and (iv) a ramp other than a fire-isolated ramp, step ramp, kerb ramp or swimming pool ramp; and (v) in the absence of a suitable barrier— (A) an overhead obstruction less than 2 m above floor level, other than a doorway; and (B) an accessway meeting a vehicular way adjacent to any pedestrian entrance to a building, excluding a pedestrian entrance serving an area referred to in D3.4, if there is no kerb or kerb ramp at that point, except for areas exempted by D3.4. (b) b) Tactile ground surface indicators required by (a) must comply with sections 1 and 2 of AS/NZS 1428.4.1.		
D3.9: Wheelchair seating spaces in Class 9b assembly buildings		N/A	N/A
D3.10: Swimming pools		N/A	N/A
D3.11: Ramps	On an accessway a series of connected ramps must not have a combined vertical rise of 3.6m and a landing for a step ramp must no overlap a landing for another step ramp or ramp	N/A	N/A
D3.12: Glazing on an Accessway	On an accessway, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, must be clearly marked in accordance with AS 1428.1.	CRA – Refer Annexure C	CRA – Refer Annexure C
SPECIFICATION D1.12 – NON-REQUIRED STAIRWAYS, RAMPS AND ESCALATORS – N/A			
SPECIFICATION D3.6 – BRAILLE AND TACTILE SIGNS			

SECTION D: ACCESS AND EGRESS			Type A Construction	Type C Construction
1.	Scope	Informational		Noted
2.	Location of Braille and Tactile Sign	Signs including symbols, numbering and lettering must be designed and installed as follows: a) Braille and tactile components of a sign must be located not less than 1200 mm and not higher than 1600 mm above the floor or ground surface. b) Signs with single lines of characters must have the line of tactile characters not less than 1250 mm and not higher than 1350 mm above the floor or ground surface. c) Signs identifying rooms containing features or facilities listed in D3.6 must be located – (i) on the wall on the latch side of the door with the leading edge of the sign located between 50 mm and 300 mm from the architecture; and (ii) where (i) is not possible, the sign may be placed on the door itself. d) Signs identifying a door required by E4.5 to be provided with an *exit* sign must be located – (i) on the side that faces a person seeking egress; and (ii) on the wall on the latch side of the door with the leading edge of the sign located between 50 mm and 300 mm from the architrave; and (iii) where (ii) is not possible, the sign may be placed on the door itself.	CRA – Refer Annexure C	CRA – Refer Annexure C
3.	Braille and Tactile Sign Specification	a) Tactile characters must be raised or embossed to a height of not less than 1 mm and not more than 1.5mm. b) Title case must be used for all tactile characters, and –	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	(i) upper case tactile characters must have a height of not less than 15 mm and not more than 55 mm, except that the upper case tactile characters on a sign identifying a door required by E4.5 to be provided with an *exit* sign must have a height of not less than 20 mm and not more than 55 mm; and (ii) lower case tactile characters must have a minimum height of 50% of the related upper case characters. c) Tactile characters, symbols, and the like, must have rounded edges. d) The entire sign, including any frame, must have all edges rounded. e) The background, negative space or fill of signs must be of matt or low sheen finish. f) The characters, symbols, logos and other features on signs must be matt or low sheen finish. g) The minimum letter spacing of tactile characters on signs must be 2 mm. h) The minimum word spacing of tactile characters on signs must be 10 mm. i) The thickness of letter strokes must not be less than 2 mm and more than 7 mm. j) Tactile text must be left justified, except that single words may be centre justified. k) Tactile text must be Arial typeface.		
4. Luminance contrast	The following applies to luminance contrast: a) The background, negative space, fill of a sign or border with a minimum width of 5 mm must have a luminance contrast with the surface on which it is mounted of not less than 30%.	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		Type A Construction	Type C Construction
	b) Tactile characters, icons and symbols must have a minimum luminance contrast of 30% to the surface on which the characters are mounted. c) Luminance contrasts must be met under the lighting conditions in which the sign is to be located.		
5. Lighting	Braille and tactile signs must be illuminated to ensure luminance contrast requirements are met at all times during which the sign is required to be read.	CRA – Refer Annexure C	CRA – Refer Annexure C
6. Braille	The following applies to braille: a) Braille must be grade 1 braille (uncontracted) in accordance with the criteria set out by the Australian Braille Authority. b) Braille must be raised and domed. c) Braille must be located 8 mm below the bottom line of text (not including descenders). d) Braille must be left justified. e) Where an arrow is used in the tactile sign, a solid arrow must be provided for braille readers. f) On signs with multiple lines of text and characters, a semicircular braille locater at the left margin must be horizontally aligned with the first line of braille text.	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION E: SERVICES AND EQUIPMENT		Type A Construction	Type C Construction
PART E1 – FIRE FIGHTING EQUIPMENT			
E1.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
E1.3: Fire hydrants	As the building has a floor area greater than 500 m^2, a fire hydrant system complying with AS 2419.1-2005 must be provided to serve the building.	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION E: SERVICES AND EQUIPMENT		Type A Construction	Type C Construction
	Details should be provided showing: • Hydrant booster assembly location. The booster location must comply with the following: – be within 8m of a hardstand for fire brigade appliance; – be within sight of the main entry; – Assuming it is attached to the building, be separated from the building by construction achieving FRL 90/90/90 for 2m either side of and 3m above the upper hose connections • Hydrant pump room location (if a pumpset is required). An internal pump room must have a door opening to a road or open space or egress to open space via a fire-isolated *exit*; • Internal hydrants in each fire-isolated *exit* at each storey providing coverage to all parts of the building. For internal fire hydrant coverage, all points on the floor must be covered by a 10m hose stream, issuing from 30 m hose length, extending not less than 1m into the room.		
E1.4: Fire hose reels	A fire hose reel system complying with BCA clause E1.4 and AS 2441-2005 must be provided to the building (excluding Classes 2, 3, 4, 5, 8 and 9c). All points on a floor shall be within reach of a 4 m hose stream issuing from a nozzle at the end of the hose laid on floor. The hose length shall not exceed 36 m. Fire hose reels must be located so that the fire hose will not need to pass through doorways fitted with fire or smoke doors, except— (i) doorways in walls referred to in C2.5(a)(v) in a Class 9a building and C2.5(b)(iv) in a Class 9c building, separating ancillary use areas of high potential fire hazard; and (ii) doorways in walls referred to in C2.12 or C2.13 separating equipment or electrical supply systems; and (iii) doorway openings to shafts referred to in C3.13.	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION E: SERVICES AND EQUIPMENT		Type A Construction	Type C Construction
E1.5: Sprinklers	The building must be provided with a sprinkler system complying with Table E1.5 and Specification E1.5 installed throughout.	CRA – Refer Annexure C	CRA – Refer Annexure C
E1.6: Portable fire extinguishers	Portable fire extinguishers must be provided in accordance with clause E1.6 & Table E1.6 of the BCA and must be selected, located and distributed in accordance with Sections 1, 2, 3 and 4 of AS 2444-2001. For the Class 2, 3 or 4 parts, portable fire extinguishers must be– (i) an ABE type fire extinguisher; and (ii) a minimum size of 2.5 kg; and (iil) distributed outside a *sole-occupancy unit*— (A) to serve only the storey at which they are located; and (B) so that the travel distance from the entrance doorway of any *sole-occupancy unit* to the nearest fire extinguisher is not more than 10 m.	CRA – Refer Annexure C	CRA – Refer Annexure C
E1.8: Fire control centres	Over 25m & Class 6, 7, 8 or 9 over 18000m². • The building must be provided with a fire control centre facility in accordance with BCA Specification E1.8. • The fire control centre must be located so that egress from any part of its floor to a public road or open space does not involve changes in level which in aggregate exceed 300 mm. If building >50m must be in separate room	CRA – Refer Annexure C	CRA – Refer Annexure C
E1.9: Fire precautions during construction	Informational– • During construction, not less than one portable fire extinguisher to suit Class A, B and C fires and electrical fires must be provided at all times on each storey adjacent to each required / temporary *exit*; and • After the building has reach an *effective height* of 12m, the required fire hydrants and fire hose reels must be operational on all floor / roof covered storeys, except for the 2 uppermost storeys; and all required booster connections must be installed.	Noted	Noted
E1.10: Provision for special hazards	Suitable additional provisions must be made if special problems of firefighting could arise because of the nature or quantity of stored materials or the location of the building in relation to a water supply.	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION E: SERVICES AND EQUIPMENT			Type A Construction	Type C Construction
Specification E1.5 – FIRE SPRINKLER SYSTEMS				
1.	Scope	Informational	Noted	Noted
2.	Application of automatic fire sprinkler standards	An automatic fire sprinkler system shall comply with AS2118 as relevant to the building classification and the design of the hydraulic consultant. Where the building is residential class 2 or 3 then refer to Specification E1.5a for specific design requirements and concessions.		
3.	Separation of sprinklered and non-sprinklered areas	Where a part of a building is not protected with sprinklers, the sprinklered and non-sprinklered parts must be fire-separated with a wall or floor which must – (a) comply with any specific requirement of the Deemed-to-Satisfy Provisions of the BCA; or (b) where there is no specific requirement, comply with the relevant part of AS 2118, FPAA101D or FPAA101H.		
4.	Protection of openings	Any openings, including those for service penetrations, in construction separating sprinklered and non-sprinklered parts of a building, including the construction separating the areas nominated for omitted protection in AS 2118.1, must be protected in accordance with the Deemed-to-Satisfy Provisions of Part C3.		
5.	Fast response sprinklers	Fast response sprinklers may be installed only if they are suitable for the type of application proposed and it is demonstrated that the sprinkler system is designed to accommodate their use. Note Table E2.2a – Class 9a and 9c buildings – residential sprinkler heads in patient care areas, and Class 9b buildings – fast response sprinkler heads. Spec G3.8 – fast response sprinkler heads for atrium floor protection.		
6.	Sprinkler valve enclosures	(a) Sprinkler alarm valves must be located in a secure room or enclosure which has direct egress to a road or open space. (b) All sprinkler valve rooms and enclosures must be secured with a system suitable for use by the fire brigade.		
7.	Water supply	(a) A required sprinkler system must be provided with at least one water supply.		

SECTION E: SERVICES AND EQUIPMENT			Type A Construction	Type C Construction
		(b) A required sprinkler system in a building greater than 25 m in *effective height* must be provided with dual water supply except that a secondary water supply storage capacity of 25,000 litres may be used if – (i) the storage tank is located at the topmost storey of the building; and (ii) the building occupancy is classified as no more hazardous than Ordinary Hazard 2 (OH2) under AS 2118.1; and (iii) an operational fire brigade service is available to attend a building fire.		
8.	Building occupant warning system	A required sprinkler system, except a FPAA101D sprinkler system, must be connected to and activate a building occupant warning system complying with Clause 7 of Specification E2.2a.		
9.	Connection to Other Systems	Where a smoke hazard management system is installed and is actuated by smoke detectors, the sprinkler system must, wherever practicable, be arranged to also activate the smoke hazard management system.		
10.	Anti-tamper Devices	(a) Where a sprinkler system is installed – (i) over any stage area in a theatre, public hall or the like, visual and audible status indication of sprinkler valves must be provided at the location normally used by the stage manager; or (ii) in a space housing lift electrical and control equipment (including machine rooms, secondary floors and sheave rooms), any valves provided to control sprinklers in these spaces must be located adjacent to the space. (b) Any valves provided to control sprinklers required by (a) must be fitted with anti-tamper monitoring devices connected to a monitoring panel.		
11.	Sprinkler Systems in Carparks	A sprinkler system protecting a carpark complying with Table 3.9 of Specification C1.1 in a multi-classified building must – (a) be independent of the sprinkler system protecting any part of the building not used as a carpark; or (b) if forming part of a sprinkler system protecting a part of the building not used as a carpark, be designed such that the section protecting the non-carpark part can be isolated without interrupting the water		

SECTION E: SERVICES AND EQUIPMENT		Type A Construction	Type C Construction
	supply or otherwise affecting the effective operation of the section protecting the carpark.		
12. Residential Care Buildings	In addition to the provisions of AS 2118.4, a sprinkler system in – (a) a Class 3 building used as a residential care building; or (b) a Class 9a health-care building used as a residential care building; or (c) a Class 9c building, must – (d) be provided with a monitored main stop valve in accordance with AS 2118.1; and (e) be permanently connected with a direct data link or other approved monitoring system to a fire station or fire station dispatch centre.		
13. Sprinkler systems in lift installations	(a) Where sprinklers are installed in a space housing lift electrical and control equipment, including machine rooms, secondary floors and sheave rooms, sprinklers in these spaces must – (i) have heads protected from accidental damage by way of a guard that will not impair the performance of the head; and (ii) be capable of being isolated and drained, either separately or collectively, without isolating any other sprinklers within the building. (b) Valves provided to control sprinklers referred to in (a) must be installed in accordance with Clause 10(b).		
Specification E1.5a – CLASS 2 AND 3 BUILDINGS NOT MORE THAN 25m IN EFFECTIVE HEIGHT – N/A			
PART E1.8 – FIRE CONTROL CENTRES			
1. Scope	Informational	Noted	Noted
2. Purpose and content	A fire control centre must— (a) provide an area from which fire-fighting operations or other emergency procedures can be directed or controlled; and (c) contain controls, panels, telephones, furniture, equipment and the like associated with the required fire services in the building; and (d) not be used for any purpose other than the control of— (i) fire-fighting activities; and (ii) other measures concerning the occupant safety or security.	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION E: SERVICES AND EQUIPMENT			Type A Construction	Type C Construction
3.	Location of fire control centre	A fire control centre must be so located in a building that egress from any part of its floor, to a road or open space, does not involve changes in level which in aggregate exceed 300 mm.	Complies	Complies
4.	Equipment not permitted within a fire control centre	An internal combustion engine, pumps, sprinkler control valves, pipes and pipe fittings must not be located in a fire control centre, but may be located in rooms accessed through the fire control centre.	CRA – Refer Annexure C	CRA – Refer Annexure C
5.	Ambient sound level of fire control centre	(e) The ambient sound level within the fire control centre measured when all fire safety equipment is operating in the manner in which it operates in an emergency must not exceed 65 dB(A). (f) The measurement must be taken for a sufficient time to characterize the effects of all sound sources. Where there is not a great variation in noise level, a measurement time of 60 seconds may be used.	CRA – Refer Annexure C	CRA – Refer Annexure C
6.	Construction of a fire control room	A fire control centre in a building more than 50 m in *effective height* must be in a separate room where— (g) the enclosing construction is of concrete, masonry or the like, sufficiently impact resistant to withstand the impact of any likely falling debris, and with an FRL of not less than 120/120/120; and (h) any material used as a finish, surface, lining or the like within the room complies with the requirements of Specification C1.10; and (i) services, pipes, ducts and the like that are not directly required for the proper functioning of the fire control room do not pass through it; and (j) openings in the walls, floors or ceiling which separate the room from the interior of the building are confined to doorways, ventilation and other openings for services necessary for the proper functioning of the facility.	N/A	N/A
7.	Protection of openings in a fire control room	Openings permitted by Clause 6 must be protected as follows: (k) Openings for windows, doorways, ventilation, service pipes, conduits and the like, in an external wall of the building that faces a road or open space, must be protected in accordance with the Deemed-to-Satisfy Provisions of Part C3. (l) Openings in the floors, ceilings and internal walls enclosing a fire control room must, except for doorways, be protected in accordance with the Deemed-to-Satisfy Provisions of Part C3.	N/A	N/A

SECTION E: SERVICES AND EQUIPMENT			Type A Construction	Type C Construction
		(m) A door opening in the internal walls enclosing a fire-control room, must be fitted with a self closing –/120/30 smoke sealed fire door. (n) Openings associated with natural or mechanical ventilation must— (i) not be made in any ceiling or floor immediately above or below the fire control room; and (ii) be protected by a –/120/– fire damper if the opening is for a duct through a wall required to have an FRL, other than an external wall.		
8.	Doors to a fire control room	(o) Required doors to a fire control room must open into the room, be lockable and located so that persons using escape routes from the building will not obstruct or hinder access to the room. (p) The fire control room must be accessible via two paths of travel— (i) one from the front entrance of the building; and (ii) one direct from a public place or fire-isolated passageway which leads to a public place and has a door with an FRL of not less than –/120/30.	N/A	N/A
9.	Size and content of a fire control room	(q) A fire control room must contain— (i) a Fire Indicator Panel and necessary control switches and visual status indication for all required fire pumps, smoke control fans and other required fire safety equipment installed in the building; and (ii) a telephone directly connected to an external telephone exchange; and (iii) a blackboard or whiteboard not less than 1200 mm wide x 1000 mm high; and (iv) a pin-up board not less than 1200 mm wide x 1000 mm high; and (v) a raked plan layout table of a size suitable for laying out the plans provided under (vi); and (vi) colour-coded, durable, tactical fire plans. (r) In addition, a fire control room may contain—	N/A	N/A

SECTION E: SERVICES AND EQUIPMENT			Type A Construction	Type C Construction
		(i) master emergency control panels, lift annunciator panels, remote switching controls for gas or electrical supplies and emergency generator backup; and (ii) building security, surveillance and management systems if they are completely segregated from all other systems. (s) A fire control room must— (i) have a floor area of not less than 10 m^2 and the length of any internal side must be not less than 2.5 m; and (ii) if only the minimum prescribed equipment is installed — have a net floor area of not less than 8 m2 with a clear space of not less than 1.5 m^2 in front of the Fire Indicator Panel; and (iii) if additional equipment is installed — have an additional area of not less than 2 m^2 net floor area for each additional facility and a clear space of not less than 1.5 m^2 in front of each additional control or indicator panel, and the area required for any path of travel through the room to other areas must be provided in addition to the requirements (ii) and (iii).		
10.	Ventilation and power supply for a fire control room	A fire control room must be ventilated by— (t) natural ventilation from a window or doorway in an external wall of the building which opens directly into the fire control room from a road or open space; or (u) a pressurisation system that only serves the fire control room, and— (i) is installed in accordance with AS 1668.1 as though the room is a fire-isolated stairway; and (ii) is activated automatically by operation of the fire alarm, or sprinkler system complying with Specification E1.5, installed in the building and manually by an over-riding control in the room; and (iii) provides a flow of fresh air through the room of not less than 30 air changes per hour when the system is operating and any door to the room is open; and (iv) has fans, motors and ductwork that form part of the system but not contained within the fire control room protected by enclosing construction with an FRL of not less than 120/120/120; and	N/A	N/A

SECTION E: SERVICES AND EQUIPMENT			Type A Construction	Type C Construction
		(v) has any electrical supply to the fire control room or equipment necessary for its operation connected to the supply side of the main disconnection switch for the building, and no openable devices other than necessary doorways, pressure controlled relief louvres and windows that are openable by a key, must be constructed in the fire control room.		
11.	Sign for a fire control room	The external face of the door to the fire control room must have a sign with the words— FIRE CONTROL ROOM in letters of not less than 50 mm high and of a colour which contrasts with that of the background.	N/A	N/A
12.	Lighting for a fire control room	Emergency lighting in accordance with the Deemed-to-Satisfy Provisions of Part E4 must be provided in a fire control room, except that an illumination level of not less than 400 lux must be maintained at the surface of the plan table.	N/A	N/A
PART E2 – SMOKE HAZARD MANAGEMENT				
E2.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
E2.1:	Application of Part	Informational	Noted	Noted
E2.2:	General requirements (including Tables E2.2a and E2.2b)	**General smoke hazard management requirements** An air-handling system which does not form part of a smoke hazard management system in accordance with Table E2.2a or Table E2.2b and which recycles air from one *fire compartment* to another *fire compartment* or operates in a manner that may unduly contribute to the spread of smoke from one *fire compartment* to another *fire compartment* (such as lobby air supply) must— (i) be designed and installed to operate as a smoke control system in accordance with AS 1668.1; or (ii) (A) incorporate smoke dampers where the air-handling ducts penetrate any elements separating the *fire compartments* served; and	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION E: SERVICES AND EQUIPMENT		Type A Construction	Type C Construction
	(B) be arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke detectors complying with clause 7.5 of AS 1668.1; and for the purposes of this provision, each *sole-occupancy unit* in a Class 2 or 3 building is treated as a separate *fire compartment*. Miscellaneous air-handling systems covered by Sections 5 and 6 of AS 1668.1 serving more than one *fire compartment* (other than a carpark ventilation system) and not forming part of a smoke hazard management system must comply with that Section of the Standard. A smoke detection system must be installed in accordance with Clause 5 of Specification E2.2a to operate AS1668.1 systems that are provided for zone pressurisation and automatic air pressurisation for fire-isolated *exits*. **Class 2 parts** Class 2 parts must be provided with an automatic smoke detection and alarm system complying with BCA Specification E2.2a. Note: Smoke alarms in sole occupancy units are now required to be interconnected. **Class 7a buildings** A Class 7a building including a basement provided with a mechanical ventilation system in accordance with AS 1668.2 must comply with clause 5.5 of AS 1668.1 except that fans with metal blades for operation at normal temperatures may be used, and the electrical power and control cabling need not be fire rated. **Fire-isolated exits** All fire-isolated *exits* serving a storey above an *effective height* of 25 m must be provided with an automatic air pressurisation system for fire-isolated *exits* in accordance with AS 1668.1. The automatic air pressurisation system applies to the entire *exit*.		
E2.3: Provisions for special hazards		N/A	N/A

SPECIFICATION E2.2a – SMOKE DETECTION AND ALARM SYSTEM				
1.	Scope	Informational	Noted	Noted
2.	Type of system			
3.	Smoke alarm system			
4.	Smoke detection system		CRA – Refer Annexure C	CRA – Refer Annexure C
5.	Combined smoke alarm and smoke detection system			
6.	Smoke detection for smoke control system			
7.	Building occupant warning system		CRA – Refer Annexure C	CRA – Refer Annexure C
8.	System Monitoring			
SPECIFICATION E2.2b – SMOKE EXHAUST SYSTEM				
1.	Scope	Informational	Noted	Noted
2.	Smoke exhaust capacity		CRA – Refer Annexure C	CRA – Refer Annexure C
3.	Smoke exhaust fans		CRA – Refer Annexure C	CRA – Refer Annexure C
4.	Smoke reservoirs		CRA – Refer Annexure C	CRA – Refer Annexure C
5.	Smoke exhaust fan and vent location		CRA – Refer Annexure C	CRA – Refer Annexure C
6.	Make-up air		CRA – Refer Annexure C	CRA – Refer Annexure C
7.	Smoke exhaust system control		CRA – Refer Annexure C	CRA – Refer Annexure C

8.	Smoke detection		CRA – Refer Annexure C	CRA – Refer Annexure C
SPECIFICATION E2.2c – SMOKE AND HEAT VENTS				
1.	Adoption of AS2665	Informational	Noted	Noted
2.	Controls		N/A	N/A
PART E3 – LIFT INSTALLATIONS				
E3.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
E3.1:	Lift installations	An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with Specification E3.1	CRA – Refer Annexure C	CRA – Refer Annexure C
E3.2:	Stretcher facility in lifts	A stretcher facility must be provided to an emergency lift required by E3.4. A stretcher facility must be provided to passenger lifts installed to serve any storey above an *effective height* of 12 m. A stretcher facility must accommodate a raised stretcher with a patient lying on it horizontally by providing a clear space not less than 600mm wide x 2000mm long x 1400mm high above floor level.	N/A	N/A
E3.3:	Warning against use of lifts in fire	Warning signs indicating “DO NOT USE LIFTS IF THERE IS A FIRE” shall be displayed near every call button for a passenger lift or group of lifts throughout a building as per E3.3.	CRA – Refer Annexure C	CRA – Refer Annexure C
E3.4:	Emergency lifts	Class 9a buildings – refer to Table E3.4 for minimum emergency lift dimensions	N/A	N/A
E3.5:	Landings	Access and egress to and from lift-well landings must comply with the Deemed-to-Satisfy Provisions of Section D.	CRA – Refer Annexure C	CRA – Refer Annexure C
E3.6:	Passenger lifts	In an accessible building, every passenger lift must be one of the types specified in Table E3.6a, have accessible features in accordance with Table E3.6b, and not rely on a constant pressure device for its operation if the lift car is fully enclosed.	CRA – Refer Annexure C	CRA – Refer Annexure C
E3.7:	Fire service controls	The lifts serving any storey above an *effective height* of 12 m must be provided with: a) A fire service recall control switch complying with E3.9 for— (i) a group of lifts; or	N/A	N/A

		(ii) a single lift not in a group that serves the *storey*. b) A lift car fire service drive control switch complying with E3.10 for every lift.		
E3.8:	Aged care buildings		N/A	N/A
E3.9:	Fire service recall switch	The fire service control switch required by E3.7, is to comply with this clause. Lift services design to confirm compliance at CC stage.	N/A	N/A
E3.10:	Lift car service drive control switch	The lift car service drive control switch required by E3.7, is to comply with this clause. Lift services design to confirm compliance at CC stage.	N/A	N/A
SPECIFICATION E3.1 – LIFT INSTALLATIONS				
1.	Scope	Informational	Noted	Noted
2.	Lift cars exposed	(a) A lift car exposed to solar radiation directly, or indirectly by re-radiations, must have – (i) mechanical ventilation at a rate of one air change per minute; or (ii) mechanical cooling. (b) A 2-hour alternative power source for ventilation or mechanical cooling at (a) must be provided in the event of normal power loss.		
3.	Lift car emergency lighting	A lift car must have an emergency lighting system designed – (a) to come on automatically upon failure of the normal light supply; and (b) to provide at least 20 lux of lighting for 2 hours on the alarm initiation button.		
4.	Cooling of lift shaft	While a lift in a lift shaft is in service, the cooling of the lift shaft must – (a) ensure that the dry bulb air temperature in the lift shaft does not exceed 40°C; and (b) if the cooling is by a ventilation system, be provided with an air changed rate determined using a temperature rise of no more than 5 K.		
5.	Lift foyer access	Where there is a security foyer in a building, access may be via locked security doors provided – (a) security doors revert to the unlocked state in the event of – (i) power failure; or (ii) fire alarm; and		

		(b) locked foyer areas are monitored by closed circuit television and intercom system to a 24-hour staffed location.		
6.	Emergency access doors in a single enclosed lift shaft	(a) Where a lift is installed in a single enclosed lift shaft having a distance between normal landing entrances greater than 12.2m, emergency access doors must be provided and constructed as follows: (i) The clear opening size of emergency doors must be not less than 600 mm wide x 980 mm high. (ii) Hinged doors must not open towards the interior of the lift shaft. (iii) Doors must be self-closing and self-locking. (iv) Doors must be marked on the landing side with the letters not less than 35 mm high: "DANGER LIFTWELL ACCESS" "KEEP FURNITURE AND FIXTURES CLEAR". (v) Doors from the landing side must only be openable by a tool. (vi) Each emergency door must be provided with a positive breaking electrical contact, wired into the control circuit to prevent movement of the lift until the emergency door is both closed and locked. (b) In single enclosed lift shafts where – (i) ropes are installed; and (ii) the vertical distance between the lift car sill and the landing door head is less than 600 mm; and (iii) the counterweight is resting on its fully compressed buffer, emergency egress from the lift car must be provided in the form of an interlocked door with clear opening dimensions not less than 600 mm x 600 mm, accessible from the lift car entrance or the lift car rook (where the door is located in the wall of the lift shaft).		
PART E4 – VISIBILITY IN AN EMERGENCY, EXIT SIGNS AND WARNING SYSTEMS				
E4.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
E4.2:	Emergency lighting requirements	An emergency lighting system must be installed throughout the building in accordance with Clause E4.2 of the BCA and AS 2293.1-2018.	CRA – Refer Annexure C	CRA – Refer Annexure C
E4.3:	Measurement of distance	Informational	Noted	Noted

E4.4:	Design and operation of emergency lighting	The emergency lighting system must comply with AS 2293.1-2018.	CRA – Refer Annexure C	CRA – Refer Annexure C
E4.5:	Exit signs	Exits signs are to be provided above or adjacent to a door providing egress as well as directional signage throughout the entire development where necessary.	DNC	DNC
E4.6:	Direction signs	Where an *exit* is not readily apparent, directional signage is to be installed indicating the direction of egress.	DNC	DNC
E4.7:	Class 2 and 3 buildings and Class 4 Parts: Exemptions	Informational	Noted	Noted
E4.8:	Design and operation of exit signs	*Exit* signs must comply with AS 2293.1-2018 and be clearly visible at all times when the building is occupied.	DNC	DNC
E4.9:	Emergency warning and intercom systems	An Emergency warning and intercom system complying where applicable with AS 1670.4 must be installed within the building.	N/A	N/A

SECTION F: HEALTH AND AMENITY			**Type A Construction**	**Type C Construction**
PART F1 – DAMP AND WEATHERPROOFING				
F1.0:	Deemed-to-Satisfy Provisions	*Performance Requirement* FP1.4, for the prevention of the penetration of water through external walls, must be complied with. There are no Deemed-to-Satisfy Provisions for this *Performance Requirement* in respect of external walls. The assessment contained within this report does not include an assessment against Performance Provision FP1.4.	PS Required	PS Required
F1.1:	Stormwater drainage	Stormwater drainage to comply with AS3500.3-2003.	CRA – Refer Annexure C	CRA – Refer Annexure C
F1.4:	External above ground membranes	Waterproofing membranes for external above ground use to comply with AS4654 Parts 1 and 2-2012.	CRA – Refer Annexure C	CRA – Refer Annexure C
F1.5:	Roof coverings	Roof coverings are to comply with BCA Clause F1.5.	CRA – Refer Annexure C	CRA – Refer Annexure C
F1.6:	Sarking	*Sarking-type materials* used for weatherproofing must comply with AS/NZS 4200 Part 1 and 2-1994.	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION F: HEALTH AND AMENITY			Type A Construction	Type C Construction
F1.7:	Water proofing of wet areas in buildings	Wet areas must be constructed in accordance with AS 3740-2010 and F1.7 of the BCA.	CRA – Refer Annexure C	CRA – Refer Annexure C
F1.9:	Damp-proofing	Moisture is to be prevented from reaching the walls above a damp-proof course, and the underside of the suspended floors.	CRA – Refer Annexure C	CRA – Refer Annexure C
F1.10:	Damp-proofing of floors on the ground	If a floor of a room is laid on the ground or on fill, moisture from the ground must be prevented from reaching the upper surface of the floor and adjacent walls by the insertion of a vapour barrier in accordance with AS 2870-2011 (N/A to areas that do not require weatherproofing – refer specific clause exemptions).	CRA – Refer Annexure C	CRA – Refer Annexure C
F1.11:	Provision of floor wastes	In Class 2 or 3 buildings or Class 4 part of a building, a bathroom or laundry is to have a floor waste where the floor is graded to the floor waste to permit the drainage of water.	CRA – Refer Annexure C	CRA – Refer Annexure C
F1.12:	Sub-floor ventilation		CRA – Refer Annexure C	CRA – Refer Annexure C
F1.13:	Glazed Assemblies	Glazed assemblies are to comply with AS2047 and AS1288.	CRA – Refer Annexure C	CRA – Refer Annexure C
PART F2 – SANITARY AND OTHER FACILITIES				
F2.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
F2.1:	Facilities in residential buildings (including Table F2.1)	Each SOU must be provided with sanitary facilities; a kitchen sink; facility for the preparation and cooking of food; a bath or shower; a closet pan; wash basin; laundry wash tub and space for a washing machine and dryer.	CRA – Refer Annexure C	CRA – Refer Annexure C
F2.2:	Calculation of number of occupants and facilities	Informational – a) The number of persons accommodated must be calculated according to D1.13 if it cannot be more accurately determined by other means b) Unless the premises are used predominantly by one sex, sanitary facilities must be provided on the basis of equal numbers of males and females c) In calculating the number of sanitary facilities to be provided under F2.1 and F2.3, a unisex facility *required* for people with a disability may be counted once for each sex	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION F: HEALTH AND AMENITY		Type A Construction	Type C Construction
	d) For the purpose of this Part, a unisex facility comprises one closet pan, one washbasin and means for the disposal of sanitary towels		
F2.3: Facilities in Class 3 to 9 buildings (including Table F2.3)	(a) Except where permitted by (b), (c), (f), F2.4(a) and F2.4(b), separate sanitary facilities for males and females must be provided for Class 3, 5, 6, 7, 8 or 9 buildings in accordance with Table F2.3. (b) If not more than 10 people are employed, a unisex facility may be provided instead of separate facilities for each sex. (c) If the majority of employees are one sex, not more than 2 employees of the other sex may share toilet facilities if the facilities are separated by means of walls, partitions and doors to afford privacy. (d) Employees and the public may share the same facilities in a Class 6 and 9b building (other than a school or early childhood centre) provided the number of facilities provided is not less than the total number of facilities required for employees plus those required for the public. (e) Adequate means of disposal of sanitary towels must be provided in sanitary facilities for use by females. (f) Separate sanitary facilities for males and females need not be provided for patients in a ward area of a Class 9a building. (g) A Class 9a health-care building must be provided with – (i) one kitchen or other adequate facility for the preparation and cooking or reheating of food including a kitchen sink and washbasin; and (ii) laundry facilities for the cleansing and drying of linen and clothing or adequate facilities for holding and dispatch or treatment of soiled linen and clothing, sanitary towels and the like and the receipt and storage of clean linen; and (iii) one shower for each 8 patients or part thereof; and (iv) one island-type plunge bath in each storey containing a ward area (h) A class 9b early childhood centre must be provided with – (i) a kitchen or food preparation area with a kitchen sink, separate hand washing facilities, space for a refrigerator and space for cooking facilities, with –	DNC	DNC

SECTION F: HEALTH AND AMENITY		Type A Construction	Type C Construction
	(A) the facilities protected by a door or gate with child proof latches to prevent unsupervised access to the facilities by children younger than 5 years old; and (B) the ability to facilitate supervision of children from the facilities if the early childhood centre accommodates children younger than 2 years old; and (ii) one bath, shower or shower-bath; and (iii) if the centre accommodates children younger than 3 years old – (A) a laundry facility comprising a washtub and space in the same room for a washing machine; and (B) a bench type baby bath, which is within 1 m of the nappy change bench; and (C) a nappy changing bench which – (aa) is within 1 m of separate adult hand washing facilities and bench type baby bath; and (bb) must be not less than 0.9 m^2 in area and a height of not less than 850 mm, but not more than 900 mm above the finished floor level; and (cc) must have a space not less than 800 mm height, 500 mm wide and 800 mm deep for the storage of steps; and (dd) is positioned to permit a staff member changing a nappy to have visibility of the play area at all times. (i) Class 9b theatres and sporting venues must be provided with one shower for each 10 participants or part thereof. (j) Not less than one washbasin must be provided where closet pans or urinals are provided.		
F2.4: Accessible sanitary facilities (including Table F2.4)	Employee sanitary facility required by Clause F2.1 is to be an accessible unisex compartment compliant with AS 1428.1-2009.	CRA – Refer Annexure C	DNC
F2.5: Construction of sanitary compartments	a) Other than in an early childhood centre, sanitary compartments must have doors and partitions that separate adjacent compartments and extend— (i) from floor level to the ceiling in the case of a unisex facility; or	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION F: HEALTH AND AMENITY		Type A Construction	Type C Construction
	(ii) to a height of not less than 1.5 m above the floor if primary school children are the principal users; or (iii) 1.8 m above the floor in all other cases. b) The door to a fully enclosed sanitary compartment must— (i) open outwards; or (ii) slide; or (iii) be readily removable from the outside of the sanitary compartment, unless there is a clear space of at least 1.2 m, measured in accordance with Figure F2.5, between the closet pan within the sanitary compartment and the doorway. <u>Early childhood centre</u> In an early childhood centre, facilities for use by children must have each sanitary compartment screened by a partition which, except for the doorway, is opaque for a height of at least 900 mm but not more than 1200 mm above the floor level.		
F2.6: Interpretation: urinals and washbasins	Informational– (a) A urinal may be— (i) an individual stall or wall-hung urinal; or (ii) each 600 mm length of a continuous urinal trough; or (iii) a closet pan used in place of a urinal. (b) A washbasin may be— (i) an individual basin; or (ii) a part of a hand washing trough served by a single water tap.	Noted	Noted
F2.8: Waste Management	Class 9a & 9c	N/A	N/A
F2.9: Accessible adult change facilities	(a) Accessible adult change facilities required by (b) (i) must be constructed in accordance with Specification F2.9; and (ii) cannot be combined with another sanitary compartment. (b) One unisex accessible adult change facility must be provided in an accessible part of a—	N/A	N/A

SECTION F: HEALTH AND AMENITY		Type A Construction	Type C Construction
	(i) Class 6 building that is a shopping centre having a design occupancy of not less than 3,500 people, calculated on the basis of the floor area and containing a minimum of 2 *sole-occupancy units*; and (ii) Class 9b sports venue or the like that— (A) has a design occupancy of not less than 35,000 spectators; or (B) contains a swimming pool that has a perimeter of not less than 70 m and that is required by Table D3.1 to be accessible; and (iii) museum, art gallery or the like having a design occupancy of not less than 1,500 patrons; and (iv) theatre or the like having a design occupancy of not less than 1,500 patrons; and (v) passenger use area of an airport terminal building within an airport that accepts domestic and/or international flights that are public transport services as defined in the Disability Standards for Accessible Public Transport 2002.		
PART F3 – ROOM SIZES			
F3.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
F3.1: Height of rooms and other spaces	The height of rooms and other spaces must be not less than— (a) in a Class 2 or 3 building or Class 4 part of a building— (i) a kitchen, laundry, or the like — 2.1 m; and (ii) a corridor, passageway or the like — 2.1 m; and (iii) a habitable room excluding a kitchen — 2.4 m; and (iv) in a room or space with a sloping ceiling or projections below the ceiling line within— (A) a habitable room— (aa) in an attic — a height of not less than 2.2 m for not less than two thirds of the floor area of the room or space; and	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION F: HEALTH AND AMENITY		Type A Construction	Type C Construction
	(bb) in other rooms — a height of not less than 2.4 m for not less than two thirds of the floor area of the room or space; and (B) a non-habitable room — a height of not less than 2.1 m for not less than two thirds of the floor area of the room or space; and when calculating the floor area of a room or space, any part that has a ceiling height of less than 1.5 m is not included; and (b) in a Class 5, 6, 7 or 8 building— (i) except as allowed in (ii) and (f) — 2.4 m; and (ii) a corridor, passageway, or the like — 2.1 m; and (c) in a Class 9a health-care building— (i) a patient care area — 2.4 m; and (ii) an operating theatre or delivery room — 3 m; and (iii) a treatment room, clinic, waiting room, assageway, corridor, or the like — 2.4 m; and (d) in a Class 9b building— (i) a school classroom or other assembly building or part that accommodates not more than 100 persons — 2.4 m; and (ii) a theatre, public hall or other assembly building or part that accommodates more than 100 persons — 2.7 m; and (iii) a corridor— (A) that serves an assembly building or part that accommodates not more than 100 persons — 2.4 m; or (B) that serves an assembly building or part that accommodates more than 100 persons — 2.7 m; and (iv) the number of persons accommodated must be calculated according to D1.13; and (e) in a Class 9c building— (i) a kitchen, laundry, or the like — 2.1 m; and (ii) a corridor, passageway or the like — 2.4 m; and (iii) a habitable room excluding a kitchen — 2.4 m; and (f) in any building—		

SECTION F: HEALTH AND AMENITY		Type A Construction	Type C Construction
	(vi)a bathroom, shower room, sanitary compartment, airlock, tea preparation room, pantry, store room, garage, car parking area, or the like — 2.1 m; and (vii) a commercial kitchen — 2.4 m; and (viii) above a stairway, ramp, landing or the like — 2 m measured vertically above the nosing line of stairway treads or the floor surface of the ramp, landing or the like. (ix)A required accessible adult change facility – 2.4m		
PART F4 – LIGHT AND VENTILATION			
F4.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
F4.1: Provision of natural light	Class 2 & 4 Natural light must be provided to all habitable rooms. Class 3 Natural light must be provided to all bedrooms and dormitories. Class 9a & 9c Natural light must be provided to all rooms used for sleeping purposes. Class 9b schools Natural light must be provided to all general purpose classrooms in primary or secondary schools Class 9b early childhood centre Natural light must be provided to all playrooms or the like for the use of children in an early childhood centre.	N/A	N/A
F4.2: Methods and extent of natural lighting	• Natural light must be provided by: (i) Windows: A. with an aggregate light transmitting area of not less than 10% the floor area of the room; and B. that are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like; or (ii) Rooflights, that:	N/A	N/A

SECTION F: HEALTH AND AMENITY		Type A Construction	Type C Construction
	A. have an aggregate light transmitting area of not less than 3% the floor area of the room; or (iii) a proportional combination of windows and roof lights required by (i) and (ii). • In a Class 9b early childhood centre, the sills of 50% of windows in children's rooms must be located not more than 500 mm above the floor level. • A required window that faces a boundary of an adjoining allotment or a wall of the same building or another building on the allotment must be not less than a horizontal distance from that boundary or wall that is the greater of – – 1m; and – 50% of the square root of the exterior height of the wall in which the window is located, measured from its sill. Class 9c not listed above		
F4.3: Natural light borrowed from adjoining room		N/A	N/A
F4.4: Artificial Lighting	Lighting to the all areas is to comply with AS 1680.0.	CRA – Refer Annexure C	CRA – Refer Annexure C
F4.5: Ventilation of rooms	All rooms to be provided with Clause F4.6 compliant natural ventilation **OR** a mechanical ventilation or air-conditioning system complying with AS 1668.2-2012.	CRA – Refer Annexure C	CRA – Refer Annexure C
F4.6: Natural ventilation	(a) Natural ventilation provided in accordance with F4.5(a) must consist of permanent openings, windows, doors or other devices which can be opened— (i) with an aggregate opening or openable size not less than 5% of the floor area of the room required to be ventilated; and (ii) open to— (A) a suitably sized court, or space open to the sky; or (B) an open verandah, carport, or the like; or (C) an adjoining room in accordance with F4.7.	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION F: HEALTH AND AMENITY			Type A Construction	Type C Construction
F4.7:	Ventilation borrowed from adjoining room	Ventilation may be 'borrowed' from adjoining rooms in some instances in accordance with this clause.	CRA – Refer Annexure C	CRA – Refer Annexure C
F4.8:	Restriction on position of water closets and urinals	Sanitary compartments must not open directly into a – • kitchen or pantry • public dining room or restaurant • dormitory in a Class 3 building • room used for public assembly (which is not an early childhood centre, primary school or open spectator stand) • workplace normally occupied by more than one person.	CRA – Refer Annexure C	CRA – Refer Annexure C
F4.9:	Airlocks	If sanitary compartments are prohibited from opening directly to another room: Class 2, 3 or 4 Sous • access must be by an airlock, hallway or other room; or • the sanitary compartments must be provided with mechanical exhaust ventilation. Class 6, 7, 8 & 9 • access must be by an airlock, hallway or other room with a floor area of not less than 1.1m^2 and fitted with self-closing doors at all access doorways; or • the sanitary compartments must be provided with mechanical exhaust ventilation and the doorway to the room adequately screened from view.	CRA – Refer Annexure C	CRA – Refer Annexure C
F4.11:	Carparks	Every storey of a carpark (except an open deck carpark) must have: • a system of mechanical ventilation complying with AS1668.2-2012; or • a system of natural ventilation complying with Section 4 of AS 1668.4-2012.	CRA – Refer Annexure C	CRA – Refer Annexure C
F4.12:	Kitchen local exhaust ventilation	Any commercial kitchen must be provided with a kitchen exhaust hood complying with AS 1668.1 and AS 1668.2 where: • any cooking apparatus has: – a total maximum electrical power input exceeding 8 kW; or	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION F: HEALTH AND AMENITY		Type A Construction	Type C Construction
	– a total gas power input exceeding 29 MJ/h; or • the total maximum power input to more than one apparatus exceeds: – 0.5 kW electrical power; or – 1.8 MJ gas, Per m^2 of floor area of the room or enclosure.		
PART F5 – SOUND TRANSMISSION AND INSULATION – N/A			

SECTION G: ANCILLARY PROVISIONS		Type A Construction	Type C Construction
PART G1 – MINOR STRUCTURES AND COMPONENTS			
G1.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
G1.1: Swimming pools	Swimming pools and spa pools are to be provided with safety fencing compliant with AS1926. Parts 1 and 2; and, as required by the Swimming Pools Act 1992 and the Swimming Pools Regulation 2008. A water recirculation system in a swimming pool or spa pool must comply with AS1926.3-2010.	N/A	N/A
G1.2: Refrigerated chambers, strong-rooms and vaults	(v) A refrigerated or cooling chamber, strongroom or vault which is of sufficient size for a person to enter must have— (i) a door which is capable of being opened by hand from inside without a key; and (ii) internal lighting controlled only by a switch which is located adjacent to the entrance doorway inside the chamber, strongroom or vault; and (iii) an indicator lamp positioned outside the chamber, strongroom or vault which is illuminated when the interior lights required by (a)(ii) are switched on; and (iv) an alarm that is— (A) located outside but controllable only from within the chamber, strongroom or vault; and	CRA – Refer Annexure C	CRA – Refer Annexure C

SECTION G: ANCILLARY PROVISIONS		Type A Construction	Type C Construction
	(B) able to achieve a sound pressure level outside the chamber, strongroom or vault of 90 dB(A) when measured 3 m from the sounding device. (w) A door required by (a)(i) in a refrigerated or cooling chamber must have a doorway with a clear width of not less than 600 mm and a clear height not less than 1.5 m.		
G1.3: Outdoor play spaces	The outdoor play space must be enclosed on all sides with a barrier which complies with AS 1926.1-2007 to restrict the children from exiting the premises. The above requirements do not apply to a wall, including doors and windows, which form part of the Class 9b early childhood centre.	N/A	N/A
NSW G1.101: Provision for cleaning windows	A safe manner for cleaning of windows located 3 or more storeys above ground level must be provided, and compliance is achieved where: • the windows can be cleaned wholly from within the building; or • via a method complying with the Work Health and Safety Act 2011 and regulations made under that Act.	FI	FI
PART G2 – BOILERS, PRESSURE VESSELS, HEATING APPLIANCES, FIREPLACES, CHIMNEYS AND FLUES – N/A			
PART G3 – ATRIUM CONSTRUCTION – N/A			
SPECIFICATION G3.8 – FIRE AND SMOKE CONTROL IN BUILDINGS CONTAINING ATRIUMS – N/A			
PART G4- CONSTRUCTION IN ALPINE AREAS – N/A			
PART G5 – CONSTRUCTION IN BUSHFIRE PRONE AREAS – N/A			
PART G6 – OCCUPIABLE OUTDOOR AREAS – N/A			

ANNEXURE C - BCA COMPLIANCE SPECIFICATION

The following BCA matters are to be addressed by specific BCA Design Certificate to be issued by the relevant architectural, services and engineering consultants at the Construction Certificate Stage. This schedule should be forwarded to all consultants to obtain verification that these items have and will be included in the design documentation / specifications:

Architectural Design Certification:

1. The FRL's of building elements for the proposed works have been designed in accordance with Table 3 of Specification C1.1 of BCA2019 for a building of Type A Construction, and Table 5 of Specification C1.1 of BCA2019 for a building of Type C Construction.
1. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2019.
2. Building elements must be non-combustible in accordance with C1.9 of BCA2019.
3. Materials, floor and wall linings/coverings, surface finishes and air-handling ductwork used in the works will comply with the fire hazard properties of Clause C1.10 and Specification C1.10 of BCA2019.
4. Any concrete external walls that could collapse as complete panels (e.g. tilt-up and pre-cast concrete), in a building having a rise in storeys of not more than 2, will comply with Specification C1.11.
5. Any fire-protected timber proposed will comply with Clause C1.13 of BCA2019.
6. Any ancillary elements fixed, installed or attached to the internal parts or external face of an external wall that is required to be non-combustible will comply with Clause C1.14 of BCA2019.
7. The large isolated building will be in accordance with Clause C2.3 of BCA 2019.
8. Vehicular access to a large isolated building will be in accordance with Clause C2.4 of BCA2019.
9. The external walls and openings of separate fire compartments will be protected in accordance with Clause C3.3.
10. The parts of different classifications located alongside one another in the same storey will be separated in accordance with Clause C2.8 and Specification C1.1 of BCA2019.
11. Floors separating storeys of different classifications will comply with BCA Clause C2.9 of BCA2019.
12. Equipment will be separated in accordance with Clause C2.12 of BCA2019.
13. Openings in the external walls that are required to have an FRL will be in located in accordance with Clause C3.2 and C3.3 of BCA2019 or protected in accordance with Clause C3.4 of BCA2019.
14. Doors in a fire-isolated exit will be self-closing or automatic closing fire doors with an FRL of not less than -/60/30 in accordance with Clause C3.8 of BCA2019.
15. Fire-isolated stairways will not be penetrated by services other than those permitted by Clause C3.9 of BCA2019.
16. Services penetrating elements required to possess an FRL including the floor slabs, walls, shafts, etc. will be protected in accordance with Clause C3.12, C3.13 and C3.15 and Specification C3.15 of BCA2019.
17. Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation will be protected in accordance with BCA Clause C3.16.

18. All attachments to the external façade of the building will be fixed in a way that does not affect the fire resistance of that element in accordance with Clause 2.4 of Specification C1.1 of BCA2019.
19. The top and bottom of the riser shafts will achieve an FRL not less than the FRL required for the walls of the shaft in accordance with Clause 2.7 of Specification C1.1 of BCA2019.
20. Fire doors will comply with AS1905.1 and Specification C3.4 of BCA2019.
21. The number of exits provided to the building will be in accordance with Clause D1.2 of BCA2019.
22. The required exits will be fire-isolated in accordance with Clause D1.3 of BCA2019.
23. Travel distances to exits will be in accordance with Clause D1.4 of BCA2019.
24. The alternative exits will be distributed uniformly around the storey and will not be less than 9m apart, and not more that 45m apart in the residential portion or patient care areas in the health-care building or 60m, in accordance with Clause D1.5 of BCA2019.
25. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D1.6 of BCA2019.
26. The fire-isolated exits will be in accordance with Clause D1.7 of BCA2019.
27. The external stairway or ramp serving as a required exit will be in accordance with Clause D1.8 of BCA2019.
28. Discharge from exits will be in accordance with Clause D1.10 of BCA2019.
29. The non-required stairways, ramps and escalators will be in accordance with Clause D1.12 of BCA2019.
30. The ladder from the plant, lift machine rooms, and electricity network substation in lieu of a stairway will be in accordance with Clause D1.16 of BCA2019.
31. The stairway or ramp within the fire-isolated shaft is to be non-combustible, and if there is a local failure not cause structural damage or impair the fire resistance of the shaft, in accordance with Clause D2.2 of BCA2019.
32. The non-fire isolated stairs will be constructed in accordance with Clause D2.3 of BCA2019.
33. The construction separating rising and descending stairs in the fire-isolated exit stairway will be non-combustible and smoke proof, in accordance with Clause D2.4 of BCA2019.
34. The smoke lobby to the fire-isolated exit will be constructed in accordance with Clause D2.6 of BCA2019.
35. The construction of EDB's and telecommunications distribution boards will be in accordance with Clause D2.7 of BCA2019 with the enclosure bounded by non-combustible construction or fire protective covering and smoke seals provided around the perimeter of the non-combustible doors and any openings sealed with non-combustible mastic to prevent smoke spreading from the enclosure.
36. The enclosing walls and ceiling under the non-fire-isolated stairway will achieve an FRL of 60/60/60, and have a self-closing -/60/30 fire door, in accordance with Clause D2.8 of BCA2019.
37. New pedestrian ramps will comply with AS1428.1-2009, Clause D2.10 and Part D3 of BCA2019. The floor surface of a ramp must have a slip-resistance classification complying with Table D2.14 when tested in accordance with AS4586.
38. The fire-isolated passageway will be in accordance with Clause D2.11 of BCA2019.
39. Stair geometry to the new stairways will be in accordance with Clause D2.13 of BCA2019. Stair treads are to have a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS4586.
40. Landings and door thresholds throughout the development will be provided in accordance with Clause D2.14 and D2.15 of BCA2019. Landings to have either a surface with a slip-

resistance classification complying with Table D2.14 when tested in accordance with AS4586 or a strip at the edge of the landing with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS4586 where the edge ledge to a flight below.

41. The handrails and balustrades to all stairs and throughout the building will be in accordance with Clause D2.16, and D2.17 of BCA2019.
42. The fixed platform, walkway, stairway and ladder and any associated going and riser, landing handrail, balustrade, located within the machinery room, boiler house, lift-machine room, plant-room, or non-habitable attic/storeroom within the sole occupancy unit will comply with AS1657-2013 or Part D2 of BCA2019.
43. The doorways and doors will be in accordance with Clause D2.19 and D2.20 of BCA2019.
44. The door latching mechanisms to the proposed required exit doors will be in accordance with Clause D2.21 of BCA2019.
45. Signage will be provided on fire and smoke doors in accordance with Clause D2.23 of BCA2019.
46. The new works will be accessible in accordance with Clause D3.1 and table D3.1, D3.2, D3.3 of BCA2019, and with AS1428.1-2009, with particular note to door circulation spaces, accessway widths, turning spaces and floor coverings, in accordance with Part D3 of BCA2019.
47. Accessible carparking will be in accordance with Clause D3.5, and Table D3.5 of BCA2019.
48. Braille and tactile signage will in accordance with Clause D3.6, and Specification D3.6 of BCA2019.
49. Tactile ground surface indicators will be provided in accordance with Clause D3.8 of BCA2019 and AS1428.4.1-2009.
50. Fixed wheel chair seating will be in accordance with Clause D3.9, and Table D3.9 of BCA2019.
51. The ramps associated with the accessway will not have a combined vertical rise of more than 3.6m and a landing for a step ramp will not overlap a landing for another step ramp of ramp in accordance with Clause D3.11 of BCA2019.
52. On an accessway, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, will be clearly marked in accordance with AS1428.1-2009 and Clause D3.12 of BCA2019.
53. The fire control centre will be in accordance with Specification E1.8 or BCA2019.
54. Fire precautions whilst the building is under construction fire precautions will be in accordance with Clause E1.9 of BCA2019.
55. Additional provisions will be made in accordance with Clause E1.10 of BCA2019, due to the special hazards associated with the building works or the location of the building works.
56. External above ground waterproofing membranes will comply with Clause F1.4 of BCA2019 and AS 4654 Parts 1 & 2.
57. The new roof covering will be in accordance with Clause F1.5 of BCA2019.
58. Any sarking proposed will be installed in accordance with Clause F1.6 of BCA2019.
59. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F1.7 of BCA2019 and AS3740.
60. Damp proofing of the proposed structure will be carried out in accordance with Clause F1.9 and F1.10 of BCA2019.
61. Floor wastes will be installed to bathrooms and laundries above sole occupancy units or public space in accordance with Clause F1.11 of BCA2019.

62. All new glazing to be installed throughout the development will be in accordance with Clause F1.13 of BCA2019 and AS1288 / AS2047.
63. Sanitary facilities will be provided in the building in accordance with Clause F2.1, Table F2.1, Clause F2.3 and Table F2.3 of BCA2019.
64. Accessible sanitary facilities will be provided in the building in accordance with Clause F2.4, Table F2.4 (a) of BCA2019 and AS1428.1-2009.
65. The construction of the sanitary facilities will be in accordance with Clause F2.5 of BCA2019.
66. Ceiling heights to the new areas will be in accordance with Clause F3.1 of BCA2019.
67. Natural light will be provided in accordance with Clause F4.1, F4.2, and F4.3 of BCA2019.
68. Natural ventilation will be provided in accordance with Clause F4.5, F4.6 and F4.7 of BCA2019.
69. Water closets and urinals will be located in accordance with Clause F4.8 of BCA2019.
70. The sanitary compartments will be either be provided with mechanical exhaust ventilation or an airlock in accordance with Clause F4.9 of BCA2019.
71. Pliable building membranes installed in external walls will comply with Clause F6.2 of BCA2019 and where a pliable building membrane is not installed in an external wall, the primary water control layer will be separated from water sensitive materials by a drained cavity.
72. A safe manner for cleaning of windows located 3 or more storeys above ground level will be provided in accordance with the Work Health & Safety Act 2011 and regulations made under that Act in accordance with NSW G1.101 of BCA2019.
73. The refrigerated or cooling chamber, strongroom or vault will be in accordance with Clause G1.2.
74. Boliers and pressure vessels shall be installed in accordance with Specification G2.2 of BCA2019.
75. Essential fire or other safety measures must be maintained and certified on an ongoing basis, in accordance with the provisions of the Environmental Planning and Assessment Regulation, 2000.
76. Building Fabric and Thermal Construction will be in accordance with Part J1 of BCA2019.
77. Glazing will be in accordance with Part J1 of BCA2019.
78. Building sealing will be in accordance with Part J3 of BCA2019.
79. Facilities for Energy Monitoring will be provided in accordance with Clause J8.3 of BCA2019.

Electrical Services Design Certification:

80. A smoke detection and alarm system will be installed throughout the building in accordance with Table E2.2a, and Specification E2.2a of BCA2019.
81. Emergency lighting will be installed throughout the development in accordance with Clause E4.2, E4.4 of BCA2019 and AS2293.1.
82. Exit signage will be installed in accordance with Clause E4.5, E4.7, and E4.8 of BCA2019 and AS2293.1.
83. Artificial lighting will be installed throughout the development in accordance Clause F4.4 of BCA2019 and AS/NZS 1680.0.
84. Lighting power and controls will be installed in accordance with Part J6 of BCA2019.

Hydraulic Services Design Certification:

85. Storm water drainage will be provided in accordance with Clause F1.1 of BCA2019 and ASNZS3500.3

86. Fire hydrant system will be installed in accordance with Clause E1.3 of BCA2019 and AS2419.1 as required.

87. Fire hose reels will be installed in accordance with Clause E1.4 of BCA2019 and AS2441.

88. A sprinkler system will be installed in accordance with Clause E1.5 of BCA2019, Specification E1.5 and appropriate part(s) of AS2118.

89. Portable fire extinguishers will be installed in accordance with Clause E1.6 of BCA2019 and AS2444.

90. The heated water supply systems will be designed and installed to NCC Volume 3 – Plumbing code and Clause J7.2 of BCA2019.

Mechanical Services Design Certification:

91. An air-handling system which does not form part of a smoke hazard management system will be installed in accordance with Clause E2.2 of BCA2019, and AS 1668.1.

92. Stair pressurisation will be installed in the building in accordance with Table E2.2a of BCA2019 and AS 1668.1.

93. A smoke exhaust system will be installed in the building in accordance with Table E2.2b, and Specification E2.2c of BCA2019.

94. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F4.5 of BCA2019 and AS1668.2.

95. Exhaust systems installed in a kitchen, bathroom, sanitary compartment or laundry of a Class 2 or 4 sole-occupancy unit will have a minimum flow rate and discharge location in accordance with Clause F6.3 of BCA2019.

96. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J5 of BCA2019.

Structural Engineers Design Certification:

97. The material and forms of construction for the proposed works will be in accordance with Clause B1.2, B1.4 and B1.6 of BCA2019 as follows:

- Dead and Live Loads – AS1170.1
- Wind Loads – AS1170.2
- Earthquake actions – AS1170.4
- Masonry – AS3700
- Concrete Construction – AS3600
- Steel Construction AS4100
- Aluminium Construction – AS/NZS1664.1 or 2
- Timber Construction – AS 1720.1
- ABCB Standard for Construction of Buildings in Flood Hazard Areas.

98. The FRL's of the structural elements for the proposed works have been designed in accordance with Table 3 of Specification C1.1 of BCA2019 for a building of Type A Construction and Table 5 of Specification C1.1 of BCA2019 for a building of Type C Construction.

99. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2019.

100. The construction joints to the structure will be in accordance with Clause C3.16 of BCA2019 to reinstate the FRL of the element concerned.

101. The concrete panel external walls will be in accordance with Specification C1.11 of BCA2019.

102. Upon completion of the works, a structural engineer will be able to certify that local failure will be in accordance with Clause D2.2 of BCA2019 for the fire isolated stairs.

Lift Services Design Certification:

103. Warning signage in accordance with Clause E3.3 of BCA2019 will be provided to the lifts to advise not to use the lifts in a fire.

104. Access and egress to the lift well landings will comply with the Deemed-to-Satisfy Provisions of D3 of the BCA2019 and will be suitable to accommodate disabled persons.

105. The type of lifts will also be suitable to accommodate persons with a disability in accordance with Clause E3.6, Table E3.6a, and will have accessible features in accordance with Table E3.6b of BCA2019.

106. The lifts will comply with AS1735.12 in accordance with Clause E3.6 of BCA2019.

107. All electric passenger lifts and electrohydraulic passenger lifts shall comply with Specification E3.1 of BCA2019.

Acoustic Services Design Certification:

108. The sound transmission and insulation of the residential portions of the development will comply with Part F5 of BCA2019.