BCA Assessment Report

8 Forest Road, Warriewood

Project:	8 Forest Road, Warriewood
Reference No:	114511-BCA-r2
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Document Control

Revision	Date	Description	
114511-BCA-r1	17 December 2021	BCA Assessment Report	
114511-BCA-r2	7 July 2022	BCA Assessment Report	
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EXECUTIVE SUMMARY

This document provides an assessment of the architectural design drawings for the proposed new residential development at 8 Forest Road, Warriewood , against the Deemed-to-Satisfy provisions of the Building Code of Australia (BCA) 2019, Volume 1 Amendment 1.

Part 3 'Matters for Further Consideration' of this report outlines the identified BCA compliance issues that require further information or consideration and/or assessment as Performance Solutions.

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

Item	Description	BCA Provision
Performance Solutions Required		
1.	The 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.	Façade Construction – Non Combustible (Timber Cladding)	Clause C1.9
2.	Exit travel distances	Clause D1.4
3.	Distance between alternative exits	Clause D1.5
4.	Fire hydrants	Clause E1.3
5.	Fire hose reels	Clause E1.4
Further Information Required		
1.	Façade Construction – Non Combustible	Clause C1.9
2.	Public corridors in Class 2 and 3 Buildings	Clause C2.14
3.	Travel by non-fire-isolated stairways or ramps	Clause D1.9

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 8 Forest Road, Warriewood

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 Amendment 1 Edition (BCA) incorporating the State variations where applicable. Please note that the version of the BCA applicable to new building works is the version applicable at the time of the lodgement of the Construction Certificate application to the Accredited Certifying Authority. The BCA is updated generally on a three-yearly cycle, starting from the 1st of May 2016.

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),

(c) the deemed to satisfy provision of Part D3, E3.6, F2.4 and F2.p of BCA2019;

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

(e) Work Health and Safety Act 2011;

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

(g) 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

(h) 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).

This is based on the basement carpark being deemed a storey due to the carpark entry being an external wall.

2.2. Classification (Clause A6.0)

The building has been classified as follows.

Table 1. Building Classification

Class	Level	Description
2	Ground Floor – Level 2	Residential Sole Occupancy Units and Common Areas
7a	Basement	Carpark

2.3. Effective Height (Clause A1.0)

The building has an *effective height* of less than 25 metres and more than 12 metres. (RL33.40 – RL19.40 = 14m)

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 7a	The carpark is to be provided with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5) 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:

(a) The residential storeys form their own fire compartment.

(b) The basement carpark will form a single fire compartment

2.7. Exits

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

(a) The doorways leading directly to open space on the Ground Floor.

(b) The doorways leading directly into the fire isolated stairways in the basement

(c) The first tread of the non-fire isolated stairways on the residential storeys

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 side boundary of the allotment

South: The side boundary of the allotment

East: The side boundary of the allotment

West: The side boundary of the allotment

Note: the central roads are only considered to be internal roads within the allotment.

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–

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

(b) 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 maters 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 address in a detailed Performance-based Alternative Solutions 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.	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.

(c) A l*oadbearing* 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.

All elements within the wall must be non-combustible in accordance with this clause.

The wall details noted the following elements being provided to the external walls throughout:

- Fibre Cement Cladding
- Glazing
- Limestone Cladding
- Sandstone Cladding
- Timber Cladding

Details will need to be provided that the proposed systems will be non-combustible and achieve compliance with this Clause.

However, it is considered that the proposal of Timber Cladding would not be suitable due to this being a combustible product. It would be required that this product is replaced with an alternative non-combustible product with suitable testing and documentation.

This will include the insulation being proposed within the external walls and any packers being used in the wall build up.

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.

It should be noted that perimeter walls of basement (below ground) floor levels are also deemed to be external walls and the above provisions apply.

Note: Due to industry wide changes to Professional Indemnity Insurance which include exclusions to external combustible cladding, BCA Logic are not in a position to recommend, advocate for, or undertake performance-based solutions for any combustible wall elements including external claddings or the use of PVC lined formwork products and the like. A reference to the use of any of these products within this report is not to be taken as support for their use in the building. BCA Logic are not responsible for the selection of any materials and our report outlines compliance pathways and whether or not compliance is achieved only.

3.5. Public corridors in Class 2 and 3 Buildings – Clause C2.14

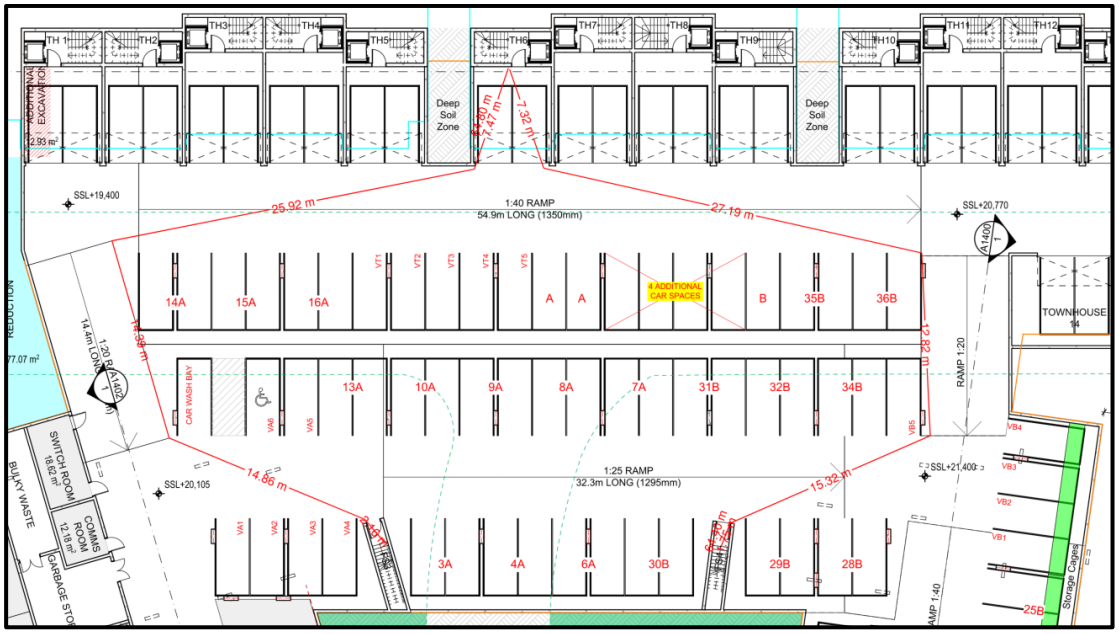
It is noted that Building D on the Ground Floor is found to have a corridor exceeding 40m in length and would need to be separated with a smoke wall to comply with this Clause.

In accordance with Clause D1.9 it is required to smoke separate the Ground Floor for the non-fire isolated stairways. Therefore, it is considered that compliance would be achieved once this occurs.

3.6. Exit travel distances – Clause D1.4

Throughout the carpark it is noted that the distance to a point of choice would be within 20m, however the maximum total distance would be up to 65m and would not be compliant.

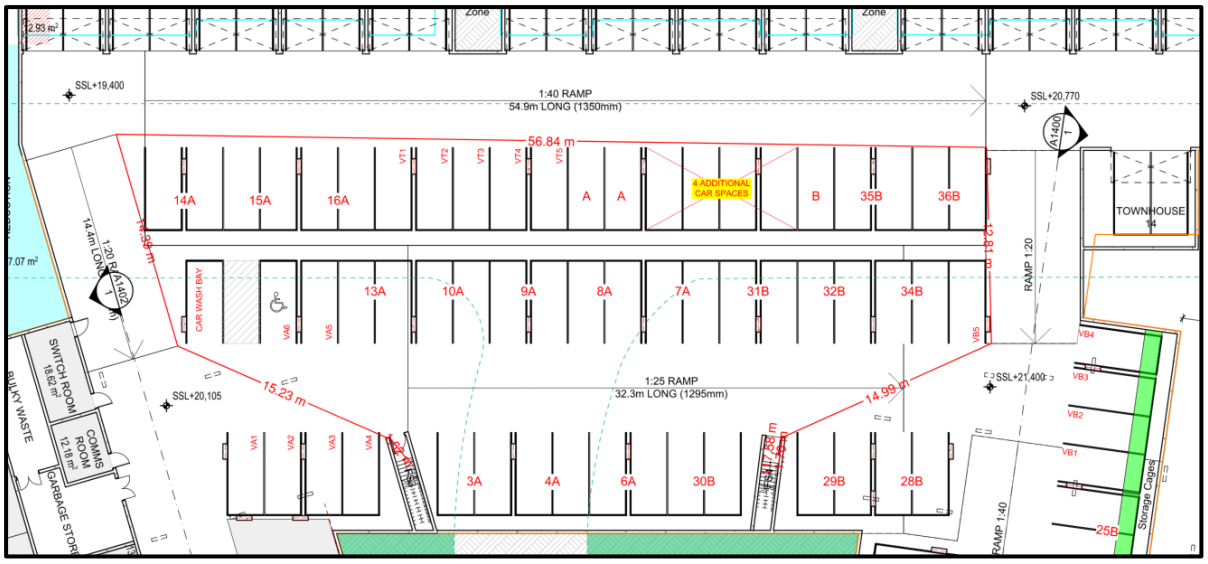
It would be required to introduce an additional egress path from this portion of the basement as egress via the SOUs is not a DTS provision. This may be provided by introducing a new egress stairway or allowing for a communication stairway being provided centrally between the two levels to allow for a short cut through the carparking in lieu of running around to the ramps.



3.7. Distance between alternative exits – Clause D1.5

Throughout the residential storeys, it is noted that distance between the alternative exits would be sufficient, however it is noted that the basement will maintain a distance of up to 118m between alternative exits and would not comply with this Clause.

It would be required to introduce an additional egress path from this portion of the basement as egress via the SOUs is not a DTS provision. This may be provided by introducing a new egress stairway or allowing for a communication stairway being provided centrally between the two levels to allow for a short cut through the carparking in lieu of running around to the ramps.



3.8. Travel by non-fire-isolated stairways or ramps – Clause D1.9

it is noted that Buildings A, B and D are provided with two non-fire isolated stairways that are discharging on the same floor. In accordance with this Clause, it would be required that the stairways are smoke separated.

It would be required that smoke walls and smoke doors are provided on the Ground Floor to break up the lobby to comply.

3.9. Fire hydrants - Clause E1.3

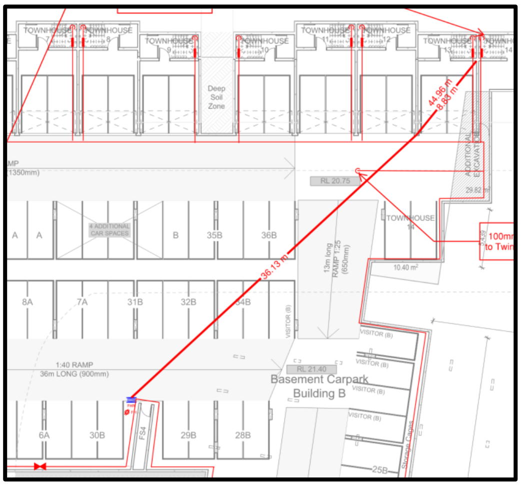
The building is required to be provided with a fire hydrant system in accordance with AS2419.1-2005. Based on the fire service spatial, it is noted that both external and internal hydrants are provided to maintain coverage. However, within the residential floor levels it is detailed that the hydrant valves will be located on the mid landing, and it would be required to confirm that these are provided not on the stairway and rather location on the level in which they are serving.

Confirmation will need to be provided from the hydraulic designer to detail compliance coverage will be maintained throughout in accordance with this Clause and AS2419

3.10. Fire hose reels – Clause E1.4

Based on the fire service spatial, it is noted that fire hose reels have been provide throughout the basement. However, concern is raised with regards to the coverage of the hose reels to the end of the carpark underneath the townhouses as it is noted that up to 44m is maintained.

Confirmation will need to be provided from the hydraulic designer to detail compliance coverage will be maintained throughout in accordance with this Clause and AS2441.


TOWNHOUSE
Deep
Soil
Zone
RL 20.75
RL 21.40
36.13 m
13m long
RAMP 1:25
(650mm)
1:40 RAMP
36m LONG (900mm)
Basement Carpark
Building B
8A
7A
31B
32B
35B
36B
6A
30B
29B
28B
25B
FS4
VISITOR (B)
10.40 m²

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 Architecture Design Studio			
Drawing Number	**Revision**	**Date**	**Title**
A01	06	11/02/2022	Site Plan
A099.1	05	11/02/2022	Floor Plans Basement 1- East
A099.2	05	11/02/2022	Floor Plans Basement 1- West
A100.1	05	11/02/2022	Floor Plans Ground Floor Plan – East
A100.2	05	11/02/2022	Floor Plans Ground Floor Plan – West
A101.1	04	11/02/2022	Floor Plans Level 1 - East
A101.2	04	11/02/2022	Floor Plans Level 1 - West
A102.1	04	11/02/2022	Floor Plans Level 2 - East
A102.2	04	11/02/2022	Floor Plans Level 2 - West
A103.1	03	11/02/2022	Floor Plans Roof Level – East
A103.2	03	11/02/2022	Floor Plans Roof Level – West
A200	04	11/02/2022	Sections
A300	04	11/02/2022	Elevations Building A and B
A301	04	11/02/2022	Elevations Building C and D
A302	04	11/02/2022	Elevations Townhouses

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.	Access Panels & doors/hoppers (fire rated)	**BCA2019 C3.13** (Openings in Shafts) **BCA2019 Spec C3.4** AS 1905.1:2015 (Fire Resistant Doorsets)
2.	Construction Joints	**BCA2019 C1.1, Spec C1.1** **BCA2019 C3.16** AS 1530.4:2014 & AS 4072.1:2005
3.	Fire doors	**BCA2019 C2.13** (Electricity Supply Systems) **BCA2019 C3.4** (Acceptable methods of Protection) **BCA2019 C3.10** (Opening in Fire Isolated Lift Shafts) AS1735.11- 1986 **BCA2019 C3.11** (Bounding Construction) **BCA2019 C3.13** (Opening in Shafts) Spec C3.4 AS1905.1: 2015
4.	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
5.	Lightweight construction >	**BCA2019 C1.1, Spec. C1.1** **BCA2019 C1.8, Spec C1.8**
6.	Smoke Walls	**BCA2019 C2.14** (Public Corridors Class 2/3) **BCA2019 D1.9** (Travel via non-fire isolated stairway)
7.	Smoke Doors > Smoke Seals > Solid Core > Swing in direction of egress/or both ways	**BCA2019 C2.14** (Public Corridors Class 2/3) **BCA2019 D1.9** (Travel via non-fire isolated stairway)

Item	Essential Fire and Other Safety Measures	Standard of Performance
	> Connected to AS1670.1:2018 if held open Smoke detectors within 1.5m both sides > Fail close on power failure	**BCA2019 Spec C3.4**
General		
8.	Portable fire extinguishers	**BCA2019 E1.6** AS 2444–2001
9.	Operation of Door latches	**D2.21** (Operation of Latch)
10.	Swing of Exit Doors	**D2.20** (Swinging Doors)
11.	Warning & operational signs	**BCA2019 D2.23 (**Signs on Fire Doors) **BCA2019 D3.6** (Braille Exit Signs) (Note: E4.5 (Exit Signs)) **BCA2019 E3.3** (Lift Signs)
Lifts		
12.	Access to Lift Pits > Located at lowest level or if >3m provided through an access door	**BCA2019 D1.17** (Access to Lift Pits) 'DANGER LIFT WELL – ENTRY OF UNAUTHORISED PERSONS PROHIBITED – KEEP CLEAR AT ALL TIMES'
13.	Stretcher Lifts including > Fire Service Controls > Recall Operation > Drive control switch	**BCA2019 E3.2** **BCA2019 E3.7** (Fire Service Controls) **BCA2019 E3.9** (Fire Service Recall Operation Switch) **BCA2019 E3.10** (Lift Car Fire Service drive control switch) **BCA2019 Spec E3.1** AS 1735.11:1986 (Fire rated landing doors)
Electrical Services		
14.	Automatic fire detection & alarm: > Clause 3 – AS 3786:2014 Smoke Alarm systems powered from consumer mains to all residential SOU's, > Clause 4 – AS 1670.1:2018 system throughout the building/part connected to a BOWS @ 100dB(A) > Incorporating a thermal detection system in the basement carpark	**BCA2019 E2.2**, NSW Table E2.2a, **Spec E2.2a** - Clause 3 (Smoke alarm system) **Spec E2.2a** - Clause 4 (Smoke detection system) **Spec E2.2a** - Clause 5 (Combined smoke alarm and smoke detection system) **Spec E2.2a** – Clause 6 (Smoke detection for smoke control systems) **Spec E2.2a** - Clause 7 (BOWS)

Item	Essential Fire and Other Safety Measures	Standard of Performance
		AS 3786:2014 (Amdt 1-4) AS 1670.1:2018 (Fire) – Section 4 and 5 (Detectors)
15.	Emergency lighting	**BCA2019 E4.2, E4.4** AS/NZS 2293.1:2018
16.	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
17.	System Monitoring	**BCA2019 E2.2 , Table E2.2a,Spec E2.2a** AS 1670.3:2018 Monitoring Required for any: > Any Sprinkler System
Hydraulic Services		
18.	Automatic fire suppression systems	**BCA2019 E1.5** **BCA2019 E1.5a** *AS2118 System has been advised*
19.	Fire hydrant systems > NSW Storz Couplings >	**BCA2019 E1.3** **BCA2019 C2.12 (Separation of Equipment)** AS 2419.1:2005 FRNSW Technical Sheet D15/45534.V9 issued 10.01.19, 'Compatible Hose Connections'
20.	Hose reel systems	**BCA2019 E1.4** AS 2441:2005
21.	Wall-wetting sprinkler / drenchers	**BCA2019 C3.4,** AS 2118.2: Wall-wetting sprinkler / drenchers
Mechanical Services		
22.	Fire dampers	**BCA2019 E2.2, Spec E2.2a,** **BCA2019 C3.15** AS 1668.1:2015 (Amdt 1) AS 1682.1:2015 & AS 1682.2:2015

Item	Essential Fire and Other Safety Measures	Standard of Performance
23.	1. Mechanical air handling systems 2. 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 provided with a control switch at the designated building entry point. **Note:** Signage should be located at the car park entry indicating the location of the control switches.

Notes:

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

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

(ii)

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

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

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

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

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

Performance Solutions

	Description of Performance Solution	DTS Provision	Performance Requirements	Method of meeting performance solutions
24.	TBC	TBC	TBC	TBC

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	Class 7a
Loadbearing External Walls (including columns and other building elements incorporated therein)		
- Less than 1.5m to a *fire-source feature*	90/90/90	120/120/120
- 1.5 – less than 3m from a *fire-source feature*	90/60/60	120/90/90
- 3m or more from a *fire source feature*	90/60/30	120/60/30
Non-Loadbearing External Walls		
- Less than 1.5m to a *fire-source feature*	-/90/90	-/120/120
- 1.5 – less than 3m from a *fire-source feature*	-/60/60	-/90/90
- 3m or more from a *fire-source feature*	-/-/-	-/-/-
External Columns		
- Loadbearing	90/-/-	120/-/-
- Non-loadbearing	-/-/-	-/-/-
Common Walls & Fire Walls	90/90/90	120/120/120
Stair and Lift Shafts required to be fire-resisting		
- Loadbearing	90/90/90	120/120/120
- Non-loadbearing	-/90/90	-/120/120
Internal walls bounding sole occupancy units		
- Loadbearing	90/90/90	120/-/-
- Non-loadbearing	-/60/60	-/-/-
Internal walls bounding public corridors, public lobbies and the like:		
- Loadbearing	90/90/90	120/-/-
- Non-loadbearing	-/60/60	-/-/-

Item	Class 2	Class 7a
Ventilating, pipe, garbage and like shafts: - Loadbearing - Non-loadbearing	 90/90/90 -/90/90	 120/90/90 -/90/90
Other loadbearing internal walls, beams trusses and columns	90/-/-	120/-/-
Floors	90/90/90	120/120/120
Roofs[1]	90/60/30	120/60/30

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 building, in a flood hazard area (refer to Council maps) must comply the ABCB Standard for Construction of Buildings in Flood Hazard Areas.	If the building is provided within a flood hazard area this Construction Standard will need to be applied.	**FI**

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.	The building will need to comply with Specification C1.1 for Type A construction.	CRA – Refer Annexure F
C1.2:	Calculation of rise in storeys	The building has a rise in storeys of four (4).	Number of storeys have been noted.	Noted
C1.3:	Buildings of multiple classification	Informational	Noted	Noted
C1.4:	Mixed Types of construction	N/A	Clause not applicable due to a single type of construction being provided.	N/A
C1.5:	Two Storey Class 2, 3 or 9c buildings	N/A	Clause is not applicable due to the building classification	N/A
C1.6:	Class 4 Parts of building	N/A	Clause not applicable due to building classification	N/A
C1.7:	Open spectator stands and indoor sports stadium	N/A	Clause not applicable due to the use of the building	N/A
C1.8:	Lightweight construction	Lightweight construction used in a fire-rated application is to comply with Specification C1.8.	Lightweight construction will need to be provide in accordance with this clause.	CRA – Refer Annexure F
C1.9:	Non-combustible building elements	(a) In a building required to be of Type A or B construction, the following building elements and their components must be *non-combustible*:	All elements within the wall must be non-combustible in accordance with this clause.	**DNC**

Section C: Fire Resistance			
	(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. (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.	The wall details noted the following elements being provided to the external walls throughout: > Fibre Cement Cladding > Glazing > Limestone Cladding > Sandstone Cladding > Timber Cladding Details will need to be provided that the proposed systems will be non-combustible and achieve compliance with this Clause. However, it is considered that the proposal of Timber Cladding would not be suitable due to this being a combustible product. It would be required that this product is replaced with an alternative non-combustible product with suitable testing and documentation. This will include the insulation being proposed within the external walls and any packers being used in the wall build up.	**Refer to Part 3 of this Report**

Section C: Fire Resistance			
	(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. 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 the use of such products is proposed – in all instances the material must be the subject of a site specific Performance Assessment Report. See comments at part 3.4 above.		
C1.10: Fire hazard properties	Fire hazard properties of internal linings, materials and assemblies must comply with C1.10 of the BCA and Specification C1.10, including floor, wall and ceiling linings, air-handling ductwork, lift cars, insulation, *sarking-type materials* and attachments, or be considered *non-combustible*.	Linings provided within the building must be compliance with this clause and Specification C1.10. No specific details of the proposed materials have been provided at this stage	CRA – Refer Annexure F
C1.11: Performance of external walls in fire	N/A	Clause is not applicable due to the rise in storeys of the building	N/A
C1.12: Non-combustible materials	Clause now deleted and relocated to C1.9.	Noted	Noted
C1.13: Fire-protected timber: Concession	N/A	There is no fire protected timber proposed.	N/A

Section C: Fire Resistance			
C1.14: Ancillary elements	An ancillary element must not be fixed, installed or attached to the internal parts or external face of an external wall that is required to be *non-combustible* unless it is one of the following: (a) An ancillary element that is *non-combustible*. (b) A gutter, downpipe or other plumbing fixture or fitting. (c) A flashing. (d) A grate or grille not more than 2 m² in area associated with a building service. (e) An electrical switch, socket-outlet, cover plate or the like. (f) A light fitting. (g) A required sign. (h) A sign other than one provided under (a) or (g) that— (i) achieves a group number of 1 or 2; and (ii) does not extend beyond one storey; and (iii) does not extend beyond one fire compartment; and (iv) is separated vertically from other signs permitted under (h) by at least 2 storeys. (i) An awning, sunshade, canopy, blind or shading hood other than one provided under (a) that— (i) meets the relevant requirements of Table 4 of Specification C1.10 as for an internal element; and (ii) serves a storey— (A) at ground level; or	Any ancillary elements provided to the building must be in accordance with this clause.	CRA – Refer Annexure F

Section C: Fire Resistance			
	(B) immediately above a storey at ground level; and (iii) does not serve an *exit*, where it would render the *exit* unusable in a fire. (j) A part of a security, intercom or announcement system. (k) Wiring. (l) A paint, lacquer or a similar finish. (m) A gasket, caulking, sealant or adhesive directly associated with (a) to (k).		
Part C2 – Compartment and Separation			
C2.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
C2.1: Application of Part	Informational - C2.2, C2.3 and C2.4 do not apply to a carpark provided with a sprinkler system complying with Specification E1.5 (other than an FPAA101D or FPAA101H system), an open-deck carpark or an open spectator stand.	Noted	Noted
C2.2: General floor area and volume limitations	The size of *fire compartments* in the building must not exceed that specified in Table C2.2.	The size of fire compartments in the building are considered to comply with Type A construction. This is based on the classification of the building and the provision of the sprinkler system due to the number of cars provided.	CRA – Refer Annexure F
C2.3: Large isolated buildings	N/A	The building is not considered to be a large isolated building	N/A

Section C: Fire Resistance				
C2.4:	Requirements for open spaces and vehicular access	N/A	The building is not considered to be a large isolated building.	N/A
C2.5:	Class 9a and 9c Buildings	N/A	Not applicable due to the building classification.	N/A
C2.6:	Vertical separation of openings in external walls	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.	It have been advised that an AS2118 system is being provided throughout and therefore this clause is not applicable.	Noted
C2.7:	Separation by fire walls	**Construction** - A *fire wall* must be constructed in accordance with the following: > Any openings in a *fire wall* must not reduce the *FRL* required by Specification C1.1 for the *fire wall*, except where permitted by the Deemed-to-Satisfy Provisions of Part C3. > Building elements, other than roof battens with dimensions of 75 mm x 50 mm or less or *sarking-type material*, must not pass through or cross the *fire wall* unless the required fire resisting performance of the *fire wall* is maintained. **Separation of *fire compartments*** – A part of a building separated from the remainder of the building by a *fire wall* may be treated as a separate *fire compartment* if it is constructed in accordance with this clause and the *fire wall* extends to the underside of – > a floor having an *FRL* required for a *fire wall*; or the roof covering.	It is required that the fire compartmentation wall separated the carpark from the SOUs on the Ground Floor is constructed in accordance with this Clause.	CRA – Refer Annexure F
C2.8:	Separation of classifications in the same storey	Where a storey has different classifications located alongside one another:	This is only considered to be applicable where the carpark is located on the Ground Floor separated by the wall of the SOU.	CRA – Refer Annexure F

Section C: Fire Resistance			
	> each building element in that storey must have the higher *FRL* prescribed in Specification C1.1 for that element for the classifications concerned; or > the parts must be separated in that storey by a *fire wall* having the higher *FRL* prescribed in Table 3; or where one part is a carpark complying with Table 3.9, 4.2 or 5.2 of Specification C1.1, the parts may be separated by a *fire wall* complying with the appropriate Table.	This wall will need to maintain the required FRL in accordance with Specification C1.1 and this Clause.	
C2.9: Separation of classifications in different storeys	Floors separating storeys of different classifications must have an *FRL* of not less than that prescribed in Specification C1.1 for the classification of the lower storey. Note: Determination of Floor *FRL*'s must also consider compliance with C2.7 whereby the floor must have the same *FRL* as the fire wall of the *fire compartment* below and D2.12 whereby roof as open space must have an *FRL* not less than 120/120/120.	Each of the floors provided throughout the building must maintain an FRL in accordance with Speciation C1.1. It is noted that the egress path from the Ground Floor is along the roof of the carpark and therefore will be deemed as roof as open space and maintain an FRL of 120/120/120 in accordance with D2.12.	CRA – Refer Annexure F
C2.10: Separation of lift shafts	Passenger lifts must be separated from the remainder of the building by enclosure in a fire rated shaft achieving an *FRL* prescribed by Table 3 of Specification C1.1.	The lift shafts will need to maintain separation in accordance with this clause and Specification C1.1. This will include the lifts serving each of the Townhouses and they will be required to maintain the required FRL. Otherwise it may be possible to seek a Performance Solution to rationalise the FRL to these particular lifts.	CRA – Refer Annexure F
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.	The lift and stairs are located in separate shafts	Complies
C2.12: Separation of equipment	Noted	Throughout the building it is noted that there are no rooms proposed at this stage which would require separation in accordance with this Clause.	Noted

Section C: Fire Resistance			
		Any equipment that will be added are required to comply with this Clause	
C2.13: Electricity supply system	> Any electrical substation located within the building must be separated from the remainder of the building by construction having an *FRL* of not less than 120/120/120, and doorways protected with self-closing fire doors having an *FRL* of not less than –/120/30. > A main switchboard which sustains emergency equipment operating in the emergency mode must be fire separated from any other part of the building by construction having an *FRL* of not less than 120/120/120 and have the doorway fitted with self-closing fire door having an *FRL* of not less than –/120/30. > Any electrical conductors located within the building that supply a substation or main switchboard for emergency equipment must comply with BCA clause C2.13. > Emergency equipment switchgear must be separated from non-emergency equipment switchgear by metal partitions designed to minimize the spread of a fault from the non-emergency equipment switchgear. > Emergency equipment includes but is not limited to the following: o fire hydrant booster pumps; o sprinkler pumps; o hose reel pumps; o air-handling systems designed to exhaust and control the spread of smoke; o control and indicating equipment; and	A Kiosk substation is proposed to be within proximity to the townhouse portion of the building but this is noted to be external to the building. Consideration will need to be given as to the location of the hydrant booster on the northern site as this may be within 10m to the proposed substation location. If the main switchboard within the basement sustains emergency equipment operating in the emergency mode will need to be separated in accordance with this clause.	CRA – Refer Annexure F

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	Note: Consideration should be given to the location of Electrical Substations on adjoining sites in regards to proximity to Fire Hydrant Boosters being within 10.0m		
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.	It is noted that Building D on the Ground Floor is found to have a corridor exceeding 40m in length and would need to be separated with a smoke wall to comply with this Clause. In accordance with Clause D1.9 it is required to smoke separate the Ground Floor for the non-fire isolated stairways. Therefore, it is considered that compliance would be achieved once this occurs. All other storeys and building are noted to be less than 40m in length	FI
Part C3 – Protection of Openings			
C3.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
C3.1: Application of Part	(a) The Deemed-to-Satisfy Provisions of this Part do not apply to– (i) Control joints, weep holes and the like in external walls of masonry construction and joints between panels in external walls of pre-cast concrete panel construction if, in all cases they are not larger than necessary for the purpose; and (ii) Non-combustible ventilators for subfloor or cavity ventilation, if each does not exceed 45 000 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	The provisions of this part are applicable throughout the building, except for the areas raised in this clause.	Noted

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	perimeter of a balcony or verandah, colonnade, terrace, or the like; and (iv) In a carpark– (A) Service penetrations through; and (B) Openings formed by a vehicle ramp in, (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. (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. (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.		
C3.2: Protection of openings in external walls	Noted	Each of the external walls are located more than 3m to the boundaries and would not require protection in accordance with this Clause. It is noted that each of the towers are still deemed a single building.	Noted

Section C: Fire Resistance			
C3.3: Separation of external walls and associated openings in different fire compartments	Noted	There are no external walls of separate fire compartments which are exposed to one another in accordance with this Clause.	N/A
C3.4: Acceptable methods of protection	Noted	Methods of protection has been noted.	CRA – Refer Annexure F
C3.5: Doorways in fire walls	Noted	It is considered that there are no fire doors located in fire walls. Each of the doors throughout are serving fire isolated stairways which are addressed under Clause C3.8.	N/A
C3.6: Sliding fire doors	N/A	There are no sliding fire doors proposed	N/A
C3.7: Protection of doorways in horizontal exits	N/A	There are no horizontal exits proposed	N/A
C3.8: Openings in fire-isolated exits	N/A	Clause is not applicable as it is considered that there are no fire isolated exits.	N/A
C3.9: Service penetrations in fire-isolated exits	N/A	Clause is not applicable as it is considered that there are no fire isolated exits.	N/A
C3.10: Openings in fire-isolated lift shafts	> Lift landing doors are required to be fire doors with an *FRL* of -/60/- that comply with AS 1735.11:1986, and be set to remain closed except when discharging or receiving, passengers, goods or vehicles. > Panels in the wall of the lift shaft must be backed by construction having an *FRL* of not less than –/60/60 if it exceeds 35 000 mm2 in area.	The openings within the lift shafts throughout the building will need to be provided in accordance with this clause. The lift contractor will be required to confirm compliance with this Clause.	CRA – Refer Annexure F

Section C: Fire Resistance			
C3.11: Bounding Construction: Class 2, 3 and 4 Buildings	> The doorways between sole occupancy units and the public lobbies and any common / service rooms and the public lobbies (class 2 parts) must be protected by self–closing -/60/30 fire doors.	The doors to each of the sole occupancy units must be protected by self–closing -/60/30 fire doors.	CRA – Refer Annexure F
C3.12: Openings in floors and ceilings for services	Where services pass through a floor which is required to achieve an *FRL* or a ceiling required to have a *resistance to the incipient spread of fire*, the service must be enclosed within a fire resisting shaft or fire protected in accordance with Clause C3.15. Where a service passes through a floor which is required to be protected by a *fire-protective* covering, the penetration must not reduce the fire performance of the covering.	Where services are passing through a fire rated element it will need to be protected in accordance with Clause C3.15.	CRA – Refer Annexure F
C3.13: Openings in shafts	Openings in shafts must be protected by: (a) if it is in a sanitary compartment – a door or panel which together with its frame, is *non-combustible* or has an *FRL* of not less than –/30/30; or (b) a self-closing –/60/30 fire door or hopper; or (c) an access panel having an *FRL* of not less than –/60/30; or (d) if the shaft is a garbage shaft – a door or hopper of *non-combustible* construction.	Any openings in fire rated shafts will need to be protected in accordance with this clause.	CRA – Refer Annexure F
C3.15: Openings for service installations	Where services pass through an element which is required to achieve an *FRL* (other than an external wall or roof), the service must be fire protected in accordance with BCA Clause C3.15. **Note:** contractors should check with PCA to confirm compliance with their proposed fire stopping method.	Where services are passing through a fire rated element it will need to be protected in accordance with this Clause.	CRA – Refer Annexure F

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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 *FRL*.	Construction joints and the like in fire rated walls must be provided in accordance with this clause.	CRA – Refer Annexure F
C3.17:	Columns protected with lightweight construction to achieve an FRL	A column protected by lightweight construction to achieve an *FRL* which passes through a building element that is required to have an *FRL* or a resistance to the incipient spread of fire, must be installed using a method and materials identical with a prototype assembly of the construction which has achieved the required *FRL* or resistance to the incipient spread of fire.	Where columns are to be protected with lightweight construction it must maintain the FRL required in accordance with this clause	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 *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– (i) has an *FRL* of not less than 30/–/–; and (ii) is neither transparent nor translucent.	The building is noted to be exposed to the fire source features being the adjacent property boundaries.	Noted
2.2:	Fire protection for a support of another part	Where a part of a building required to have an *FRL* depends upon direct vertical or lateral support from another part to maintain its *FRL*, that supporting part must have an *FRL* not less than that required by other provisions of this Specification; and if located within the same *fire compartment* as the part it supports have an FRL in respect of structural adequacy the greater of that required for the supporting part itself and for the part it supports.	The FRL of supporting elements must be provided in accordance with this clause and maintain the required FRL.	CRA – Refer Annexure F

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2.3:	Lintels	A lintel must have the FRL required for the part of the building in which it is situated unless it does not contribute to the support of a fire door, fire window or fire shutter and meets the requirements of Spec C1.1 clause 2.3 (a) & (b).	Any lintels within the building must be in accordance with this clause and maintain the required FRL.	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.	Any attachments to the building must be in accordance with this clause. It is noted that attachments will also need to comply with Clause C1.14 of the BCA which requires non-combustible construction.	CRA – Refer Annexure F
2.5:	General concessions	Structures on roofs — A *non-combustible* structure situated on a roof need not comply with the other provisions of this Specification if it only contains— (i) lift motor equipment; or (ii) one or more of the following: (A) Hot water or other water tanks. (B) Ventilating ductwork, ventilating fans and their motors. (C) Air-conditioning chillers. (D) Window cleaning equipment. (E) Other service units that are *non-combustible* and do not contain flammable or combustible liquids or gases.	There are concessions available in accordance with this clause for any structures located on the roof.	CRA – Refer Annexure F
2.6:	Mezzanine floors: Concession	Noted	There are no mezzanines provided within the building	CRA – Refer Annexure F
2.7:	Enclosure of shafts	Fire-isolated shafts are required to be enclosed at the top and bottom of the shaft with fire rated construction having an *FRL* required for the walls of a non-load-bearing shaft	Any fire isolated shafts provided within the building must be enclosed at the top of this shaft in accordance with this clause.	CRA – Refer Annexure F

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		in the same building, as per specification C1.1. This fire rating is required in two directions. The above does not apply to shafts extending beyond the roof covering, other than fire isolated stair and lift shafts and the bottom of *non-combustible* shafts laid directly on the ground.		
2.8:	Carparks in Class 2 and 3 Buildings	Noted	This concession may be applicable, however due to the requirement for roof as open space it is noted that a 120min FRL is required and supporting elements will need to maintain the same FRL.	Noted
2.9:	Residential Aged Care building: Concession	N/A	Clause not applicable due to the use of the building	N/A
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 appliable to the project.	-
3.1:	Fire-resistance of building elements	> The FRL's of all elements are to be in accordance with the FRL's detailed in the Table contained within Part 4.0 of this report. > External walls, common walls and the flooring and floor framing of lift pits must be *non-combustible*. (Note: insulation and sarking used must be *non-combustible*) > Internal walls required to be fire rated must extend to– (i) to the underside of the floor next above; or (ii) the underside of a roof complying with Table 3; or (iii) if under Clause 3.5 the roof is not required to comply with Table 3, the underside of the *non-combustible* roof covering and, except for roof battens with dimensions of 75 mm x 50 mm or	The elements within the building are required to maintain an FRL in accordance with this clause and Specification C1.1.	CRA – Refer Annexure F

Section C: Fire Resistance			
	less or *sarking-type material*, 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, pipe, garbage or similar shaft wall must be of non-combustible construction. **Note:** This includes *non-combustible* insulation. When an insulation material is not certified as *non-combustible*, this material will need to be the subject of a Fire Engineering Assessment at the CC stage. > The *FRL*s specified in Table 3 for an external column apply also to those parts of an internal column that face and are within 1.5m of a window and are exposed through that window to a *fire-source feature*. > It should also be noted that if Dincel material is to be used as an element where the BCA requires such element to be *non-combustible*, this material will need to be the subject of a Fire Engineering Assessment at the CC stage		
3.2: Concessions for floors	A floor need not comply with Table 3 if— (a) it is laid directly on the ground; or (b) in a Class 2, 3, 5 or 9 building, the space below is not a *storey*, does not accommodate motor	The slabs laid directly on the Ground are provided with a concession in accordance with this Clause, in addition to the slabs located internally within the townhouses.	Noted

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		vehicles, is not a storage or work area, and is not used for any other ancillary purpose; or (c) it is a timber stage floor in a Class 9b building laid over a floor having the *required FRL* and the space below the *stage* is not used as a dressing room, store room, or the like; or (d) it is within a *sole-occupancy unit* in a Class 2 or 3 building or Class 4 part of a building; or (e) it is an open-access floor (for the accommodation of electrical and electronic services and the like) above a floor with the *required FRL*.		
3.3:	Floor Loading of Class 5 and 9b buildings: Concession	N/A	Clause not applicable due to building classification	N/A
3.4:	Roof superimposed on concrete slab: Concession	A roof superimposed on a concrete slab roof need not comply with Clause 3.1 as to fire-resisting construction if— (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.	It is noted that any concrete slabs proposed to be used as roofs throughout the building. This concession may be applied throughout.	Noted
3.5:	Roof: Concession	A roof need not comply with Table 3 if its covering is *non-combustible* and the building— (a) has a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5 installed throughout; or (b) has a rise in storeys of 3 or less; or (c) is of Class 2 or 3; or (d) has an *effective height* of not more than 25 m and the ceiling immediately below the roof has a	This concession may be applicable due to the classification of the building.	Noted

Section C: Fire Resistance			
	resistance to the incipient spread of fire to the roof space of not less than 60 minutes.		
3.6: Roof lights	If a roof is required to have an *FRL* or its covering is required to be *non-combustible*, roof lights or the like installed in that roof must— (a) have an aggregate area of not more than 20% of the roof surface; and (b) be not less than 3 m from— (i) any boundary of the allotment other than the boundary with a road or public place; and (ii) any part of the building which projects above the roof unless that part has the *FRL* required of a *fire wall* and any openings in that part of the wall for 6 m vertically above the rooflight or the like are protected in accordance with C3.4; and (iii) any rooflight or the like in an adjoining *sole-occupancy unit* if the walls bounding the unit are required to have an *FRL*; and (iv) any rooflight or the like in an adjoining fire-separated section of the building; and (c) if a ceiling with a resistance to the incipient spread of fire is required, be installed in a way that will maintain the level of protection provided by the ceiling to the roof space.	There are several roof lights provided throughout that are noted to be located more than 3m from each other and the property boundary and represent less than 20% of the roof area.	Complies
3.7: Internal columns and walls: Concession	For a building with an *effective height* of not more than 25 m and having a roof without an FRL in accordance with Clause 3.5, in the storey immediately below that roof, internal columns other than those referred to in Clause 3.1(f) and internal walls other than *fire walls* and shaft walls may have— (a) in a Class 2 or 3 building: FRL 60/60/60; or	In the storey immediately below that roof, internal columns other than those referred to in Clause 3.1(f) and internal walls other than *fire walls* and shaft walls may have an FRL of 60/60/60.	CRA – Refer Annexure F

Section C: Fire Resistance				
		(b) in a Class 5, 6, 7, 8 or 9 building— (i) with rise in storeys exceeding 3: *FRL* 60/60/60 (ii) with rise in storeys not exceeding 3: no FRL.		
3.8:	Open spectator stands and indoor sports stadiums concession	N/A	Clause not applicable due to the use of the building	N/A
3.9:	Carparks	Noted	It is noted that portions of the Basement roof are used as open space on the Ground Floor and will need to maintain an FRL of 120/120/120 and therefore all supporting elements must maintain the same FRL in accordance with this specification.	Noted
3.10:	Class 2 and 3 buildings Concession	N/A	Clause not applicable due to the rise in storeys of the building	N/A
Specification C1.10 – Fire Hazard Properties				
1.	Scope	Informational	Noted	-
2.	Application	Informational	Noted	Noted
3.	Floor linings and floor coverings	A floor lining or floor covering must have– (a) a *critical radiant flux* not less than that listed in Table 2; and (b) in a building not protected by a sprinkler system complying with Specification E1.5, a maximum smoke development rate of 750 percent-minutes; and (c) a *group number* complying with Clause 6(b), for any portion of the floor covering that is continued more than 150 mm up a wall.	The floor linings or covering must be provided in accordance with this clause.	CRA – Refer Annexure F

Section C: Fire Resistance				
4.	Wall and ceiling linings	(a) A wall or ceiling lining system must comply with the *group number* specified in Table 3 and for buildings not fitted with a sprinkler system complying with Specification E1.5 have– (i) a *smoke growth rate index* not more than 100; or (ii) an *average specific extinction area* less than 250 m2/kg. (b) A *group number* of a wall or ceiling lining and the *smoke growth rate index* or *average specific extinction area* must be determined in accordance with AS 5637.1:2015.	The wall and ceiling linings must be provided in accordance with this clause.	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.	The air handling ductwork must be provided in accordance with this clause.	CRA – Refer Annexure F
6.	Lift cars	Materials used as— (a) floor linings and floor coverings must have a *critical radiant flux* not less than 2.2; and (b) wall and ceiling linings must be a Group 1 material or a Group 2 material in accordance with AS 5637.1:2015.	The materials in the lift car must be provided in accordance with this clause.	CRA – Refer Annexure F
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.	Any other material proposed within the building must be provided in accordance with this clause.	CRA – Refer Annexure F
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 *FRL*.	All fire doors are required to be provided in accordance with this clause	CRA – Refer Annexure F

Section C: Fire Resistance				
3.	Smoke doors	N/A	There are no smoke doors proposed	N/A
4.	Fire shutters	N/A	There are no fire shutters required	N/A
5.	Fire windows	N/A	There are no fire windows required	N/A

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 *sole-occupancy unit* in a Class 2 or 3 building or a Class 4 part of a building.	Noted	Noted
D1.2:	Number of exits required	Each of the storeys are required to be provided with access to at least one exit. **Basements–** Not less than 2 *exits* 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 – (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 *exit* is not more than 20 m.	Each of the residential storeys have been provided with access to at least a single exit will comply with this clause and the basement will have access to at least two exit.	Complies
D1.3:	When fire-isolated stairways and ramps are required	Every stairway or ramp serving as a required exit must be fire-isolated unless connects, passes through or passes by not more than 3 consecutive storeys	Each of the stairways throughout the building are noted to be non-fire isolated stairways. Each of the stairs are only connecting a maximum of 3 storeys in the residential	Noted

Section D: Access and Egress			
		portion and the basement is only connecting with the single storey as they discharge external	
D1.4: Exit travel distances	Class 2 residential — > The entrance doorway of each *sole-occupancy unit* must be not more than – o 6 m from an *exit* or from a point from which travel in different directions to 2 *exits* is available; or o 20 m from a single *exit* 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 *sole-occupancy unit* must be more than 20 m from an *exit* or from a point at which travel in different directions to 2 *exits* is available. Class 7a carpark— > No point on a floor must be more than 20 m from an exit, or a point from which travel in different directions to 2 exits is available, in which case the maximum distance to one of those exits must not exceed 40 m.	Class 2 residential — > Due to the number of exit made available within the residential towers, it is noted that a point of choice will be available within 6m and within Building C due to only a single exit being maintained it is noted that the exit will be available within 7m which is deemed suitable under the concessions within Specification E1.5a due to the sprinkler system being provided. Class 7a carpark— > Throughout the carpark it is noted that the distance to a point of choice would be within 20m, however the maximum total distance would be up to 65m and would not be compliant. It would be required to introduce an additional egress path from this portion of the basement as egress via the SOUs is not a DTS provision. This may be provided by introducing a new egress stairway or allowing for a communication stairway being provided centrally between the two levels to allow for a short cut through the carparking in lieu of running around to the ramps.	FI
D1.5: Distance between alternative exits	*Exits* that are required as alternative means of egress must be– (a) distributed as uniformly as practicable within or around the storey served and in positions where unobstructed access to at least 2 *exits* is readily available from all points on the floor including lift lobby areas; and (b) not less than 9 m apart; and (c) not more than—	Each of the exits are noted as being located more than 9m from each other throughout the building and will not require a convergence of paths. Throughout the residential storeys, it is noted that distance between the alternative exits would be sufficient, however it is noted that the basement will maintain a distance of up to 118m between alternative exits and would not comply with this Clause. It would be required to introduce an additional egress path from this portion of the basement as egress via the	FI

Section D: Access and Egress			
	(i) in a Class 2 or 3 building — 45 m apart; or (ii) in all other cases — 60 m apart; and (d) located so that alternative paths of travel do not converge such that they become less than 6 m apart. Note: the distance between *exits* must be measured through the point at which travel two *exits* is available.	SOUs is not a DTS provision. This may be provided by introducing a new egress stairway or allowing for a communication stairway being provided centrally between the two levels to allow for a short cut through the carparking in lieu of running around to the ramps.	
D1.6: Dimensions of exits and paths of travel to exits	In a required *exit* or path of travel to an *exit*– > the unobstructed height throughout *exits* and paths of travel to *exits* must not be less than 2 m, except the unobstructed height of any doorway may be reduced to not less than 1980 mm; and > the unobstructed width of each *exit* or path of travel to an *exit*, except for doorways must be not less than 1m; > the unobstructed width of doorways must be not less than 750 mm, unless providing access for people with disabilities in which case the unobstructed width must be not less than 850 mm. > the required width of a stairway or ramp must be measured clear of all obstructions such as handrails. > the unobstructed width of a required *exit* must not diminish in the direction of travel to a road or open space.	Throughout the building it is noted that there is at least a 1000mm egress path maintained. Within the basement it is noted that there are 1000mm wide egress passageway. However, the location of the fire hose reel and services will need to be confirmed as being located more than 1m away to allow for egress. This may be detailed under design development Based on the ceiling heights provided throughout it is noted that the sufficient clearance will be maintained along the egress paths in accordance with this clause.	CRA – Refer Annexure F
D1.7: Travel via fire-isolated exits	Noted	Each of the stairways are noted to be non-fire isolated stairways due to the basement stairs not being enclosed on the Ground Floor and the proposed hydrants being detailed external to the stair shafts.	Noted

Section D: Access and Egress				
D1.8:	External stairways or ramps in lieu of fire-isolated exits	N/A	Clause not applicable due to no external stairways or the like being proposed	N/A
D1.9:	Travel by non-fire-isolated stairways or ramps	> A non-fire-isolated stairway serving as a required *exit* must provide a continuous means of travel by its own flights and landings from every storey served to the level at which egress to a road or open space is provided. > In a Class 2, 3 or 4 building, the distance between the doorway of a room or *sole-occupancy unit* and the point of egress to a road or open space by way of a stairway or ramp that is not fire-isolated and is required to serve that room or *sole-occupancy unit* must not exceed 60m. > 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 –	Throughout each of the stairways, it is noted that discharge distances would be in accordance with this Clause due to open space being located within proximity. However, it is noted that Buildings A, B and D are provided with two non-fire isolated stairways that are discharging on the same floor. In accordance with this Clause, it would be required that the stairways are smoke separated. It would be required that smoke walls and smoke doors are provided on the Ground Floor to break up the lobby to comply.	**DNC** **Refer to Part 3 of this Report**

Section D: Access and Egress			
	(i) 20 m from a doorway providing egress to a road or open space or from a fire-isolated passageway leading to a road or open space; or (ii) 40 m from one of 2 such doorways or passageways if travel to each of them from the non-fire-isolated stairway or non-fire-isolated ramp is in opposite or approximately opposite directions. > In a Class 2 or 3 building, if 2 or more *exits* are required and are provided by means of internal non-fire-isolated stairways or non-fire-isolated ramps, each *exit* must— (i) provide separate egress to a road or open space; and (ii) be suitably smoke-separated from each other at the level of discharge.		
D1.10: Discharge from exits	*Exits* must not be blocked at the point of discharge and where necessary, suitable barriers must be provided to prevent vehicles from blocking the *exit*. If a required *exit* leads to open space, the path of travel to the road must have an unobstructed width of not less than 1m. If an *exit* discharges to open space that is at a different level that the public road to which it is connected, the path of travel to the road must be by a ramp or other incline not steeper than 1:8, or a BCA compliant stairway. The discharge points of alternative *exits* must be as far apart as practical	Discharge from the exits are all considered to lead to open space in accordance with this clause. Further details would need to be provided on the paths leading to the road to ensure compliance is maintained with Part D2.	CRA – Refer Annexure F
D1.11: Horizontal exits	N/A	There are no horizontal exits being relied upon.	N/A

Section D: Access and Egress			
D1.12: Non-required stairways, ramps or escalators	N/A	The current plans do not detail any non-required stairways or the like	N/A
D1.13: Number of persons accommodated	Informational– The number of persons accommodated in a storey, room or mezzanine must be determined within consideration to the purpose for which it is used and the layout of the floor area by– (a) calculating the sum of the numbers obtained by dividing the floor area of each part of the storey by the number of square metres per person listed in BCA Table D1.13 according to the use of that part, excluding spaces set aside for— (i) lifts, stairways, ramps and escalators, corridors, hallways, lobbies and the like; and (ii) service ducts and the like, sanitary compartments or other ancillary uses; or (b) reference to the seating capacity in an assembly building or room; or (c) any other suitable means of assessing its capacity. Based on floor area and Table D1.13, the population numbers are as follows:	Due to the number of SOUs provided on each level, it would be considered that there would be no more than 100 people being accommodated on each storey.	Noted
D1.14: Measurement of distances	Informational	Noted	Noted
D1.15: Method of Measurement	Informational	Noted	Noted
D1.16: Plant rooms, lift motor rooms and electricity network substations: concession	Noted	It is considered that there are no plant rooms that would require access in accordance with this clause. Level access has been provided throughout or a suitable stairway will be provided.	Noted

Section D: Access and Egress			
		However, it is noted that roof access provided with a ladder for maintenance will need to be provided in accordance with AS1657.	
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.	Access to the lift pit must be provided in accordance with this clause	CRA – Refer Annexure F
D1.18: Egress from early childhood centres	N/A	Clause not applicable due to the use of the building	N/A
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), D2.18 & D2.24, the deemed-to-satisfy Provisions of this Part do not apply to internal parts of the Class 2 *sole-occupancy units.*	Noted	Noted
D2.2: Fire-isolated stairways and ramps	The fire isolated stairways must be constructed of *non-combustible* materials and constructed so that if there is local failure it will not cause structural damage to, or impair the fire-resistance of the shaft.	The fire stairs are required to be provided in accordance with this Clause. Details of its construction have not been provided at this stage.	CRA – Refer Annexure F
D2.3: Non-fire-isolated stairways and ramps	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—	The non-fire isolated stair serving the basement will need to be provided in accordance with this Clause. Details of its construction have not been provided at this stage.	CRA – Refer Annexure F

Section D: Access and Egress			
	(i) has a finished thickness of not less than 44 mm; and (ii) has an average density of not less than 800 kg/m3 at a moisture content of 12%; and (iii) has not been joined by means of glue unless it has been laminated and glued with resorcinol formaldehyde or resorcinol phenol formaldehyde glue".		
D2.4: Separation of rising and descending stair flights	N/A	Clause not applicable as there are no connecting rising and descending stairs	N/A
D2.5: Open access ramps and balconies	N/A	Clause is not applicable as there are no open access ramps or balconies proposed	CRA – Refer Annexure F
D2.6: Smoke lobbies	N/A	Clause is not applicable as no smoke lobbies are required	N/A
D2.7: Installations in exits and paths of travel	> Access to service shafts and services other than to fire-fighting or detection equipment must not be provided from a fire-isolated stairway or fire-isolated passageway. > Gas or other fuel services must not be installed in a required *exit*. > Any electricity meters, distribution boards or ducts, or telecommunications distribution boards or equipment installed in corridors/hallways/lobbies or the like must be enclosed with *non-combustible* construction or a fire protective covering with doorways suitably sealed against smoke spread. > Electrical wiring may be installed in a fire-isolated *exit* if the wiring is associated with: ○ a lighting, detection, or pressurization system serving the *exit*; or	Any electricity meters, distribution boards or ducts, or telecommunications distribution boards or equipment installed in the common areas or along an egress path must be smoke sealed in accordance with this clause.	CRA – Refer Annexure F

Section D: Access and Egress			
	○ a security, surveillance or management system serving the *exit*; or ○ an intercommunication system or an audible or visual alarm system in accordance with D2.22; or ○ the monitoring of hydrant or sprinkler isolating valves.		
D2.8: Enclosure of space under stairs and ramps	N/A	Clause is not applicable due to there being no enclosures or the lie below stairs or ramps.	N/A
D2.9: Width of stairways and ramps	Informational– A required stairway or ramp that exceeds 2 m in width is counted as having a width of only 2 m unless it is divided by a handrail or barrier continuous between landings and each division has a width of not more than 2 m.	Throughout the building it is noted that there are no stairs or the like which are required to be more than 2m.	Noted
D2.10: Pedestrian ramps	> A ramp serving as a required *exit* must— (i) where the ramp is also serving as an accessible ramp under Part D3, be in accordance with AS 1428.1:2009; 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.	The ramps provided throughout the building are required to be provided in accordance with this Clause. The gradients of the ramps have not been detailed at this stage to ensure compliance. The floor surface of the ramp must be provided in accordance with Clause D2.14.	CRA – Refer Annexure F
D2.11: Fire-isolated passageways	N/A	There are no fire isolated passageways provided	N/A
D2.12: Roof as open space	Roof of basement level to achieve an FRL of 120/120/120 as *exits* discharge onto it.	There are portions of the basement 1 roof which are used as open space on the Ground Floor and will need to	CRA – Refer Annexure F

Section D: Access and Egress			
		maintain the required FRL in accordance with this clause. It is considered that the egress paths from the Ground Floor are not required to pass within 3m of the stairway openings.	
D2.13: Goings and risers	Stairways must comply with the following: > Stairways must have not more than 18 and not less than 2 risers in each flight; > Goings must be between 240 mm and 355 mm within the residential units; > Goings must be between 250 mm and 355 mm in other areas; > Risers must be between 115 mm high and 190 mm high; > The slope relationship (2 x riser dimension + going dimension) must be within the range of 550-700; > The goings and risers must be constant (uniform) throughout each flight and the dimensions of goings (G) and risers (R) are considered constant if the variation between– (A) adjacent risers, or between adjacent goings, is no greater than 5 mm; and (B) the largest and smallest riser within a flight, or the largest and smallest going within a flight, does not exceed 10 mm. > Risers must not contain any openings that would permit a 125 mm sphere to pass through. > Each tread must have a non-slip finish or an adequate non-skid strip near the edge of the nosings;	Details of the risers and goings have not been provided at this stage. > Goings must be between 250 mm and 355 mm; > Risers must be between 115 mm high and 190 mm high; Compliance must be provided with this Clause, and this will require nosing strips being provided to each of the goings.	CRA – Refer Annexure F

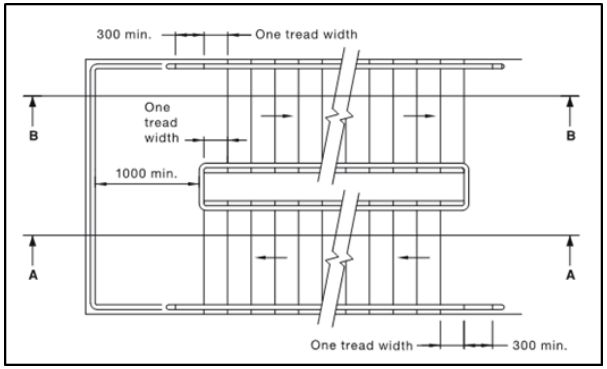
<table>
<tr><th colspan="4">Section D: Access and Egress</th></tr>
<tr><td></td><td>

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 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.

</td><td></td><td></td></tr>
<tr><td>D2.14: Landings</td><td>Landings must be not less than 750 mm long and have either a surface with a slip-resistance classification complying with Table D2.14 or a strip at the edge of the landing with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013.
<table>
<tr><th rowspan="2">Application</th><th colspan="2">Surface Condition</th></tr>
<tr><th>Dry</th><th>Wet</th></tr>
<tr><td>Ramp steeper than 1:14</td><td>P4 or R11</td><td>P5 or R12</td></tr>
<tr><td>Ramp steeper than 1:20 but not steeper than 1:14</td><td>P3 or R10</td><td>P4 or R11</td></tr>
<tr><td>Tread or landing surface</td><td>P3 or R10</td><td>P4 or R11</td></tr>
<tr><td>Nosing or landing edge strip</td><td>P3</td><td>P4</td></tr>
</table>
</td><td>The landings are considered to be provided in accordance with this clause. Each of the elements must be provided with the required slip resistance in accordance with this clause and table D2.14.</td><td>CRA – Refer Annexure F</td></tr>
<tr><td>D2.15: Thresholds</td><td>The threshold of a doorway must not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf unless–</td><td>The threshold provided throughout the building must be provided in accordance with this clause. Based on majority of the doorways being internal or accessible it is considered that compliance would be available.</td><td>CRA – Refer Annexure F</td></tr>
</table>

Section D: Access and Egress			
	(a) in a building required to be accessible, the doorway– (i) opens to a road or open space; and (ii) is provided with a threshold ramp or step ramp in accordance with AS 1428.1:2009; or (b) in other cases– (i) the doorway opens to a road or open space, external stair landing or external balcony; and (ii) the door sill is not more than 190 mm above the finished surface of the ground, balcony, or the like, to which the doorway opens.	Details of the threshold have not been provided for assessment.	
D2.16: Barriers to prevent falls	Balustrades must be provided to stairs and balconies, driveway ramps etc where there is a fall of more than 1m. Balustrades must comply with the following: <u>Balustrade minimum heights</u> > 865 mm above stair nosings; > 865 mm above landings to a stair where the barrier is provided along the inside edge of the landing and does not exceed 500 mm in length; and > 1 m in all other locations. <u>Balustrade openings – fire-isolated stairs</u> > maximum openings of 300 mm; or > where rails are used– o 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	Barriers to prevent falls will need to be provided in accordance with this clause and maintain a height of no less than 1m. The stairways will need to maintain a height of no less than 865mm and landings no less than 1000mm.	CRA – Refer Annexure F

Section D: Access and Egress			
	○ the opening between rails must not be more than 460 mm Balustrade openings – other than fire-isolated stairs > 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. Climbability – other than fire-isolated stairs 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.		
D2.17: Handrails	Handrails to stairways must: > be located along at least one side of the ramp or flight (a flight being 2 or more risers); and > located along each side if the total width of the stairway or ramp is 2m or more; and > be fixed at a height of not less than 865 mm above the nosings of the stair treads and the floor surface of the ramp, landing, or the like; and > be continuous between stair flight landings and have no obstruction that will break a hand-hold. > be constructed to comply with clause 12 of AS 1428.1:2009 (including handrails to the fire stairs). > Handrails in common areas (other than fire stairs) must also accord with D3.3. 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.	Throughout the stairways it is required that handrails are provided in accordance with this clause. To comply with Clause 12 of AS1428.1-2009 it is required to provide an offset to allow for a continuous height being maintained throughout the flights and landing. The current plans generally provide an offset riser to each of the stairways throughout the building and would allow for compliance being provided. Additionally, throughout the basement it is noted that the driveway ramps in several locations are noted to be used for egress and therefore will need to be provided with a handrail in accordance with this Clause where a gradient steeper than 1:20 is maintained. Details of handrails may be provided during detailed design.	CRA – Refer Annexure F

Section D: Access and Egress			
	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.	It is considered that there are no plant rooms that would access in accordance with this clause. However, any roof access would need to be provided in accordance with this Clause.	CRA – Refer Annexure F
D2.19: Doorways and doors	> Sliding doors serving as *exit* doors must be openable manually under a force of not more than 110N. > *Exit* doors that are power operated must be able to be opened manually under a force of not more than 110 N if there is a malfunction or failure of the power source and if leading to road or open space, open automatically if there is a power failure or on the	Each of the egress doorways throughout the building are noted as being a swinging doorway. Any of the doors that are power operated will need to be manually openable and failsafe open under a power or fire trip in accordance with this clause.	CRA – Refer Annexure F

Section D: Access and Egress			
	activation of a fire or smoke alarm anywhere in the *fire compartment* served by the door. > A power operated door in a path of travel to a required *exit* must be able to be opened manually under a force of not more than 110 N if there is a malfunction of the power source.		
D2.20: Swinging doors	Swinging doors in a required *exit* must not encroach– (i) at any part of its swing by more than 500 mm on the required 1m width of the *exit* and (ii) when fully open, by more than 100 mm on the required 1m *exit* width; and the measurement of encroachment in each case is to include door handles or other furniture or attachments to the door. A swinging door in a required *exit* must swing in the direction of egress unless– > it serves a building or part with a floor area not more than 200 m2, it is the only required *exit* from the building or part and it is fitted with a device for holding it in the open position; or > it serves a sanitary compartment or airlock (in which case it may swing in either direction).	Each of the swinging doors used as an exit and the final discharge door are noted to swing in the direction of egress as required by this clause and maintain the required clearance to not impact on the required egress width.	CRA – Refer Annexure F
D2.21: Operation of latch	All doors in a required *exit* or forming part of a required *exit* AND doors in a path of travel to a required *exit* must be readily openable without a key from the side that faces a person seeking egress, by– (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 –	The latches throughout the egress paths of the building are required to be provided in accordance with this clause. This will require a single hand downward action or pushing action on a single device which is located between 900mm and 1.1 m from the floor.	CRA – Refer Annexure F

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	(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 – (i) serves only or is within a *sole-occupancy unit* in a Class 2 building; or		

Section D: Access and Egress			
	(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.		
D2.22: Re-entry from fire-isolated exits	N/A	Clause not applicable due to the rise in storeys of the building	N/A
D2.23: Signs on doors	Signage in accordance with this clause is to be located on all fire and smoke doors stating “Fire Safety Door, Do Not Obstruct, Do Not Keep Open” and the discharge door from the fire isolated stairways are to state “Fire Safety Door – Do Not Obstruct” in capital letters not less than 20mm in height. Note: Fire signage in accordance with clause 183 of the Environmental Planning and Assessment Regulation 2000 is also required.	Signage is required to be provided to the fire doors in accordance with this Clause.	CRA – Refer Annexure F
D2.24: Protection of openable windows	(a) Bedroom windows must be provided with protection if the floor below the window is 2m or more above the surface beneath. (b) Where the lowest level of the window opening is less than 1.7m above the floor, a window opening covered by (a) must comply with the following: (i) The openable portion of the window must be protected with– (A) a device to restrict the window opening; or (B) a screen with secure fittings. (ii) A device or screen required by (i) must–	Window protection must be provided to any new window openings in accordance with this clause.	CRA – Refer Annexure F

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

Section D: Access and Egress			
	(ii) Class 7 (other than carparks) and Class 8 buildings and parts of buildings containing those classes; (A) must not permit a 300mm sphere to pass through it. **Note:** when considering the preferred option to comply with this clause consideration will need to be given to natural ventilation required under Clause F4.6.		
D2.25: Timber stairways: concession	N/A	There are no timber stairways proposed in accordance with this clause.	N/A
Part D3 – Access for People with A Disability			
Refer to separate Access Report for an Assessment on this Part			

Section E: Services and Equipment			
Part E1 – Fire Fighting Equipment			
E1.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
E1.3: Fire hydrants	As the building has a floor area greater than 500 m2, a fire hydrant system complying with AS 2419.1:2005 must be provided to serve the building. Details should be provided showing: > Hydrant booster assembly location. The booster location must comply with the following: o be within 8m of a hardstand for fire brigade appliance; o be within sight of the main entry;	The building is required to be provided with a fire hydrant system in accordance with AS2419.1-2009. The hydrant booster has been detailed on the plans at this stage, however due to the building being sprinkler protected it would be noted that no protection is required pending the setback of the booster. Confirmation would need to be provided from the Certifier whether a Performance Solution would be required to address the location of the booster due to several building entrances. The fire pump room has not been detailed at this stage.	**FI**

Section E: Services and Equipment			
	> Assuming it is attached to the building, be separated from the building by construction achieving FRL 90/90/90 for 2m either side of and 3m above the upper hose connections > Hydrant pump room location (if a pumpset is required). An internal pump room must have a door opening to a road or open space or egress to open space via a fire-isolated *exit*; > Internal hydrants in each fire-isolated *exit* at each storey providing coverage to all parts of the building. For internal fire hydrant coverage, all points on the floor must be covered by a 10m hose stream, issuing from 30 m hose length, extending not less than 1m into the room. Note: Consideration should be given to the location of Electrical Substations on adjoining sites in regards to proximity to Fire Hydrant Boosters being within 10.0m	Based on the fire service spatial, it is noted that both external and internal hydrants are provided to maintain coverage. However, within the residential floor levels it is detailed that the hydrant valves will be located on the mid landing, and it would be required to confirm that these are provided not on the stairway and rather location on the level in which they are serving. Confirmation will need to be provided from the hydraulic designer to detail compliance coverage will be maintained throughout in accordance with this Clause and AS2419.	
E1.4: Fire hose reels	A fire hose reel system complying with BCA clause E1.4 and AS 2441:2005 must be provided to the building (excluding Classes 2, 3, 4, 5, 8 and 9c). All points on a floor shall be within reach of a 4 m hose stream issuing from a nozzle at the end of the hose laid on floor. The hose length shall not exceed 36 m. Fire hose reels must be located so that the fire hose will not need to pass through doorways fitted with fire or smoke doors, except— (iii) 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 (iv) doorways in walls referred to in C2.12 or C2.13 separating equipment or electrical supply systems; and	Fire hose reels are required to be provided throughout the basement storey due to the building classifications. Based on the fire service spatial, it is noted that fire hose reels have been provide throughout the basement. However, concern is raised with regards to the coverage of the hose reels to the end of the carpark underneath the townhouses as it is noted that up to 44m is maintained. Confirmation will need to be provided from the hydraulic designer to detail compliance coverage will be maintained throughout in accordance with this Clause and AS2441.	FI

Section E: Services and Equipment			
	(v) doorway openings to shafts referred to in C3.13.		
E1.5: Sprinklers	The building must be provided with a sprinkler system complying with Table E1.5 and Specification E1.5 installed throughout.	The building is required to be sprinkler protected due to the rise in storeys of the building. Compliance will need to be maintained in accordance with Specification E1.5 and E1.5a. Concessions will be made available throughout the building pending the sprinkler system being provided, however it is noted that due to the size of the carpark that an AS2118 system must be provided.	CRA – Refer Annexure F
E1.6: Portable fire extinguishers	Portable fire extinguishers must be provided in accordance with clause E1.6 & Table E1.6 of the BCA and must be selected, located and distributed in accordance with Sections 1, 2, 3 and 4 of AS 2444:2001. For the Class 2 parts, portable fire extinguishers must be– (i) an ABE type fire extinguisher; and (ii) a minimum size of 2.5 kg; and (iii) distributed outside a *sole-occupancy unit*— (A) to serve only the storey at which they are located; and (B) so that the travel distance from the entrance doorway of any *sole-occupancy unit* to the nearest fire extinguisher is not more than 10 m.	Portable fire extinguishers are required to be provided to each of the residential levels. This will be required to provide extinguishers on each of the landings in accordance with AS2444-2001.	CRA – Refer Annexure F
E1.8: Fire control centres	N/A	Clause not applicable due to the effective height of the building	N/A
E1.9: Fire precautions during construction	Informational–	These provisions will need to be applied throughout the building construction.	Noted

Section E: Services and Equipment				
		> During construction, not less than one portable fire extinguisher to suit Class A, B and C fires and electrical fires must be provided at all times on each storey adjacent to each required / temporary *exit*; and > After the building has reach an *effective height* of 12m, the required fire hydrants and fire hose reels must be operational on all floor / roof covered storeys, except for the 2 uppermost storeys; and all required booster connections must be installed.		
E1.10:	Provision for special hazards	N/A	Clause not applicable due to the effective height of the building	N/A
Specification E1.5 – Fire Sprinkler Systems				
1.	Scope	Informational	Noted	Noted
2.	Application of automatic fire sprinkler standards	An automatic fire sprinkler system shall comply with AS2118 as relevant to the building classification and the design of the hydraulic consultant. Where the building is residential class 2 or 3 then refer to Specification E1.5a for specific design requirements and concessions.	The entire building is required to be provided with a sprinkler system in accordance with this specification. Due to the size of the carpark, it is required that an AS2118 system is provided within the carpark. Details on the remainder of the system will need to be provided.	CRA – Refer Annexure F
3.	Separation of sprinklered and non-sprinklered areas	Where a part of a building is not protected with sprinklers, the sprinklered and non-sprinklered parts must be fire-separated with a wall or floor which must – (a) comply with any specific requirement of the Deemed-to-Satisfy Provisions of the BCA; or (b) where there is no specific requirement, comply with the relevant part of AS 2118, FPAA101D or FPAA101H.	The entire building is required to be sprinkler protected	CRA – Refer Annexure F

Section E: Services and Equipment				
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.	It is considered that the entire building is required to be sprinkler protected and that this clause would therefore not be applicable	CRA – Refer Annexure F
5.	Fast response sprinklers	Fast response sprinklers may be installed only if they are suitable for the type of application proposed and it is demonstrated that the sprinkler system is designed to accommodate their use. Note Table E2.2a – Class 9a and 9c buildings – residential sprinkler heads in patient care areas, and Class 9b buildings – fast response sprinkler heads. Spec G3.8 – fast response sprinkler heads for atrium floor protection.	Any fast response sprinklers must be provided in accordance with this clause.	CRA – Refer Annexure F
6.	Sprinkler valve enclosures	(a) Sprinkler alarm valves must be located in a secure room or enclosure which has direct egress to a road or open space. (b) All sprinkler valve rooms and enclosures must be secured with a system suitable for use by the fire brigade.	A sprinkler alarm valves must be provided in accordance with this clause. Details have not been provided at this stage to confirm the location. It would be required that this is provided with direct access to open space as required by this Clause.	CRA – Refer Annexure F
7.	Water supply	(a) A required sprinkler system must be provided with at least one water supply.	Due to the effective height of the building, it would be required that at least one water supply is provided.	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.	The sprinkler system must activate a building occupant warning system in accordance with this clause.	CRA – Refer Annexure F
9.	Connection to Other Systems	Noted	The building is not considered to maintain any other smoke hazard management systems that would be activated	Noted

Section E: Services and Equipment				
10.	Anti-tamper Devices	(a) Where a sprinkler system is installed – (i) over any stage area in a theatre, public hall or the like, visual and audible status indication of sprinkler valves must be provided at the location normally used by the stage manager; or (ii) in a space housing lift electrical and control equipment (including machine rooms, secondary floors and sheave rooms), any valves provided to control sprinklers in these spaces must be located adjacent to the space. (b) Any valves provided to control sprinklers required by (a) must be fitted with anti-tamper monitoring devices connected to a monitoring panel.	Anti-tamper devices are not required to be installed due to the use of the building, however in a space housing lift electrical and control equipment these may be provided.	CRA – Refer Annexure F
11.	Sprinkler Systems in Carparks	Noted	It is considered that this concession will not be relied upon	Noted
12.	Residential Care Buildings	N/A	Clause not applicable due to building classification	N/A
13.	Sprinkler systems in lift installations	(a) Where sprinklers are installed in a space housing lift electrical and control equipment, including machine rooms, secondary floors and sheave rooms, sprinklers in these spaces must – (i) have heads protected from accidental damage by way of a guard that will not impair the performance of the head; and (ii) be capable of being isolated and drained, either separately or collectively, without isolating any other sprinklers within the building. (b) Valves provided to control sprinklers referred to in (a) must be installed in accordance with Clause 10(b).	Where sprinklers are installed in a space housing lift electrical and control equipment they must be provided in accordance with this clause.	CRA – Refer Annexure F

Section E: Services and Equipment				
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	A required automatic fire sprinkler system installed in a Class 2 or 3 building with an *effective height* of not more than 25 m and a rise in storeys of 4 or more must comply with— (i) AS 2118.1:2017; or (ii) AS 2118.4:2012, as applicable; or (iii) FPAA101D, except for residential care buildings; or (iv) FPAA101H, except for residential care buildings		CRA – Refer Annexure F
3.	Permitted concessions	Noted	Pending the sprinkler system being provided within the building, it is noted that there are concessions available	CRA – Refer Annexure F
Part E2 – Smoke Hazard Management				
E2.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
E2.1:	Application of Part	Informational	Noted	Noted
E2.2:	General requirements (including Tables E2.2a and E2.2b)	**General smoke hazard management requirements** An air-handling system which does not form part of a smoke hazard management system in accordance with Table E2.2a or Table E2.2b and which recycles air from one *fire compartment* to another *fire compartment* or operates in a manner that may unduly contribute to the	**Class 2 parts** Class 2 parts must be provided with an automatic smoke detection and alarm system complying with BCA Specification E2.2a. Note: Smoke alarms in sole occupancy units are now required to be interconnected. **Class 7a buildings**	CRA – Refer Annexure F

Section E: Services and Equipment			
	spread of smoke from one *fire compartment* to another *fire compartment* (such as lobby air supply) must— (i) be designed and installed to operate as a smoke control system in accordance with AS 1668.1:2015; or (ii) (A) incorporate smoke dampers where the air-handling ducts penetrate any elements separating the *fire compartments* served; and (B) be arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke detectors complying with clause 7.5 of AS 1668.1:2015; and for the purposes of this provision, each *sole-occupancy unit* in a Class 2 or 3 building is treated as a separate *fire compartment*. Miscellaneous air-handling systems covered by Sections 5 and 6 of AS 1668.1:2015 serving more than one *fire compartment* (other than a carpark ventilation system) and not forming part of a smoke hazard management system must comply with that Section of the Standard. A smoke detection system must be installed in accordance with Clause 6 of Specification E2.2a to operate AS1668.1:2015 systems that are provided for zone pressurisation and automatic air pressurisation for fire-isolated *exits*. **Class 2 parts** Class 2 parts must be provided with an automatic smoke detection and alarm system complying with BCA Specification E2.2a. Note: Smoke alarms in sole occupancy units are now required to be interconnected.	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.	

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		Class 7a buildings 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.		
E2.3:	Provisions for special hazards	N/A	The building is not considered to be a special hazard	N/A
Specification E2.2a – Smoke Detection and Alarm System				
1.	Scope	Informational	Noted	Noted
2.	Type of system	A required automatic smoke detection and alarm system must be provided in accordance with the following: (a) Class 2 buildings and Class 4 parts of a building— (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 5, 6, 7, 8, 9b and 9c buildings— a smoke detection system complying with Clause 4.	The building may be provided with a Clause 3, 4 or 5 system.	CRA – Refer Annexure F
3.	Smoke alarm system	(a) All Class 2 - 9 buildings— (i) A smoke alarm system must— (A) consist of smoke alarms complying with AS 3786; and	The smoke alarms throughout the units will need to be provided in accordance with this clause. The alarms must be mains powered and interconnected where more than one is provided.	CRA – Refer Annexure F

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	(B) be powered from the consumer mains source. (ii) In kitchens and other areas where the use of the area is likely to result in smoke alarms causing spurious signals— (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. (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 alarm system, the following applies: (i) Alarms must be installed within each sole-occupancy unit, and located on or near the ceiling in any storey— (A) containing bedrooms— (aa) between each part of the sole-occupancy unit containing bedrooms and the remainder of the sole-occupancy unit; and (bb) where bedrooms are served by a hallway, in that hallway; and		

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	(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— (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.		
4. Smoke detection system	(a) All Class 2 - 9 buildings— (i) A smoke detection system must— (A) subject to (b) and (c), comply with AS 1670.1; and (B) activate a building occupant warning system in accordance with Clause 7. (ii) In kitchens and other areas where the use of the area is likely to result in smoke detectors causing spurious signals— (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	Smoke detectors installed within the common areas will need to be installed in accordance with this clause and AS1670.1. The system will be required to activate the building occupant warning system. Based on the sprinkler system required, there are concessions available to remove the requirement for detectors within the common areas. However, this will be depending on the proposed sprinkler system.	CRA – Refer Annexure F

Section E: Services and Equipment			
	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. (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: (i) Smoke detectors must be installed— (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. (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.		
5. Combined smoke alarm and smoke detection system	(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—	This will be a combination of the comments above for a Clause 3 and Clause 4 system. Based on the sprinkler system required, there are concessions available to remove the requirement for	CRA – Refer Annexure F

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		(i) be provided with a smoke alarm system complying with Clause 3 within sole-occupancy units; and (ii) subject to (b), be provided with a smoke detection system complying with Clause 4 in areas not within sole-occupancy units. (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.	detectors within the common areas. However, this will be depending on the proposed sprinkler system.	
6.	Smoke detection for smoke control system	N/A	Clause is not applicable as there are no smoke control systems provided	N/A
7.	Building occupant warning system	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— (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)— (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 (ii) the inbuilt sounders of the smoke alarms may be used to wholly or partially meet the requirements; and (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	A building occupant warning system is required to be maintained in accordance with this Clause and activated by the common areas systems.	CRA – Refer Annexure F

Section E: Services and Equipment			
	level of not less than 100 dB(A) is provided at the door providing access to the sole-occupancy unit;		
8. System Monitoring	N/A	System monitoring is not required to be provided	N/A
Part E3 – Lift Installations			
E3.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
E3.1: Lift installations	An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with Specification E3.1	The passenger lift must be provided in accordance with Specification E3.1	CRA – Refer Annexure F
E3.2: Stretcher facility in lifts	A stretcher facility must be provided to an emergency lift required by E3.4. A stretcher facility must be provided to passenger lifts installed to serve any storey above an *effective height* of 12 m. A stretcher facility must accommodate a raised stretcher with a patient lying on it horizontally by providing a clear space not less than 600mm wide x 2000mm long x 1400mm high above floor level.	Due to the effective height of the building, it is required that the lifts are capable of providing stretcher facilities in accordance with this clause. Based on the plans it is note that the proposed lift shaft would allow for a lift car with a clear length of 2000mm and compliance being achieved with this Clause	CRA – Refer Annexure F
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.	Suitable signage must be provided to the lift in accordance with this clause.	CRA – Refer Annexure F
E3.4: Emergency lifts	N/A	Clause not applicable due to the effective height of the building	N/A

Section E: Services and Equipment			
E3.5: Landings	Access and egress to and from lift-well landings must comply with the Deemed-to-Satisfy Provisions of Section D.	Each of the lift landing are considered to allow for suitable access and egress in accordance with this clause. Note: this is not considered to include the townhouses as these are considered to be private lifts within non-accessible areas.	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.	The passenger lift proposed is required to be provided in accordance with this Clause and AS1735.12 as required. It is considered that the size of the lift car will allow for compliance being achieved. Refer to separate Access Assessment Report for a details assessment of this Clause	Noted
E3.7: Fire service controls	The lifts serving any storey above an *effective height* of 12 m must be provided with: (a) A fire service recall control switch complying with E3.9 for— (i) a group of lifts; or (ii) a single lift not in a group that serves the storey. (b) A lift car fire service drive control switch complying with E3.10 for every lift.	Fire service controls are required to be provided in accordance with this clause.	CRA – Refer Annexure F
E3.8: Aged care buildings	N/A	Clause not applicable due to the use of the building	N/A
E3.9: Fire service recall switch	The fire service control switch required by E3.7, is to comply with this clause. Lift services design to confirm compliance at CC stage.	Fire service recall switch is required to be provided in accordance with this clause.	CRA – Refer Annexure F
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.	The lift car service drive control switch is required to be provided in accordance with this clause.	CRA – Refer Annexure F

Section E: Services and Equipment			
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.	It would be required that each of the stairways and ramps throughout the egress paths and the carpark is provided with emergency lighting in accordance with this clause. Confirmation would be required from the electrical designer to ensure that compliance is maintained in accordance with this Clause.	CRA – Refer Annexure F
E4.3: Measurement of distance	Informational	Noted	Noted
E4.4: Design and operation of emergency lighting	The emergency lighting system must comply with AS/NZS 2293.1:2018.	The emergency lighting will need to comply with AS2293.1. Confirmation would be required from the electrical designer to ensure that compliance is maintained in accordance with this Clause.	CRA – Refer Annexure F
E4.5: Exit signs	*Exits* signs are to be provided above or adjacent to a door providing egress as well as directional signage throughout the entire development where necessary.	Exits signage must be provided in accordance with this clause. Confirmation would be required from the electrical designer to ensure that compliance is maintained in accordance with this Clause.	CRA – Refer Annexure F
E4.6: Direction signs	Where an *exit* is not readily apparent, directional signage is to be installed indicating the direction of egress.	Where an *exit* is not readily apparent, directional signage is to be installed indicating the direction of egress. Confirmation would be required from the electrical designer to ensure that compliance is maintained in accordance with this Clause.	CRA – Refer Annexure F

Section E: Services and Equipment				
E4.7:	Class 2 and 3 buildings and Class 4 Parts: Exemptions	Informational	Noted	Noted
E4.8:	Design and operation of exit signs	*Exit* signs must comply with AS/NZS 2293.1:2018 and be clearly visible at all times when the building is occupied.	Exits signage must be provided in accordance with this clause. Confirmation would be required from the electrical designer to ensure that compliance is maintained in accordance with this Clause.	CRA – Refer Annexure F
E4.9:	Emergency warning and intercom systems	N/A	Clause not applicable due to the effective height of the building	N/A

Section F: Health and Amenity				
Part F1 – Damp and Weatherproofing				
F1.0:	Deemed-to-Satisfy Provisions	*Performance Requirement* FP1.4, for the prevention of the penetration of water through external walls, must be complied with. There are no Deemed-to-Satisfy Provisions for this *Performance Requirement* in respect of external walls. The assessment contained within this report does not include an assessment against Performance Provision FP1.4.	A performance solution would be required to address this provision.	PS Required
F1.1:	Stormwater drainage	Stormwater drainage to comply with AS/NZS 3500.3:2018.	Stormwater drainage will need to be provided in accordance with this clause.	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.	Waterproofing membranes will need to be provided in accordance with this clause. Consideration will need to be given to the external balconies where a level threshold is maintained. If pedestal tiles are provided it would be required to seek a	CRA – Refer Annexure F

Section F: Health and Amenity			
		Performance Solution from a waterproofing consultant as this would not technically comply with AS4654.	
F1.5: Roof coverings	Roof coverings are to comply with BCA Clause F1.5.	The roof coverings will need to be provided in accordance with this clause.	CRA – Refer Annexure F
F1.6: Sarking	*Sarking-type materials* used for weatherproofing must comply with AS/NZS 4200 Part 1 and 2:2017.	Sarking will need to be provided in accordance with this clause.	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.	Wet areas will need to be provided in accordance with this clause.	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.	Damp-proofing will need to be provided in accordance with this clause.	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).	Damp-proofing will need to be provided in accordance with this clause.	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.	Floor wastes in the Class 2 portion will need to be provided in accordance with this clause.	CRA – Refer Annexure F
F1.12: Sub-floor ventilation	N/A	The building is proposed to be slab on ground and therefore not contain any sub-floor ventilation.	N/A
F1.13: Glazed Assemblies	Glazed assemblies are to comply with AS 2047:2014 and AS 1288:2006.	Glazed assemblies will need to be provided in accordance with this clause.	CRA – Refer Annexure F
Part F2 – Sanitary and Other Facilities			

Section F: Health and Amenity			
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.	Each of the sole occupancy units are provided with a laundry, bathroom and kitchen facilities in accordance with this clause	Complies
F2.2: Calculation of number of occupants and facilities	N/A	Clause not applicable due to building classification	N/A
F2.3: Facilities in Class 3 to 9 buildings (including Table F2.3)	N/A	Clause not applicable due to building classification and no common area facilities proposed.	N/A
F2.4: Accessible sanitary facilities (including Table F2.4)	Noted	Refer to separate Access Assessment Report	Noted
F2.5: Construction of sanitary compartments	The door to a fully enclosed sanitary compartment must— (i) open outwards; or (ii) slide; or (iii) be readily removable from the outside of the sanitary compartment, unless there is a clear space of at least 1.2 m, measured in accordance with Figure F2.5, between the closet pan within the sanitary compartment and the doorway.	Each of the WCs in the SOUs are noted to be located a suitable distance away from the door swing or provided with a siding door in accordance with this Clause. However, it is noted that the townhouses are provided with bathroom on Level 1 which show a 1.2m clearance, if less than 1.2m is maintained consideration will need to be given to this Clause.	CRA – Refer Annexure F
F2.6: Interpretation: urinals and washbasins	Informational	Noted	Noted
F2.8: Waste Management	N/A	Clause not applicable due to building classification	N/A

Section F: Health and Amenity				
F2.9:	Accessible adult change facilities	N/A	Clause not applicable due to the use of the building	N/A
Part F3 – Room Heights				
F3.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
F3.1:	Height of rooms and other spaces	(a) The height of rooms and other spaces must be not less than— (b) in a Class 2 part of a building— (i) a kitchen, laundry, or the like — 2.1 m; and (ii) a corridor, passageway or the like — 2.1 m; and (iii) a habitable room excluding a kitchen — 2.4 m; and (iv) in a room or space with a sloping ceiling or projections below the ceiling line (v) within— (A) a habitable room— (aa) in an attic — a height of not less than 2.2 m for not less than two thirds of the floor area of the room or space; and (bb) in other rooms — a height of not less than 2.4 m for not less than two thirds of the floor area of the room or space; and (B) a non-habitable room — a height of not less than 2.1 m for not less than two thirds of the floor area of the room or space; and (aa) when calculating the floor area of a room or space, any part that has	Throughout the residential levels, the slabs will maintain 3100mm between the floor levels on the residentials levels. Within the basement carpark, it is generally found that a height of at least 2100mm between the floor and slab above will be maintained at the lowest point. Based upon these distances it is considered that suitable clear heights will be maintained in accordance with this clause. However, consideration will need to be given as to the layout of services within the carpark to ensure the reduced areas will not provide less than 2100mm as required.	CRA – Refer Annexure F

Section F: Health and Amenity			
	a ceiling height of less than 1.5 m is not included; and (c) in a Class 7 building— (i) except as allowed in (ii) and (f) — 2.4 m; and (ii) a corridor, passageway, or the like — 2.1 m; and (d) in a Class 9a health-care building— (i) a patient care area — 2.4 m; and (ii) an operating theatre or delivery room — 3 m; and (iii) a treatment room, clinic, waiting room, passageway, corridor, or the like — 2.4 m; and (e) in any building— (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.	Natural lighting is required to be provided to the Class 2 portion of the building.	CRA – Refer Annexure F

Section F: Health and Amenity				
F4.2:	Methods and extent of natural lighting	(a) Natural light must be provided by: (i) Windows: (A) with an aggregate light transmitting area of not less than 10% the floor area of the room; and (B) that are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like; or (ii) Rooflights, that: (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). (b) A required window that faces a boundary of an adjoining allotment or a wall of the same building or another building on the allotment must be not less than a horizontal distance from that boundary or wall that is the greater of – (c) 1m; and (d) 50% of the square root of the exterior height of the wall in which the window is located, measured from its sill.	Natural light is provided throughout the residential levels due to the direct access to glazed openings to each of the habitable rooms. This is considered that the openings will provide 10% of the floor area in accordance with this clause. Confirmation will need to be sought by the Architect to confirm that the windows are suitable in accordance with this clause.	CRA – Refer Annexure F
F4.3:	Natural light borrowed from adjoining room	Noted	Due to the direct natural light provided throughout, it is considered that light would not need to be borrowed in accordance with this Clause. The kitchen, living and dining room are considered to be a single room and would not require borrowing light throughout.	Noted

Section F: Health and Amenity			
F4.4: Artificial Lighting	Lighting to all areas is to comply with AS/NZS 1680.0:2009.	Lighting is required to be provided in accordance with this clause.	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.	Ventilation to the rooms must be provided in accordance with this clause.	CRA – Refer Annexure F
F4.6: Natural ventilation	(a) Natural ventilation provided in accordance with F4.5(a) must consist of permanent openings, windows, doors or other devices which can be opened— (i) with an aggregate opening or openable size not less than 5% of the floor area of the room required to be ventilated; and (ii) open to— (A) a suitably sized court, or space open to the sky; or (B) an open verandah, carport, or the like; or (C) an adjoining room in accordance with F4.7.	Natural ventilation is provided throughout the residential levels due to the direct access to glazed openings to each of the rooms. This is considered that the openings will provide 5% of the floor area in accordance with this clause. Confirmation will need to be sought by the Architect to confirm that the windows are suitable in accordance with this clause when considering the openable portion of the windows.	CRA – Refer Annexure F
F4.7: Ventilation borrowed from adjoining room	Ventilation may be 'borrowed' from adjoining rooms in some instances in accordance with this clause.	Due to the direct natural ventilation provided throughout, it is considered that ventilation would not need to be borrowed in accordance with this Clause. The kitchen, living and dining room are considered to be a single room and would not require borrowing ventilation throughout.	CRA – Refer Annexure F
F4.8: Restriction on position of water closets and urinals	Sanitary compartments must not open directly into a – > kitchen or pantry > public dining room or restaurant > dormitory in a Class 3 building	Within the sole occupancy units, it is noted that the sanitary compartments are provided in a suitable location in accordance with this clause.	Complies

Section F: Health and Amenity			
	> 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.		
F4.9: Airlocks	N/A	It is considered that compliance is maintained with F4.8	Noted
F4.11: Carparks	Every storey of a carpark (except an open deck carpark) must have: > 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.	The carpark will need to be provided mechanical or natural ventilation in accordance with this clause	CRA – Refer Annexure F
F4.12: Kitchen local exhaust ventilation	N/A	There are no commercial kitchens provided.	N/A
Part F5 – Sound Transmission and Insulation			
F5.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
F5.1: Application of Part	Informational– The Deemed-to-Satisfy Provisions of this Part apply to Class 2 and 3 buildings and Class 9c buildings.	This part is applicable to the Class 2 portion of the building	Noted
F5.2: Determination of airborne sound insulation ratings	A form of construction required to have an airborne sound insulation rating must— (a) have the required value for weighted sound reduction index (R_w) or weighted sound reduction index with spectrum adaptation term (R_w + Ctr)	Construction in accordance with this clause must be applied to comply.	CRA – Refer Annexure F

Section F: Health and Amenity				
		determined in accordance with AS/NZS ISO 717.1 using results from laboratory measurements; or (b) comply with Specification F5.2.		
F5.3:	Determination of impact sound insulation ratings	(a) A floor in a building required to have an impact sound insulation rating must— (i) have the required value for weighted normalised impact sound pressure level with spectrum adaptation term ($L_{n,w}$ + CI) 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 (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.	Construction in accordance with this clause must be applied to comply.	CRA – Refer Annexure F
F5.4:	Sound insulation rating of floors	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: > SOU's; or > An SOU from a plant room, lift shaft, public corridor, public lobby or parts of a different classification.	The floors of the Class 2 part are required to be in accordance with this clause.	CRA – Refer Annexure F

Section F: Health and Amenity				
F5.5:	Sound insulation rating of walls	(a) A wall in a Class 2 building must: (i) have an $R_w + C_{tr}$ (airborne) not less than 50 if it separates *sole-occupancy units*; 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 lobby or the like, or parts of a different classification; and (iii) be of discontinuous construction in accordance with F5.3(b) if it separates: (A) a bathroom, sanitary compartment, laundry or kitchen in one *sole-occupancy unit* from a habitable room (other than a kitchen) in an adjoining unit; or (B) a *sole-occupancy unit* from a plant room or lift shaft. (b) Where a wall required to have sound insulation has a floor above, the wall must continue to: (i) the underside of the floor above; or (ii) a ceiling that provides the sound insulation required for the wall. (c) Where a wall required to have sound insulation has a roof above, the wall must continue to: (i) the underside of the roof above; or (ii) a ceiling that provides the sound insulation required for the wall. (d) Doorways in walls separating the Class 2 *sole-occupancy units* 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.	The walls of the Class 2 part are required to be in accordance with this clause.	CRA – Refer Annexure F

Section F: Health and Amenity				
F5.6:	Sound insulation rating of services	(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 *sole-occupancy unit*, the duct or pipe must be separated from the rooms of any sole occupancy unit by construction with an $R_w + C_{tr}$ (airborne) not less than— (i) 40 if the adjacent room is a habitable room (other than a kitchen); or (ii) 25 if the adjacent room is a kitchen or non-habitable room. (b) If a storm water pipe passes through a *sole-occupancy unit* it must be separated in accordance with (a)(i) and (ii).	The sound insulation of services within the Class 2 part are required to be in accordance with this clause.	CRA – Refer Annexure F
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.	The sound insulation of pumps within the Class 2 part are required to be in accordance with this clause.	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	Noted
Specification F5.5 – Impact Sound – Test of Equivalence				
1.	Scope	Noted	Noted	-
2. Tested	Construction to be	Information only	Noted	Noted
3.	Method	Information only	Noted	Noted

Section F: Health and Amenity				
Part F6 – Condensation Management				
F6.0:	Deemed-to-satisfy provisions	Informational	Noted	Noted
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.	Pliable building membrane is required to be provided to the Class 2 portion in accordance with this clause.	CRA – Refer Annexure F
F6.3:	Flow rate and discharge of exhaust systems	(a) An exhaust system installed in a kitchen, bathroom, sanitary compartment or laundry must have a minimum flow rate of— (i) 25 L/s for a bathroom or sanitary compartment; and (ii) 40 L/s for a kitchen or laundry. (b) Exhaust from a kitchen must be discharged directly or via a shaft or duct to outdoor air. (c) Exhaust from a bathroom, sanitary compartment, or laundry must be discharged— (i) directly or via a shaft or duct to outdoor air; or (ii) to a roof space that is ventilated in accordance with F6.4	The exhausts provided within the Class 2 portion of the building must be in accordance with this clause.	CRA – Refer Annexure F
F6.4:	Ventilation of roof spaces	(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. (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 22º, or 1/150 of	Any exhaust ventilation into the roof space must be in accordance with this clause.	CRA – Refer Annexure F

Section F: Health and Amenity			
	the respective ceiling area if the roof pitch is less than or equal to 22º. (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 vertically, with the remaining required area provided by eave vents.		

Section G: Ancillary Provisions			
Part G1 – Minor Structures and Components			
G1.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
NSW G1.101: Provision for cleaning windows	A safe manner for cleaning of windows located 3 or more storeys above ground level must be provided, and compliance is achieved where: > the windows can be cleaned wholly from within the building; or > via a method complying with the Work Health and Safety Act 2011 and regulations made under that Act.	Provisions for cleaning must be provided in accordance with this Clause.	CRA – Refer Annexure F
Part G3 – Atrium Construction			
G3.1: Atriums Affected by the Part	This Part does not apply to an atrium which— (a) connects only 2 storeys; or (b) connects only 3 storeys if— (i) each storey is provided with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5 throughout; and	It is considered that there are voids provided but these are not connecting more than 2 storeys.	N/A

Section G: Ancillary Provisions			
	(ii) one of those storeys is situated at a level at which there is direct egress to a road or open space.		

Section I: Maintenance
Part I1 – Equipment and Safety Installations
This Part has been deleted in BCA2019.

Section J: Energy Efficiency
Part J1 – Building Fabric

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.

Designated bushfire prone area

Designated bushfire prone area means land which has been designated under a power of legislation as being subject, or likely to be subject, to bushfires.

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

Fire wall

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

Flammability index

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

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 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.
6. Vertical separation will be provided to the new openings in the external walls in accordance with Clause C2.6 of BCA2019. It is noted that no spandrel separation is required in the stairway or to a void.
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. Any main switch room sustaining emergency equipment required to operate in emergency mode, will be separated from the remaining building with construction having an FRL 120/120/120 and provided with self-closing -/120/130 fire doors in accordance with Clause C2.13 of BCA2019.
11. The public corridors will be divided into intervals of not more than 40m in length with smoke proof walls in accordance with Clause C2.14, and Clause 2 of Specification C2.5 of BCA2019.
12. Doors in a fire-isolated exit will be self-closing or automatic closing fire doors with an FRL of not less than -/60/30 in accordance with Clause C3.8 of BCA2019.
13. Fire-isolated stairways will not be penetrated by services other than those permitted by Clause C3.9 of BCA2019.
14. 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.
15. 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.
16. The lift doors will be --/60/- fire doors complying with AS 1735.11:1986 in accordance Clause C3.10 of BCA2019.
17. Doorways and other opening in internal walls required to have an FRL will be protected in accordance with Clause C3.11 of BCA2019.

18. 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.
19. 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.
20. 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.
21. The top and bottom of the riser shafts will achieve an FRL not less than the FRL required for the walls of the shaft in accordance with Clause 2.7 of Specification C1.1 of BCA2019.
22. Fire doors will comply with AS 1905.1:2015 and Specification C3.4 of BCA2019.
23. The required exits will be fire-isolated in accordance with Clause D1.3 of BCA2019.
24. Travel distances to exits will be in accordance with Clause D1.4 of BCA2019.
25. 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 60m, in accordance with Clause D1.5 of BCA2019.
26. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D1.6 of BCA2019.
27. The fire-isolated exits will be in accordance with Clause D1.7 of BCA2019.
28. Smoke separation will be provided between the exit stairs at the level of discharge in accordance with Clause D1.9 of BCA2019.
29. Discharge from exits will be in accordance with Clause D1.10 of BCA2019.
30. The ladder from the plant, lift machine rooms, and electricity network substation in lieu of a stairway will be in accordance with Clause D1.16 of BCA2019.
31. Access to the lift pit will be in accordance with Clause D1.17 of BCA2019.
32. The stairway or ramp within the fire-isolated shaft is to be non-combustible, and if there is a local failure not cause structural damage or impair the fire resistance of the shaft, in accordance with Clause D2.2 of BCA2019.
33. The non-fire isolated stairs will be constructed in accordance with Clause D2.3 of BCA2019.
34. 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.
35. 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.
36. The fire-isolated passageway will be in accordance with Clause D2.11 of BCA2019.
37. The roof of the building where the exit discharges will have an FRL of 120/120/120, and will not have roof lights or openings within 3m of the path of travel in accordance with Clause D2.12 of BCA2019.

38. 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.
39. 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.
40. The handrails and balustrades to all stairs and throughout the building will be in accordance with Clause D2.16, and D2.17 of BCA2019.
41. 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.
42. The doorways and doors will be in accordance with Clause D2.19 and D2.20 of BCA2019.
43. Door latching mechanisms will be in accordance with Clause D2.21 of BCA2019
44. Signage will be provided on fire and smoke doors in accordance with Clause D2.23 of BCA2019.
45. The openable portion of a window in a bedroom 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.
46. Fire precautions whilst the building is under construction fire precautions will be in accordance with Clause E1.9 of BCA2019.
47. Non-illuminated exit signage will be installed in accordance with Clause E4.7, and of BCA2019.
48. External above ground waterproofing membranes will comply with Clause F1.4 of BCA2019 and AS 4654 Parts 1 & 2:2012.
49. The new roof covering will be in accordance with Clause F1.5 of BCA2019.
50. Any sarking proposed will be installed in accordance with Clause F1.6 of BCA2019.
51. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F1.7 of BCA2019 and AS 3740:2010.
52. Damp proofing of the proposed structure will be carried out in accordance with Clause F1.9 and F1.10 of BCA2019.
53. Floor wastes will be installed to bathrooms and laundries above sole occupancy units or public space in accordance with Clause F1.11 of BCA2019.
54. 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.
55. Sanitary facilities will be provided in the building in accordance with Clause F2.1 and Table F2.1 of BCA2019.
56. The construction of the sanitary facilities will be in accordance with Clause F2.5 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 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.
66. 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.
67. Building Fabric and Thermal Construction will be in accordance with Part J1 of BCA2019.
68. Glazing will be in accordance with Part J1 of BCA2019.
69. Building sealing will be in accordance with Part J3 of BCA2019.
70. Facilities for Energy Monitoring will be provided in accordance with Clause J8.3 of BCA2019.

Electrical Services Design Certification:

71. A smoke detection and alarm system will be installed throughout the building in accordance with Table E2.2a, and Specification E2.2a of BCA2019.
72. Emergency lighting will be installed throughout the development in accordance with Clause E4.2, E4.4 of BCA2019 and AS/NZS 2293.1:2018.
73. Exit signage will be installed in accordance with Clause E4.5, E4.7, and E4.8 of BCA2019 and AS/NZS 2293.1:2018.
74. Artificial lighting will be installed throughout the development in accordance Clause F4.4 of BCA2019 and AS/NZS 1680.0:2009.
75. Lighting power and controls will be installed in accordance with Part J6 of BCA2019.
76. 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:

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

82. 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:

83. 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.
84. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F4.5 of BCA2019 and AS 1668.2:2012.
85. 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.
86. 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.
87. 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.
88. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J5 of BCA2019
89. Rigid and flexible ductwork will comply with the fire hazard properties set out in AS 4254 Parts 1 and 2.

Structural Engineers Design Certification:

90. 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:
    a. Dead and Live Loads – AS/NZS 1170.1:2002
    b. Wind Loads – AS/NZS 1170.2:2011
    c. Earthquake actions – AS 1170.4:2007
    d. Masonry – AS 3700:2018
    e. Concrete Construction – AS 3600:2018
    f. Steel Construction AS 4100:1998
    g. Aluminium Construction – AS/NZS 1664.1 or 2:1997
    h. Timber Construction – AS 1720.1:2010
    i. ABCB Standard for Construction of Buildings in Flood Hazard Areas.
91. 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.
92. The lift shaft will have an FRL in accordance with Clause C2.10 and Specification C1.1 of BCA2019.
93. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2019.
94. The construction joints to the structure will be in accordance with Clause C3.16 of BCA2019 to reinstate the FRL of the element concerned.
95. Upon completion of the works, a structural engineer will be able to certify that local failure will be in accordance with Clause D2.2 of BCA2019 for the fire isolated stairs.

Lift Services Design Certification:

96. 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.
97. 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.
98. A fire service recall control switch is to be installed on a landing at a location nominated by the appropriate authority in accordance with Clause E3.9.
99. A lift car fire service drive control switch is to be installed within the lift car in accordance with Clause E3.10.
100. 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.
101. 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.
102. The lifts will comply with AS 1735.12:1999 in accordance with Clause E3.6 of BCA2019.
103. All electric passenger lifts and electrohydraulic passenger lifts shall comply with Specification E3.1 of BCA2019.

Acoustic Services Design Certification:

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