

BCA Assessment Report

51 Arthur Street, Forestville



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Document Control



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Table of Contents

EXECUTIVE SUMMARY	6
1 BASIS OF ASSESSMENT	7
1.1. Location and Description.....	7
1.2. Purpose	7
1.3. Building Code of Australia	7
1.4. Limitations	7
1.5. Design Documentation	8
2 BUILDING DESCRIPTION.....	9
2.1. Rise in Storeys (Clause C1.2).....	9
2.2. Classification (Clause A6.0)	9
2.3. Effective Height (Clause A1.0).....	9
2.4. Type of Construction Required (Table C1.1)	9
2.5. Floor Area and Volume Limitations (Table C2.2).....	9
2.6. Fire Compartments	10
2.7. Exits.....	10
2.8. Climate Zone (Clause A1.0).....	11
2.9. Location of Fire-source features	11
3 MATTERS FOR FURTHER CONSIDERATION	12
3.1. General.....	12
3.2. Dimensions and Tolerances.....	12
3.3. Performance Based Design – Performance Solutions	12
3.4. Façade Construction – Non Combustible	13
3.5. PART C1 – FIRE RESISTANCE AND STABILITY	14
3.6. PART C3 – PROTECTION OF OPENINGS	15
3.7. PART D1 – PROVISIONS FOR ESCAPE	16
3.8. PART C2 – CONSTRUCTION OF EXITS	18
3.9. PART D3 – ACCESS FOR PEOPLE WITH A DISABILITY	18
3.10. PART E1 – FIRE FIGHTING SERVICES	18
3.11. PART E2 – SMOKE HAZARD MANAGEMENT	19
3.12. PART E3 – LIFT INSTALLATIONS.....	19
3.13. PART E4 – VISABILITY IN AN EMERGENCY, EXIT SIGNS AND WARNING SYSTEMS ...	20
3.14. PART F2 – SANITARY AND OTHER FACILITITES.....	20
4 STATEMENT OF COMPLIANCE.....	21
ANNEXURE A DESIGN DOCUMENTATION.....	22
ANNEXURE B ESSENTIAL SERVICES	24
ANNEXURE C FIRE RESISTANCE LEVELS	28
ANNEXURE D DETAILED BCA 2019 ASSESSMENT	31
ANNEXURE E DEFINITIONS.....	152

ANNEXURE F BCA COMPLIANCE SPECIFICATION 156

Tables

Table 1.	Building Classification.....	9
Table 2.	Performance Solutions	12
Table 3.	Architectural Plans.....	23
Table 4.	Essential Fire Safety Measures.....	25
Table 5.	Type A Construction	29
Table 6.	Deemed to Satisfy Clause Assessment	33

EXECUTIVE SUMMARY

This document provides an assessment of the architectural design drawings for the proposed four (4) storey multi-residential and commercial development at 51 Arthur Street, Forestville, against the Deemed-to-Satisfy provisions of the Building Code of Australia (BCA) 2019, Volume 1 Amendment 1. The development consists of basement carparking, several commercial shop front tenancies, and multi-unit shop top housing above.

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.	Permit a single exit from the Basement Carpark where egress to street involves a vertical rise >1.5m.	DtS Provision – D1.2 Performance Requirements DP4 and EP2.2
2.	To permit extended travel distances between the entrance doors of the most disadvantaged SOU to the fire stair located on the first floor of the building of 21m in lieu of the 12m concession allowed under Spec E1.5a requirements.	DtS Provision – D1.4 Performance Requirements DP4 & EP2.2
3.	The construction of 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 – Specification C1.1	DtS Provision – C1.1 & Spec C1.1
2.	Protection of Openings in External Wall	DtS Provision – C3.2
3.	Number of Required Exits	DtS Provision – D1.2
4.	Exit Travel Distances	DtS Provision – D1.4
5.	Fire Hydrants	DtS Provision – E1.3
6.	Fire Hose Reels	DtS Provision – E1.4
7.	Sprinklers	DtS Provision – E1.5
8.	General Requirements (Smoke Hazard Management)	DtS Provision – E2.2
9.	Construction of Sanitary Compartments	DtS Provision – F2.5

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

1 BASIS OF ASSESSMENT

1.1. Location and Description

The building development, the subject of this report, is located at 51 Arthur Street, Forestville.



Photograph: Aerial of proposed development site.

1.2. 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.

1.3. 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) Amendment 1 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.

1.4. 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.

1.5. Design Documentation

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

2 BUILDING DESCRIPTION

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

2.1. Rise in Storeys (Clause C1.2)

The building has a rise in storeys of Four (4).

2.2. Classification (Clause A6.0)

The building has been classified as follows.

Table 1. Building Classification

Class	Level	Description
7a	Basement	Basement Carpark, Plant Room, and Bike Storage
5 & 6	Ground	Commercial Shop Fronts, Sanitary Facilities, and Lobby.
2	First	Residential Units
2	Second	Residential Units

2.3. Effective Height (Clause A1.0)

The building has an *effective height* less than 12 metres.

2.4. Type of Construction Required (Table C1.1)

The building is required to be of Type A Construction.

2.5. Floor Area and Volume Limitations (Table C2.2)

The building is subject to maximum floor area and volume limits of:-

Class 5	Maximum Floor Area	8,000m ²
	Maximum Volume	48,000m ³
Class 6	Maximum Floor Area	5,000m ²
	Maximum Volume	30,000m ³
Class 7a	The carpark is to be provided with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5a) and as such there are no maximum floor area or volume limitations for this area.	
Class 2	The Class 2 portions of the building are not subject to floor area and volume limitations of C2.2 as Table 3 of Specifications C1.1 and Clause C3.11 of the BCA regulates the compartmentation and separation provisions applicable to buildings, or building portions, of Class 2 classifications.	

2.6. Fire Compartments

The following *fire compartments* have been assumed:

- The Basement carpark is assumed to be a fire compartment given the FRL construction throughout the separating floor slab above.
- The Ground Floor Class 6 tenancy is to be considered a fire compartment throughout the separating floor slab above and below.
- The first floor and second floor comprising four (4) storey Class 2 residential sole occupancy units (SOU's) are considered a separate single fire compartment from the remainder of the building.

2.7. Exits

The following points in the building have been considered as the exits:

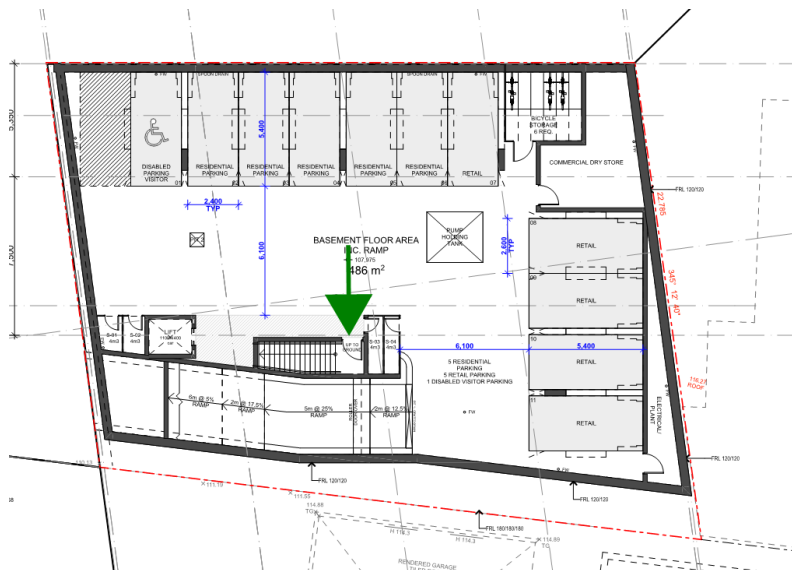


Figure: Single exit stair located within the Basement Carpark.



Figure: Each SOU tenancy <200m² the bi-fold doors maybe considered an exit. Plus, an additional lobby exit for Carpark below and Class 2 above.



Figure: Central stair is considered an exit, and each door to an SOU.

2.8. Climate Zone (Clause A1.0)

The building is located within Climate Zone 5

2.9. Location of Fire-source features

The fire source features for the subject development are:

- | | | | |
|--------|--|---|----------------------|
| North: | The far roadside boundary of Arthur Street | - | ~19m setback exists; |
| South: | The side allotment boundary | - | 0m setback proposed; |
| East: | The side allotment boundary | - | 0m setback proposed; |
| West: | The far roadside boundary of Duke Street | - | ~12m setback exists. |

In accordance with Clause 2.1 of Specification C1.1, a part of 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 MATTERS FOR FURTHER CONSIDERATION

3.1. 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*.

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

Note: It is important that Annexure D is read in conjunction with the items below, as some matters may not have had sufficient information provided to allow a detailed assessment to be undertaken.

3.2. 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 matters such as access for people with disabilities, stair and corridor widths and balustrade heights.

3.3. 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 addressed in a detailed Fire Safety Engineering Report to be prepared for this development under separate cover:

Table 2. Performance Solutions

Item	Description of Performance Solution	DTS Provision	Relevant Performance Requirements
1.	Permit a single exit from the Basement Carpark where egress to street involves a vertical rise >1.5m.	DtS Provision – D1.2	Performance Requirements DP4 and EP2.2
2.	To permit extended travel distances between the entrance doors of the most disadvantaged SOU to the fire stair located on the first floor of the building of 21m in lieu of the 12m concession allowed under Spec E1.5a requirements.	DtS Provision – D1.4	Performance Requirements DP4 & EP2.2
3.	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 Performance Provisions Only	

3.4. Façade Construction – Non Combustible

As the building is required to be of Type A Construction, the external façade is required to be *non-combustible* and comply with Clause C1.9 of BCA2019 which states as follows:

- (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.
- (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—
 - (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.

Currently all external façade construction has been nominated on the plans as follows:

- > No external wall construction nominated on plans – further assessment required as design progresses to ensure *non-combustible* wall construction complies with above.

It is also noted that this clause also prohibits the use of in situ formwork containing combustible elements including PVC lined formwork products where the PVC lining remains in place for the life of the building

where proposed to be used as an external wall element, common walls, the flooring and floor framing of lift pits, services riser shafts or non-loadbearing internal walls required to be fire resisting.

Note that perimeter walls of basement (below ground) floor levels are also deemed to be external walls.

3.5. PART C1 – FIRE RESISTANCE AND STABILITY

3.5.1. C1.1 Type of Construction Required – Specification C1.1

Where Part 2.4 of the report details the level of fire resisting construction required for that of a Type A building, the Fire-Resistant Levels (FRL) detailed below are required for each building and their key components

3.5.1.1. External Walls

The following walls have been identified as being located within 3m of the side boundary, and as a result, a minimum Fire Resistance Level (FRL) of the following:

- (a) Basement 120/120 where loadbearing, and -/120/120 where non-loadbearing;
- (b) Ground Floor 180/180/180 where structural, and -/180/180 where non-loadbearing;
- (c) First and Second Floor 90/90/90 where structural, and -/90/90/90.

3.5.1.2. Separating Floors

The following FRL's are required throughout each separating floor:

- (a) Basement Carpark to ground floor slab is to achieve an FRL of 120/120/120;
- (b) Ground Floor retail tenancies to first floor residential slab is to achieve an FRL of 180/180/180;
- (c) Second Floor AC Plant area floor slab is to achieve an FRL of 90/90/90.

(Note: Clause 3.2 concession of BCA SpecC1.1 does not require internal floors of the same Class 2 SOU to have separation)



Figure: FRL required throughout floor separation.

3.5.1.3. Between and Bounding SOU's

The following FRL's are required between each bounding SOU and the public lobby:

- (a) Between and bounding SOU's require an FRL of 90/90/90.

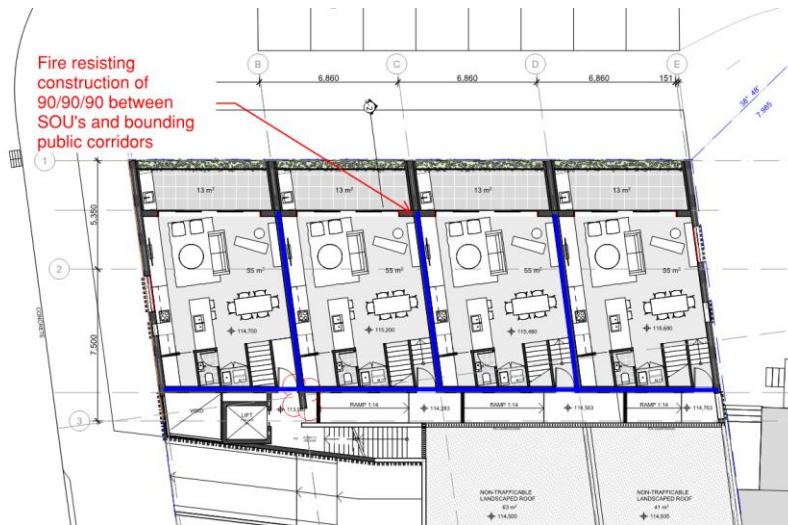


Figure: FRL required for bounding SOU walls.

Note: Sprinkler concession allows for FRL of non-loadbearing internal walls to be reduced to -/45/45 where a system complying with Spec E1.5a and AS2118.1 is installed throughout.

3.5.2. C1.9 Non-combustible Building Elements

The design is to note the requirements for external walls and their component parts to be non-combustible. Refer to Part 3.4 of the Report above.

3.6. PART C3 – PROTECTION OF OPENINGS

3.6.1. C3.2 Protection of Openings in External Wall

While it is noted that the window openings located within the second floor external wall of the most eastern SOU have been nominated as non-openable fire rated glass windows, the same level of protection is to be afforded to the first floor openings situated within 3m of the side boundary.



Figure: Window openings exposed to fire-source feature.

In addition, where the SOU entry door has been nominated as having a fire rated door achieving an FRL of 3-/30/30, as per the allowable concessions under Specification E1.5a for a sprinkler protected building. The self-closing door is to achieve a minimum FRL of -/60/30 to achieve compliance with Clause C3.2 and C3.4 requirements.

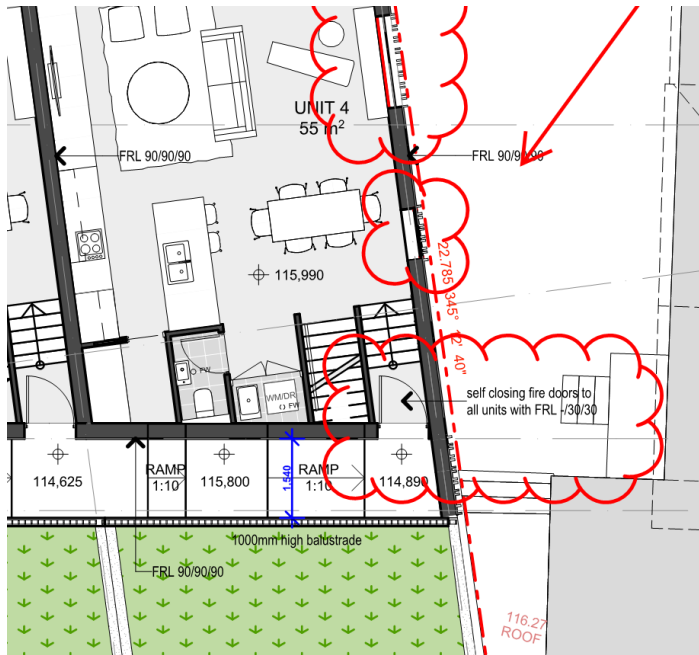


Figure: Single door opening FRL to be increased to FRL-/60/30.

3.6.2. C3.11 Bounding Construction: Class 2 & 3 Buildings & Class 4 Parts

Note: Where a sprinkler complying with AS2118.1 is installed throughout the building the FRL of the self-closing fire doors detailed above may be reduced to -/30/30.

3.6.3. C3.15 Openings for Service Installations

All building services that penetrate a building element required to demonstrate an FRL as detailed by Specification C1.1 of the BCA is required to comply with the requirements of SpecC3.15, or that of a tested system complying with AS4072.1 and AS1530.4.

Note: Where a sprinkler complying with AS2118.1 is installed throughout the building the FRL for services penetrating a non-loadbearing wall reduced to -/45/45.

3.7. PART D1 – PROVISIONS FOR ESCAPE

3.7.1. D1.2 Number of Exits Required

Where occupants within the basement carpark are required to egress via a vertical rise greater than 1.5m, a second exit is to be provided given the basement floor area is more than 50m². Alternatively, a Fire Engineered Performance Solution is to be employed to demonstrate compliance with Performance Requirements DP4 & EP2.2.

3.7.2. D1.3 Where Fire-Isolated Stairways and Ramps are Required

Currently the fire stair connecting the Basement Carpark through to the First Floor lobby space of the Class 2 SOU's is connecting three (3) storeys within a sprinkler protected building. Considering this, the stair is permitted to be constructed as a non-fire isolated stair where the sprinkler system installed is anything other than a FPAA101D system.

3.7.3. D1.4 Exit Travel Distances

Extended travel of up to 21m is proposed from the furthest SOU entry doors at first floor level to the first riser of the non-fire isolated egress stair serving the floor. This distance is in lieu of the 12m concession provided by the installation of a sprinkler system complying with Spec E1.5a requirements.



Figure: Extended travel within the First Floor of the building.

However, considering the nature of the open access balconies, it is envisioned that a Fire Engineered Performance Solution to demonstrate compliance with Performance Requirements DP4 and EP2.2 could be employed.

3.8. PART C2 – CONSTRUCTION OF EXITS

3.8.1. D2.16 Barrier to Prevent Fall

The balustrade provided along the first floor open access balcony is to achieve a minimum height of 1000mm above the finished floor surface beneath, and contain no openings >125mm.

3.8.2. D2.24 Protection of Openable Windows

Each second floor bedroom window with a sill height <1700mm is to have appropriate means of restricting the window to 125mm, or alternatively, have installed a screen capable of withstanding an outward horizontal force of 250N.

Note: Please be advised that under Clause 30 of the Strata Schemes Management Regulations 2016 the requirements of window protection above, are not limited to bedroom windows, as they are in the BCA. Therefore, the design may require window restricting devices to be installed to all windows throughout the SOU's where a window has a sill height less than 1.7m and a rise of 2m above ground level to the internal floor of the SOU.

3.9. PART D3 – ACCESS FOR PEOPLE WITH A DISABILITY

Note: No Fee engagement for a Part D3 Access review has been accepted. However, the design should note that the building is identified by Clause D3.1 of the BCA as a building that is required to accessible throughout. In addition, SEPP 65 and Council DCP requirements will apply for certain SOU's to be constructed as Adaptable and Livable at Construction Certificate stage.

In addition, the accessible carparking and vehicle entry to the accessible car space will need to comply with AS2890.6-2009 requirements.

3.10. PART E1 – FIRE FIGHTING SERVICES

3.10.1. E1.3 Fire Hydrants

The building has a floor area greater than 500m², and as a result, is required to demonstrate compliant hydrant coverage in accordance with AS2419-2005 requirements. Dependant on the existing flows and pressures demonstrated by that of the street hydrant system, further investigations as to whether system coverage can be attained by use of the two closest street hydrants at (34 Duke Street) and (49 Arthur Street) using a standard 90m of coverage where the appropriate hardstand area exist for the brigade pumping appliance. Where compliant system coverage to the building is unable to be achieved via the street hydrants, the installation of either an external hydrant and or internal hydrant may be required to comply with AS2419 requirements.

Furthermore, where a sprinkler system complying with AS2118 is to be installed throughout the building, the use of a dry hydrant system may be employed to demonstrate compliance with AS2419, as per the concession provided under Spec E1.5a of the BCA.

3.10.2. E1.4 Fire Hose Reels

Hose reel system coverage is to be provided throughout the Basement and Ground Floor areas of the building. The location and operation of each hose reel is to comply with BCA Clause E1.4 and AS 2441 requirements.

3.10.3. E1.5 Sprinklers

Given the building is identified as having a RIS of 4 or more, a sprinkler system complying with Spec E1.5a of the BCA is to be installed throughout all classifications of the building. It is recommended that the design of the sprinkler system achieve compliance with AS2118.1 so as to encourage the adoption of all the permitted concessions allowable under Spec E1.5a of the BCA.

3.10.4. E1.6 Portable Fire Extinguishers

Extinguishers are required to serve each Class 2 component of the building where internal hydrants are installed. Where internal hydrants are not installed, extinguishers are to provide coverage to any fire compartment with a floor area >500m² & comply with the requirements of AS2444 & Table E1.6 of the BCA.

3.11. PART E2 – SMOKE HAZARD MANAGEMENT**3.11.1. E2.2 General Requirements**

Each SOU is to be provided with smoke detection operating in accordance with Spec E2.2a & AS3786-2014 for location and operational requirements. Where the building is to be sprinkler protected throughout with a system complying with Spec E1.5a and AS2118.1, no detection is required throughout the remaining classifications of the building.

3.12. PART E3 – LIFT INSTALLATIONS

The single passenger lift to be installed within the building is observed as connecting three (3) storeys in a sprinkler protected building & is required to be installed and operate in accordance with Clause E3.3, E3.6, and AS1735.12 requirements.

3.13. PART E4 – VISABILITY IN AN EMERGENCY, EXIT SIGNS AND WARNING SYSTEMS

The building will require both emergency lighting and exit signs throughout the Class 7a Carpark, Class 6 Commercial Tenancies, and Class 2 common areas. Emergency lighting and Exit signs are to be installed and operate in accordance with AS2293.1 requirement. It is noted that Clause E4.7 Exemptions may be employed for the Class 2 areas of the building.

3.14. PART F2 – SANITARY AND OTHER FACILITIES

3.14.1. F2.5 Construction of Sanitary Compartments

Where the pan of each first floor WC is positioned within 1200mm of the door opening in each Class 2 SOU, the door is required to either swing outward, or provisions for LOH will be required at construction stage. Furthermore, each WC is to be mechanically ventilated to achieve compliance with Clause F4.8 requirements.

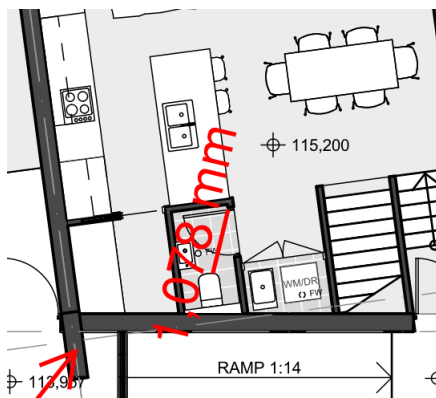


Figure: LOH required on WC doors of SOU's.

4 STATEMENT OF COMPLIANCE

The architectural design documentation as referred to in report has been assessed against the applicable provisions of the Building Code of Australia, (BCA) and it is considered that such documentation is capable of complying (as outlined in Annexure D) with that Code.

ANNEXURE A DESIGN DOCUMENTATION

Annexure A – Design Documentation

This report has been based on the following design documentation.

Table 3. Architectural Plans

Architectural Plans Prepared by			
Drawing Number	Revision	Date	Title
A01	K	30/09/2020	COVER PAGE
A12	J	09/09/2020	LOCATION PLAN
A15	J	09/09/2020	SITE PLAN
A10	K	30/09/2020	BASEMENT FLOOR PLAN
A11	K	30/09/2020	GROUND FLOOR PLAN
A12	K	30/09/2020	FIRST FLOOR PLAN
A13	K	30/09/2020	SECOND FLOOR PLAN
A14	K	30/09/2020	NORTH ELEVATION
A15	K	30/09/2020	SOUTH ELEVATION
A16	K	30/09/2020	EAST ELEVATION
A17	K	30/09/2020	WEST ELEVATION
A18	K	30/09/2020	SECTION SHOP 2/UNIT 2
A19	K	30/09/2020	SECTION BB APARTMENT INTERNAL

ANNEXURE B ESSENTIAL SERVICES

Annexure B - Essential Services

The following fire safety measures are required to be installed in the building. The following table may be required to be updated as the design develops and options for compliance are confirmed.

Table 4. Essential Fire Safety Measures

Item	Essential Fire and Other Safety Measures	Standard of Performance
Fire Resistance (Floors – Walls – Doors – Shafts)		
1.	Fire doors	BCA2019 C3.11 (Bounding Construction) Spec C3.4 AS1905.1: 2015
2.	Fire seals protecting openings in fire resisting components of the building	BCA2019 C3.15 (Openings for service installations) BCA2019 Spec C3.15 AS1530.4:2014 & AS4072.1-2005
3.	Fire windows <ul style="list-style-type: none"> > Fixed External wall-wetting sprinklers > -/60/- Fire Windows automatic closing > -/60/- Fire Windows fixed closed > FRL required for windows 	BCA2019 C3.2 (Protection of Openings) BCA2019 C3.4 (Acceptable Methods of Protection) BCA2019 Spec. C3.4 identical to tested prototype
4.	Lightweight construction <ul style="list-style-type: none"> > Fire Rating of Walls <ul style="list-style-type: none"> ○ Non-combustible roof or floor covering ○ Bounding walls lined internally with a fire protective covering 	BCA2019 C1.1, Spec. C1.1 BCA2019 C1.8, Spec C1.8 AS1530.4:2014
General		
5.	Portable fire extinguishers	BCA2019 E1.6 AS 2444–2001
6.	Fire blankets	AS 2444–2001
General Egress		
7.	Warning & operational signs	BCA2019 D3.6 (Braille Exit Signs) (Note: E4.5 (Exit Signs)) BCA2019 E3.3 (Lift Signs)
Electrical Services		
8.	Automatic fire detection & alarm: <ul style="list-style-type: none"> > Clause 3 – AS 3786:2014 Smoke Alarm systems powered from consumer mains to all residential SOU's. 	BCA2019 E2.2 , NSW Table E2.2a Spec E2.2a - Clause 3 (Smoke alarm system)

Item	Essential Fire and Other Safety Measures	Standard of Performance
	<i>Note: Sprinkler concession of Spec E1.5a applied.</i>	AS 3786:2014 (Amdt 1-4)
9.	Emergency lighting	BCA2019 E4.2, E4.4 AS/NZS 2293.1:2018
10.	Exit signs	BCA2019 E4.5 (Exit Signs) BCA2019 E4.6 (Direction Signs) BCA2019 E4.7 (Residential Concession) BCA2019 E4.8 (Design and Operation - Exits) AS/NZS 2293.1:2018
Hydraulic Services		
11.	Automatic fire suppression systems > General Sprinklers > Residential only >	BCA2019 E1.5 BCA2019 E1.5a AS 2118.1:2017 (Sprinklers); or AS 2118.4:2012 (Residential not exceeding 4 storey)
12.	Fire hydrant systems > NSW Storz Couplings	BCA2019 E1.3 AS 2419.1:2005
13.	Hose reel systems (Carpark and Ground Floor Retail only)	BCA2019 E1.4 AS 2441:2005
14.	Wall-wetting sprinkler / drenchers	BCA2019 C3.4, AS 2118.2: Wall-wetting sprinkler / drenchers
Mechanical Services		
15.	Fire dampers	BCA2019 E2.2, Spec E2.2a, Spec E2.2b BCA2019 C3.15 AS 1668.1:2015 (Amdt 1) AS 1682.1:2015 & AS 1682.2:2015
16.	Mechanical ventilation to carpark.	BCA2019 E2.2, Table E2.2a Spec E2.2a 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

Item	Essential Fire and Other Safety Measures		Standard of Performance	
			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.	
Performance Solutions				
	Description of Performance Solution	DTS Provision	Performance Requirements	Method of meeting performance solutions
17.	Permit a single exit from the Basement Carpark where egress to street involves a vertical rise >1.5m.	DtS Provision – D1.2	Performance Requirements DP4 and EP2.2	
18.	To permit extended travel distances between the entrance doors of the most disadvantaged SOU to the fire stair located on the first floor of the building of 21m in lieu of the 12m concession allowed under Spec E1.5a requirements.	DtS Provision – D1.4	Performance Requirements DP4 & EP2.2	

ANNEXURE C FIRE RESISTANCE LEVELS

Annexure C - 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

Table 5. Type A Construction

Item	Class 2	Class7a	Class 6
Loadbearing External Walls (including columns and other building elements incorporated therein)			
- Less than 1.5m to a <i>fire- source feature</i>	90/90/90	120/120/120	180/180/180
- 1.5 – less than 3m from a <i>fire-source feature</i>	90/60/60	120/90/90	180/180/120
- 3m or more from a <i>fire source feature</i>	90/60/30	120/60/30	180/120/90
Non-Loadbearing External Walls			
- Less than 1.5m to a <i>fire-source feature</i>	-/90/90	-/120/120	-/180/180
- 1.5 – less than 3m from a <i>fire-source feature</i>	-/60/60	-/90/90	-/180/120
- 3m or more from a <i>fire-source feature</i>	-/-/-	-/-/-	-/-/-
External Columns			
- Loadbearing	90/-/-	120/-/-	180/-/-
- Non-loadbearing	-/-/-	-/-/-	-/-/-
Common Walls & Fire Walls	90/90/90	120/120/120	180/180/180
Stair and Lift Shafts required to be fire-resisting			
- Loadbearing	90/90/90	120/120/120	180/120/120
- Non-loadbearing	-/90/90	-/120/120	-/120/120
Internal walls bounding sole occupancy units			
- Loadbearing	90/90/90	120/-/-	180/-/-
- Non-loadbearing	-/60/60	-/-/-	-/-/-
Internal walls bounding public corridors, public lobbies and the like:			
- Loadbearing	90/90/90	120/-/-	180/-/-
- Non-loadbearing	-/60/60	-/-/-	-/-/-

Item	Class 2	Class7a	Class 6
Ventilating, pipe, garbage and like shafts:			
- Loadbearing	90/90/90	120/90/90	180/120/120
- Non-loadbearing	-/90/90	-/90/90	-/120/120
Other loadbearing internal walls, beams trusses and columns	90/-/-	120/-/-	180/-/-
Floors	90/90/90	120/120/120	180/180/180
Roofs ¹	90/60/30	120/60/30	180/60/30

N.B. There are FRL concessions applicable for fully sprinkler protected car park portions under Clause 3.9 of BCA Specification C1.1, reducing the carpark FRL's down from 120/120/120 to 60/60/60.

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

ANNEXURE D DETAILED BCA 2019 ASSESSMENT

Annexure D – Detailed BCA 2019 Assessment

Outlined below is a detailed assessment of the design under the Deemed-to-Satisfy Provisions of the Building Code of Australia (BCA) including the State variations where applicable.

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 F	'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 F 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 6. Deemed to Satisfy Clause Assessment

Clause	Clause Requirements	Comment	Status
Section B: Structure			
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 F
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 F
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 to certify at CC stage.	CRA – Refer Annexure F
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 at CC stage.	CRA – Refer Annexure F
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.		NA

Section C: Fire Resistance**Part C1 – Fire Resistance and Stability**

C1.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
C1.1:	Type of construction required	The building is required to be of Type A Construction. Refer to Specification C1.1 requirements at the end of this Section.		CRA – Refer Annexure F
C1.2:	Calculation of rise in storeys	The building has a rise in storeys of four (4).		Noted
C1.3:	Buildings of multiple classification	Informational	Noted	Noted
C1.4:	Mixed Types of construction	A building may be of mixed Types of construction where it is separated in accordance with C2.7 and the Type of construction is determined in accordance with C1.1 or C1.3.		CRA – Refer Annexure F
C1.5:	Two Storey Class 2, 3 or 9c buildings	<p>A building having a rise in storeys of 2 may be of Type C construction if –</p> <p>(a) it is a Class 2 or 3 building or a mixture of these classes and each sole-occupancy unit has –</p> <p>(i) access to at least 2 exits; or</p> <p>(ii) its own direct access to a road or open space; or</p> <p>(b) it is a Class 9c building protected throughout with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5 and complies with maximum compartment size specified in Table C2.2 for Type C construction.</p>		NA

Section C: Fire Resistance			
C1.6: Class 4 Parts of building	For the Type of construction required by C1.3, a Class 4 part of a building requires the same FRL for building elements and the same construction separating the Class 4 part from the remainder of the building as a Class 2 part in the same Type of construction.		NA
C1.7: Open spectator stands and indoor sports stadium	<p>(a) An open spectator stand or indoor sports stadium may be of Type C construction and need not comply with the other provisions of this Part if it contains not more than 1 tier of seating, is of non-combustible construction, and has only changing rooms, sanitary facilities or the like below the tiered seating.</p> <p>(b) In (a), one tier of seating means numerous rows of tiered seating incorporating cross-overs but within one viewing level.</p>		NA
C1.8: Lightweight construction	Lightweight construction used in a fire-rated application is to comply with Specification C1.8.		CRA – Refer Annexure F
C1.9: Non-combustible building elements	<p>(a) In a building required to be of Type A or B construction, the following building elements and their components must be <i>non-combustible</i>:</p> <ul style="list-style-type: none"> (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. <p>(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 <i>non-combustible</i> construction in—</p> <ul style="list-style-type: none"> (i) a building required to be of Type A construction; and 		CRA – Refer Annexure F

Section C: Fire Resistance

	<ul style="list-style-type: none"> (ii) a building required to be of Type B construction, subject to C2.10, in— <ul style="list-style-type: none"> (A) a Class 2, 3 or 9 building; and (B) Class 5, 6, 7 or 8 building if the shaft connects more than 2 storeys. (c) A loadbearing internal wall and a loadbearing <i>fire wall</i>, 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 <i>non-combustible</i> material is required: <ul style="list-style-type: none"> (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) <i>Sarking-type materials</i> that do not exceed 1 mm in thickness and have a <i>Flammability Index</i> not greater than 5. (vii) Bonded laminated materials where— <ul style="list-style-type: none"> (A) each lamina, including any core, is <i>non-combustible</i>; and 		
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Section C: Fire Resistance

	<p>(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</p> <p>(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.</p>		
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, <i>sarking-type materials</i> and attachments, or be considered <i>non-combustible</i> .		CRA – Refer Annexure F
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.		NA
C1.12: Non-combustible materials	Clause now deleted and relocated to C1.9.		Noted
C1.13: Fire-protected timber: Concession	<p><i>Fire-protected timber</i> in all building classifications may be used wherever an element is required to be <i>non-combustible</i>, provided—</p> <p>(a) the building is—</p> <p>(i) a separate building; or</p> <p>(ii) a part of a building—</p> <p>(A) which only occupies part of a storey, and is separated from the remaining part by a fire wall; or</p>		CRA – Refer Annexure F

Section C: Fire Resistance

	<p>(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</p> <p>(b) the building has an <i>effective height</i> of not more than 25 m; and</p> <p>(c) the building has a sprinkler system (other than a FPAA101D or FPAA101H system) throughout complying with Specification E1.5; and</p> <p>(d) any insulation installed in the cavity of the timber building element required to have an <i>FRL</i> is <i>non-combustible</i>; and</p> <p>(e) cavity barriers are provided in accordance with Specification C1.13.</p>		
C1.14: Ancillary elements	<p>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 <i>non-combustible</i> unless it is one of the following:</p> <p>(a) An ancillary element that is <i>non-combustible</i>.</p> <p>(b) A gutter, downpipe or other plumbing fixture or fitting.</p> <p>(c) A flashing.</p> <p>(d) A grate or grille not more than 2 m² in area associated with a building service.</p> <p>(e) An electrical switch, socket-outlet, cover plate or the like.</p> <p>(f) A light fitting.</p> <p>(g) A required sign.</p>		CRA – Refer Annexure F

Section C: Fire Resistance

	<ul style="list-style-type: none"> (h) A sign other than one provided under (a) or (g) that— <ul style="list-style-type: none"> (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— <ul style="list-style-type: none"> (i) meets the relevant requirements of Table 4 of Specification C1.10 as for an internal element; and (ii) serves a storey— <ul style="list-style-type: none"> (A) at ground level; or (B) immediately above a storey at ground level; and (iii) does not serve an <i>exit</i>, where it would render the <i>exit</i> 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

Section C: Fire Resistance			
C2.1: Application of Part	<p>Informational -</p> <p>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.</p>		Noted
C2.2: General floor area and volume limitations	The size of <i>fire compartments</i> in the building must not exceed that specified in Table C2.2.		CRA – Refer Annexure F
C2.3: Large isolated buildings	<p>The size of a fire compartment in a building may exceed that specified in Table C2.2 where –</p> <p>(a) the building does not exceed 18 000 m² in floor area nor exceed 108 000m³ in volume, if –</p> <p>(i) the building is Class 7 or 8 and –</p> <p>(A) contains not more than 2 storeys; and</p> <p>(B) is provided with open space complying with C2.4(a) not less than 18 m wide around the building; or</p> <p>(ii) the building is Class 5, 6, 7, 8 or 9 and is –</p> <p>(iii) protected throughout with a sprinkler system complying with Specification E1.5; and</p> <p>(iv) provided with a perimeter vehicular access complying with C2.4(b); or</p> <p>(b) the building is Class 5, 6, 7, 8 or 9 and exceeds 18 000 m² in floor area or 108 000 m³ in volume, if it is –</p> <p>(i) protected throughout with a sprinkler system complying with Specification E1.5; and</p> <p>(ii) provided with a perimeter vehicular access complying with C2.4(b); or</p>		NA

Section C: Fire Resistance

	<p>(c) there is more than one building on the allotment and —</p> <p>(i) each building complies with (a) or (b); or</p> <p>(ii) if the buildings are closer than 6 m to each other they are regarded as one building and collectively comply with (a) or (b).</p>		
C2.4: Requirements for open spaces and vehicular access	<p>(a) An open space required by C2.3 must—</p> <p>(i) be wholly within the allotment except that any road, river, or public place adjoining the allotment, but not the farthest 6 m of it may be included; and</p> <p>(ii) include vehicular access in accordance with (b); and</p> <p>(iii) not be used for the storage or processing of materials; and</p> <p>(iv) not be built upon, except for guard houses and service structures (such as electricity substations and pump houses) which may encroach upon the width of the space if they do not unduly impede fire-fighting at any part of the perimeter of the allotment or unduly add to the risk of spread of fire to any building on an adjoining allotment.</p> <p>(b) Vehicular access required by this Part—</p> <p>(i) must be capable of providing continuous access for emergency vehicles to enable travel in a forward direction from a public road around the entire building; and</p> <p>(ii) must have a minimum unobstructed width of 6 m with no part of its furthest boundary more than 18 m from the building and in no part of the 6 m</p>		NA

Section C: Fire Resistance

	<p>width be built upon or used for any purpose other than vehicular or pedestrian movement; and</p> <p>(iii) must provide reasonable pedestrian access from the vehicular access to the building; and</p> <p>(iv) must have a load bearing capacity and unobstructed height to permit the operation and passage of fire brigade vehicles; and</p> <p>(v) must be wholly within the allotment except that a public road complying with (i), (ii), (iii) and (iv) may serve as the vehicular access or part thereof.</p>		
C2.5: Class 9a and 9c Buildings	<p>(a) A Class 9a health-care building must comply with the following:</p> <p>(i) patient care areas must be divided into fire compartments not exceeding 2000 m².</p> <p>(ii) A fire compartment must be separated from the remainder of the building by fire walls and—</p> <p>(A) in Type A construction—floors and roof or ceiling as required in Specification C1.1; and</p> <p>(B) in Type B construction—floors with an FRL of not less than 120/120/120 and with the openings in external walls bounding patient care areas being vertically separated in accordance with the requirements of Open link in same pageC2.6 as if the building were of Type A construction.</p> <p>(iii) Ward areas —</p> <p>(A) where the floor area exceeds 1000 m², must be divided into floor areas not more</p>		NA

Section C: Fire Resistance

	<p>than 1000 m2 by walls with an FRL of not less than 60/60/60; and</p> <p>(B) where the floor area exceeds 500 m2, must be divided into floor areas not more than 500 m2 by smoke-proof walls complying with Specification C2.5; and</p> <p>(C) where the floor area is not more than 500 m2, must be separated from the remainder of the patient care area by smoke-proof walls complying with Specification C2.5; and</p> <p>(D) where division of ward areas by fire-resisting walls under (i) or required, any smoke-proof wall required under (iii)(B) or (C) must have an FRL of not less than 60/60/60.</p> <p>(iv) Treatment areas —</p> <p>(A) where the floor area exceeds 1000 m2, must be divided into floor areas not more than 1000 m2 by smoke-proof walls complying with Specification C2.5; and</p> <p>(B) where the floor area is not more than 1000 m2, must be separated from the remainder of the patient care area by smoke-proof walls complying with Specification C2.5.</p> <p>(v) Ancillary use areas located within a patient care area and containing equipment or materials that are a high potential fire hazard, must be separated from the remainder of the patient care area by walls with an FRL of not less than 60/60/60.</p> <p>(vi) The ancillary use areas referred to in (v) include, but are not limited to, the following:</p>		
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Section C: Fire Resistance

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|--|--|--|--|
| | <ul style="list-style-type: none"> (A) A kitchen and related food preparation areas having a combined floor area of more than 30 m². (B) A room containing a hyperbaric facility (pressure chamber). (C) A room used predominantly for the storage of medical records having a floor area of more than 10 m². (D) laundry, where items of equipment are of the type that are potential fire sources (e.g. gas fire dryers). <p>(vii) A wall required by (v) to separate ancillary use areas from the remainder of the building must extend to the underside of—</p> <ul style="list-style-type: none"> (A) the floor above; or (B) a non-combustible roof covering; or (C) a ceiling having a resistance to the incipient spread of fire to the space above itself of not less than 60 minutes. <p>(viii) Openings in walls required by (iii) and (v) to have an FRL must be protected as follows:</p> <ul style="list-style-type: none"> (A) Doorways—self-closing or automatic closing –/60/30 fire doors. (B) Windows—automatic or permanently fixed closed –/60/– fire windows or –/60/– automatic fire shutters. (C) Other openings—construction having an FRL not less than –/60/–. <p>(b) A Class 9c building must comply with the following:</p> | | |
|--|--|--|--|

Section C: Fire Resistance

- (i) A building must be divided into areas not more than 500 m² by smoke-proof walls complying with Specification C2.5.
- (ii) fire compartment must be separated from the remainder of the building by fire walls and, notwithstanding C2.7 and Specification C1.1, floors with an FRL of not less than 60/60/60.
- (iii) Internal walls (other than those bounding lift and stair shafts) supported by floors provided in accordance with C2.5(b)(ii) need not comply with Specification C1.1 if they have an FRL not less than 60/-/-.
- (iv) Ancillary use areas containing equipment or materials that are a high potential fire hazard, must be separated from the sole-occupancy units by smoke-proof walls complying with Specification C2.5.
- (v) The ancillary use areas referred to in (iv) include, but are not limited to, the following:
 - (A) A kitchen and related food preparation areas having a combined floor area of more than 30 m².
 - (B) A laundry, where items of equipment are of the type that are potential fire sources (e.g. gas fired dryers).
 - (C) Storage rooms greater than 10 m² used predominantly for the storage of administrative records.
- (vi) Openings in fire walls must be protected as follows:
 - (A) Doorways —self-closing or automatic closing —/60/30 fire doors.

Section C: Fire Resistance

	<p>(B) Windows —automatic or permanently fixed closed —/60/— fire windows or —/60/— automatic fire shutters.</p> <p>(C) Other openings — construction having an FRL not less than —/60/—.</p>		
C2.6: Vertical separation of openings in external walls	<p>Note: The following applies to buildings that are not provided with an AS 2118.1:2017 or AS 2118.4:2012 sprinkler system installed throughout.</p> <p>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:</p> <ul style="list-style-type: none"> > They must be protected with a 900mm high (<i>FRL</i> 60/60/60) spandrel extending at least 600mm above the separating slab, or > They must be provided with a 1.1m horizontal projection (<i>FRL</i> 60/60/60) also extending at least 450mm either side of the openings. <p>The above does not apply to openings within the same stairway.</p> <p>For the purposes of this clause, opening means that part of the external wall of a building that does not have an <i>FRL</i> of 60/60/60 or greater.</p>		NA
C2.7: Separation by fire walls	<p>Construction - A <i>fire wall</i> must be constructed in accordance with the following:</p> <ul style="list-style-type: none"> > Any openings in a <i>fire wall</i> must not reduce the <i>FRL</i> required by Specification C1.1 for the <i>fire wall</i>, except where permitted by the Deemed-to-Satisfy Provisions of Part C3. 		NA

Section C: Fire Resistance

> 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:

- (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

Section C: Fire Resistance			
	<p>is constructed in accordance with this clause and the <i>fire wall</i> extends to the underside of –</p> <ul style="list-style-type: none"> > a floor having an <i>FRL</i> required for a <i>fire wall</i>; or > the roof covering. 		
C2.8: Separation of classifications in the same storey	<p>Where a storey has different classifications located alongside one another:</p> <ul style="list-style-type: none"> > each building element in that storey must have the higher <i>FRL</i> prescribed in Specification C1.1 for that element for the classifications concerned; or > the parts must be separated in that storey by a <i>fire wall</i> having the higher <i>FRL</i> prescribed in Table 3; or > 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 <i>fire wall</i> complying with the appropriate Table. 		CRA – Refer Annexure F
C2.9: Separation of classifications in different storeys	Floors separating storeys of different classifications must have an <i>FRL</i> of not less than that prescribed in Specification C1.1 for the classification of the lower storey.		CRA – Refer Annexure F
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).		NA
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.		NA
C2.12: Separation of equipment	<p>Any of the following equipment located in the building must be separated from the remainder of the building:</p> <ul style="list-style-type: none"> > lift motors and lift control panels; or 		CRA – Refer Annexure F

Section C: Fire Resistance

	<ul style="list-style-type: none"> > 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. <p>Equipment need not be separated in if the equipment comprises:</p> <ul style="list-style-type: none"> > 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 1668.1:2015; or > a lift installation without a machine room; or > equipment otherwise adequately separated from the remainder of the building. <p>Separation must be by construction having an <i>FRL</i> as required by Specification C1.1, but not less than <i>FRL</i> 120/120/120 with openings protected by self-closing fire doors having an <i>FRL</i> of not less than –/120/30.</p> <p>Separation of on-site fire pumps must comply with the requirements of AS 2419.1:2005.</p>		
C2.13: Electricity supply system	<ul style="list-style-type: none"> > Any electrical substation located within the building must be separated from the remainder of the building by construction having an <i>FRL</i> of not less than 120/120/120, and doorways protected with self-closing fire doors having an <i>FRL</i> of not less than –/120/30. 		CRA – Refer Annexure F

Section C: Fire Resistance

	<ul style="list-style-type: none"> > 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 <i>FRL</i> of not less than 120/120/120 and have the doorway fitted with self-closing fire door having an <i>FRL</i> 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: <ul style="list-style-type: none"> ○ fire hydrant booster pumps; ○ sprinkler pumps; ○ hose reel pumps; ○ 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.		CRA – Refer Annexure F

Section C: Fire Resistance**Part C3 – Protection of Openings**

C3.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
C3.1: Application of Part	<p>(a) The Deemed-to-Satisfy Provisions of this Part do not apply to—</p> <ul style="list-style-type: none"> (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 mm² 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— <ul style="list-style-type: none"> (A) Service penetrations through; and (B) Openings formed by a vehicle ramp in, <ul style="list-style-type: none"> (aa) 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. 		Noted

Section C: Fire Resistance

	<p>(b) 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.</p> <p>(c) 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.</p>		
C3.2: Protection of openings in external walls	<p>Openings in an external wall that is required to have an <i>FRL</i> must be protected in accordance with C3.4 if the distance between the opening and the <i>fire-source feature</i> is:</p> <ul style="list-style-type: none"> > 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 > less than 6 m from another building on the allotment that is not Class 10; and <p>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.</p> <p>Where wall-wetting sprinklers are used, they must be located externally.</p>	Refer to Part 3.6.1 of the Report.	DNC
C3.3: Separation of external walls and associated	The distance between parts of external walls and any openings within them in different <i>fire compartments</i>		NA

Section C: Fire Resistance

openings in different fire compartments	<p>separated by a <i>fire wall</i> must not be less than that set out in Table C3.3, unless—</p> <p>(a) those parts of each wall have an <i>FRL</i> not less than 60/60/60; and</p> <p>(b) any openings protected in accordance with C3.4.</p> <p>Table C3.3 DISTANCE BETWEEN EXTERNAL WALLS AND ASSOCIATED OPENINGS IN DIFFERENT FIRE COMPARTMENTS</p> <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>	Angle between walls	Min. Distance	0° (walls opposite)	6 m	more than 0° to 45°	5 m	more than 45° to 90°	4 m	more than 90° to 135°	3 m	more than 135° to less than 180°	2 m	180° or more	Nil		
Angle between walls	Min. Distance																
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more than 0° to 45°	5 m																
more than 45° to 90°	4 m																
more than 90° to 135°	3 m																
more than 135° to less than 180°	2 m																
180° or more	Nil																
C3.4: Acceptable methods of protection	<p>Where protection is required, openings must be protected as follows:</p> <p><u>Doorways:</u></p> <p>(i) Internal or external wall-wetting sprinklers as appropriate used with doors that are self-closing; or</p> <p>(ii) –/60/30 fire doors that are self-closing.</p> <p><u>Windows:</u></p> <p>(i) Internal or external wall-wetting sprinklers as appropriate used with windows that are automatic closing or permanently fixed in the closed position; or</p>		CRA – Refer Annexure F														

Section C: Fire Resistance

	<ul style="list-style-type: none"> (ii) –60/– fire windows that are automatically closing or permanently fixed in the closed position; or (iii) –/60/– automatic closing fire shutters. <p><u>Other openings:</u></p> <ul style="list-style-type: none"> (i) Excluding voids – internal or external wall-wetting sprinklers; or (ii) Construction having an <i>FRL</i> not less than –/60/– <p>Fire doors, fire windows and fire shutters must comply with BCA Specification C3.4.</p>		
C3.5: Doorways in fire walls	Doorways in the fire walls must be protected by a self-closing fire door that achieves an <i>FRL</i> of not less than that required by Specification C1.1 for the <i>fire wall</i> except that each door must have an insulation level of at least 30.		NA
C3.6: Sliding fire doors	<ul style="list-style-type: none"> (a) If a doorway in a fire wall is fitted with a sliding fire door which is open when the building is in use— <ul style="list-style-type: none"> (i) it must be held open with an electromagnetic device, which when de-activated in accordance with (b) and (c), allows the door to be fully closed in not less than 20 seconds and not more than 30 seconds after release; and (ii) in the event of power failure to the door — the door must fail safe in the closed position in accordance with (i); and (iii) an audible warning device must be located near the doorway and a red flashing warning light of adequate intensity on each side of the doorway must be activated in accordance with (b) and (c); and 		NA

Section C: Fire Resistance

	<p>(iv) signs must be installed on each side of the doorway located directly over the opening stating—</p> <p>WARNING – SLIDING FIRE DOOR</p> <p>in capital letters not less than 50 mm high in a colour contrasting with the background.</p> <p>(b) The electromagnetic device required by (a)(i) must be de-activated and the warning system activated by heat or smoke detectors, as appropriate, installed in accordance with AS 1905.1 and the relevant provisions of AS 1670.1.</p> <p>(c) Where any other required suitable fire alarm system, including a sprinkler system (other than a FPAA101D system) complying with Specification E1.5, is installed in the building, activation in either fire compartment separated by the fire wall must also de-activate the electromagnetic device and activate the warning system.</p>		
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 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.		NA
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.		NA
C3.9: Service penetrations in fire-isolated exits	The fire isolated <i>exits</i> are not to be penetrated by any services other than:		NA

Section C: Fire Resistance

	<ul style="list-style-type: none"> > electrical wiring associated with: <ul style="list-style-type: none"> ○ 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; <ul style="list-style-type: none"> (i) is constructed of material having an <i>FRL</i> 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. 		
C3.10: Openings in fire-isolated lift shafts	<ul style="list-style-type: none"> > Lift landing doors are required to be fire doors with an <i>FRL</i> of -/60/- that comply with AS 1735.11:1986, and be set to remain closed except when discharging or receiving, passengers, goods or vehicles. > Panels in the wall of the lift shaft must be backed by construction having an <i>FRL</i> of not less than -/60/60 if it exceeds 35 000 mm² in area. 		NA
C3.11: Bounding Construction: Class 2, 3 and 4 Buildings	<ul style="list-style-type: none"> > 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. > In a Class 2 building where a path of travel to an <i>exit</i> does not provide a person seeking egress with 		CRA – Refer Annexure F

Section C: Fire Resistance

	<p>a choice of travel in different directions to alternative <i>exits</i> and is along an open balcony, landing or the like and passes an external wall of–</p> <ul style="list-style-type: none"> (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– <ul style="list-style-type: none"> (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. 		
C3.12: Openings in floors and ceilings for services	<p>Where services pass through a floor which is required to achieve an <i>FRL</i> or a ceiling required to have a <i>resistance to the incipient spread of fire</i>, the service must be enclosed within a fire resisting shaft or fire protected in accordance with Clause C3.15.</p> <p>Where a service passes through a floor which is required to be protected by a <i>fire-protective</i> covering, the penetration must not reduce the fire performance of the covering.</p>		CRA – Refer Annexure F
C3.13: Openings in shafts	<p>Openings in shafts must be protected by:</p> <ul style="list-style-type: none"> (a) if it is in a sanitary compartment – a door or panel which together with its frame, is <i>non-combustible</i> or has an <i>FRL</i> of not less than –/30/30; or 		CRA – Refer Annexure F

Section C: Fire Resistance				
		(b) a self-closing –/60/30 fire door or hopper; or (c) an access panel having an <i>FRL</i> of not less than –/60/30; or (d) if the shaft is a garbage shaft – a door or hopper of <i>non-combustible</i> construction.		
C3.15: Openings for service installations		Where services pass through an element which is required to achieve an <i>FRL</i> (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 F
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 1530.4:2014 to achieve the required <i>FRL</i> .		CRA – Refer Annexure F
C3.17: Columns protected with lightweight construction to achieve an <i>FRL</i>		A column protected by lightweight construction to achieve an <i>FRL</i> which passes through a building element that is required to have an <i>FRL</i> 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 <i>FRL</i> or resistance to the incipient spread of fire.		CRA – Refer Annexure F
Specification C1.1 – Fire-Resisting Construction				
2.0: General Requirements	Informational		Noted	Noted
2.1: Exposure to fire-source features	A building element is exposed to a <i>fire-source feature</i> if any of the horizontal straight lines between that part and the <i>fire-source feature</i> , or vertical projection of the			Noted

Section C: Fire Resistance			
	feature, is not obstructed by another part of the building that— (i) has an <i>FRL</i> 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 <i>FRL</i> depends upon direct vertical or lateral support from another part to maintain its <i>FRL</i> , that supporting part must have an <i>FRL</i> not less than that required by other provisions of this Specification; and if located within the same <i>fire compartment</i> as the part it supports have an <i>FRL</i> in respect of structural adequacy the greater of that required for the supporting part itself and for the part it supports.		CRA – Refer Annexure F
2.3: Lintels	A lintel must have the <i>FRL</i> 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 F
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 F
2.5: General concessions	<p>> Balconies and verandahs</p> <p>Structures on roofs — A <i>non-combustible</i> structure situated on a roof need not comply with the other provisions of this Specification if it only contains—</p> <p>(i) lift motor equipment; or</p> <p>(ii) one or more of the following:</p> <p>(A) Hot water or other water tanks.</p>		CRA – Refer Annexure F

Section C: Fire Resistance

	<p>(B) Ventilating ductwork, ventilating fans and their motors.</p> <p>(C) Air-conditioning chillers.</p> <p>(D) Window cleaning equipment.</p> <p>(E) Other service units that are <i>non-combustible</i> and do not contain flammable or combustible liquids or gases.</p>		
2.6: Mezzanine floors: Concession	<p>(a) This Clause does not apply to a Class 9b building that is a spectator stand or audience viewing area accommodating more than 100 persons as calculated according to D1.13.</p> <p>(b) A mezzanine and its supports need not have an FRL or be non-combustible provided—</p> <p>(i) the total floor area of all the mezzanines in the same room does not exceed 1/3 of the floor area of the room or 200 m², whichever is the lesser; and</p> <p>(ii) the FRL of each wall and column that supports any other part of the building within 6 m of the mezzanine is increased by the amount listed in Table 2.6.</p>		NA
2.7: Enclosure of shafts	<p>Fire-isolated shafts are required to be enclosed at the top and bottom of the shaft with fire rated construction having an <i>FRL</i> 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.</p> <p>The above does not apply to shafts extending beyond the roof covering, other than fire isolated stair and lift shafts and the bottom of <i>non-combustible</i> shafts laid directly on the ground.</p>		NA

Section C: Fire Resistance			
2.8: Carparks in Class 2 and 3 Buildings			NA
2.9: Residential Aged Care building: Concession	<p>(c) In a Class 3 building protected with a sprinkler system complying with Specification E1.5 and used as a residential care building, any FRL criterion prescribed in Tables 3, 4 or 5—</p> <p>(i) for any floor and any loadbearing wall, may be reduced to 60, except any FRL criterion of 90 for an external wall must be maintained when tested from the outside; and</p> <p>(ii) for any non- loadbearing internal wall, need not apply if—</p> <p>(A) it is lined on each side with standard grade plasterboard not less than 13 mm thick or similar non-combustible material; and</p> <p>(B) it extends—</p> <p>(aa) to the underside of the floor next above; or</p> <p>(bb) to the underside of a ceiling lined with standard grade plasterboard not less than 13 mm thick or a material with at least an equivalent level of fire protection; or</p> <p>(cc) to the underside of a non-combustible roof covering; and</p> <p>(C) any insulation installed in the cavity of the wall is non-combustible; and</p> <p>(D) any construction joint, space or the like between the top of the wall and the floor, ceiling or roof is smoke sealed with intumescent putty or other suitable material.</p>		NA

Section C: Fire Resistance			
	(d) The concession described at (a) does not apply to fire-protected timber building elements.		
3.0: Type A fire-resisting construction	Type A fire-resisting construction is applicable to the development.	Refer to part 3 clauses below for the relevant Type A Construction requirements applicable to the project.	-
3.1: Fire-resistance of building elements	<ul style="list-style-type: none"> > 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 <i>non-combustible</i>. (Note: insulation and sarking used must be <i>non-combustible</i>) > Internal walls required to be fire rated must extend to— <ul style="list-style-type: none"> (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 <i>non-combustible</i> roof covering and, except for roof battens with dimensions of 75 mm x 50 mm or less or <i>sarking-type material</i>, must not be crossed by timber or other combustible building elements; or (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, 		CRA – Refer Annexure F

Section C: Fire Resistance

	<p>pipe, garbage or similar shaft wall must be of non-combustible construction.</p> <p>Note: This includes <i>non-combustible</i> insulation. When an insulation material is not certified as <i>non-combustible</i>, this material will need to be the subject of a Fire Engineering Assessment at the CC stage.</p> <ul style="list-style-type: none"> > The <i>FRLs</i> 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 <i>fire-source feature</i>. > It should also be noted that if Dintel material is to be used as an element where the BCA requires such element to be <i>non-combustible</i>, this material will need to be the subject of a Fire Engineering Assessment at the CC stage 		
3.2: Concessions for floors	<p>A floor need not comply with Table 3 if—</p> <ul style="list-style-type: none"> (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 <i>storey</i>, 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 <i>required FRL</i> and the space below the <i>stage</i> is not used as a dressing room, store room, or the like; or (d) it is within a <i>sole-occupancy unit</i> in a Class 2 or 3 building or Class 4 part of a building; or (e) it is an open-access floor (for the accommodation of electrical and electronic services and the like) above a floor with the <i>required FRL</i>. 		Noted

Section C: Fire Resistance			
3.3:	Floor Loading of Class 5 and 9b buildings: Concession	<p>If a floor in a Class 5 or 9b building is designed for a live load not exceeding 3 kPa—</p> <ul style="list-style-type: none"> (a) the floor next above (including floor beams) may have an <i>FRL</i> of 90/90/90; or (b) the roof, if that is next above (including roof beams) may have an <i>FRL</i> of 90/60/30. 	Noted
3.4:	Roof superimposed on concrete slab: Concession	<p>A roof superimposed on a concrete slab roof need not comply with Clause 3.1 as to fire-resisting construction if—</p> <ul style="list-style-type: none"> (a) the superimposed roof and any construction between it and the concrete slab roof are non-combustible throughout; and (b) the concrete slab roof complies with Table 3. 	CRA – Refer Annexure F
3.5:	Roof: Concession	<p>A roof need not comply with Table 3 if its covering is <i>non-combustible</i> and the building—</p> <ul style="list-style-type: none"> (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 <i>effective height</i> of not more than 25 m and the ceiling immediately below the roof has a <i>resistance to the incipient spread of fire</i> to the roof space of not less than 60 minutes. 	CRA – Refer Annexure F
3.6:	Roof lights	<p>If a roof is required to have an <i>FRL</i> or its covering is required to be <i>non-combustible</i>, roof lights or the like installed in that roof must—</p> <ul style="list-style-type: none"> (a) have an aggregate area of not more than 20% of the roof surface; and 	CRA – Refer Annexure F

Section C: Fire Resistance

	<p>(b) be not less than 3 m from—</p> <ul style="list-style-type: none"> (i) any boundary of the allotment other than the boundary with a road or public place; and (ii) any part of the building which projects above the roof unless that part has the <i>FRL</i> required of a <i>fire wall</i> 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 <i>sole-occupancy unit</i> if the walls bounding the unit are required to have an <i>FRL</i>; and (iv) any rooflight or the like in an adjoining fire-separated section of the building; and <p>(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.</p>		
3.7: Internal columns and walls: Concession	<p>For a building with an <i>effective height</i> of not more than 25 m and having a roof without an <i>FRL</i> 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 <i>fire walls</i> and shaft walls may have—</p> <ul style="list-style-type: none"> (a) in a Class 2 or 3 building: <i>FRL</i> 60/60/60; or (b) in a Class 5, 6, 7, 8 or 9 building— <ul style="list-style-type: none"> (i) with rise in storeys exceeding 3: <i>FRL</i> 60/60/60 (ii) with rise in storeys not exceeding 3: no <i>FRL</i>. 		CRA – Refer Annexure F
3.8: Open spectator stands and indoor sports stadiums concession	<p>In an open spectator stand or indoor sports stadium, the following building elements need not have the <i>FRL</i> specified in Table 3:</p>		CRA – Refer Annexure F

Section C: Fire Resistance

	<ul style="list-style-type: none"> (a) The roof if it is non-combustible. (b) Columns and loadbearing walls supporting only the roof if they are non-combustible. (c) Any non- loadbearing part of an external wall less than 3 m— (d) from any fire-source feature to which it is exposed if it has an FRL of not less than –/60/60 and is non-combustible; or (e) from an external wall of another open spectator stand if it is non-combustible. 		
3.9: Carparks	<p>Open deck and sprinkler protected carpark</p> <ul style="list-style-type: none"> (a) Notwithstanding Clause 3.1, a carpark may comply with Table 3.9 if it is an open-deck carpark or is protected with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5 and is— <ul style="list-style-type: none"> (i) a separate building; or (ii) a part of a building— <ul style="list-style-type: none"> (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 another classification, and the floor separating the classifications complies with C2.9; or (C) which is located above another Class 7 part of the building not used for carparking, and the floor separating the parts complies with Table 3 for a Class 7 part other than a carpark; or (D) which is located below another Class 7 part of the building not used for 		CRA – Refer Annexure F

Section C: Fire Resistance

	<p>carparking, and the floor separating the parts complies with Table 3.9.</p> <p>(b) For the purposes of this Clause, a carpark—</p> <p>(i) includes—</p> <p>(A) an administration area associated with the functioning of the carpark; and</p> <p>(B) where the carpark is sprinklered, is associated with a Class 2 or 3 building and provides carparking for separate sole-occupancy units, each carparking area with an area not greater than 10% of its floor area for purposes ancillary to the sole-occupancy units; but</p> <p>(ii) excludes—</p> <p>(A) except for (b)(i), any area of another classification, or other part of a Class 7 building not used for carparking; and</p> <p>(B) a building or part of a building specifically intended for the parking of trucks, buses, vans and the like.</p>		
3.10: Class 2 and 3 buildings Concession	<p>(c) In a Class 2 or 3 building with a rise in storeys of not more than 3—</p> <p>(i) notwithstanding C1.9(a) and (b) and C2.6, timber framing may be used for—</p> <p>(A) external walls; and</p> <p>(B) common walls; and</p> <p>(C) the floor framing of lift pits; and</p> <p>(D) non-loadbearing internal walls which are required to be fire-resisting; and</p>		CRA – Refer Annexure F

Section C: Fire Resistance

	<p>(E) non-loadbearing shafts, except shafts used for the discharge of hot products of combustion; and</p> <p>(F) spandrels or horizontal construction provided for the purposes of C2.6; and</p> <p>(ii) (notwithstanding Clause 3.1(d) of Specification C1.1, for loadbearing internal walls and loadbearing fire walls—</p> <p>(A) timber framing may be used; and</p> <p>(B) non-combustible materials may be used.</p> <p>(d) A Class 2 or 3 building having a rise in storeys of not more than 4 may have the top three storeys constructed in accordance with (a) provided—</p> <p>(i) the lowest storey is used solely for the purpose of parking motor vehicles or for some other ancillary purpose; and</p> <p>(ii) the lowest storey is constructed of concrete or masonry including the floor between it and the Class 2 or 3 part of the building above; and</p> <p>(iii) the lowest storey and the storey above are separated by construction having an FRL of not less than 90/90/90 with no openings or penetrations that would reduce the fire-resisting performance of that construction except that a doorway in that construction may be protected by a –/60/30 self-closing fire door.</p> <p>(e) In a Class 2 or 3 building complying with (a) or (b) and fitted with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5, any FRL criterion prescribed in Table 3—</p> <p>(i) for any floor and any loadbearing wall, may be reduced to 60, except any FRL criterion of 90 for</p>		
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Section C: Fire Resistance

	<p>an external wall must be maintained when tested from the outside; and</p> <p>(ii) for any non-loadbearing internal wall, need not apply if—</p> <p>(A) it is lined on each side with 13 mm standard grade plasterboard or similar non-combustible material; and</p> <p>(B) it extends—</p> <p>(aa) to the underside of the floor next above; or</p> <p>(bb) to the underside of a ceiling with a resistance to the incipient spread of fire of 60 minutes; or</p> <p>(cc) to the underside of a non-combustible roof covering; and</p> <p>(C) any insulation installed in the cavity of the wall is non-combustible; and</p> <p>(D) any construction joint, space or the like between the top of the wall and the floor, ceiling or roof is smoke sealed with intumescent putty or other suitable material; and</p> <p>(E) any doorway in the wall is protected by a self-closing, tight fitting, solid core door not less than 35 mm thick.</p>		
4.0: Type B fire-resisting construction	Type B fire-resisting construction is applicable to the development.	Refer to part 3 clauses below for the relevant Type B Construction requirements applicable to the project.	NA
Specification C1.10 – Fire Hazard Properties			
1. Scope	Informational	Noted	-

Section C: Fire Resistance				
2.	Application	Informational	Noted	Noted
3.	Floor linings and floor coverings	<p>A floor lining or floor covering must have—</p> <p>(a) a <i>critical radiant flux</i> not less than that listed in Table 2; and</p> <p>(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</p> <p>(c) a <i>group number</i> complying with Clause 6(b), for any portion of the floor covering that is continued more than 150 mm up a wall.</p>		CRA – Refer Annexure F
4.	Wall and ceiling linings	<p>(a) A wall or ceiling lining system must comply with the <i>group number</i> specified in Table 3 and for buildings not fitted with a sprinkler system complying with Specification E1.5 have—</p> <p>(i) a <i>smoke growth rate index</i> not more than 100; or</p> <p>(ii) an <i>average specific extinction area</i> less than 250 m²/kg.</p> <p>(b) A <i>group number</i> of a wall or ceiling lining and the <i>smoke growth rate index</i> or <i>average specific extinction area</i> must be determined in accordance with AS 5637.1:2015.</p>		CRA – Refer Annexure F
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 F
6.	Lift cars	<p>Materials used as—</p> <p>(a) floor linings and floor coverings must have a <i>critical radiant flux</i> not less than 2.2; and</p>		CRA – Refer Annexure F

Section C: Fire Resistance			
	(b) wall and ceiling linings must be a Group 1 material or a Group 2 material in accordance with AS 5637.1:2015.		
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 F
Specification C1.11 – Performance of External Walls in Fire – NA			
Specification C2.5 – Smoke Proof Walls in Health Care and Aged Buildings – NA			
Specification C3.4 – Fire Doors, Smoke Doors, Fire Window and Shutters			
1. Scope	Informational	Noted	Noted
2. Fire doors	Fire doorsets must comply with AS 1905.1:2015 and not fail by radiation through any glazed part during the period specified for integrity in the required <i>FRL</i> .		CRA – Refer Annexure F
3. Smoke doors	<p>3.1 - 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.</p> <p>3.2 – A smoke door of one or two leaves satisfies Clause 3.1 if it is constructed as follows:</p> <p>(a) The leaves are side-hung to swing–</p> <p>(i) in the direction of egress; or</p> <p>(ii) in both directions.</p> <p>(b)</p> <p>(i) The leaves are capable of resisting smoke at 200 degrees Celsius for 30 minutes.</p> <p>(ii) Solid-core leaves at least 35 mm thick satisfy (i).</p>		NA

Section C: Fire Resistance

	<p>(c) The leaves are fitted with smoke seals.</p> <p>(d)</p> <p>(i) The leaves are normally in the closed position; or</p> <p>(ii)</p> <p>(A) The leaves are closed automatically with the automatic closing operation initiated by smoke detectors, installed in accordance with the relevant provisions of AS 1670.1, located on each side of the doorway not more than 1.5m horizontal distance from the doorway; and</p> <p>(B) in the event of power failure to the door the leaves fail-safe in the closed position.</p> <p>(e) The leaves return to the fully closed position after each manual opening.</p> <p>(f) Any glazing incorporated in the door complies with AS 1288.</p> <p>(g)</p> <p>(i) If a glazed panel is capable of being mistaken for an unobstructed exit, the presence of the glass must be identified by opaque construction.</p> <p>(ii) An opaque mid-height band, mid-rail or crash bar satisfied (i).</p>		
4. Fire shutters	Fire shutters must comply with Clause 4 of BCA Specification C3.4.		CRA – Refer Annexure F
5. Fire windows	Fire window must be identical to the prototype which achieved the required <i>FRL</i> and be installed in the same manner and in an opening that is not larger than the tested prototype.		CRA – Refer Annexure F

Section C: Fire Resistance**Specification C3.15 – Penetration of Walls, Floors and Ceilings by Services**

1. Scope	Informational	Noted	Noted
2. Application	<p>(a) This Specification applies to installations permitted under the Deemed-to-Satisfy Provisions of the BCA as alternatives to systems that have been demonstrated by test to fulfil the requirements of C3.15(a).</p> <p>(b) This Specification does not apply to installations in ceilings required to have a resistance to the incipient spread of fire nor to the installation of piping that contains or is intended to contain a flammable liquid or gas.</p>		CRA – Refer Annexure F
3. Metal pipe system	<p>(a) A pipe system comprised entirely of metal (excluding pipe seals or the like) that is not normally filled with liquid must not be located within 100 mm, for a distance of 2 m from the penetration, of any combustible building element or a position where combustible material may be located, and must be constructed of—</p> <p>(i) copper alloy or stainless steel with a wall thickness of at least 1 mm; or</p> <p>(ii) cast iron or steel (other than stainless steel) with a wall thickness of at least 2 mm.</p> <p>(b) An opening for a pipe system comprised entirely of metal (excluding pipe seals or the like) must—</p> <p>(i) be neatly formed, cut or drilled; and</p> <p>(ii) be no closer than 200 mm to any other service penetration; and</p> <p>(iii) accommodate only one pipe.</p> <p>(c) A pipe system comprised entirely of metal (excluding pipe seals or the like) must be wrapped</p>		CRA – Refer Annexure F

Section C: Fire Resistance

	<p>but must not be lagged or enclosed in thermal insulation over the length of its penetration of a wall, floor or ceiling unless the lagging or thermal insulation fulfils the requirements of Clause 7.</p> <p>(d) The gap between a metal pipe and the wall, floor or ceiling it penetrates must be fire-stopped in accordance with Clause 7.</p>		
4. Pipes penetrating sanitary compartments	<p>If a pipe of metal or UPVC penetrates the floor of a sanitary compartment in accordance with C3.15(c)(ii)—</p> <p>(a) the opening must be neatly formed and no larger than is necessary to accommodate the pipe or fitting; and</p> <p>(b) the gap between pipe and floor must be fire-stopped in accordance with Clause 7.</p>		CRA – Refer Annexure F
5. Wires and cables	<p>If a wire or cable or cluster of wires or cables penetrates a floor, wall or ceiling—</p> <p>(a) the opening must be neatly formed, cut or drilled and no closer than 50 mm to any other service; and</p> <p>(b) the opening must be no larger in cross-sectional area than—</p> <p>(i) 2000 mm² if only a single cable is accommodated and the gap between cable and wall, floor or ceiling is no wider than 15 mm; or</p> <p>(ii) 500 mm² in any other case; and</p> <p>(iii) the gap between the service and the wall, floor or ceiling must be fire-stopped in accordance with Clause 7.</p>		CRA – Refer Annexure F
6. Electrical switches and outlets	<p>If an electrical switch, outlet, socket or the like is accommodated in an opening or recess in a wall, floor or ceiling—</p>		CRA – Refer Annexure F

Section C: Fire Resistance

	<ul style="list-style-type: none"> (a) the opening or recess must not— <ul style="list-style-type: none"> (i) be located opposite any point within 300 mm horizontally or 600 mm vertically of any opening or recess on the opposite side of the wall; or (ii) extend beyond half the thickness of the wall; and (b) the gap between the service and the wall, floor or ceiling must be fire-stopped in accordance Clause 7. 		
7. Fire-stopping	<ul style="list-style-type: none"> (a) Material: The material used for the fire-stopping of service penetrations must be concrete, high-temperature mineral fibre, high-temperature ceramic fibre or other material that does not flow at a temperature below 1120°C when tested in accordance with ISO 540, and must have— <ul style="list-style-type: none"> (i) demonstrated in a system tested in accordance with C3.15(a) that it does not impair the fire-resisting performance of the building element in which it is installed; or (ii) demonstrated in a test in accordance with (e) that it does not impair the fire-resisting performance of the test slab. (b) Installation: Fire-stopping material must be packed into the gap between the service and wall, floor or ceiling in a manner, and compressed to the same degree, as adopted for testing under Clause 7(a)(i) or (ii). (c) Hollow construction: If a pipe penetrates a hollow wall (such as a stud wall, a cavity wall or a wall of hollow blockwork) or a hollow floor/ceiling system, the cavity must be so framed and packed with fire-stopping material that is— 		CRA – Refer Annexure F

Section C: Fire Resistance

- (i) installed in accordance with Clause 7(b) to a thickness of 25 mm all round the service for the full length of the penetration; and
- (ii) restrained, independently of the service, from moving or parting from the surfaces of the service and of the wall, floor or ceiling.
- (d) Recesses: If an electrical switch, socket, outlet or the like is accommodated in a recess in a hollow wall or hollow floor/ceiling system—
- (e) the cavity immediately behind the service must be framed and packed with fire-stopping material in accordance with Clause 7(c); or
- (f) the back and sides of the service must be protected with refractory lining board identical with and to the same thickness as that in which the service is installed.
- (g) Test: The test to demonstrate compliance of a fire-stopping material with this Specification must be conducted as follows:
- (h) The test specimen must comprise a concrete slab not less than 1 m square and not more than 100 mm thick, and appropriately reinforced if necessary for structural adequacy during manufacture, transport and testing.
- (i) The slab must have a hole 50 mm in diameter through the centre and the hole must be packed with the fire-stopping material.
- (j) The slab must be conditioned in accordance with AS 1530.4.
- (k) Two thermocouples complying with AS 1530.4 must be attached to the upper surface of the packing each about 5 mm from its centre.

Section C: Fire Resistance

	(l) The slab must be tested on flat generally in accordance with Section 10 of AS 1530.4 and must achieve an FRL of 60/60/60 or as otherwise required.		
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Section D: Access and Egress**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 <i>sole-occupancy unit</i> in a Class 2 or 3 building or a Class 4 part of a building.		Noted
D1.2: Number of exits required	<p>Basements–</p> <p>Not less than 2 <i>exits</i> must be provided from any storey if egress from that storey involves a vertical rise within the building of more than 1.5 m, unless –</p> <ul style="list-style-type: none"> (i) the floor area of the storey is not more than 50 m²; and (ii) the distance of travel from any point on the floor to a single <i>exit</i> is not more than 20 m. <p>General</p> <p>> Without passing through another <i>sole-occupancy unit</i>, every occupant of a storey or part of a storey must have access to an <i>exit</i> or at least 2 <i>exits</i>, if 2 or more are required.</p>	Refer to Part 3.7 of the Report	DNC
D1.3: When fire-isolated stairways and ramps are required	Every <i>exit</i> stairway must be fire-isolated, except for.....		CRA – Refer Annexure F

Section D: Access and Egress

D1.4: Exit travel distances	<p><u>Class 2 residential —</u></p> <ul style="list-style-type: none"> > The entrance doorway of each <i>sole-occupancy unit</i> must be not more than – <ul style="list-style-type: none"> ○ 6 m from an <i>exit</i> or from a point from which travel in different directions to 2 <i>exits</i> is available; or ○ 20 m from a single <i>exit</i> serving the storey at the level of egress to a road or open space; and > No point on the floor of a room which is not in a <i>sole-occupancy unit</i> must be more than 20 m from an <i>exit</i> or from a point at which travel in different directions to 2 <i>exits</i> is available. <p><u>Class 7a carpark—</u></p> <p>No point on a floor must be more than 20 m from an <i>exit</i>, or a point from which travel in different directions to 2 <i>exits</i> is available, in which case the maximum distance to one of those <i>exits</i> must not exceed 40 m.</p> <ul style="list-style-type: none"> > no point on a floor must be more than 20 m from an <i>exit</i>, or a point from which travel in different directions to 2 <i>exits</i> is available, in which case the maximum distance to one of those <i>exits</i> must not exceed 40 m; and > in a Class 5 or 6 building, the distance to a single <i>exit</i> serving a storey at the level of access to a road or open space may be increased to 30 m. 	Refer to Part 3.7 of the Report	DNC
D1.5: Distance between alternative exits	<p><i>Exits</i> that are required as alternative means of egress must be—</p> <ul style="list-style-type: none"> (a) distributed as uniformly as practicable within or around the storey served and in positions where unobstructed access to at least 2 <i>exits</i> is readily 		CRA – Refer Annexure F

Section D: Access and Egress

	<p>available from all points on the floor including lift lobby areas; and</p> <p>(b) not less than 9 m apart; and</p> <p>(c) not more than—</p> <p>(i) in a Class 2 or 3 building — 45 m apart; or</p> <p>(ii) in a Class 9a health-care building, if such required <i>exit</i> serves a patient care area — 45 m apart; or</p> <p>(iii) in all other cases — 60 m apart; and</p> <p>(d) located so that alternative paths of travel do not converge such that they become less than 6 m apart.</p> <p>Note: the distance between <i>exits</i> must be measured through the point at which travel two <i>exits</i> is available.</p>		
D1.6: Dimensions of exits and paths of travel to exits	<p>In a required <i>exit</i> or path of travel to an <i>exit</i>—</p> <ul style="list-style-type: none"> > the unobstructed height throughout <i>exits</i> and paths of travel to <i>exits</i> 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 <i>exit</i> or path of travel to an <i>exit</i>, 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. 		CRA – Refer Annexure F

Section D: Access and Egress			
	<ul style="list-style-type: none"> > the unobstructed width of a required <i>exit</i> must not diminish in the direction of travel to a road or open space. 		
D1.7: Travel via fire-isolated exits	<ul style="list-style-type: none"> > A doorway from a room must not open directly into a stairway that is required to be fire-isolated unless it is from – <ul style="list-style-type: none"> (i) a public corridor, public lobby or the like; or (ii) a <i>sole-occupancy unit</i> occupying all of a storey; or (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— <ul style="list-style-type: none"> (i) to a road or open space; or (ii) to a point— <ul style="list-style-type: none"> (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— <ul style="list-style-type: none"> (A) adjoins a road or open space; (B) and is open for at least 1/3 of its perimeter; and 		NA

Section D: Access and Egress

	<p>(C) has an unobstructed clear height throughout, including the perimeter openings, of not less than 3 m; and</p> <p>(D) provides an unimpeded path of travel from the point of discharge to the road or open space of not more than 6 m.</p> <p>> D1.7 (c) - Where a path of travel from the point of discharge of a fire-isolated <i>exit</i> 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—</p> <p>(i) an FRL of not less than 60/60/60; and</p> <p>(ii) any openings protected internally in accordance with C3.4,</p> <p>(iii) 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.</p> <p>> D1.7 (d) If more than 2 access doorways, not from a sanitary compartment or the like open to a required fire-isolated <i>exit</i> in the same storey –</p> <ul style="list-style-type: none"> ○ a smoke lobby in accordance with D2.6 must be provided; or ○ the <i>exit</i> must be pressurized in accordance with AS 1668.1:2015 <p>> A ramp must be provided at any change in level less than 600 mm in a fire-isolated passageway in a Class 9 building.</p>		
D1.8: External stairways or ramps in lieu of fire-isolated exits	<p>(a) An external stairway or ramp may serve as a required exit in lieu of a fire-isolated exit serving a storey below an effective height of 25 m, if the stairway or ramp is—</p>		NA

Section D: Access and Egress

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| | <ul style="list-style-type: none"> (i) non-combustible throughout; and (ii) protected in accordance with (c) if it is within 6 m of, and exposed to any part of the external wall of the building it serves. <p>(b) For the purposes of this clause—</p> <ul style="list-style-type: none"> (i) exposure under (a)(ii), is measured in accordance with Clause 2.1 of Specification C1.1, as if the exit was a building element and the external wall of the building was a fire-source feature to the exit, except that the FRL required in Clause 2.1(a)(i) must not be less than 60/60/60; and (ii) the plane formed at the construction edge or perimeter of an unenclosed building or part such as an open-deck carpark, open spectator stand or the like, is deemed to be an external wall; and (iii) openings in an external wall and openings under (c) and (d), are determined in accordance with C3.1. <p>(c) The protection referred to in (a)(ii), must adequately protect occupants using the exit from exposure to a fire within the building, in accordance with one of the following methods:</p> <ul style="list-style-type: none"> (i) The part of the external wall of the building to which the exit is exposed must have— <ul style="list-style-type: none"> (A) an FRL of not less than 60/60/60; and (B) no openings less than 3 m from the exit (except a doorway serving the exit protected by a –/60/30 fire door in accordance with C3.8(a)); and (C) any opening 3 m or more but less than 6 m from the exit, protected in accordance | | |
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Section D: Access and Egress

	<p>with C3.4 and if wall wetting sprinklers are used, they are located internally.</p> <p>(ii) The exit must be protected from—</p> <p>(A) any part of the external wall of the building having an FRL of less than 60/60/60; and</p> <p>(B) any openings in the external wall, by the construction of a wall, roof, floor or other shielding element as appropriate in accordance with (d).</p> <p>(d) The wall, roof, floor or other shielding element required by (c)(ii) must—</p> <p>(i) have an FRL of not less than 60/60/60; and</p> <p>(ii) have no openings less than 3 m from the external wall of the building (except a doorway serving the exit protected by a –/60/30 fire door in accordance with C3.8(a)); and</p> <p>(iii) have any opening 3 m or more but less than 6 m from any part of the external wall of the building protected in accordance with C3.4 and if wall wetting sprinklers are used, they are located on the side exposed to the external wall.</p>		
D1.9: Travel by non-fire-isolated stairways or ramps	<p>> A non-fire-isolated stairway serving as a required <i>exit</i> 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.</p> <p>> In a Class 2, 3 or 4 building, the distance between the doorway of a room or <i>sole-occupancy unit</i> 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 <i>sole-occupancy unit</i> must not exceed 60m. 30m for Type C</p>		Complies

Section D: Access and Egress

- > 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-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

Section D: Access and Egress

	(ii) be suitably smoke-separated from each other at the level of discharge.		
D1.10: Discharge from exits	<p><i>Exits</i> must not be blocked at the point of discharge and where necessary, suitable barriers must be provided to prevent vehicles from blocking the <i>exit</i>.</p> <p>If a required <i>exit</i> 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 <i>exit</i> if greater.</p> <p>If an <i>exit</i> 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.</p> <p>The discharge points of alternative <i>exits</i> must be as far apart as practical</p>		CRA – Refer Annexure F
D1.11: Horizontal exits	<i>Horizontal exits</i> must not comprise more than half of the required <i>exits</i> from any part of a storey divided by a <i>fire wall</i> .		NA
D1.12: Non-required stairways, ramps or escalators	<p>An escalator, moving walkway or non-required non fire-isolated stairway or pedestrian ramp—</p> <p>(a) must not be used between storeys in—</p> <ul style="list-style-type: none"> (i) a patient care area in a Class 9a health-care building; or (ii) a resident use area in a Class 9c building; and <p>(b) may connect any number of storeys if it is—</p> <ul style="list-style-type: none"> (i) in an open spectator stand or indoor sports stadium; or (ii) in a carpark or an atrium; or (iii) outside a building; or 		NA

Section D: Access and Egress

	<ul style="list-style-type: none"> (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— <ul style="list-style-type: none"> (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. 		
D1.13: Number of persons accommodated	<p>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—</p> <ul style="list-style-type: none"> (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— <ul style="list-style-type: none"> (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 		Noted

Section D: Access and Egress			
	(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:		
D1.14: Measurement of distances	Informational – The nearest part of an <i>exit</i> 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 <i>horizontal exit</i> , the nearest part of the doorway.		Noted
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 .		CRA – Refer Annexure F

Section D: Access and Egress			
	(b) A ladder permitted under (a)— <ul style="list-style-type: none"> (i) may form part of an <i>exit</i> 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. 		
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 F
D1.18: Egress from early childhood centres	(a) Every part of a Class 9b early childhood centre must be wholly within a storey that provides direct egress to a road or open space. (b) The requirements of (a) do not apply in a building with a rise in storeys of not more than 2, where the Class 9b early childhood centre is the only use in that building.		
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 <i>sole-occupancy unit</i> in a Class 3 building. 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		Noted

Section D: Access and Egress

	Part do not apply to internal parts of the Class 2 <i>sole-occupancy units</i> .		
D2.2: Fire-isolated stairways and ramps	The fire isolated stairways must be constructed of <i>non-combustible</i> 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.		NA
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/m ³ 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 F
D2.4: Separation of rising and descending stair flights	If a stairway serving as an <i>exit</i> 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		NA

Section D: Access and Egress			
	<p>(b) any construction that separates or is common to the rising and descending flights must be</p> <p>(i) non-combustible; and</p> <p>(ii) smoke proof in accordance with Clause 2 of Specification C2.5.</p> <p>OR</p> <p>Complies – there is no direct connection between the stairs rising from the basement levels and the stairs from the residential levels.</p>		
D2.5: Open access ramps and balconies	<p>Where an open access ramp or balcony is provided to meet the smoke hazard management requirements of Table E2.2a, it must—</p> <p>(a) have ventilation openings to the outside air which—</p> <p>(i) have a total unobstructed area not less than the floor area of the ramp or balcony; and</p> <p>(ii) are evenly distributed along the open sides of the ramp or balcony; and</p> <p>(b) not be enclosed on its open sides above a height of 1 m except by an open grille or the like having a free air space of not less than 75% of its area.</p>		CRA – Refer Annexure F
D2.6: Smoke lobbies	<p>A smoke lobby required by D1.7 must—</p> <p>(a) have a floor area not less than 6 m²; and</p> <p>(b) be separated from the occupied areas in the storey by walls which are impervious to smoke, and—</p> <p>(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</p>		NA

Section D: Access and Egress

	<ul style="list-style-type: none"> (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. 		
D2.7: Installations in exits and paths of travel	<ul style="list-style-type: none"> > 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. > Gas or other fuel services must not be installed in a required <i>exit</i>. > 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 <i>non-combustible</i> construction or a fire protective covering with doorways suitably sealed against smoke spread. > Electrical wiring may be installed in a fire-isolated <i>exit</i> if the wiring is associated with: <ul style="list-style-type: none"> ○ a lighting, detection, or pressurization system serving the <i>exit</i>; or ○ a security, surveillance or management system serving the <i>exit</i>; or 		CRA – Refer Annexure F

Section D: Access and Egress

	<ul style="list-style-type: none"> ○ 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	<p>The space under the fire-isolated stairways within the shaft must not be enclosed to form a cupboard or similar enclosed space.</p> <p>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.</p>		CRA – Refer Annexure F
D2.9: Width of stairways and ramps	<p>Informational–</p> <p>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.</p>		Noted
D2.10: Pedestrian ramps	<ul style="list-style-type: none"> > A ramp serving as a required <i>exit</i> must— <ul style="list-style-type: none"> (i) where the ramp is also serving as an accessible ramp under Part D3, be in accordance with AS 1428.1:2009; 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 4586:2013. 		CRA – Refer Annexure F

Section D: Access and Egress			
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.		NA
D2.12: Roof as open space			NA
D2.13: Goings and risers	<p>Stairways must comply with the following:</p> <ul style="list-style-type: none"> > 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– <ul style="list-style-type: none"> (A) adjacent risers, or between adjacent goings, is no greater than 5 mm; and (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. 		CRA – Refer Annexure F

Section D: Access and Egress

	<ul style="list-style-type: none">> 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.																
D2.14: Landings	<p>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 4586:2013.</p> <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></table>	Application	Surface Condition		Dry	Wet	Ramp steeper than 1:14	P4 or R11	P5 or R12	Ramp steeper than 1:20 but not steeper than 1:14	P3 or R10	P4 or R11	Tread or landing surface	P3 or R10	P4 or R11		CRA – Refer Annexure F
Application	Surface Condition																
	Dry	Wet															
Ramp steeper than 1:14	P4 or R11	P5 or R12															
Ramp steeper than 1:20 but not steeper than 1:14	P3 or R10	P4 or R11															
Tread or landing surface	P3 or R10	P4 or R11															

Section D: Access and Egress

	Nosing or landing edge strip	P3	P4		
D2.15: Thresholds	<p>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–</p> <p>(a) in a building required to be accessible, the doorway–</p> <p>(i) opens to a road or open space; and</p> <p>(ii) is provided with a threshold ramp or step ramp in accordance with AS 1428.1:2009; or</p> <p>(b) in other cases–</p> <p>(i) the doorway opens to a road or open space, external stair landing or external balcony; and</p> <p>(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.</p>				CRA – Refer Annexure F
D2.16: Barriers to prevent falls	<p>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:</p> <p><u>Balustrade minimum heights</u></p> <ul style="list-style-type: none"> > 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. <p><u>Balustrade openings – fire-isolated stairs</u></p> <ul style="list-style-type: none"> > maximum openings of 300 mm; or > where rails are used– 				CRA – Refer Annexure F

Section D: Access and Egress

	<ul style="list-style-type: none"> ○ 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 <p><u>Balustrade openings – other than fire-isolated stairs</u></p> <p>> 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.</p> <p><u>Climbability – other than fire-isolated stairs</u></p> <p>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.</p>		
D2.17: Handrails	<p>Handrails to stairways must:</p> <ul style="list-style-type: none"> > 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 1428.1:2009 (including handrails to the fire stairs). > Handrails in common areas (other than fire stairs) must also accord with D3.3. 		CRA – Refer Annexure F

Section D: Access and Egress

Clause 12 of AS 1428.1:2009

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 AS 1428.1:2009.

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 AS 1428.1:2009 or with larger landings to accommodate required handrail extensions.

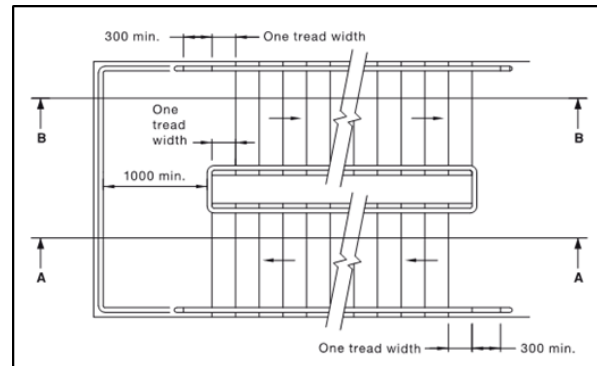


Figure 28 in AS 1428.1:2009

D2.18: Fixed platforms, walkways stairways and ladders	Plant areas may be accessed via stairs and ladders compliant with AS 1657:2018.		CRA – Refer Annexure F
D2.19: Doorways and doors	> Sliding doors serving as <i>exit</i> doors must be openable manually under a force of not more than 110N.		CRA – Refer Annexure F

Section D: Access and Egress

	<ul style="list-style-type: none"> > <i>Exit</i> 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 <i>fire compartment</i> served by the door. > A power operated door in a path of travel to a required <i>exit</i> 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. 		
D2.20: Swinging doors	<p>Swinging doors in a required <i>exit</i> must not encroach—</p> <ul style="list-style-type: none"> (i) at any part of its swing by more than 500 mm on the required 1m width of the <i>exit</i> and (ii) when fully open, by more than 100 mm on the required 1m <i>exit</i> width; and <p>the measurement of encroachment in each case is to include door handles or other furniture or attachments to the door.</p> <p>A swinging door in a required <i>exit</i> must swing in the direction of egress unless—</p> <ul style="list-style-type: none"> > it serves a building or part with a floor area not more than 200 m², it is the only required <i>exit</i> 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). 		CRA – Refer Annexure F
D2.21: Operation of latch	<p>All doors in a required <i>exit</i> or forming part of a required <i>exit</i> AND doors in a path of travel to a required <i>exit</i> must be readily openable without a key from the side that faces a person seeking egress, by—</p>		CRA – Refer Annexure F

Section D: Access and Egress

- (iii) 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
- (iv) a single hand pushing action on a single device which is located between 900mm and 1.2m from the floor.
- (v) where the latch operation device referred to in (ii) is not located on the door leaf itself—
 - (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 –

Section D: Access and Egress

- (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 200m²; 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.

Class 9b (other than school, early childhood centre or religious) for storey or room accommodating >100 persons:

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 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.

Section D: Access and Egress

D2.22: Re-entry from fire-isolated exits	<p>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 –</p> <ul style="list-style-type: none"> (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. 		NA
D2.23: Signs on doors	<p>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.</p> <p>Note: Fire signage in accordance with clause 183 of the Environmental Planning and Assessment Regulation 2000 is also required.</p>		NA
D2.24: Protection of openable windows	<ul style="list-style-type: none"> (a) Bedroom windows must be provided with protection if the floor below the window is 2m or more above the surface beneath. (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: <ul style="list-style-type: none"> (i) The openable portion of the window must be protected with– <ul style="list-style-type: none"> (A) a device to restrict the window opening; or (B) a screen with secure fittings. 		CRA – Refer Annexure F

Section D: Access and Egress

	<ul style="list-style-type: none"> (ii) A device or screen required by (i) must– <ul style="list-style-type: none"> (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– <ul style="list-style-type: none"> (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– <ul style="list-style-type: none"> (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– <ul style="list-style-type: none"> (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– <ul style="list-style-type: none"> (i) fire-isolated stairways, fire-isolated ramps and other areas used primarily for emergency purposes, excluding external stairways and external ramps; and 		
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Section D: Access and Egress

	<p>(ii) Class 7 (other than carparks) and Class 8 buildings and parts of buildings containing those classes;</p> <p>(A) must not permit a 300mm sphere to pass through it.</p> <p>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.</p>		
D2.25: Timber stairways: concession	<p>(a) Notwithstanding D2.2(a), timber treads, risers, landings and associated supporting framework which—</p> <p>(i) has a finished thickness of not less than 44 mm; and</p> <p>(ii) has an average density of not less than 800 kg/m³ at a moisture content of 12%, may be used within a required fire-isolated stairway or fire-isolated passageway constructed from fire-protected timber in accordance with C1.13 subject to—</p> <p>(iii) the building being protected throughout by a sprinkler system (other than a FPAA101D system) complying with Specification E1.5 which extends to within the fire-isolated enclosure; and</p> <p>(iv) fire protection being provided to the underside of stair flights and landings located immediately above a landing level which—</p> <p>(A) is at or near the level of egress; or</p> <p>(B) provides direct access to a carpark.</p> <p>(b) Fire protection required by (a) must be not less than one layer of 13 mm fire-protective grade plasterboard fixed in accordance with the system requirements for a fire-protective covering.</p>		CRA – Refer Annexure F

Section D: Access and Egress**Part D3 – Access for People with A Disability – NO REVIEW UNDERTAKEN****Section E: Services and Equipment****Part E1 – Fire Fighting Equipment**

E1.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
E1.3: Fire hydrants	<p>As the building has a floor area greater than 500 m², a fire hydrant system complying with AS 2419.1:2005 must be provided to serve the building.</p> <ul style="list-style-type: none"> > Hydrant booster assembly location. The booster location must comply with the following: <ul style="list-style-type: none"> ○ 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 <i>exit</i>; > Internal hydrants in each fire-isolated <i>exit</i> 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. 	Further detail to be considered at Construction Certificate (CC) stage.	CRA – Refer Annexure F

Section E: Services and Equipment

E1.4: Fire hose reels	<p>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).</p> <p>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.</p> <p>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—</p> <ul style="list-style-type: none"> (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. 	Further detail to be considered at Construction Certificate (CC) stage.	CRA – Refer Annexure F
E1.5: Sprinklers	The building must be provided with a sprinkler system complying with Table E1.5 and Specification E1.5 installed throughout.	Further detail to be considered at Construction Certificate (CC) stage.	CRA – Refer Annexure F
E1.6: Portable fire extinguishers	<p>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.</p> <p>For the Class 2, 3 or 4 parts, portable fire extinguishers must be—</p> <ul style="list-style-type: none"> (i) an ABE type fire extinguisher; and (ii) a minimum size of 2.5 kg; and (iii) distributed outside a <i>sole-occupancy unit</i>— 		CRA – Refer Annexure F

Section E: Services and Equipment

	<p>(A) to serve only the storey at which they are located; and</p> <p>(B) so that the travel distance from the entrance doorway of any <i>sole-occupancy unit</i> to the nearest fire extinguisher is not more than 10 m.</p>		
E1.8: Fire control centres	<p>Over 25m & Class 6, 7, 8 or 9 over 18000m².</p> <ul style="list-style-type: none"> > 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. <p>If building >50m must be in separate room</p>		NA
E1.9: Fire precautions during construction	<p>Informational–</p> <ul style="list-style-type: none"> > 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 <i>exit</i>, and > After the building has reach an <i>effective height</i> 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
E1.10: Provision for special hazards	<p>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.</p>		CRA – Refer Annexure F

Section E: Services and Equipment**Specification E1.5 – Fire Sprinkler Systems**

1.	Scope	Informational	Noted	Noted
2.	Application of automatic fire sprinkler standards	<p>An automatic fire sprinkler system shall comply with AS2118 as relevant to the building classification and the design of the hydraulic consultant.</p> <p>Where the building is residential class 2 or 3 then refer to Specification E1.5a for specific design requirements and concessions.</p>		CRA – Refer Annexure F
3.	Separation of sprinklered and non-sprinklered areas	<p>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 –</p> <p>(a) comply with any specific requirement of the Deemed-to-Satisfy Provisions of the BCA; or</p> <p>(b) where there is no specific requirement, comply with the relevant part of AS 2118, FPAA101D or FPAA101H.</p>		CRA – Refer Annexure F
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 2118.1:2017, must be protected in accordance with the Deemed-to-Satisfy Provisions of Part C3.		CRA – Refer Annexure F
5.	Fast response sprinklers	<p>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.</p> <p>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</p>		CRA – Refer Annexure F

Section E: Services and Equipment

	G3.8 – fast response sprinkler heads for atrium floor protection.		
6. Sprinkler valve enclosures	<p>(a) Sprinkler alarm valves must be located in a secure room or enclosure which has direct egress to a road or open space.</p> <p>(b) All sprinkler valve rooms and enclosures must be secured with a system suitable for use by the fire brigade.</p>		CRA – Refer Annexure F
7. Water supply	<p>(a) A required sprinkler system must be provided with at least one water supply.</p> <p>(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 –</p> <p>(i) the storage tank is located at the topmost storey of the building; and</p> <p>(ii) the building occupancy is classified as no more hazardous than Ordinary Hazard 2 (OH2) under AS 2118.1:2017; and</p> <p>(iii) an operational fire brigade service is available to attend a building fire.</p>		CRA – Refer Annexure F
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.		CRA – Refer Annexure F
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.		CRA – Refer Annexure F

Section E: Services and Equipment

10. Anti-tamper Devices	<p>(a) Where a sprinkler system is installed –</p> <p>(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</p> <p>(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.</p> <p>(b) Any valves provided to control sprinklers required by (a) must be fitted with anti-tamper monitoring devices connected to a monitoring panel.</p>		CRA – Refer Annexure F
11. Sprinkler Systems in Carparks	<p>A sprinkler system protecting a carpark complying with Table 3.9 of Specification C1.1 in a multi-classified building must –</p> <p>(a) be independent of the sprinkler system protecting any part of the building not used as a carpark; or</p> <p>(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 supply or otherwise affecting the effective operation of the section protecting the carpark.</p>		CRA – Refer Annexure F
12. Residential Care Buildings	<p>In addition to the provisions of AS 2118.4:2012, a sprinkler system in –</p> <p>(a) a Class 3 building used as a residential care building; or</p> <p>(b) a Class 9a health-care building used as a residential care building; or</p> <p>(c) a Class 9c building, must –</p>		CRA – Refer Annexure F

Section E: Services and Equipment

	<ul style="list-style-type: none"> (d) be provided with a monitored main stop valve in accordance with AS 2118.1:2017; 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	<ul style="list-style-type: none"> (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 – <ul style="list-style-type: none"> (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). 		CRA – Refer Annexure F
Specification E1.5a – Class 2 and 3 Buildings Not More Than 25m In Effective Height			
1. Scope and application	This specification sets out the design options and installation requirements for sprinklers in a class 2 or 3 residential building four or more storeys.		Noted
2. System requirements	<p>A required automatic fire sprinkler system installed in a Class 2 or 3 building with an <i>effective height</i> of not more than 25 m and a rise in storeys of 4 or more must comply with—</p> <ul style="list-style-type: none"> (i) AS 2118.1:2017; or (ii) AS 2118.4:2012, as applicable; or (iii) FPAA101D, except for residential care buildings; or 		CRA – Refer Annexure F

Section E: Services and Equipment

	(iv) FPAA101H, except for residential care buildings		
3. Permitted concessions	<p>AS 2118.1:2017 or AS 2118.4:2012 system concession:</p> <ul style="list-style-type: none"> (i) The FRL for self-closing fire doors, as required by C3.8 and C3.11, may be reduced to not less than -/30/30. (ii) The FRL for— <ul style="list-style-type: none"> (A) all non-loadbearing internal walls and shafts constructed of fire-protected timber, as required by Specification C1.1 to have FRLs greater than -/60/60, may be reduced to -/60/60 and service penetrations through non-loadbearing internal walls and shafts constructed of fire-protected timber, as required by C3.15, may be reduced to not less than -/60/15; and (B) all other non-loadbearing internal walls, as required by Specification C1.1, may be reduced to -/45/45 and the FRL for service penetrations through internal non-loadbearing walls and shafts, as required by C3.15, may be reduced to -/45/15. (iii) The FRL for fire-isolated stairways enclosed with non-loadbearing construction, as required by D1.3, may be reduced to -/45/45. (iv) Except in a residential care building, the maximum distance of travel, as required by D1.4(a)(i)(A), may be increased from 6 m to 12 m. (v) The maximum distance of travel from a single <i>exit</i> serving the storey at the level of egress to a road or open space, as required by D1.4(a)(i)(B), may be increased from 20 m to 30 m. 		CRA – Refer Annexure F

Section E: Services and Equipment

- (vi) The maximum distance between alternative exits, as required by D1.5(c)(i), may be increased from 45 m to 60 m.
- (vii) Internal fire hydrants in accordance with E1.3 are not required where—
 - (A) the building is served by external fire hydrants that provide compliant coverage installed in accordance with E1.3, except that in a residential care building the nozzle at the end of the length of hose need only reach the entry door of any *sole-occupancy unit* to be considered as covering the area within the sole occupancy unit; or
 - (B) a dry fire hydrant system that otherwise complies with AS 2419.1 is installed in the building and—
 - (aa) each fire hydrant head is located in accordance with E1.3 and fitted with a blank end cap or plug; and
 - (bb) the pipework is installed in accordance with E1.3 (as for a required fire main) except that it need not be connected to a water supply; and
 - (cc) a hydrant booster inlet connection is provided in accordance with E1.3; and
 - (dd) an external street or feed hydrant capable of providing the required system flow is located within 60 m of the hydrant booster connection.
- (viii) An emergency warning and intercom system need not be provided in a residential care building in accordance with E4.9 if a warning

Section E: Services and Equipment			
	system with an override public address facility is installed in accordance with Specification E2.2d.		
Part E1.8 – Fire Control Centres - NA			
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)	<p>General smoke hazard management requirements</p> <p>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 <i>fire compartment</i> to another <i>fire compartment</i> or operates in a manner that may unduly contribute to the spread of smoke from one <i>fire compartment</i> to another <i>fire compartment</i> (such as lobby air supply) must—</p> <ul style="list-style-type: none"> (i) be designed and installed to operate as a smoke control system in accordance with AS 1668.1:2015; or (ii) <ul style="list-style-type: none"> (A) incorporate smoke dampers where the air-handling ducts penetrate any elements separating the <i>fire compartments</i> 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 1668.1:2015; and 		CRA – Refer Annexure F

Section E: Services and Equipment

	<p>for the purposes of this provision, each <i>sole-occupancy unit</i> in a Class 2 or 3 building is treated as a separate <i>fire compartment</i>.</p> <p>Miscellaneous air-handling systems covered by Sections 5 and 6 of AS 1668.1:2015 serving more than one <i>fire compartment</i> (other than a carpark ventilation system) and not forming part of a smoke hazard management system must comply with that Section of the Standard.</p> <p>A smoke detection system must be installed in accordance with Clause 6 of Specification E2.2a to operate AS1668.1:2015 systems that are provided for zone pressurisation and automatic air pressurisation for fire-isolated <i>exits</i>.</p> <p>Class 2 parts</p> <p>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.</p> <p>Class 7a buildings</p> <p>A Class 7a building including a basement provided with a mechanical ventilation system in accordance with AS 1668.2:2012 must comply with clause 5.5 of AS 1668.1:2015 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.</p> <p>Class 9a health care and Class 9c Aged Care buildings</p> <p>> Table E2.2a) - Any system in a Class 9a health care or 9c aged care building that does not operate as a smoke control system as per AS/NZS 1668.1:2015, other than:</p>		
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Section E: Services and Equipment			
	<ul style="list-style-type: none"> ○ individual room units with a capacity of not more than 1000 L/s; or ○ systems serving critical treatment areas; or ○ miscellaneous exhaust are systems installed as per Section 5 and 6 of AS 1668.1:2015. 		
E2.3: Provisions for special hazards	<p>Additional smoke hazard management measures may be necessary due to the—</p> <ul style="list-style-type: none"> (a) special characteristics of the building; or (b) special function or use of the building; or (c) special type or quantity of materials stored, displayed or used in a building; or (d) special mix of classifications within a building or fire compartment, which are not addressed in Tables E2.2a and E2.2b 		NA
Specification E2.2a – Smoke Detection and Alarm System			
1. Scope	Informational	Noted	Noted
2. Type of system	<p>A required automatic smoke detection and alarm system must be provided in accordance with the following:</p> <ul style="list-style-type: none"> (a) Class 2 buildings and Class 4 parts of a building— <ul style="list-style-type: none"> (i) a smoke alarm system complying with Clause 3; or (ii) a smoke detection system complying with Clause 4; or (iii) a combination of a smoke alarm system and a smoke detection system complying with Clause 5. (b) Class 3 buildings— 		CRA – Refer Annexure F

Section E: Services and Equipment

	<ul style="list-style-type: none"> (i) with a Class 3 part located more than 2 storeys above ground level — a smoke detection system complying with Clause 4; or (ii) which accommodate more than 20 residents and are the residential part of a school, accommodation for the aged, children or people with a disability — a smoke detection system complying with Clause 4; or (iii) all other Class 3 buildings— <ul style="list-style-type: none"> (A) a smoke alarm system complying with Clause 3; or (B) a smoke detection system complying with Clause 4; or (C) a combination of a smoke alarm system and a smoke detection system complying with Clause 5. (c) Class 5, 6, 7, 8, 9b and 9c buildings— a smoke detection system complying with Clause 4. (d) Class 9a health-care buildings — <ul style="list-style-type: none"> (i) where more than 6 bed patients are accommodated — a smoke detection system complying with Clause 4; or (ii) where 6 or less bed patients are accommodated— <ul style="list-style-type: none"> (A) a smoke alarm system complying with Clause 3; or (B) a smoke detection system complying with Clause 4. 		
3. Smoke alarm system	<ul style="list-style-type: none"> (a) All Class 2 - 9 buildings— <ul style="list-style-type: none"> (i) A smoke alarm system must— 		CRA – Refer Annexure F

Section E: Services and Equipment

	<ul style="list-style-type: none"> (A) consist of smoke alarms complying with AS 3786; and (B) be powered from the consumer mains source. 		
	<ul style="list-style-type: none"> (ii) In kitchens and other areas where the use of the area is likely to result in smoke alarms causing spurious signals— <ul style="list-style-type: none"> (A) any other alarm deemed suitable in accordance with AS 1670.1 may be installed provided that smoke alarms are installed elsewhere in the sole-occupancy unit in accordance with Clause 3(b)(i) and Clause 3(b)(ii); or (B) an alarm acknowledgement facility may be installed, except where the kitchen or other area is in a building protected with a sprinkler system complying with Specification E1.5 (other than a FPAA101D system), the alarms need not be installed in the kitchen or other areas likely to result in spurious signals. 		
	<ul style="list-style-type: none"> (b) Class 2 or 3 buildings or Class 4 parts of a building <ul style="list-style-type: none"> — In a Class 2 or 3 building or Class 4 part of a building provided with a smoke alarm system, the following applies: <ul style="list-style-type: none"> (i) Alarms must be installed within each sole-occupancy unit, and located on or near the ceiling in any storey— <ul style="list-style-type: none"> (A) containing bedrooms— <ul style="list-style-type: none"> (aa) between each part of the sole-occupancy unit containing bedrooms and the remainder of the sole-occupancy unit; and 		

Section E: Services and Equipment

	<ul style="list-style-type: none"> (bb) where bedrooms are served by a hallway, in that hallway; and (B) not containing any bedrooms, in egress paths. (ii) Where there is more than one alarm installed within a sole-occupancy unit, alarms must be interconnected within that sole-occupancy unit. (iii) Subject to (iv), alarms must be— <ul style="list-style-type: none"> (A) installed in public corridors and other internal public spaces, located in accordance with the requirements for smoke detectors in AS 1670.1; and (B) connected to activate a building occupant warning system in accordance with Clause 7. (iv) In a Class 2 or 3 building or Class 4 part of a building protected with a sprinkler system complying with Specification E1.5 (other than a FPAA101D system), alarms are not required in public corridors and other internal public spaces. (c) Class 9a buildings — Smoke alarms must— <ul style="list-style-type: none"> (i) installed in every room, public corridor and other internal public space; and (ii) located in accordance with the requirements for smoke detectors in AS 1670.1; and (iii) interconnected to provide a common alarm; and (iv) have manual call points installed in evacuation routes so that no point on a floor is more than 30 m from a manual call point. 		
4. Smoke detection system	<ul style="list-style-type: none"> (a) All Class 2 - 9 buildings— <ul style="list-style-type: none"> (i) A smoke detection system must— 		CRA – Refer Annexure F

Section E: Services and Equipment

	<ul style="list-style-type: none"> (A) subject to (b) and (c), comply with AS 1670.1; and (B) activate a building occupant warning system in accordance with Clause 7. 		
	<ul style="list-style-type: none"> (ii) In kitchens and other areas where the use of the area is likely to result in smoke detectors causing spurious signals— <ul style="list-style-type: none"> (A) any other detector deemed suitable in accordance with AS 1670.1 may be installed provided that smoke detectors are installed elsewhere in the sole-occupancy unit in accordance with the requirements for alarms in Clause 3(b)(i) and Clause 3(b)(ii); or (B) an alarm acknowledgement facility may be installed, except where the kitchen or other area is in a building protected with a sprinkler system complying with Specification E1.5 (other than a FPAA101D or FPAA101H system), the detectors need not be installed in the kitchen or other areas likely to result in spurious signals. 		
	<ul style="list-style-type: none"> (b) Class 2 or 3 buildings or Class 4 parts of a building — In a Class 2 or 3 building or Class 4 part of a building provided with a smoke detection system, the following applies: <ul style="list-style-type: none"> (i) Smoke detectors must be installed— <ul style="list-style-type: none"> (A) within each sole-occupancy unit, in accordance with the requirements for alarms in Clause 3(b)(i) and Clause 3(b)(ii); and (B) subject to (ii), in public corridors and other internal public spaces. 		

Section E: Services and Equipment

	<p>(ii) In a Class 2 or 3 building or Class 4 part of a building protected with a sprinkler system complying with Specification E1.5 (other than a FPAA101D or FPAA101H system), smoke detectors are not required in public corridors and other internal public spaces.</p> <p>(c) Class health-care buildings — The following applies in a Class 9a health-care building:</p> <p>(i)</p> <p>(A) Photoelectric type smoke detectors must be installed in patient care area and in paths of travel to exits from patient care areas; and</p> <p>(B) in areas other than patient care areas and paths of travel to exits from patient care areas, where the use of the area is likely to result in smoke detectors causing spurious signals, any other detector deemed suitable in accordance with AS 1670.1 may be installed in lieu of smoke detectors,</p> <p>except where an area is protected with a sprinkler system complying with Specification E1.5, smoke detectors need not be installed where the use of the area is likely to result in spurious signals.</p> <p>(ii) Manual call points must be installed in evacuation routes so that no point on a floor is more than 30 m from a manual call point.</p> <p>(d) Class 9c buildings — In a Class 9c building—</p> <p>(i) remote automatic indication of each zone must be given in each smoke compartment by means of—</p>		
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Section E: Services and Equipment

	<p>(A) mimic panels with an illuminated display; or</p> <p>(B) annunciator panels with alpha numeric display; and</p> <p>(ii) if the building accommodates more than 20 residents, manual call points must be installed in paths of travel so that no point on a floor is more than 30 m from a manual call point.</p>		
5. Combined smoke alarm and smoke detection system	<p>(a) A Class 2 or 3 building or Class 4 part of a building provided with a combination of a smoke alarm system and smoke detection system in accordance with Clause 2 must—</p> <p>(i) be provided with a smoke alarm system complying with Clause 3 within sole-occupancy units; and</p> <p>(ii) subject to (b), be provided with a smoke detection system complying with Clause 4 in areas not within sole-occupancy units.</p> <p>(b) In a Class 2 or 3 building or Class 4 part of a building protected with a sprinkler system complying with Specification E1.5 (other than a FPAA101D or FPAA101H system), smoke detectors are not required in public corridors and other internal public spaces.</p>		CRA – Refer Annexure F
6. Smoke detection for smoke control system	<p>(a) Smoke detectors required to activate air pressurisation systems for fire-isolated exits and zone pressurisation systems must—</p> <p>(i) be installed in accordance with AS 1670.1; and</p> <p>(ii) have additional smoke detectors installed adjacent to each bank of lift landing doors set back horizontally from the door openings by a distance of not more than 3 m.</p>		CRA – Refer Annexure F

Section E: Services and Equipment

	<p>(b) Smoke detectors required to activate—</p> <ul style="list-style-type: none"> (i) automatic shutdown of air-handling systems in accordance with Table E2.2b; or (ii) a smoke exhaust system in accordance with Specification E2.2b, <p>must—</p> <ul style="list-style-type: none"> (iii) be spaced— <ul style="list-style-type: none"> (A) not more than 20 m apart and not more than 10 m from any wall, bulkhead or smoke curtain; and (B) in enclosed malls and walkways in a Class 6 building not more than 15 m apart and not more than 7.5 m from any wall, bulkhead or curtain; and (iv) have a sensitivity— <ul style="list-style-type: none"> (A) in accordance with AS 1670.1 in areas other than a multi- storey walkway and mall in a Class 6 building; and (B) not exceeding 0.5% smoke obscuration per metre with compensation for external airborne contamination as necessary, in a multi- storey walkway and mall in a Class 6 building. <p>(c) Smoke detectors provided to activate a smoke control system must—</p> <ul style="list-style-type: none"> (i) <ul style="list-style-type: none"> (A) form part of a building fire or smoke detection system complying with AS 1670.1; or 		
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Section E: Services and Equipment

	<p>(B) be a separate dedicated system incorporating control and indicating equipment complying with AS 1670.1; and</p> <p>(ii) activate a building occupant warning system complying with Clause 7, except that smoke detectors provided solely to initiate automatic shutdown of air-handling systems in accordance with (b)(i) need not activate a building occupant warning system.</p>		
7. Building occupant warning system	<p>Subject to E4.9, a building occupant warning system provided as part of a smoke hazard management system must comply with clause 3.22 of AS 1670.1 to sound through all occupied areas except—</p> <p>(a) in a Class 2 and 3 building or Class 4 part of a building provided with a smoke alarm system in accordance with Clause 3(b)(iii)—</p> <p>(i) the sound pressure level need not be measured within a sole-occupancy unit if a level of not less than 85 dB(A) is provided at the door providing access to the sole-occupancy unit; and</p> <p>(ii) the inbuilt sounders of the smoke alarms may be used to wholly or partially meet the requirements; and</p> <p>(b) in a Class 2 and 3 building or Class 4 part of a building provided with a smoke detection system in accordance with Clause 4(b), the sound pressure level from a building occupant warning system need not be measured within a sole-occupancy unit if a level of not less than 100 dB(A) is provided at the door providing access to the sole-occupancy unit; and</p> <p>(c) in a Class 3 building used as a residential care building, the system—</p>		CRA – Refer Annexure F

Section E: Services and Equipment

	<ul style="list-style-type: none"> (i) must be arranged to provide a warning for occupants; and (ii) in areas used by residents, may have its alarm adjusted in volume and content to minimise trauma consistent with the type and condition of residents; and (d) in a Class 9a health-care building, in a patient care area, the system— <ul style="list-style-type: none"> (i) must be arranged to provide a warning for occupants; and (ii) in a ward area, may have its alarm adjusted in volume and content to minimise trauma consistent with the type and condition of the patients; and (e) in a Class 9c building, the system— <ul style="list-style-type: none"> (i) must be arranged to provide a warning for occupants; and (ii) must notify staff caring for the residents of the building; and (iii) in areas used by residents, may have its alarm adjusted in volume and content to minimise trauma consistent with the type and condition of residents. 		
8. System Monitoring	<p>The following installations must be connected to a fire alarm monitoring system connected to a fire station or fire station dispatch centre in accordance with AS 1670.3:</p> <ul style="list-style-type: none"> (a) A smoke detection system in a Class 3 building provided in accordance with Clause 2(b)(i) or Clause 2 (b)(ii). 		NA

Section E: Services and Equipment

	<ul style="list-style-type: none"> (b) A smoke detection system in a Class 9a health-care building, if the building accommodates more than 20 patients. (c) A smoke detection system in a Class 9c building. (d) Smoke detection in accordance with Clause 6 provided to activate— <ul style="list-style-type: none"> (i) a smoke exhaust system in accordance Specification E2.2b; or (ii) smoke-and-heat vents in accordance with Specification E2.2c. (e) An automatic fire detection and alarm system required by Table E2.2a for large isolated buildings subject to C2.3. 		
Specification E2.2b – Smoke Exhaust System - NA			
Specification E2.2c – Smoke and Heat Vents – NA			
Specification E2.2d – Residential Fire Safety Systems – NA			
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 F
E3.2: Stretcher facility in lifts	<p>A stretcher facility must be provided to an emergency lift required by E3.4.</p> <p>A stretcher facility must be provided to passenger lifts installed to serve any storey above an <i>effective height</i> of 12 m.</p>		NA

Section E: Services and Equipment

	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.		
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 F
E3.4: Emergency lifts			NA
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 F
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 F
E3.7: Fire service controls	<p>The lifts serving any storey above an <i>effective height</i> of 12 m must be provided with:</p> <p>(a) A fire service recall control switch complying with E3.9 for—</p> <ul style="list-style-type: none"> (i) a group of lifts; or (ii) a single lift not in a group that serves the storey. <p>(b) A lift car fire service drive control switch complying with E3.10 for every lift.</p>		NA
E3.8: Aged care buildings	Where residents in a Class 9c residential care building are on levels which do not have direct access to a road		NA

Section E: Services and Equipment

	<p>or open space, the building must be provided with either—</p> <p>(a) at least one lift to accommodate a stretcher in accordance with E3.2(b); or</p> <p>(b) a ramp in accordance with AS 1428.1, and the lift or ramp must discharge at a level providing direct access to a road or open space.</p>		
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.		NA
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.		NA
Specification E3.1 – Lift Installations			
1. Scope	Informational	Noted	Noted
2. Lift cars exposed	<p>(a) A lift car exposed to solar radiation directly, or indirectly by re-radiations, must have –</p> <p>(i) mechanical ventilation at a rate of one air change per minute; or</p> <p>(ii) mechanical cooling.</p> <p>(b) A 2-hour alternative power source for ventilation or mechanical cooling at (a) must be provided in the event of normal power loss.</p>		NA
3. Lift car emergency lighting	<p>A lift car must have an emergency lighting system designed –</p> <p>(a) to come on automatically upon failure of the normal light supply; and</p>		CRA – Refer Annexure F

Section E: Services and Equipment

	(b) to provide at least 20 lux of lighting for 2 hours on the alarm initiation button.		
4. Cooling of lift shaft	<p>While a lift in a lift shaft is in service, the cooling of the lift shaft must –</p> <p>(a) ensure that the dry bulb air temperature in the lift shaft does not exceed 40°C; and</p> <p>(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.</p>		CRA – Refer Annexure F
5. Lift foyer access	<p>Where there is a security foyer in a building, access may be via locked security doors provided –</p> <p>(a) security doors revert to the unlocked state in the event of –</p> <p>(i) power failure; or</p> <p>(ii) fire alarm; and</p> <p>(b) locked foyer areas are monitored by closed circuit television and intercom system to a 24-hour staffed location.</p>		CRA – Refer Annexure F
6. Emergency access doors in a single enclosed lift shaft	<p>(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:</p> <p>(i) The clear opening size of emergency doors must be not less than 600 mm wide x 980 mm high.</p> <p>(ii) Hinged doors must not open towards the interior of the lift shaft.</p> <p>(iii) Doors must be self-closing and self-locking.</p> <p>(iv) Doors must be marked on the landing side with the letters not less than 35 mm high:</p>		CRA – Refer Annexure F

Section E: Services and Equipment

	<p>(A) "DANGER LIFTWELL ACCESS"</p> <p>(B) "KEEP FURNITURE AND FIXTURES CLEAR".</p> <p>(v) Doors from the landing side must only be openable by a tool.</p> <p>(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.</p> <p>(b) In single enclosed lift shafts where –</p> <p>(i) ropes are installed; and</p> <p>(ii) the vertical distance between the lift car sill and the landing door head is less than 600 mm; and</p> <p>(iii) the counterweight is resting on its fully compressed buffer,</p> <p>(iv) 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).</p>		
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/NZS 2293.1:2018.		CRA – Refer Annexure F
E4.3: Measurement of distance	Informational	Noted	Noted

Section E: Services and Equipment

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

Section F: Health and Amenity**Part F1 – Damp and Weatherproofing**

F1.0:	Deemed-to-Satisfy Provisions	<i>Performance Requirement</i> 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 <i>Performance Requirement</i> in respect of external walls. The assessment contained within this report does not include an assessment against Performance Provision FP1.4.		PS Required
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Section F: Health and Amenity			
F1.1:	Stormwater drainage	Stormwater drainage to comply with AS/NZS 3500.3:2018.	CRA – Refer Annexure F
F1.4:	External above ground membranes	Waterproofing membranes for external above ground use to comply with AS 4654 Parts 1 and 2:2012.	CRA – Refer Annexure F
F1.5:	Roof coverings	Roof coverings are to comply with BCA Clause F1.5.	CRA – Refer Annexure F
F1.6:	Sarking	<i>Sarking-type materials</i> used for weatherproofing must comply with AS/NZS 4200 Part 1 and 2:2017.	CRA – Refer Annexure F
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 F
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 F
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 F
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 F
F1.12:	Sub-floor ventilation		CRA – Refer Annexure F

Section F: Health and Amenity			
F1.13: Glazed Assemblies	Glazed assemblies are to comply with AS 2047:2014 and AS 1288:2006.		CRA – Refer Annexure F
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 F
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 (d) For the purpose of this Part, a unisex facility comprises one closet pan, one washbasin and means for the disposal of sanitary towels		CRA – Refer Annexure F
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.		CRA – Refer Annexure F

Section F: Health and Amenity

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| | <ul style="list-style-type: none"> (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 – <ul style="list-style-type: none"> (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 | | |
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Section F: Health and Amenity

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| | <p>(h) A class 9b early childhood centre must be provided with –</p> <p>(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 –</p> <p>(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</p> <p>(B) the ability to facilitate supervision of children from the facilities if the early childhood centre accommodates children younger than 2 years old; and</p> <p>(ii) one bath, shower or shower-bath; and</p> <p>(iii) if the centre accommodates children younger than 3 years old –</p> <p>(A) a laundry facility comprising a washtub and space in the same room for a washing machine; and</p> <p>(B) a bench type baby bath, which is within 1 m of the nappy change bench; and</p> <p>(C) a nappy changing bench which –</p> <p>(aa) is within 1 m of separate adult hand washing facilities and bench type baby bath; and</p> <p>(bb) must be not less than 0.9 m² in area and a height of not less than 850 mm, but not more than 900 mm above the finished floor level; and</p> <p>(cc) must have a space not less than 800 mm height, 500 mm wide and</p> | | |
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Section F: Health and Amenity

	<p>800 mm deep for the storage of steps; and</p> <p>(dd) is positioned to permit a staff member changing a nappy to have visibility of the play area at all times.</p> <p>(i) Class 9b theatres and sporting venues must be provided with one shower for each 10 participants or part thereof.</p> <p>(j) Not less than one washbasin must be provided where closet pans or urinals are provided.</p>		
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 F
F2.5: Construction of sanitary compartments	<p>(a) Other than in an early childhood centre, sanitary compartments must have doors and partitions that separate adjacent compartments and extend—</p> <p>(i) from floor level to the ceiling in the case of a unisex facility; or</p> <p>(ii) to a height of not less than 1.5 m above the floor if primary school children are the principal users; or</p> <p>(iii) 1.8 m above the floor in all other cases.</p> <p>(b) The door to a fully enclosed sanitary compartment must—</p> <p>(i) open outwards; or</p> <p>(ii) slide; or</p> <p>(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</p>		CRA – Refer Annexure F

Section F: Health and Amenity

	<p>with Figure F2.5, between the closet pan within the sanitary compartment and the doorway.</p> <p><u>Early childhood centre</u></p> <p>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.</p>		
F2.6: Interpretation: urinals and washbasins	<p>Informational—</p> <p>(a) A urinal may be—</p> <ul style="list-style-type: none"> (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. <p>(b) A washbasin may be—</p> <ul style="list-style-type: none"> (i) an individual basin; or (ii) a part of a hand washing trough served by a single water tap. 		Noted
F2.8: Waste Management	<p>(a) In a Class 9a health-care building, at least one slop-hopper or other device, other than a water closet pan or urinal, must be provided—</p> <ul style="list-style-type: none"> (i) on any storey containing ward areas or bedrooms to facilitate emptying of containers of sewage or dirty water; and (ii) with a flushing apparatus, tap and grating. <p>(b) In a Class 9c building, the following facilities must be provided for every 60 beds or part thereof on each storey containing resident use areas—</p> <ul style="list-style-type: none"> (i) one slop-hopper or other device other than a water closet pan or urinal for the safe handling 		NA

Section F: Health and Amenity			
	<p>and disposal of liquid and solid wastes with a flushing apparatus, tap and grating; and</p> <p>(ii) an appliance for the disinfection of pans or an adequate means to dispose of receptacles.</p>		
F2.9: Accessible adult change facilities	<p>(a) Accessible adult change facilities required by (b)</p> <p>(i) must be constructed in accordance with Specification F2.9; and</p> <p>(ii) cannot be combined with another sanitary compartment.</p> <p>(b) One unisex accessible adult change facility must be provided in an accessible part of a—</p> <p>(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 <i>sole-occupancy units</i>; and</p> <p>(ii) Class 9b sports venue or the like that—</p> <p>(A) has a design occupancy of not less than 35,000 spectators; or</p> <p>(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</p> <p>(iii) museum, art gallery or the like having a design occupancy of not less than 1,500 patrons; and</p> <p>(iv) theatre or the like having a design occupancy of not less than 1,500 patrons; and</p> <p>(v) passenger use area of an airport terminal building within an airport that accepts domestic and/or international flights that are public</p>		NA

Section F: Health and Amenity			
	transport services as defined in the Disability Standards for Accessible Public Transport 2002.		
Specification – F2.9 Accessible Adult Change Facilities – NA			
Part F3 – Room Sizes			
F3.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
F3.1: Height of rooms and other spaces	<ul style="list-style-type: none"> (a) The height of rooms and other spaces must be not less than— (b) in a Class 2 or 3 building or Class 4 part of a building— <ul style="list-style-type: none"> (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 (v) within— <ul style="list-style-type: none"> (A) a habitable room— <ul style="list-style-type: none"> (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 (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 		CRA – Refer Annexure F

Section F: Health and Amenity

	<p>(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</p> <p>(aa) 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</p> <p>(c) in a Class 5, 6, 7 or 8 building—</p> <p>(i) except as allowed in (ii) and (f) — 2.4 m; and</p> <p>(ii) a corridor, passageway, or the like — 2.1 m; and</p> <p>(d) in a Class 9a health-care building—</p> <p>(i) a patient care area — 2.4 m; and</p> <p>(ii) an operating theatre or delivery room — 3 m; and</p> <p>(iii) a treatment room, clinic, waiting room, passageway, corridor, or the like — 2.4 m; and</p> <p>(e) in a Class 9b building—</p> <p>(i) a school classroom or other assembly building or part that accommodates not more than 100 persons — 2.4 m; and</p> <p>(ii) a theatre, public hall or other assembly building or part that accommodates more than 100 persons — 2.7 m; and</p> <p>(iii) a corridor—</p> <p>(A) that serves an assembly building or part that accommodates not more than 100 persons — 2.4 m; or</p> <p>(B) that serves an assembly building or part that accommodates more than 100 persons — 2.7 m; and</p>		
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Section F: Health and Amenity

	<ul style="list-style-type: none"> (iv) the number of persons accommodated must be calculated according to D1.13; and (f) in a Class 9c building— <ul style="list-style-type: none"> (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 (g) in any building— <ul style="list-style-type: none"> (i) a bathroom, shower room, sanitary compartment, airlock, tea preparation room, pantry, store room, garage, car parking area, or the like — 2.1 m; and (ii) a commercial kitchen — 2.4 m; and (iii) 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. (iv) 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	Natural light must be provided to all habitable rooms.		CRA – Refer Annexure F
F4.2: Methods and extent of natural lighting	<ul style="list-style-type: none"> (a) Natural light must be provided by: <ul style="list-style-type: none"> (i) Windows: 		CRA – Refer Annexure F

Section F: Health and Amenity

	<ul style="list-style-type: none"> (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: <ul style="list-style-type: none"> (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). 		
F4.3: Natural light borrowed from adjoining room	<ul style="list-style-type: none"> (a) Natural light to a room in a Class 2 building or Class 4 part of a building or in a sole-occupancy unit of a Class 3 building, may come through one or more glazed panels or openings from an adjoining room (including an enclosed verandah) if— <ul style="list-style-type: none"> (i) both rooms are within the same sole-occupancy unit or the enclosed verandah is on common property; and (ii) the glazed panels or openings have an aggregate light transmitting area of not less than 10% of the floor area of the room to which it provides light; and (iii) the adjoining room has— <ul style="list-style-type: none"> (A) windows , excluding roof lights, that— <ul style="list-style-type: none"> (aa) have an aggregate light transmitting area of not less than 10% of the combined floor areas of both rooms; and (bb) are open to the sky or face a court or other space open to the sky or 		CRA – Refer Annexure F

Section F: Health and Amenity

	<p>an open verandah, carport or the like; or</p> <p>(B) roof lights, that—</p> <p>(aa) have an aggregate light transmitting area of not less than 3% of the combined floor areas of both rooms; and</p> <p>(bb) are open to the sky; or</p> <p>(C) a proportional combination of windows and roof lights required by (A) and (B).</p> <p>(b) The areas specified in (a)(ii) and (a)(iii) may be reduced as appropriate if direct natural light is provided from another source.</p>		
F4.4: Artificial Lighting	Lighting to all areas is to comply with AS/NZS 1680.0:2009.		CRA – Refer Annexure F
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 F
F4.6: Natural ventilation	<p>(a) Natural ventilation provided in accordance with F4.5(a) must consist of permanent openings, windows, doors or other devices which can be opened—</p> <p>(i) with an aggregate opening or openable size not less than 5% of the floor area of the room required to be ventilated; and</p> <p>(ii) open to—</p> <p>(A) a suitably sized court, or space open to the sky; or</p> <p>(B) an open verandah, carport, or the like; or</p>		CRA – Refer Annexure F

Section F: Health and Amenity			
	(C) an adjoining room in accordance with F4.7		
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 F
F4.8: Restriction on position of water closets and urinals	<p>Sanitary compartments must not open directly into a –</p> <ul style="list-style-type: none"> > 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. 	WC's within first floor of Class 2 SOU to be mechanically ventilated.	CRA – Refer Annexure F
F4.9: Airlocks	<p>If sanitary compartments are prohibited from opening directly to another room:</p> <ul style="list-style-type: none"> > access must be by an airlock, hallway or other room; or > the sanitary compartments must be provided with mechanical exhaust ventilation. 		CRA – Refer Annexure F
F4.11: Carparks	<p>Every storey of a carpark (except an open deck carpark) must have:</p> <ul style="list-style-type: none"> > a system of mechanical ventilation complying with AS 1668.2:2012; or > a system of natural ventilation complying with Section 4 of AS 1668.4:2012. 		CRA – Refer Annexure F

Section F: Health and Amenity

F4.12: Kitchen local exhaust ventilation	<p>Any commercial kitchen must be provided with a kitchen exhaust hood complying with AS 1668.1:2015 and AS 1668.2:2012 where:</p> <ul style="list-style-type: none"> > any cooking apparatus has: <ul style="list-style-type: none"> ○ a total maximum electrical power input exceeding 8 kW; or ○ a total gas power input exceeding 29 MJ/h; or > the total maximum power input to more than one apparatus exceeds: <ul style="list-style-type: none"> ○ 0.5 kW electrical power; or ○ 1.8 MJ gas, <p>Per m² of floor area of the room or enclosure.</p>		CRA – Refer Annexure F
Part F5 – Sound Transmission and Insulation			
F5.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
F5.1: Application of Part	<p>Informational–</p> <p>The Deemed-to-Satisfy Provisions of this Part apply to Class 2 and 3 buildings and Class 9c buildings.</p>		Noted
F5.2: Determination of airborne sound insulation ratings	<p>A form of construction required to have an airborne sound insulation rating must—</p> <ul style="list-style-type: none"> (a) have the required value for weighted sound reduction index (R_w) or weighted sound reduction index with spectrum adaptation term ($R_w + C_{tr}$) determined in accordance with AS/NZS ISO 717.1 using results from laboratory measurements; or (b) comply with Specification F5.2. 		CRA – Refer Annexure F

Section F: Health and Amenity

F5.3: Determination of impact sound insulation ratings	<ul style="list-style-type: none"> (a) A floor in a building required to have an impact sound insulation rating must— <ul style="list-style-type: none"> (i) have the required value for weighted normalised impact sound pressure level with spectrum adaptation term ($L_{n,w} + C_I$) determined in accordance with AS/ISO 717.2 using results from laboratory measurements; or (ii) comply with Specification F5.2. (b) A wall in a building required to have an impact sound insulation rating must be of discontinuous construction; and (c) For the purposes of this Part, discontinuous construction means a wall having a minimum 20 mm cavity between 2 separate leaves, and <ul style="list-style-type: none"> (i) for masonry, where wall ties are required to connect leaves, the ties are of the resilient type; and (ii) for other than masonry, there is no mechanical linkage between leaves except at the periphery. 		CRA – Refer Annexure F
F5.4: Sound insulation rating of floors	<p>A floor in a Class 2 building must achieve an $R_w + C_{tr}$ (airborne) not less than 50, and an $L_{n,w} + C_I$ (impact) not more than 62, if separating:</p> <ul style="list-style-type: none"> > SOU's; or > An SOU from a plant room, lift shaft, public corridor, public lobby or parts of a different classification. 		CRA – Refer Annexure F
F5.5: Sound insulation rating of walls	<ul style="list-style-type: none"> (a) A wall in a Class 2 building must: <ul style="list-style-type: none"> (i) have an $R_w + C_{tr}$ (airborne) not less than 50 if it separates <i>sole-occupancy units</i>; and (ii) have an R_w (airborne) not less than 50 if it separates a sole occupancy unit from a plant room, lift shaft, stairway, public corridor, public 		CRA – Refer Annexure F

Section F: Health and Amenity

	<p>lobby or the like, or parts of a different classification; and</p> <p>(iii) be of discontinuous construction in accordance with F5.3(b) if it separates:</p> <p>(A) a bathroom, sanitary compartment, laundry or kitchen in one <i>sole-occupancy unit</i> from a habitable room (other than a kitchen) in an adjoining unit; or</p> <p>(B) a <i>sole-occupancy unit</i> from a plant room or lift shaft.</p> <p>(b) Where a wall required to have sound insulation has a floor above, the wall must continue to:</p> <p>(i) the underside of the floor above; or</p> <p>(ii) a ceiling that provides the sound insulation required for the wall.</p> <p>(c) Where a wall required to have sound insulation has a roof above, the wall must continue to:</p> <p>(i) the underside of the roof above; or</p> <p>(ii) a ceiling that provides the sound insulation required for the wall.</p> <p>(d) Doorways in walls separating the Class 2 <i>sole-occupancy units</i> from a stairway, public corridor, public lobby or the like must be provided with a door assembly that has an R_w not less than 30.</p>		
F5.6: Sound insulation rating of services	<p>(a) If a duct, soil, waste or water supply pipe, including a duct or pipe that is located in a wall or floor cavity, serves or passes through more than one <i>sole-occupancy unit</i>, the duct or pipe must be separated from the rooms of any sole occupancy unit by</p>		CRA – Refer Annexure F

Section F: Health and Amenity			
	<p>construction with an $R_w + C_{tr}$ (airborne) not less than—</p> <p>(i) 40 if the adjacent room is a habitable room (other than a kitchen); or</p> <p>(ii) 25 if the adjacent room is a kitchen or non-habitable room.</p> <p>(b) If a storm water pipe passes through a <i>sole-occupancy unit</i> it must be separated in accordance with (a)(i) and (ii).</p>		
F5.7: Sound isolation of pumps	A flexible coupling must be used at the point of connection between the service pipes in a building and any circulating pump.		CRA – Refer Annexure F
Specification F5.2 – Sound Insulation for Building Elements			
1. Scope	Informational	Noted	Noted
2. Construction Deemed-to-Satisfy	Information only		Noted
Specification F5.5 – Impact Sound – Test of Equivalence			
1. Scope	Noted		-
2. Construction to be Tested	Information only		Noted
3. Method	Information only		Noted
Part F6 – Condensation Management			
F6.0: Deemed-to-satisfy provisions	Informational	Noted	Noted

Section F: Health and Amenity				
F6.1:	Application of Part	Informational	Noted	Noted
F6.2	Pliable building membrane	Where a pliable building membrane is installed in an external wall it shall comply with AS/NZS 4200.1:2017 and installed in accordance with AS 4200.2:2017.		CRA – Refer Annexure F
F6.3:	Flow rate and discharge of exhaust systems	<p>(a) An exhaust system installed in a kitchen, bathroom, sanitary compartment or laundry must have a minimum flow rate of—</p> <p>(i) 25 L/s for a bathroom or sanitary compartment; and</p> <p>(ii) 40 L/s for a kitchen or laundry.</p> <p>(b) Exhaust from a kitchen must be discharged directly or via a shaft or duct to outdoor air.</p> <p>(c) Exhaust from a bathroom, sanitary compartment, or laundry must be discharged—</p> <p>(i) directly or via a shaft or duct to outdoor air; or</p> <p>(ii) to a roof space that is ventilated in accordance with F6.4</p>		CRA – Refer Annexure F
F6.4:	Ventilation of roof spaces	<p>(a) Where an exhaust system covered by F6.3 discharges directly or via a shaft or duct into a roof space, the roof space must be ventilated to outdoor air through evenly distributed openings.</p> <p>(b) Openings required by (a) must have a total unobstructed area of 1/300 of the respective ceiling area if the roof pitch is greater than 22°, or 1/150 of the respective ceiling area if the roof pitch is less than or equal to 22°.</p> <p>(c) 30% of the total unobstructed area required by (b) must be located more than 900 mm below the ridge or highest point of the roof space, measured</p>		CRA – Refer Annexure F

Section F: Health and Amenity

	vertically, with the remaining required area provided by eave vents.		
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Section G: Ancillary Provisions**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 AS 1926.3:2010.		NA
G1.2: Refrigerated chambers, strong-rooms and vaults	<p>(a) A refrigerated or cooling chamber, strongroom or vault which is of sufficient size for a person to enter must have—</p> <p>(i) a door which is capable of being opened by hand from inside without a key; and</p> <p>(ii) internal lighting controlled only by a switch which is located adjacent to the entrance doorway inside the chamber, strongroom or vault; and</p> <p>(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</p> <p>(iv) an alarm that is—</p> <p>(A) located outside but controllable only from within the chamber, strongroom or vault; and</p>		CRA – Refer Annexure F

Section G: Ancillary Provisions

	<p>(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.</p> <p>(b) 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.</p>		
G1.3: Outdoor play spaces	<p>The outdoor play space must be enclosed on all sides with a barrier which complies with AS 1926.1:2012 to restrict the children from exiting the premises.</p> <p>The above requirements do not apply to a wall, including doors and windows, which form part of the Class 9b early childhood centre.</p>		NA
NSW G1.101: Provision for cleaning windows	<p>A safe manner for cleaning of windows located 3 or more storeys above ground level must be provided, and compliance is achieved where:</p> <ul style="list-style-type: none"> > 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. 		CRA – Refer Annexure F
Part G2 – Boilers, Pressure Vessels, Heating Appliances, Fireplaces, Chimneys and Flues – NA			
Part G3 – Atrium Construction – NA			
Specification G3.8 – Fire and Smoke Control in Buildings Containing Atriums – NA			
Part G4 – Construction in Alpine Areas – NA			
G4.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted

Section G: Ancillary Provisions**Part G5 – Construction in Bushfire Prone Areas – NA****Part G6 – Occupiable Outdoor Areas – NA****Section H: Special Use Buildings – NA****Section I: Maintenance****Part I1 – Equipment and Safety Installations**

This Part has been deleted in BCA2019.

ANNEXURE E DEFINITIONS

Annexure E - Definitions

Average specific extinction area

Average specific extinction area means the average specific extinction area for smoke as determined by AS 5637.1:2015.

Critical radiant flux

Critical radiant flux (CRF) means the critical heat flux at extinguishment (CHF in kW/m²) as determined by AS ISO 9239.1:2003.

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).

Envelope

Envelope, for the purposes of Section J in Volume One, means the parts of a building's fabric that separate a conditioned space or habitable room from—

- (a) the exterior of the building; or
- (b) a non-conditioned space including—
 - (i) the floor of a rooftop plant room, lift-machine room or the like; and
 - (ii) the floor above a carpark or warehouse; and
 - (iii) the common wall with a carpark, warehouse or the like.

Exit

Exit means –

- (a) Any, or any combination of the following if they provide egress to a road or open space—
 - (i) An internal or external stairway.
 - (ii) A ramp.
 - (iii) A fire-isolated passageway.
 - (iv) A doorway opening to a road or open space.
 - (v) 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—
 - (i) 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
 - (ii) 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

- (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

Flammability index

Flammability Index means the index number as determined by AS 1530.2:1993.

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.

Loadbearing

Intended to resist vertical forces additional to those due to its own weight.

Non-combustible

Non-combustible means—

- (a) applied to a material — not deemed combustible as determined by AS 1530.1:1994 — Combustibility Tests for Materials; and
- (b) applied to construction or part of a building — constructed wholly of materials that are not deemed combustible

Open space

Open space means a space on the allotment, or a roof or similar part of a building adequately protected from fire, open to the sky and connected directly with a public road.

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.

Sarking-type material

Sarking-type material means a material such as a reflective insulation or other flexible membrane of a type normally used for a purpose such as waterproofing, vapour management or thermal reflectance.

Smoke developed index

Smoke developed index means the index number for smoke as determined by AS/NZS 1530.3.

Smoke development rate

Smoke development rate means the development rate for smoke as determined by testing flooring materials in accordance with AS ISO 9239.1.

Smoke growth rate index

Smoke growth rate index (SMOGRA RC) means the index number for smoke 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.

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.

ANNEXURE F BCA COMPLIANCE SPECIFICATION

Annexure F – 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.
2. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2019.
3. Building elements must be non-combustible in accordance with C1.9 of BCA2019.
4. 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.
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 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.
8. Floors separating storeys of different classifications will comply with BCA Clause C2.9 of BCA2019.
9. Equipment will be separated in accordance with Clause C2.12 of BCA2019.
10. 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.
11. 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.
12. 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.
13. Doorways and other opening in internal walls required to have an FRL will be protected in accordance with Clause C3.11 of BCA2019.
14. Columns protected by light weight construction will achieve an FRL not less than the FRL for the element it is penetrating, in accordance with Clause C3.17 of BCA2019.
15. A lintel will 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 it spans an opening in masonry which is not more than 150 mm thick and is not more than 3m wide if the masonry is non-loadbearing; or not more than 1.8m wide if the masonry is loadbearing and part of a solid wall or one of the leaves of a cavity wall, or it spans an opening in a non-loadbearing wall of the Class 2 or 3 building, in accordance with Specification C1.1 Clause 2.3 BCA2019.
16. 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.
17. Fire doors will comply with AS 1905.1:2015 and Specification C3.4 of BCA2019.
18. Fire shutters and fire windows will be in accordance with Specification C3.4 of BCA2019.

19. The number of exits provided to the building will be in accordance with Clause D1.2 of BCA2019.
20. Travel distances to exits will be in accordance with Clause D1.4 of BCA2019.
21. The alternative exits will be distributed uniformly around the storey and will not be less than 9m apart, and not more than 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.
22. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D1.6 of BCA2019.
23. Discharge from exits will be in accordance with Clause D1.10 of BCA2019.
24. 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.
25. Access to the lift pit will be in accordance with Clause D1.17 of BCA2019.
26. The non-fire isolated stairs will be constructed in accordance with Clause D2.3 of BCA2019.
27. The ramp or balcony provided for smoke hazard management requirements will be in accordance with Clause D2.5 of BCA2019.
28. 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.
29. 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.
30. New pedestrian ramps will comply with AS 1428.1:2009, 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 AS 4586:2013.
31. 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 AS 4586:2013.
32. 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 AS 4586:2013 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 4586:2013 where the edge ledge to a flight below.
33. The handrails and balustrades to all stairs and throughout the building will be in accordance with Clause D2.16, and D2.17 of BCA2019.
34. 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 AS 1657:2013 or Part D2 of BCA2019.
35. The doorways and doors will be in accordance with Clause D2.19 and D2.20 of BCA2019.
36. Door latching mechanisms will be in accordance with Clause D2.21 of BCA2019.
37. The openable portion of a window in a 9b early childhood centre or a bedroom of a Class 2, 3, 4 building will be protected with a restricting device or secure screen that does not allow a 125mm sphere to pass through the opening or screen and resist an outward horizontal action of 250N in accordance with Clause D2.24 of BCA2019. In addition to window protection, and for other

openable windows 4 meters or more above the ground below, a barrier with a height not less than 865mm above the floor will be installed to the openable window.

38. The new works will be accessible in accordance with Clause D3.1 and table D3.1, D3.2, D3.3 of BCA2019, and with AS 1428.1:2009, with particular note to door circulation spaces, accessway widths, turning spaces and floor coverings, in accordance with Part D3 of BCA2019.
39. Accessible carparking will be in accordance with Clause D3.5, and Table D3.5 of BCA2019.
40. Braille and tactile signage will in accordance with Clause D3.6, and Specification D3.6 of BCA2019.
41. Hearing augmentation system will be provided in accordance with Clause D3.7 of BCA2019.
42. Tactile ground surface indicators will be provided in accordance with Clause D3.8 of BCA2019 and AS/NZS 1428.4.1:2009.
43. 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.
44. 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 AS 1428.1:2009 and Clause D3.12 of BCA2019.
45. Non-illuminated exit signage will be installed in accordance with Clause E4.7, and of BCA2019.
46. External above ground waterproofing membranes will comply with Clause F1.4 of BCA2019 and AS 4654 Parts 1 & 2:2012.
47. The new roof covering will be in accordance with Clause F1.5 of BCA2019.
48. Any sarking proposed will be installed in accordance with Clause F1.6 of BCA2019.
49. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F1.7 of BCA2019 and AS 3740:2010.
50. Damp proofing of the proposed structure will be carried out in accordance with Clause F1.9 and F1.10 of BCA2019.
51. Floor wastes will be installed to bathrooms and laundries above sole occupancy units or public space in accordance with Clause F1.11 of BCA2019.
52. All new glazing to be installed throughout the development will be in accordance with Clause F1.13 of BCA2019 and AS 1288:2006 / AS 2047:2014.
53. 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.
54. 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.
55. The construction of the sanitary facilities will be in accordance with Clause F2.5 of BCA2019.
56. A slop-hopper will be provided in accordance with Clause F2.8 of BCA2019.
57. Ceiling heights to the new areas will be in accordance with Clause F3.1 of BCA2019.
58. Natural light will be provided in accordance with Clause F4.1, F4.2, and F4.3 of BCA2019.
59. Natural ventilation will be provided in accordance with Clause F4.5, F4.6 and F4.7 of BCA2019.
60. Water closets and urinals will be located in accordance with Clause F4.8 of BCA2019.
61. The sanitary compartments will be either be provided with mechanical exhaust ventilation or an airlock in accordance with Clause F4.9 of BCA2019.

62. 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.
63. Every storey of the carpark will be provided with an adequate system of permanent natural or mechanical ventilation in accordance with Clause F4.11 of BCA2019.
64. 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.
65. The refrigerated or cooling chamber, strongroom or vault will be in accordance with Clause G1.2.
66. The construction of the residential portions of the development will be undertaken in accordance with the relevant BASIX commitments that form part of the Development Consent approval.
67. 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.
68. Building Fabric and Thermal Construction will be in accordance with Part J1 of BCA2019.
69. Glazing will be in accordance with Part J1 of BCA2019.
70. Building sealing will be in accordance with Part J3 of BCA2019.
71. Facilities for Energy Monitoring will be provided in accordance with Clause J8.3 of BCA2019.

Electrical Services Design Certification:

72. A smoke detection and alarm system will be installed throughout the building in accordance with Table E2.2a, and Specification E2.2a of BCA2019.
73. Emergency lighting will be installed throughout the development in accordance with Clause E4.2, E4.4 of BCA2019 and AS/NZS 2293.1:2018.
74. Exit signage will be installed in accordance with Clause E4.5, E4.7, and E4.8 of BCA2019 and AS/NZS 2293.1:2018.
75. Artificial lighting will be installed throughout the development in accordance Clause F4.4 of BCA2019 and AS/NZS 1680.0:2009.
76. Lighting power and controls will be installed in accordance with Part J6 of BCA2019.
77. Electrical conductors located within the building that supply a main switchboard that sustains emergency equipment will comply with Clause C2.13 of BCA2019.

Hydraulic Services Design Certification:

78. Storm water drainage will be provided in accordance with Clause F1.1 of BCA2019 and AS/NZS 3500.3:2018
79. Fire hydrant system will be installed in accordance with Clause E1.3 of BCA2019 and AS 2419.1:2005 as required.
80. Fire hose reels will be installed in accordance with Clause E1.4 of BCA2019 and AS 2441:2005.
81. A sprinkler system will be installed in accordance with Clause E1.5 of BCA2019, Specification E1.5 and appropriate part(s) of AS 2118.
82. Portable fire extinguishers will be installed in accordance with Clause E1.6 of BCA2019 and AS 2444:2001.
83. 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:

84. 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 1668.1:2015.
85. A smoke exhaust system will be installed in the building in accordance with Table E2.2b, and Specification E2.2c of BCA2019.
86. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F4.5 of BCA2019 and AS 1668.2:2012.
87. Every storey of the car park will be ventilated in accordance with Clause F4.11 of BCA2019 and where not naturally ventilated it will be mechanically ventilated in accordance with AS 1668.2:2012 as applicable.
88. 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.
89. Where exhaust discharges directly or via shaft into a roof space of a Class 2 or 4 *sole-occupancy unit*, ventilation of the roof space will comply with Clause F6.4 of BCA2019.
90. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J5 of BCA2019
91. Rigid and flexible ductwork will comply with the fire hazard properties set out in AS 4254 Parts 1 and 2.

Structural Engineers Design Certification:

92. 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:
93. Dead and Live Loads – AS/NZS 1170.1:2002
94. Wind Loads – AS/NZS 1170.2:2011
95. Earthquake actions – AS 1170.4:2007
96. Masonry – AS 3700:2018
97. Concrete Construction – AS 3600:2018
98. Steel Construction AS 4100:1998
99. Aluminium Construction – AS/NZS 1664.1 or 2:1997
100. Timber Construction – AS 1720.1:2010
101. ABCB Standard for Construction of Buildings in Flood Hazard Areas.
102. The FRL's of the structural elements for the proposed works have been designed in accordance with Specification C1.1 of BCA2019, including Table 3 for a building of Type A Construction.
103. The lift shaft will have an FRL in accordance with Clause C2.10 and Specification C1.1 of BCA2019.
104. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2019.
105. The construction joints to the structure will be in accordance with Clause C3.16 of BCA2019 to reinstate the FRL of the element concerned.
106. The concrete panel external walls will be in accordance with Specification C1.11 of BCA2019.

Lift Services Design Certification:

107. The lifts throughout the development will be provided with stretcher facilities in accordance with Clause E3.2 of BCA2019 and will be capable of accommodating a stretcher with a patient lying horizontally by providing a clear space not less than 600mm wide x 2000mm long x 1400mm high above the floor level.
108. 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.
109. 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.
110. 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.
111. The lifts will comply with AS 1735.12:1999 in accordance with Clause E3.6 of BCA2019.
112. All electric passenger lifts and electrohydraulic passenger lifts shall comply with Specification E3.1 of BCA2019.

Acoustic Services Design Certification:

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