BCA LOGIC

Building Regulation, BCA,
Fire, Access and Energy Consultants

To:	Croatia 88 Pty Ltd C/- mosca pserras architects pty ltd
Project:	190 Croatia Ave, Edmondson Park
Report:	BCA Assessment Report
Reference No:	108844-BCA-r2
Date:	06 December 2017
Client Contact:	Greg Koutoulas
Email:	greg@moscapserras.com.au
From:	Alex Newberry
Direct:	02 8484 4092
Email:	anewberry@bcalogic.com.au

DOCUMENT CONTROL

Revision	Date				
108844-BCA-r1	24.11.17	Description:	Preliminary BCA Assessment Report		
			Prepared By	Checked By	Approved By
		Name:	Alex Newberry Senior Building Regulations Consultant	Alex Newberry Senior Building Regulations Consultant	Alex Newberry Senior Building Regulations Consultant
		Signature:			
108844-BCA-r2	06.12.17	Description:	BCA Assessment Report – DA Submission		
			Prepared by	Checked by	Approved by
		Name:	Alex Newberry Senior Building Regulations Consultant	Alex Newberry Senior Building Regulations Consultant	Alex Newberry Senior Building Regulations Consultant
		Signature:			

Table of Contents

1 BASIS OF ASSESSMENT

1.1 Location and Description

The building development, the subject of this report, is located at 190 Croatia Avenue, Edmondson Park. The site will be proposed with an additional road (Costello Lane) through the site to create two separate sites. Building A&B are on one site and Building C is on a separate site separated by Costello Lane.

Building A&B are connected by a common basement with two levels of basement carparking and each building has 6 levels of residential sole-occupancy units (SOU's).

Building C is a separate building with two levels of basement carparking and 6 levels of residential sole-occupancy units (SOU's).

1.2 Purpose

The purpose of this report is to assess the current design proposal against the Deemed-to-Satisfy Provisions of BCA 2016, 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 2016. 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, 2016 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), (Note: The provision of disabled access to the subject development has been assessed against the deemed to satisfy provision of Part D.3 and F2.4 of BCA2016 only);

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

(d) Work Healthy and Safety Act 2011;

(e) 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

(f) 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)

Building A&B has a rise in storeys of six (6).

Building C has a rise in storeys of six (6).

2.2 Classification (Clause A3.2)

The building has been classified as follows.

Table 1. Building Classification

Class	Level	Description
7a	Basement 1&2 – Building A, B & C	Carparking
2	Ground to Level 5	Residential SOU's

Building C: No storage cages proposed on Basement 2. Basement 1 waste storage room is less than 10% of the total floor area of the storey, therefore the whole storey is Class 7a.

Building A&B: Residential storage cages – will be design to be less than 10% of the floor area, therefore the whole storey is Class 7a.

Building A&B: Ground Floor – Garbage storage rooms are less than 10% of the total floor area of the storey, therefore the whole storey is Class 2.

2.3 Effective Height (clause A1.1)

Building A&B: The building has an effective height of less than 25 metres and more than 12 metres. Measured from Level 5 RL67.50 to Basement 1 RL47.40 =20.10m.

Building C: The building has an effective height of less than 25 metres and more than 12 metres. Measured from Level 5 RL68.50 to Basement 1 RL48.90 = 19.60m.

The BCA2016 definition is as follows:

"*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).*"

2.4 Type of Construction Required (Table C1.1)

The buildings are 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 (Building C)	Maximum Floor Area	5,000m^2
	Maximum Volume	30,000m^3
Class 7a (Building A/B)	The carpark is to be sprinkler protected 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:

Building A&B:

- Basement carpark levels form one fire compartment.
- Each residential level forms a separate fire compartment

Building C:

- Each Basement carpark level forms one fire compartment. They are separated by fire walls and a fire shutter on Basement 2.
- Each residential level forms a separate fire compartment

2.7 Exits

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

Building A&B:

- Basement storeys are served by four (4) fire-isolated stairs.
- Ground Floor: Each SOU has access to two fire-isolated exits.
- Level 1-4: Each SOU has access to two fire-isolated stairs.
- Level 5: Each SOU has access to two fire-isolated stairs.

Building C:

- Basement storeys are served by two (2) fire-isolated stairs.
- Ground Floor: Each SOU has access to two fire-isolated exits.
- Level 1-4: Each SOU has access to two fire-isolated stairs
- Level 5: Each SOU has access to two fire-isolated stairs

2.8 Climate Zone (Clause A1.1)

The building is located within Climate Zone 6.

2.9 Location of Fire-source features

The fire source features for the subject development are:

North: The allotment boundary for Building A & C.

South: The far boundary of the adjoining road

East: The far boundary of the adjoining road

West: The far boundary of the adjoining road

A fire-source feature is defined in Section A1.1 of the BCA as–

(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.

(d)

3 ESSENTIAL FIRE SAFETY MEASURES

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

Table 2. 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)	**BCA2016 C3.13** (Openings in Shafts)
2.	Construction Joints	**BCA2016 C1.1, Spec C1.1** **BCA2016 C3.16** AS1530.4:2014 & AS4072.1-2005
3.	Fire doors	**BCA2016 C2.13** (Electricity Supply Systems) **BCA2016 C3.4** (Methods of Protection) **BCA2016 C3.5** (Doors in Fire Walls) **BCA2016 C3.8** (Openings in Fire Isolated Exits) **BCA2016 C3.11** (Bounding Construction) Spec C3.4, AS1905.1: 2015
4.	Fire seals protecting openings in fire resisting components of the building	**BCA2016 C3.15,** **BCA2016 C3.16,** **BCA2016 Spec C3.15** AS1530.4:2014 & AS4072.1-2005
5.	Fire shutters	**BCA2016 C3.5 & Spec. C3.4** AS1905.2-2005
6.	Fire windows • Fixed Internal wall-wetting sprinklers	**BCA2016 D1.8** (External Stairways or Ramps in Lieu of Fire-Isolated Exits) **BCA2016 Spec. C3.4**
7.	Smoke Walls	**BCA2016 C2.14** (Public Corridors Class 2)
8.	Smoke doors • Smoke Seals	**BCA2016 C2.14** (Public Corridors Class 2) Clause 2 of Spec C2.5

Item	Essential Fire and Other Safety Measures	Standard of Performance
9.	Portable fire extinguishers	**BCA2016 E1.6** AS2444–2001
General - Egress		
10.	Path of travel for stairways, passageway and ramps	EP&A Reg. 2000 Clauses 184-186
11.	Swing of Exit Doors	**D2.20** (Swinging Doors)
12.	Warning & operational signs	**BCA2016 D2.23** (Signs on Fire Doors) **BCA2016 D3.6** (Braille Exit Signs) (Note: E4.5 (Exit Signs)) **BCA2016 E3.3** (Lift Signs),
Lifts		
13.	Stretcher Lifts including • Fire Service Controls • Recall Operation • Drive control switch	**BCA2016 E3.2** **BCA2016 E3.7** (Fire Service Controls) **BCA2016 E3.9** (Fire Service Recall Operation Switch) **BCA2016 E3.10** (Lift Car Fire Service drive control switch) **BCA2016 Spec E3.1** AS1735.11-1986 (Fire rated landing doors)
Electrical Services		
14.	Automatic fire detection & alarm:	**BCA2016 E2.2**, **NSW Table E2.2a, Spec E2.2a** AS3786:2014 (Amdt 1-4) AS1670.1:2015
15.	Emergency lighting	**BCA2016 E4.2, E4.4** AS/NZS 2293.1 –2005
16.	Exit signs	**BCA2016 E4.5** (Exit Signs) **BCA2016 E4.6** (Direction Signs) **BCA2016 E4.8** (Design and Operation - Exits) AS 2293.1 –2005
17.	System Monitoring – Sprinkler System	**BCA2016 E1.5 Spec E1.5** AS1670.3-2004
Hydraulic Services		

Item	Essential Fire and Other Safety Measures	Standard of Performance
18.	Automatic fire suppression systems • General Sprinklers Building A&B Basement carpark	**BCA2016 E1.5, Spec E1.5** AS2118.1–1999 (Sprinklers)
19.	Fire hydrant systems • NSW Storz Couplings	**BCA2016 E1.3** **BCA2016 C2.12 (Separation of Equipment)** AS2419.1–2005 FRNSW Technical Sheet D15/45534.V6 issued 11.04.17, 'Compatible Hose Connections'
20.	Hose reel systems (carpark only)	**BCA2016 E1.4** AS2441–2005
Mechanical Services		
21.	Mechanical air handling systems 1. Mechanical ventilation to carpark.	**BCA2016 E2.2, Table E2.2a,** AS/NZS 1668.1:2015 **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/NZS 1668.1; 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; 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.

Item	Essential Fire and Other Safety Measures	Standard of Performance
Miscellaneous air-handling systems covered by Sections 5 and 6 of AS/NZS 1668.1 serving more than one fire compartment (other than a carpark ventilation system) and not forming part of a smoke hazard management system must comply with that Section of the Standard.		
22.	**Performance Solution** *Fire Engineering Report prepared at CC stage.	

4 FIRE RESISTANCE LEVELS

The following fire resistance levels (FRL's) are required for the various structural elements of the building, 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 3. Type A Construction

Item	Class 2	Class 7a
Loadbearing External Walls (including columns and other building elements incorporated therein)	90/90/90	120/120/120
• Less than 1.5m to a fire source feature	90/60/60	120/90/90
• 1.5 – less than 3m from a fire source feature;	90/60/30	120/60/30
• 3m or more from a fire source feature		
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:	90/90/90 -/60/60	120/-/- -/-/-

Item	Class 2	Class 7a
• Loadbearing • Non-loadbearing		
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]	-	120/120/120

N.B. [1] The roof need not comply with any FRL's due to being Class 2 building.

The roof of the basement carpark is required to have FRL not less than 120/120/120 under D2.12 as roof as open space.

5 MATTERS FOR FURTHER CONSIDERATION

5.1 General

Assessment of the Architectural design documentation against the Deemed-to Satisfy Provisions of the Building Code of Australia, 2016 (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 B 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 B 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.

5.2 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.

5.3 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 Fire Safety Engineering Report to be prepared for this development under separate cover:

Table 4. Performance Solutions

Item	Description of Performance Solution	DTS Provision
1.	Building C: Basement 2 - Fire shutter to be addressed as a Performance Solution as it will only achieve FRL -/120/- in lieu of 30 minute insulation rating.	C3.5

ANNEXURE A - DESIGN DOCUMENTATION

This report has been based on the following design documentation.

Table 5. Architectural Plans

Architectural Plans Prepared by MPA			
Drawing Number	**Revision**	**Date**	**Title**
AP04	A	01/12/2017	SITE PLAN
AP05	A	01/12/2017	BASEMENT 2
AP06	A	01/12/2017	BASEMENT 1
AP07	A	01/12/2017	GROUND FLOOR
AP08	A	01/12/2017	LEVELS 1-3
AP09	A	01/12/2017	LEVEL 4
AP10	A	01/12/2017	LEVEL 5
AP11	A	01/12/2017	ROOF PLAN
AP12	A	01/12/2017	ELEVATIONS
AP13	A	01/12/2017	ELEVATIONS
AP14	A	01/12/2017	ELEVATIONS
AP15	A	01/12/2017	SECTIONS

ANNEXURE B - DETAILED BCA 2016 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	'COMPLIANCE READILY ACHIEVABLE'. It is considered that there was not enough information included in the documentation to accurately determine strict compliance with the individual clause requirements. However, subject to noting the requirements of each clause, compliance can be readily achieved.
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	Comment	Status
SECTION B: STRUCTURE		
PART B1 – STRUCTURAL PROVISIONS		
B1.0: Deemed-to-Satisfy Provisions	Informational	Noted
B1.1: Resistance to actions	The resistance of the building must be greater than the most critical action effect resulting from different combinations of actions, where the most critical action has been determined in accordance with this Part – Structural Engineer to certify at CC stage.	CRA – Refer Annexure C
B1.2: Determination of individual actions	The magnitude of actions must be determined in accordance with this Clause – Structural Engineer to certify at CC stage.	CRA – Refer Annexure C
B1.4: Determination of structural resistance of materials and forms of construction	The structural resistance of materials and forms of construction must be determined in accordance with this Clause – Structural Engineer, Architect and Manufacturers to certify at CC stage.	CRA – Refer Annexure C
B1.5 Structural software	Structural software used in computer aided design of a building or structure within the geometrical limits of (b) of this Clause must comply with the ABCB Protocol for Structural Software. Structural Engineer to certify.	CRA – Refer Annexure C
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.	FI
SECTION C: FIRE RESISTANCE		
PART C1 – FIRE RESISTANCE AND STABILITY		
C1.0: Deemed-to-Satisfy Provisions	Informational	Noted
C1.1: Type of construction required	The buildings are required to be of Type A Construction. Refer to Specification C1.1 requirements at the end of this Section.	CRA – Refer Annexure C
C1.2: Calculation of rise in storeys	Each building has a rise in storeys of six (6).	Noted
C1.3: Buildings of multiple classification	Informational	Noted
C1.4: Mixed Types of construction	Not applicable	N/A
C1.8: Lightweight construction	Lightweight construction used in a fire-rated application is to comply with Specification C1.8.	CRA – Refer Annexure C
C1.10: Fire hazard properties	Fire hazard properties of building materials must comply with C1.10 of the BCA and Specification C1.10, including floor, wall and ceiling linings, air-handling ductwork, lift	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		
	cars, insulation, sarking-type materials and attachments, or be considered non-combustible.	
C1.12: Non-combustible materials	The following materials, though *combustible* or containing *combustible* fibres, may be used wherever a *non-combustible* material is *required*: (a) Plasterboard. (b) Perforated gypsum lath with a normal paper finish. (c) Fibrous-plaster sheet. (d) Fibre-reinforced cement sheeting. (e) 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. (f) Bonded laminated materials where— (i) each laminate is *non-combustible*; and (ii) each adhesive layer does not exceed 1 mm in thickness; and (iii) the total thickness of the adhesive layers does not exceed 2 mm; and (iv) the *Spread-of-Flame Index* and the *Smoke-Developed Index* of the laminated material as a whole does not exceed 0 and 3 respectively.	Noted
PART C2 – COMPARTMENT AND SEPARATION		
C2.0: Deemed-to-Satisfy Provisions	Informational	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.	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.	Complies
C2.6: Vertical separation of openings in external walls	Where the vertical projection of an opening in an external wall falls no further than 450 mm outside an opening in the storey next below, the openings must be provided with vertical separation complying with Clause C2.6, that is: • They must be protected with a 900mm high (FRL 60/60/60) spandrel extending at least 600mm above the separating slab, or • They must be provided with a 1.1m horizontal projection (FRL 60/60/60) also extending at least 450mm either side of the openings. Compliance can be readily achieved at detailed design stage for CC documentation.	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		
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. Building C: Basement 2 fire walls will be 120/120/120 and will separate the storey from the vehicular ramp including a fire shutter to create a separate fire compartment on each basement storey.	CRA – Refer Annexure C
C2.8: Separation of classifications in the same storey	Not applicable	N/A
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.	CRA – Refer Annexure C
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.	CRA – Refer Annexure C
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.	Complies
C2.12: Separation of equipment	Any of the following equipment located in the building must be separated from the remainder of the building: • lift motors and lift control panels; or • emergency generators used to sustain emergency equipment operating in the emergency mode; or • central smoke control plant; or	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		
	• boilers; or • a battery or batteries installed in the building that have a voltage exceeding 24 volts and a capacity exceeding 10 ampere hours. Equipment need not be separated in if the equipment comprises: • smoke control exhaust fans located in the air stream which are constructed for high temperature operation in accordance with Specification E2.2b; or • stair pressurizing equipment installed in compliance with the relevant provisions of AS/NZS 1668.1; or • a lift installation without a machine room; or • equipment otherwise adequately separated from the remainder of the building. Separation must be by construction having an FRL as required by Specification C1.1, but not less than FRL 120/120/120 with openings protected by self-closing fire doors having an FRL of not less than –/120/30. Separation of on-site fire pumps must comply with the requirements of AS 2419.1-2005.	
C2.13: Electricity supply system	• Any electrical substation located within the building must be separated from the remainder of the building by construction having an FRL of not less than 120/120/120, and doorways protected with self-closing fire doors having an FRL of not less than –/120/30. • A main switchboard which sustains emergency equipment operating in the emergency mode must be fire separated from any other part of the building by construction having an FRL of not less than 120/120/120 and have the doorway fitted with self-closing fire door having an FRL of not less than –/120/30. • Any electrical conductors located within the building that supply a substation or main switchboard for emergency equipment must comply with BCA clause C2.13. • Emergency equipment switchgear must be separated from non-emergency equipment switchgear by metal partitions designed to minimize the spread of a fault from the non-emergency equipment switchgear. Emergency equipment includes but is not limited to the following: – fire hydrant booster pumps; – sprinkler pumps;	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		
	– hose reel pumps; – air-handling systems designed to exhaust and control the spread of smoke; – emergency lifts; – control and indicating equipment; and – sound systems and intercom systems for emergency purposes.	
C2.14: Public corridors in Class 2 and 3 Buildings	Public corridors in Class 2 parts that exceed 40 m in length must be divided at intervals of not more than 40m with smoke-proof walls complying with Clause 2 of Specification C2.5. The following assessment is provided: • Ground Floor: The public corridor is enclosed and is over 40m in length in Building B. Smoke wall and smoke doors provided. • Level 1-5: The public corridors are not enclosed as they are provided with breezeways. They do not fit the definition of a public corridor as they are not fully enclosed throughout. Therefore this clause is not applicable to upper levels.	CRA – Refer Annexure C
PART C3 – PROTECTION OF OPENINGS		
C3.0: Deemed-to-Satisfy Provisions	Informational	Noted
C3.1: Application of Part	(a) The Deemed-to-Satisfy Provisions of this Part do not apply to– (i) Control joints, weep holes and the like in external walls of masonry construction and joints between panels in external walls of pre-cast concrete panel construction if, in all cases they are not larger than necessary for the purpose; and (ii) Non-combustible ventilators for subfloor or cavity ventilation, if each does not exceed 45 000 mm^2 in face area and is spaced not less than 2 m from any other ventilator in the same wall; and (iii) Openings in the vertical plane formed between building elements at the construction edge or perimeter of a balcony or verandah, colonnade, terrace, or the like; and (iv) In a carpark– (A) Service penetrations through; and (B) Openings formed by a vehicle ramp in, A floor other than a floor that separates a part not used as a carpark, providing	Noted

SECTION C: FIRE RESISTANCE		
	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 (including 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	Openings are more than 3m or 6m away from the fire source feature.	N/A
C3.4: Acceptable methods of protection	Where protection is required, openings must be protected as follows: <u>Doorways:</u> (i) Internal or external wall-wetting sprinklers as appropriate used with doors that are self-closing; or (ii) –/60/30 fire doors that are self-closing. Fire doors, fire windows and fire shutters must comply with BCA Specification C3.4.	CRA – Refer Annexure C
C3.5: Doorways in fire walls	Doorways or fire shutters in the fire walls must be protected by a self-closing fire door that achieves an FRL of not less than that required by Specification C1.1 for the fire wall except that each door must have an insulation level of at least 30. Building C: Basement 2 - Fire shutter to be addressed as a Performance Solution as it will only achieve FRL -/120/- in lieu of 30 minute insulation rating.	**PS – Refer Part 5.3 of Report**
C3.8: Openings in fire-isolated exits	Doorways that open to fire-isolated stairways, fire-isolated passageways or fire-isolated ramps, and are not doorways opening to a road or open space, must be protected by –/60/30 fire doors that are self-closing, or automatic-closing in accordance with (ii) and (iii) of Clause C3.8.	CRA – Refer Annexure C
C3.9: Service penetrations in fire-isolated exits	The fire isolated exits are not to be penetrated by any services **other** than: • electrical wiring associated with:	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		
	– a lighting, detection, or pressurization system serving the exit; or – a security, surveillance or management system serving the exit; or – an intercommunication system or an audible or visual alarm system in accordance with D2.22; or – the monitoring of hydrant or sprinkler isolating valves. • ducting associated with a pressurisation system if it; (i) is constructed of material having an FRL of not less than –/120/60 where it passes through any other part of the building; and (ii) does not open into any other part of the building; or • water supply pipes for fire services.	
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 mm^2 in area.	CRA – Refer Annexure C
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.	CRA – Refer Annexure C
C3.12: Openings in floors and ceilings for services	Where services pass through a floor which is required to achieve an FRL or a ceiling required to have a resistance to the incipient spread of fire, the service must be enclosed within a fire resisting shaft or fire protected in accordance with Clause C3.15.	CRA – Refer Annexure C
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.	CRA – Refer Annexure C
C3.15: Openings for service installations	Where services pass through an element which is required to achieve an FRL (other than an external wall	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		
	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.	
C3.16: Construction joints	Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation must be protected in a manner identical with a prototype tested in accordance with AS 1530.4 to achieve the required FRL.	CRA – Refer Annexure C
C3.17: Columns protected with lightweight construction to achieve an FRL	A column protected by lightweight construction to achieve an FRL which passes through a building element that is required to have an FRL or a resistance to the incipient spread of fire, must be installed using a method and materials identical with a prototype assembly of the construction which has achieved the required FRL or resistance to the incipient spread of fire.	CRA – Refer Annexure C
SPECIFICATION C.1.1 – FIRE-RESISTING CONSTRUCTION		
2.0: General Requirements	Informational	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.	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.	CRA – Refer Annexure C
2.3: Lintels	A lintel must have the FRL required for the part of the building in which it is situated unless it does not contribute to the support of a fire door, fire window or fire shutter and meets the requirements of Spec C1.1 clause 2.3 (a) & (b).	CRA – Refer Annexure C
2.4: Attachments not to impair fire-resistance	Where a combustible material is used as a finish or lining to a wall or roof, or sunscreen, or awning, to a building element required to have an FRL– • the material must be exempted under C1.10 or comply with the fire hazard properties prescribed under C1.10; and • the material must not be located near or directly above a required exit so as to make the exit unusable in a fire; and	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE			
		• the material must not otherwise constitute an undue risk of fire spread via the façade of the building or compromise egress from the building. Note: The above includes any aluminium panels which, where containing plastic strengthening elements, would be considered combustible. Where aluminium composite panels are proposed as an attachment to a fire rated element, the panels and their location must comply with the above. Details, including fire hazard properties of the panels are to be provided for review. It is likely that Aluminium Composite Panels if used will need to be the subject of an Alternate Solution Report.	
2.5:	General concessions	Structures on roofs — A non-combustible structure situated on a roof need not comply with the other provisions of this Specification if it only contains— (i) lift motor equipment; or (ii) one or more of the following: (A) Hot water or other water tanks. (B) Ventilating ductwork, ventilating fans and their motors. (C) Air-conditioning chillers. (D) Window cleaning equipment. (E) Other service units that are non-combustible and do not contain flammable or combustible liquids or gases.	CRA – Refer Annexure C
2.7:	Enclosure of shafts	Fire-isolated shafts are required to be enclosed at the top and bottom of the shaft with fire rated construction having an FRL required for the walls of a non-load-bearing shaft in the same building, as per specification C1.1. This fire rating is required in two directions. The above does not apply to shafts extending beyond the roof covering, other than fire isolated stair and lift shafts and the bottom of non-combustible shafts laid directly on the ground. Garbage rooms in Basement: The garbage chute which runs through the building discharge into the room. It is very difficult to fire rate the bottom of the garbage chute/shaft therefore the room will be fire rated and act as the bottom of the shaft. The walls require FRL 120/120/120 or -/120/120 and the fire doors -/120/30.	CRA – Refer Annexure C
3.0:	Type A fire-resisting construction	Noted	-
3.1:	Fire-resistance of building elements	• The FRL's of all elements are to be in accordance with the FRL's detailed in the Table contained within Part 4.0 of this report.	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		
	• External walls, common walls and the flooring and floor framing of lift pits must be non-combustible. (Note: insulation and sarking used must be non-combustible) • Internal walls required to be fire rated must extend to– (i) to the underside of the floor next above; or (ii) the underside of a roof complying with Table 3; or (iii) if under Clause 3.5 the roof is not required to comply with Table 3, the underside of the non-combustible roof covering and, except for roof battens with dimensions of 75 mm x 50 mm or less or sarking-type material, must not be crossed by timber or other combustible building elements; or (iv) a ceiling that is immediately below the roof and has a resistance to the incipient spread of fire to the roof space above itself of not less than 60 minutes. • Load bearing internal walls (including those part of a loadbearing shaft) and fire walls must be of concrete or masonry. • Non-loadbearing internal walls required to be fire rated, as well as non-load bearing lift, ventilating, pipe, garbage or similar shaft wall must be of non-combustible construction. **Note:** This includes non-combustible insulation. When an insulation material is not certified as non-combustible, this material will need to be the subject of a Fire Engineering Assessment at the CC stage. • The FRLs specified in Table 3 for an external column apply also to those parts of an internal column that face and are within 1.5m of a window and are exposed through that window to a fire-source feature. • It should also be noted that if Dincel material is to be used as an element where the BCA requires such element to be non-combustible, this material will need to be the subject of a Fire Engineering Assessment at the CC stage	
3.2: Concessions for floors	A floor need not comply with Table 3 if— (a) it is laid directly on the ground;	Noted
3.5: Roof: Concession	A roof need not comply with Table 3 if its covering is non-combustible and the building is of Class 2.	CRA – Refer Annexure C
3.6: Roof lights	None proposed	N/A

SECTION C: FIRE RESISTANCE		
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;	CRA – Refer Annexure C
SPECIFICATION C1.10 – FIRE HAZARD PROPERTIES		
1. Scope	Informational	-
2. Application	Informational	Noted
3. Floor linings and floor coverings	A floor lining or floor covering must have– a) a critical radiant flux not less than that listed in Table 2; and b) in a building not protected by a sprinkler system complying with Specification E1.5, a maximum smoke development rate of 750 percent-minutes; and c) a group number complying with Clause 6(b), for any portion of the floor covering that is continued more than 150 mm up a wall.	CRA – Refer Annexure C
4. Wall and ceiling linings	a) A wall or ceiling lining system must comply with the group number specified in Table 3 and for buildings not fitted with a sprinkler system complying with Specification E1.5 have– (i) a smoke growth rate index not more than 100; or (ii) an average specific extinction area less than 250 m2/kg. b) A group number of a wall or ceiling lining and the smoke growth rate index or average specific extinction area must be determined in accordance with AS 5637.1.	CRA – Refer Annexure C
5. Air-handling ductwork	Rigid and flexible ductwork must comply with the *fire hazard properties* set out in AS 4254 Parts 1 and 2.	CRA – Refer Annexure C
6. Lift cars	Materials used as— a) floor linings and floor coverings must have a *critical radiant flux* not less than 2.2; and b) wall and ceiling linings must be a Group 1 material or a Group 2 material in accordance with AS 5637.1.	CRA – Refer Annexure C
7. Other materials	Materials and assemblies not included in Clauses 3, 4, 5 or 6 must not exceed the indices set out in Table 4.	CRA – Refer Annexure C
SPECIFICATION C3.4 – FIRE DOORS, SMOKE DOORS, FIRE WINDOWS AND SHUTTERS		
1. Scope	Noted	-

SECTION C: FIRE RESISTANCE		
2. Fire doors	Fire doorsets must comply with AS1905.1 and not fail by radiation through any glazed part during the period specified for integrity in the required FRL.	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		
PART D1 – PROVISION FOR ESCAPE		
D1.0: Deemed-to-Satisfy Provisions	Informational	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
D1.2: Number of exits required	**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 **General** Without passing through another sole-occupancy unit, every occupant of a storey or part of a storey must have access to an exit or at least 2 exits, if 2 or more are required.	Complies
D1.3: When fire-isolated stairways and ramps are required	Every exit stairway must be fire-isolated. Residential fire stairs are constructed in accordance with D1.8 whereby external stairways are provided in lieu of traditional fire-isolated stairs.	Complies
D1.4: Exit travel distances	Class 2 residential — • The entrance doorway of each sole-occupancy unit must be not more than – – 6 m from an exit or from a point from which travel in different directions to 2 exits is available; or – 20 m from a single exit serving the storey at the level of egress to a road or open space; and 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. The following assessment is provided: • Building A,B,C: Basement levels are less than 40m to an exit. • Building A,B,C: All SOU's have access to 2 exits and a point of choice within 6m. Common open space has direct egress to the road through the play area.	CRA – Refer Annexure C

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

SECTION D: ACCESS AND EGRESS		
	(iii) a sanitary compartment, airlock or the like. • D1.7 (c) - Where a path of travel from the point of discharge of a fire-isolated exit necessitates passing within 6 m of any part of an external wall of the same building, measured horizontally at right angles to the path of travel, that part of the wall must have— (i) an FRL of not less than 60/60/60; and (ii) any openings protected internally in accordance with C3.4, The following assessment is provided: • All fire stairs discharge to open space with direct egress to the road.	
D1.8: External stairways or ramps in lieu of fire-isolated exits	Residential stairs are constructed in accordance with this clause. They are open external stairs which are protected with walls (60/60/60) and fire doors from the remainder of the building. Further detailed design at CC stage can readily achieve compliance with these provisions. Building B Level 5: Provide the protection around the stair itself with 60/60/60 walls and a fire door into the stair. The walls need to be the same height as the Lift lobby. Some windows between 3m to m from an exit stair will need to be protected in accordance with C3.4.	CRA – Refer Annexure C
D1.9: Travel by non-fire-isolated stairways or ramps	None proposed	N/A
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. All exits discharge direct to the road.	CRA – Refer Annexure C
D1.11: Horizontal exits	None proposed	N/A
D1.12: Non-required stairways, ramps or escalators	None proposed	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	Noted

SECTION D: ACCESS AND EGRESS		
	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: • Basement storeys will have one person / 30m^2	
D1.14: Measurement of distances	Informational – The nearest part of an exit means in the case of— (a) a fire-isolated stairway, fire-isolated passageway, or fire-isolated ramp, the nearest part of the doorway providing access to them; and (b) a non-fire-isolated stairway, the nearest part of the nearest riser; and (c) a non-fire-isolated ramp, the nearest part of the junction of the floor of the ramp and the floor of the storey; and (d) a doorway opening to a road or open space, the nearest part of the doorway; and (e) a horizontal exit, the nearest part of the doorway.	Noted
D1.15: Method of Measurement	Informational	Noted
D1.16: Plant rooms, lift motor rooms and electricity network substations: concession	Informational – (a) A ladder may be used in lieu of a stairway to provide egress from— (i) a plant room with a floor area of not more than 100 m^2; or (ii) all but one point of egress from a plant room, a lift machine room or a Class 8 electricity network substation with a floor area of not more than 200 m^2. (b) A ladder permitted under (a)—	CRA – Refer Annexure C

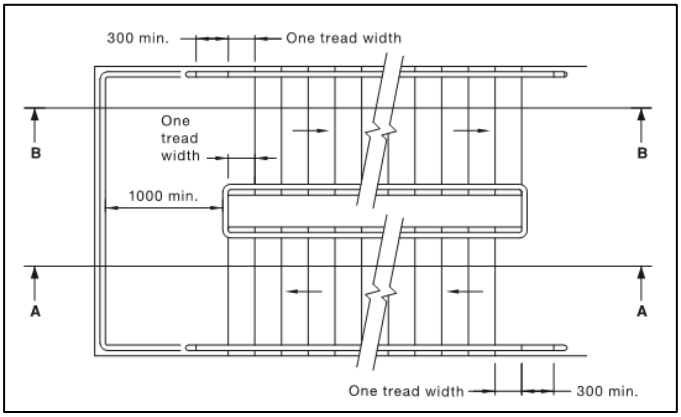
SECTION D: ACCESS AND EGRESS		
	(i) may form part of an exit provided that in the case of a fire-isolated stairway it is contained within the shaft; or (ii) may discharge within a storey in which case it must be considered as forming part of the path of travel; and (iii) for a plant room or a Class 8 electricity network substation, must comply with AS 1657.	
D1.17: Access to lift pits	Access to the lift pit is assumed to be through the bottom landing doors as the pit is assumed to be less than 3m deep.	CRA – Refer Annexure C
PART D2 – CONSTRUCTION OF EXITS		
D2.0: Deemed-to-Satisfy Provisions	Informational	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
D2.2: Fire-isolated stairways and ramps	The fire isolated stairways must be constructed of non-combustible materials and constructed so that if there is local failure it will not cause structural damage to, or impair the fire-resistance of the shaft.	CRA – Refer Annexure C
D2.3: Non-fire-isolated stairways and ramps	None proposed	N/A
D2.4: Separation of rising and descending stair flights	If a stairway serving as an exit is required to be fire-isolated— (a) there must be no direct connection between— (i) a flight rising from a storey below the lowest level of access to a road or open space; and (ii) a flight descending from a storey above that level; and (b) any construction that separates or is common to the rising and descending flights must be (i) non-combustible; and (ii) smoke proof in accordance with Clause 2 of Specification C2.5. CRA – there will be no direct connection between the stairs rising from the basement levels and the stairs from the residential levels. The basement fire stairs will be in a fire rated shaft all the way to discharge point and the D1.8 external stair will be separated from the basement fire stair in accordance with this clause. To be detailed at CC stage.	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		
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 – 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.	CRA – Refer Annexure C
D2.8: Enclosure of space under stairs and ramps	The space under the fire-isolated stairways within the shaft must not be enclosed to form a cupboard or similar enclosed space. The space below a required non fire-isolated stairway (including an external stairway) or non-fire-isolated ramp must not be enclosed to form a cupboard or other enclosed space unless the enclosing walls and ceilings have an FRL of not less than 60/60/60 and the doorway is fitted with a self-closing –/60/30 fire door.	CRA – Refer Annexure C
D2.9: Width of stairways and ramps	Informational	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; 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.	CRA – Refer Annexure C
D2.11: Fire-isolated passageways	None proposed	N/A

SECTION D: ACCESS AND EGRESS		
D2.12: Roof as open space	Roof of basement level 1 to achieve an FRL of 120/120/120 as exits discharge onto it.	CRA – Refer Annexure C
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 250 mm and 355 mm; • 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; • 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. • 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.*	CRA – Refer Annexure C

<table>
<tr><th colspan="3">SECTION D: ACCESS AND EGRESS</th></tr>
<tr><td>D2.14: Landings</td><td>Landings must be not less than 750 mm long and have either a surface with a slip-resistance classification complying with Table D2.14 or a strip at the edge of the landing with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586.
<table>
<tr><th rowspan="2">Application</th><th colspan="2">Surface Condition</th></tr>
<tr><th>Dry</th><th>Wet</th></tr>
<tr><td>Ramp steeper than 1:14</td><td>P4 or R11</td><td>P5 or R12</td></tr>
<tr><td>Ramp steeper than 1:20 but not steeper than 1:14</td><td>P3 or R10</td><td>P4 or R11</td></tr>
<tr><td>Tread or landing surface</td><td>P3 or R10</td><td>P4 or R11</td></tr>
<tr><td>Nosing or landing edge strip</td><td>P3</td><td>P4</td></tr>
</table></td><td>CRA – Refer Annexure C</td></tr>
<tr><td>D2.15: Thresholds</td><td>The threshold of a doorway must not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf unless–
a) in a building required to be accessible, the doorway–
(i) opens to a road or open space; and
(ii) is provided with a threshold ramp or step ramp in accordance with AS 1428.1; or
b) in other cases–
(i) the doorway opens to a road or open space, external stair landing or external balcony; and
(ii) the door sill is not more than 190 mm above the finished surface of the ground, balcony, or the like, to which the doorway opens.</td><td>CRA – Refer Annexure C</td></tr>
<tr><td>D2.16: Barriers to prevent falls</td><td>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</td><td>CRA – Refer Annexure C</td></tr>
</table>

SECTION D: ACCESS AND EGRESS		
	• 1 m in all other locations. <u>Balustrade openings – fire-isolated stairs</u> • maximum openings of 300 mm; or • where rails are used– – a 150 mm sphere must not be able to pass through the opening between the nosing line of the stair treads and the rail or between the rail and the floor of the landing, balcony or the like; and – the opening between rails must not be more than 460 mm <u>Balustrade openings – other than fire-isolated stairs</u> • A 125 mm sphere must not be able to pass through any opening and for stairways, the 125 mm is measured above the nosing line of the stair treads. <u>Climbability – other than fire-isolated stairs</u> For floors more than 4m above the surface beneath, the balustrade must not incorporate any horizontal or near horizontal elements between 150 mm and 760 mm above the floor that could facilitate climbing.	
D2.17: Handrails	Handrails to stairways must: • be located along at least one side of the ramp or flight (a flight being 2 or more risers); and • located along each side if the total width of the stairway or ramp is 2m or more; and • be fixed at a height of not less than 865 mm above the nosings of the stair treads and the floor surface of the ramp, landing, or the like; and • be continuous between stair flight landings and have no obstruction that will break a hand-hold. • be constructed to comply with clause 12 of AS 1428.1 (including handrails to the fire stairs). • Handrails in common areas (other than fire stairs) must also accord with D3.3. <u>Clause 12 of AS 1428.1-2009</u> A required exit (fire isolated or non-fire isolated) serving an area required to be accessible must be fitted with handrails in accordance with Clause 12 of AS1428.1. The handrail shall follow the angle of the nosings and be consistent height through the stair flight and any landings with no vertical sections at the landing. Compliance can be achieved via offset risers at the bottom of the flight in accordance with Figure 28 in AS1428.1-2009 or with	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		
	larger landings to accommodate required handrail extensions.  *Figure 28 in AS1428.1-2009*	
D2.18: Fixed platforms, walkways stairways and ladders	Plant areas may be accessed via stairs and ladders compliant with AS 1657-2013.	CRA – Refer Annexure C
D2.19: Doorways and doors	• Exit doors that are power operated must be able to be opened manually under a force of not more than 110 N if there is a malfunction or failure of the power source and if leading to road or open space, open automatically if there is a power failure or on the activation of a fire or smoke alarm anywhere in the fire compartment served by the door. • A power operated door in a path of travel to a required exit must be able to be opened manually under a force of not more than 110 N if there is a malfunction of the power source. • Garbage rooms on ground floor can have a roller door as the sole exit as it will be in the open position when the room is in use.	CRA – Refer Annexure C
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 m^2, it is the only required exit from the building or part and it is fitted with a device for holding it in the open position; or	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		
	• it serves a sanitary compartment or airlock (in which case it may swing in either direction).	
D2.21: Operation of latch	All doors in a required exit or forming part of a required exit AND doors in a path of travel to a required exit must be readily openable without a key from the side that faces a person seeking egress, by– (i) a single hand downward action or pushing action on a single device which is located between 900mm and 1.1 m from the floor and if serving an area required to be accessible by Part D3 – A. be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and B. have a clearance between the handle and the back plate or door face at the centre grip section of the handle of not less than 35mm and not more than 45mm; or (ii) a single hand pushing action on a single device which is located between 900mm and 1.2m from the floor. The above requirements do not apply to a door that – (i) serves only or is within a sole-occupancy unit in a Class 2 building; or (ii) serves a sole-occupancy unit in a Class 5, 6 or 7 building with a floor area not more than 200m^2; or (iii) are fitted with a fail-safe device which automatically unlocks the door upon the activation of an AS 1670.1 detection system installed throughout the building.	CRA – Refer Annexure C
D2.23: Signs on doors	Signage in accordance with this clause is to be located on all fire and smoke doors stating “Fire Safety Door, Do Not Obstruct, Do Not Keep Open” and the discharge door from the fire isolated stairways are to state “Fire Safety Door – Do Not Obstruct” in capital letters not less than 20mm in height. Note: Fire signage in accordance with clause 183 of the Environmental Planning and Assessment Regulation 2000 is also required.	CRA – Refer Annexure C
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–	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		
	A. a device to restrict the window opening; or B. a screen with secure fittings. (ii) A device or screen required by (i) must– A. not permit a 125 mm sphere to pass through the window opening or screen; and B. resist an outward horizontal action of 250 N against the– aa. window restrained by a device; or bb. screen protecting the opening; and C. have a child resistant release mechanism if the screen or device is able to be removed, unlocked or overridden. c) A barrier with a height not less than 865 mm above the floor is required to an openable window– (i) in addition to window protection, when a child resistant screen 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. 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.	
PART D3 - ACCESS FOR PEOPLE WITH A DISABILITY		
Refer to Separate Access Report by BCA Logic 108844-Access-r1		Noted

SECTION E: SERVICES AND EQUIPMENT			
PART E1 – FIRE FIGHTING EQUIPMENT			
E1.0:	Deemed-to-Satisfy Provisions	Informational	Noted
E1.3:	Fire hydrants	As the building/s have a floor area greater than 500 m^2, a fire hydrant system complying with AS 2419.1-2005 must be provided to serve the building. Details should be provided for CC stage: • Confirm with Hydraulic consultant whether a single shared system or two separate systems is a preferred method for hydrant coverage.	CRA – Refer Annexure C

SECTION E: SERVICES AND EQUIPMENT		
	• Hydrant booster assembly location. The booster location must comply with the following: – be within 8m of a hardstand for fire brigade appliance; – be within sight of the main entry; – Assuming it is attached to the building, be separated from the building by construction achieving FRL 90/90/90 for 2m either side of and 3m above the upper hose connections. – Or located 10m away from the building and be adjacent the vehicular entry. • Hydrant pump room location (if a pumpset is required). An internal pump room must have a door opening to a road or open space or egress to open space via a fire-isolated exit; • Internal hydrants in each fire-isolated exit at each storey providing coverage to all parts of the building. For internal fire hydrant coverage, all points on the floor must be covered by a 10m hose stream, issuing from 30 m hose length, extending not less than 1m into the room.	
E1.4: Fire hose reels	A fire hose reel system complying with BCA clause E1.4 and AS 2441-2005 must be provided to the building (excluding Class 2 parts). All points on a floor shall be within reach of a 4 m hose stream issuing from a nozzle at the end of the hose laid on floor. The hose length shall not exceed 36 m. Fire hose reels must be located so that the fire hose will not need to pass through doorways fitted with fire or smoke doors, except— (i) doorways in walls referred to in C2.5(a)(v) in a Class 9a building and C2.5(b)(iv) in a Class 9c building, separating ancillary use areas of high potential fire hazard; and (ii) doorways in walls referred to in C2.12 or C2.13 separating equipment or electrical supply systems; and (iii) doorway openings to shafts referred to in C3.13.	CRA – Refer Annexure C
E1.5: Sprinklers	Building A&B: The basement carpark has over 40 cars and must be provided with a sprinkler system complying with Specification E1.5 installed throughout. The sprinkler valve room location should be indicated on the plans. The room must have direct egress to road or open space. Building C: Basement 2 level has 40 vehicle spaces and will be separated by a fire shutter at the vehicular ramp. As the fire compartment is not over 40 vehicles sprinklers are not required in either carpark fire compartment.	CRA – Refer Annexure C

SECTION E: SERVICES AND EQUIPMENT			
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.	CRA – Refer Annexure C
E1.8:	Fire control centres	Not applicable	N/A
E1.9:	Fire precautions during construction	Informational– • During construction, not less than one portable fire extinguisher to suit Class A, B and C fires and electrical fires must be provided at all times on each storey adjacent to each required / temporary exit; and • After the building has reach an effective height of 12m, the required fire hydrants and fire hose reels must be operational on all floor / roof covered storeys, except for the 2 uppermost storeys; and all required booster connections must be installed.	Noted
E1.10:	Provision for special hazards	Not applicable	N/A
PART E2 – SMOKE HAZARD MANAGEMENT			
E2.0:	Deemed-to-Satisfy Provisions	Informational	Noted
E2.1:	Application of Part	Informational	Noted
E2.2:	General requirements (including Tables E2.2a and E2.2b)	**General smoke hazard management requirements** An air-handling system which does not form part of a smoke hazard management system in accordance with Table E2.2a or Table E2.2b and which recycles air from one fire compartment to another fire compartment or operates in a manner that may unduly contribute to the spread of smoke from one fire compartment to another fire compartment (such as lobby air supply) must— (i) be designed and installed to operate as a smoke control system in accordance with AS/NZS 1668.1; 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 4.10 of AS/NZS 1668.1; and	CRA – Refer Annexure C

SECTION E: SERVICES AND EQUIPMENT			
		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 11 of AS/NZS 1668.1 serving more than one fire compartment (other than a carpark ventilation system) and not forming part of a smoke hazard management system must comply with that Section of the Standard. **Class 2 parts** Class 2 parts must be provided with an automatic smoke detection and alarm system complying with BCA Specification E2.2a. Note: Smoke alarms in sole occupancy units are now required to be interconnected. **Class 7a buildings** A Class 7a building including a basement provided with a mechanical ventilation system in accordance with AS 1668.2 must comply with clause 5.5 of AS/NZS 1668.1 except that fans with metal blades for operation at normal temperatures may be used, and the electrical power and control cabling need not be fire rated.	
E2.3:	Provisions for special hazards	Not applicable	N/A
SPECIFICATION E2.2a – SMOKE DETECTION AND ALARM SYSTEM			
1.	Scope	Noted	-
2.	Type of system	Class 3 or 4 system as required	Noted
3.	Smoke alarm system	Class 3 system for inside SOU's, interconnected where required.	CRA
4.	Smoke detection system	Class 4 system in public corridors and common areas	CRA
5.	Smoke detection for smoke control system	Not applicable	N/A
6.	Building occupant warning system	BOWS to be provided throughout the building	CRA
7.	System Monitoring	Not applicable. However, sprinkler systems under AS2118.1 are required to be monitored to the brigade.	N/A
PART E3 – LIFT INSTALLATIONS			
E3.0:	Deemed-to-Satisfy Provisions	Informational	Noted
E3.1:	Lift installations	An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with Specification E3.1	CRA – Refer Annexure C
E3.2:	Stretcher facility in lifts	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.	CRA – Refer Annexure C
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	CRA – Refer Annexure C

SECTION E: SERVICES AND EQUIPMENT			
		passenger lift or group of lifts throughout a building as per E3.3.	
E3.5:	Landings	Access and egress to and from lift-well landings must comply with the Deemed-to-Satisfy Provisions of Section D.	CRA – Refer Annexure C
E3.6:	Passenger lifts	In an accessible building, every passenger lift must be one of the types specified in Table E3.6a, have accessible features in accordance with Table E3.6b, and not rely on a constant pressure device for its operation if the lift car is fully enclosed.	CRA – Refer Annexure C
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.	CRA – Refer Annexure C
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.	CRA – Refer Annexure C
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.	CRA – Refer Annexure C
PART E4 – VISIBILITY IN AN EMERGENCY, EXIT SIGNS AND WARNING SYSTEMS			
E4.0:	Deemed-to-Satisfy Provisions	Informational	Noted
E4.2:	Emergency lighting requirements	An emergency lighting system must be installed throughout the building in accordance with Clause E4.2 of the BCA and AS 2293.1-2005.	CRA – Refer Annexure C
E4.3:	Measurement of distance	Informational	Noted
E4.4:	Design and operation of emergency lighting	The emergency lighting system must comply with AS 2293.1-2005.	CRA – Refer Annexure C
E4.5:	Exit signs	Exits signs are to be provided above or adjacent to a door providing egress as well as directional signage throughout the entire development where necessary.	CRA – Refer Annexure C
E4.6:	Direction signs	Where an exit is not readily apparent, directional signage is to be installed indicating the direction of egress.	CRA – Refer Annexure C
E4.7:	Class 2 and 3 buildings and Class 4 Parts: Exemptions	Informational	Noted
E4.8:	Design and operation of exit signs	Exit signs must comply with AS 2293.1-2005 and be clearly visible at all times when the building is occupied.	CRA – Refer Annexure C
E4.9:	Sound systems and intercom systems for emergency purposes	Not applicable	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.	Noted
F1.1:	Stormwater drainage	Stormwater drainage to comply with AS3500.3-2003.	CRA – Refer Annexure C
F1.4:	External above ground membranes	Waterproofing membranes for external above ground use to comply with AS4654 Parts 1 and 2-2012.	CRA – Refer Annexure C
F1.5:	Roof coverings	Roof coverings are to comply with BCA Clause F1.5.	CRA – Refer Annexure C
F1.6:	Sarking	Sarking-type materials used for weatherproofing must comply with AS/NZS 4200 Part 1 and 2-1994.	CRA – Refer Annexure C
F1.7:	Water proofing of wet areas in buildings	Wet areas must be constructed in accordance with AS 3740-2010 and F1.7 of the BCA.	CRA – Refer Annexure C
F1.9:	Damp-proofing	Moisture is to be prevented from reaching the walls above a damp-proof course, and the underside of the suspended floors.	CRA – Refer Annexure C
F1.10:	Damp-proofing of floors on the ground	If a floor of a room is laid on the ground or on fill, moisture from the ground must be prevented from reaching the upper surface of the floor and adjacent walls by the insertion of a vapour barrier in accordance with AS 2870-2011 (N/A to areas that do not require weatherproofing – refer specific clause exemptions).	CRA – Refer Annexure C
F1.11:	Provision of floor wastes	In Class 2 or 3 buildings or Class 4 part of a building, a bathroom or laundry is to have a floor waste where the floor is graded to the floor waste to permit the drainage of water.	CRA – Refer Annexure C
F1.12:	Sub-floor ventilation	Not applicable	N/A
F1.13:	Glazed Assemblies	Glazed assemblies are to comply with AS2047 and AS1288.	CRA – Refer Annexure C
PART F2 – SANITARY AND OTHER FACILITIES			
F2.0:	Deemed-to-Satisfy Provisions	Informational	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; laundry wash tub and space for a washing machine and dryer. An employee facility that incorporates a washbasin and closet pan is required at or near ground floor level. The facility must be an accessible unisex toilet facility, compliant with AS 1428.1-2009. Toilet is provided in Building A at Ground Floor which can cater for united building being Building A&B. Building C will require its own toilet facility – to be provided at CC stage.	CRA – Refer Annexure C
F2.2:	Calculation of number of occupants and facilities	Informational –	CRA – Refer Annexure C

SECTION F: HEALTH AND AMENITY			
		a) The number of persons accommodated must be calculated according to D1.13 if it cannot be more accurately determined by other means b) Unless the premises are used predominantly by one sex, sanitary facilities must be provided on the basis of equal numbers of males and females c) In calculating the number of sanitary facilities to be provided under F2.1 and F2.3, a unisex facility *required* for people with a disability may be counted once for each sex d) For the purpose of this Part, a unisex facility comprises one closet pan, one washbasin and means for the disposal of sanitary towels	
F2.3:	Facilities in Class 3 to 9 buildings (including Table F2.3)	Not applicable for Class 2 and Class 7a carpark.	N/A
F2.4:	Accessible sanitary facilities (including Table F2.4)	Employee sanitary facility required by Clause F2.1 is to be an accessible unisex compartment compliant with AS 1428.1-2009.	CRA – Refer Annexure C
F2.5:	Construction of sanitary compartments	a) Other than in an early childhood centre, sanitary compartments must have doors and partitions that separate adjacent compartments and extend— (i) from floor level to the ceiling in the case of a unisex facility; or (ii) to a height of not less than 1.5 m above the floor if primary school children are the principal users; or (iii) 1.8 m above the floor in all other cases. b) The door to a fully enclosed sanitary compartment must— (i) open outwards; or (ii) slide; or (iii) be readily removable from the outside of the sanitary compartment, unless there is a clear space of at least 1.2 m, measured in accordance with Figure F2.5, between the closet pan within the sanitary compartment and the doorway.	CRA – Refer Annexure C
F2.6:	Interpretation: urinals and washbasins	Informational	Noted
PART F3 – ROOM SIZES			
F3.0:	Deemed-to-Satisfy Provisions	Informational	Noted
F3.1:	Height of rooms and other spaces	The height of rooms and other spaces must be not less than— (a) in a Class 2 building— (i) a kitchen, laundry, or the like — 2.1 m; and (ii) a corridor, passageway or the like — 2.1 m; and (iii) a habitable room excluding a kitchen — 2.4 m; and (iv) in a room or space with a sloping ceiling or projections below the ceiling line within— (A) a habitable room—	CRA – Refer Annexure C

SECTION F: HEALTH AND AMENITY			
		(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 when calculating the floor area of a room or space, any part that has a ceiling height of less than 1.5 m is not included; and (f) 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.	
PART F4 – LIGHT AND VENTILATION			
F4.0:	Deemed-to-Satisfy Provisions	Informational	Noted
F4.1:	Provision of natural light	Class 2 Natural light must be provided to all habitable rooms.	CRA – Refer Annexure C
F4.2:	Methods and extent of natural lighting	• Natural light must be provided by: (i) Windows: A. with an aggregate light transmitting area of not less than 10% the floor area of the room; and B. that are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like; or (ii) Rooflights, that: 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). • A required window that faces a boundary of an adjoining allotment or a wall of the same building or another building on the allotment must be not less than a horizontal distance from that boundary or wall that is the greater of – – 1m; and – 50% of the square root of the exterior height of the wall in which the window is located, measured from its sill.	CRA – Refer Annexure C
F4.3:	Natural light borrowed from adjoining room	Not required	N/A

SECTION F: HEALTH AND AMENITY			
F4.4:	Artificial Lighting	Lighting to the all areas is to comply with AS 1680.0.	CRA – Refer Annexure C
F4.5:	Ventilation of rooms	All rooms to be provided with Clause F4.6 compliant natural ventilation **OR** a mechanical ventilation or air-conditioning system complying with AS 1668.2-2012.	CRA – Refer Annexure C
F4.6:	Natural ventilation	(a) Natural ventilation provided in accordance with F4.5(a) must consist of permanent openings, windows, doors or other devices which can be opened— (i) with an aggregate opening or openable size not less than 5% of the floor area of the room required to be ventilated; and (ii) open to— (A) a suitably sized court, or space open to the sky; or (B) an open verandah, carport, or the like; or (C) an adjoining room in accordance with F4.7.	CRA – Refer Annexure C
F4.7:	Ventilation borrowed from adjoining room	Not required	N/A
F4.8:	Restriction on position of water closets and urinals	Sanitary compartments must not open directly into a – • kitchen or pantry	Complies
F4.9:	Airlocks	Not required as complies with F4.8. Note sanitary compartments will be provided with mechanical ventilation under F4.5.	N/A
F4.11:	Carparks	Every storey of a carpark (except an open deck carpark) must have: • a system of mechanical ventilation complying with AS1668.2-2012; or • a system of natural ventilation complying with Section 4 of AS 1668.4-2012.	CRA – Refer Annexure C
PART F5 – SOUND TRANSMISSION AND INSULATION			
F5.0:	Deemed-to-Satisfy Provisions	Informational	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.	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 (Rw) or weighted sound reduction index with spectrum adaptation term (Rw + Ctr) determined in accordance with AS/NZS 1276.1 or ISO 717.1 using results from laboratory measurements; or (b) comply with Specification F5.2.	CRA – Refer Annexure C
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 (Ln,w + CI) determined in accordance with AS/ISO 717.2 using results from laboratory measurements; or	CRA – Refer Annexure C

SECTION F: HEALTH AND AMENITY			
		(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.	
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 $L_{n,w}+C_l$ (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.	CRA – Refer Annexure C
F5.5:	Sound insulation rating of walls	• 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. • 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. • 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. • 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 Rw not less than 30.	CRA – Refer Annexure C
F5.6:	Sound insulation rating of services	If a soil or waste pipe passes through more than one unit the pipe must be separated from the rooms with construction that has a Rw + Ctr (airborne) not less than 40 if adjacent to a habitable room (other than a kitchen), or 25 if adjacent to a kitchen or other room.	CRA – Refer Annexure C

SECTION F: HEALTH AND AMENITY			
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.	
SPECIFICATION F5.2 – SOUND INSULATION FOR BUILDING ELEMENTS			
1.	Scope	Noted	-
2.	Construction Deemed-to-Satisfy	Information only.	Noted
SPECIFICATION F5.5 – IMPACT SOUND – TEST OF EQUIVALENCE			
1.	Scope	Noted	-
2.	Construction to be Tested	Information only.	Noted
3.	Method	Information only.	Noted

SECTION G: ANCILLARY PROVISIONS			
PART G1 – MINOR STRUCTURES AND COMPONENTS			
G1.0:	Deemed-to-Satisfy Provisions	Informational	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.	CRA – Refer Annexure C
PART G5 – CONSTRUCTION IN BUSHFIRE PRONE AREAS			
G5.0:	Deemed-to-Satisfy Provisions	Noted	-
G5.1:	Application of Part	Noted	-
NSW G5.2:	Protection	Confirm with Council if in a Bush fire prone area.	FI

SECTION J: ENERGY EFFICIENCY (Class 7a Carpark)			
PART J0 – ENERGY EFFICIENCY			
J0.1:	Application of Section J	Informational	Noted
J0.2:	Heating & cooling loads of SOU's to Class 2 & 4 parts	Not applicable	NA
J0.3:	Ceiling fans	Not applicable	NA
PART J1 – BUILDING FABRIC			
J1.0:	Deemed-to-Satisfy Provisions	Informational	Noted
J1.1:	Application of Part	This part is not applicable to the carpark.	NA
PART J2 – GLAZING			
J2.0:	Deemed-to-Satisfy Provisions	Informational	Noted
J2.1:	Application of Part	This part is not applicable to the carpark.	NA

SECTION J: ENERGY EFFICIENCY (Class 7a Carpark)			
PART J3 – BUILDING SEALING			
J3.0:	Deemed-to-Satisfy Provisions	Informational	Noted
J3.0:	Application of Part	This part is not applicable to the carpark.	NA
PART J4 – AIR MOVEMENT			
Deleted		Part J4 deleted in BCA2016	-
PART J5 – AIR CONDITIONING AND VENTILATION SYSTEMS			
J5.0:	Deemed-to-Satisfy Provisions	Informational	Noted
J5.2:	Air-conditioning systems	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure C
J5.3:	Mechanical ventilation systems	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure C
J5.4:	Miscellaneous exhaust systems	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure C
PART J6 – ARTIFICIAL LIGHTING AND POWER			
J6.0:	Deemed-to-Satisfy Provisions	Informational	Noted
J6.1:	Application of Part	Informational	Noted
J6.2:	Artificial lighting	Artificial lighting to comply with this clause, design certification to be provided by the electrical designer.	CRA – Refer Annexure C
J6.3:	Interior artificial lighting and power control	Lighting controls are to be in accordance with this clause, which sets requirements on location of switching and sets limits on floor areas controlled by a switch.	CRA – Refer Annexure C
J6.4:	Interior decorative and display lighting	Lighting falling under this clause is to be separately switched from other lighting, be under a manual switch and controlled with a time switch.	CRA – Refer Annexure C
J6.5:	Artificial lighting around the perimeter of a building	Perimeter lighting is to be controlled by a daylight sensor or time switch and where it exceeds 100W have an average light source density of 60 Lumens/W or be controlled by a motion sensor complying with Specification J6.	CRA – Refer Annexure C
J6.6:	Boiling water and chilled water storage units	The power supply to a fixed boiling water or chilled water storage unit must be controlled by a time switch in accordance with Specification J6.	CRA – Refer Annexure C
PART J7 – HEATED WATER SUPPLY			
J7.0:	Deemed-to-Satisfy Provisions	Noted	-
J7.2:	Heated water supply system	A heated water supply system for food preparation and sanitary purposes must be designed and installed in accordance with Part B2 of NCC Volume Three — Plumbing Code of Australia.	CRA – Refer Annexure C
PART J8 – FACILITIES FOR ENERGY MONITORING			
J8.0:	Deemed-to-Satisfy Provisions	Informational	Noted
J8.1:	Application of Part	Informational	Noted

SECTION J: ENERGY EFFICIENCY (Class 7a Carpark)			
J8.3:	Facilities for energy monitoring	• A building with a floor area of more than 500m^2 must have an energy monitoring facility to record the consumption of gas and electricity. • A building with a floor area of more than 2,500m^2 must have the facility to record, individually the energy consumption of: – air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and – artificial lighting; and – appliance power; and – central hot water supply; and – internal transport devices including lifts, escalators and travelators where there is more than one serving the building; and – other ancillary plant.	CRA – Refer Annexure C

SECTION J: ENERGY EFFICIENCY (Class 2)			
NSW PART J(A)1 – BUILDING FABRIC			
NSW J(A)1.0:	Deemed-to-Satisfy Provisions	Informational	Noted
NSW J(A)1.1:	Application of Part	Informational– • The Deemed-to-Satisfy Provisions of this Part only apply to thermal insulation in the Class 2 part where development consent specifies that the insulation is to be provided as part of the development. • The Deemed-to-Satisfy provisions of this Part for thermal breaks apply.	Noted
NSW J(A)1.2:	Compliance with BCA Provisions	Sole occupancy units of the Class 2 building must comply with the following National Provisions except that the reference to 'where required' in J1.2 is deemed to refer to 'where a development consent specifies that insulation is to be provided as part of the development.' • for general thermal construction, comply with J1.2; and • for thermal breaks, comply with J1.3(d) and J1.5(c); and • for compensating for a loss of ceiling insulation, comply with J1.3(c); and • for floor edge insulation, comply with J1.6(c) and J1.6 (d).	CRA – Refer Annexure C
NSW PART J(A)2 – BUILDING SEALING			
NSW J(A)2.0:	Deemed-to-Satisfy Provisions	Informational	Noted
NSW J(A)2.1:	Application of Part	The requirements of this Part are applicable to Class 2 buildings excluding: • a building in a climate zones 2 and 5 where the only means of air-conditioning is by using an evaporative cooler;	Noted

SECTION J: ENERGY EFFICIENCY (Class 2)		
	• a building ventilation opening necessary for the safe operation of a gas appliance; • parts of the building that cannot be fully enclosed.	
NSW J(A)2.2: Compliance with BCA Provisions	Class 2 buildings and Class 4 parts of buildings, must comply with the following National Provisions: (a) J3.2 Chimneys and flues; (b) J3.3 Roof lights; (c) J3.4 External doors and windows; (d) J3.5 Exhaust fans; (e) J3.6 Construction of roofs walls and floors; and (f) J3.7 Evaporative coolers.	CRA – Refer Annexure C
J3.2: Chimneys and flues	Not applicable	NA
J3.3: Roof lights	Roof lights must be sealed or be capable of being sealed and must be constructed with– (i) an imperforate ceiling diffuser or the like installed at the ceiling or lining level; or (ii) a weatherproof seal; or (iii) shutter system readily operated either manually, mechanically or electronically by the occupant.	
J3.4: External windows and doors	• A seal to restrict air infiltration must be fitted to each edge of a door, openable window or the like forming part of: – the *envelope* of a conditioned space; or – the external fabric of a habitable room or public area. • The above does not apply to: – a window complying with AS 2047; or – a fire door or smoke door; or – a roller shutter door, roller shutter grille or other security device. • For the bottom edge of external swing doors, the seal must be a draft protection device and may otherwise be a foam or rubber compression strip, fibrous seal or the like. • An entrance to a building, if leading to a conditioned space must have an airlock, self-closing door, revolving door or the like, other than– (i) where the conditioned space has a floor area of not more than 50m^2; or (ii) where a café, restaurant, open front shop or the like has– A. a 3m deep un-conditioned zone between the main entrance, including an open front, and the conditioned space; and B. at all other entrances to the café, restaurant, open from shop of the like, self-closing doors.	CRA – Refer Annexure C
J3.5: Exhaust Fans	The exhaust fans to the sanitary facilities, and any other miscellaneous exhaust fans to other conditioned spaces,	CRA – Refer Annexure C

SECTION J: ENERGY EFFICIENCY (Class 2)		
	are to be pre-fitted with a sealing device, such as a self-closing damper of the like.	
J3.6: Construction of Roofs, Walls and Floors	The roof, walls, floors and any other openings, such as window or doors, are to be constructed to minimise air leakage by being enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions or are sealed by caulking, skirting, architraves, cornices or the like.	CRA – Refer Annexure C
J3.7: Evaporative Coolers	Where provided an evaporative cooler is to be fitted with a self-closing damper in accordance with this clause.	CRA – Refer Annexure C
NSW PART J(A)3 – AIR-CONDITIONING AND VENTILATING SYSTEMS		
NSW J(A)3.0: Deemed-to-Satisfy Provisions	Informational	Noted
NSW J(A)3.1: Application of Part	Informational	Noted
NSW J(A)3.2: Compliance with BCA Provisions	Class 2 buildings must comply with the following national BCA provisions (as applicable): (a) J5.2 (a) to (d) and (f) to (g) Air conditioning systems; and (b) J5.3 Mechanical ventilation systems; and (c) J5.4 Miscellaneous exhaust systems.	Noted
J5.2: Air-conditioning systems	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure C
J5.3: Mechanical ventilation systems	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure C
J5.4: Miscellaneous exhaust systems	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure C
NSW PART J(A)4 – HOT WATER SUPPLY		
NSW J(A)4.0 Deemed-to-Satisfy Provisions	Noted	-
NSW J(A)4.1 Application of Part	Noted	-
NSW J(A)4.2 Compliance with BCA Provisions	The hot water supply system must comply with Clause J7.2 Heated Water Supply.	Noted
J7.2: Hot Water Supply	A heated water supply system for food preparation and sanitary purposes must be designed and installed in accordance with Part B2 of NCC Volume Three — Plumbing Code of Australia.	CRA – Refer Annexure C
NSW PART J(A)5 – ACCESS FOR MAINTENANCE		
NSW J(A)5.0 Deemed-to-Satisfy Provisions	Informational	Noted
NSW J(A)5.1 Application of Part	Informational– The *Deemed-to-Satisfy Provisions* of this Part apply to a Class 2 building except within a *sole-occupancy unit*.	Noted
NSW J(A)5.3 Compliance with BCA Provisions	Class 2 Buildings must comply with national BCA provisions J8.3.	Noted
J8.3 Facilities for energy monitoring	a) A building or sole-occupancy unit with a floor area of more than 500 m^2 must have the facility to record the consumption of gas and electricity.	CRA – Refer Annexure C

SECTION J: ENERGY EFFICIENCY (Class 2)		
	b) The building with a floor area of more than 2,500m^2 must have the facility to record, individually the energy consumption of: – air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and – artificial lighting; and – appliance power; and – central hot water supply; and – internal transport devices including lifts, escalators and travelators where there is more than one serving the building; and – other ancillary plant. c) The provisions of (b) do not apply to a Class 2 building with a floor area of more than 2,500m^2 where the total area of the common areas is less than 500m^2.	

ANNEXURE C - BCA COMPLIANCE SPECIFICATION

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

Architectural Design Certification:

1. The FRL's of the structural elements for the proposed works have been designed in accordance with Table 3 of Specification C1.1 of BCA2016 for a building of Type A Construction.
2. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2016.
3. Materials, floor and wall linings/coverings, surface finished and air-handling ductwork used in the works will comply with the fire hazard properties of Clause C1.10 and Specification C1.10 of BCA2016.
4. Vertical separation will be provided to the new openings in the external walls in accordance with Clause C2.6 of BCA2016. It is noted that no spandrel separation is required in the stairway or to a void.
5. Floors separating storeys of different classifications will comply with BCA Clause C2.9 of BCA2016.
6. Equipment will be separated in accordance with Clause C2.12 of BCA2016.
7. The electricity substation and 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 BCA2016.
8. 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 BCA2016.
9. Doorways in any fire walls separating fire compartments will be protected in accordance with Clause C3.5 of BCA2016*, and as amended for the fire shutter in the fire engineering report.*
10. 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 BCA2016.
11. Fire-isolated stairways will not be penetrated by services other than those permitted by Clause C3.9 of BCA2016.
12. 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 BCA2016.
13. 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.
14. The lift doors will be --/60/- fire doors complying with AS1735.11 in accordance Clause C3.10 of BCA2016.
15. Doorways and other opening in internal walls required to have an FRL will be protected in accordance with Clause C3.11 of BCA2016.
16. 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 BCA2016.
17. 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 BCA2016.

18. All attachments to the external façade of the building will be of anon-combustible material, or a combustible material in accordance with Clause 2.4 of Specification C1.1 of BCA2016.
19. The top and bottom of the riser shafts will achieve an FRL not less than the FRL required for the walls of the shaft in accordance with Clause 2.7 of Specification C1.1 of BCA2016.
20. Fire doors will comply with AS1905.1 and Specification C3.4 of BCA2016.
21. Smoke doors will be constructed so smoke will not pass from one side of the doorway to the other in accordance with Specification C3.4 of BCA2016.
22. The required exits will be fire-isolated in accordance with Clause D1.3 of BCA2016.
23. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D1.6 of BCA2016.
24. The fire-isolated exits will be in accordance with Clause D1.7 of BCA2016.
25. The external stairway or ramp serving as a required exit will be in accordance with Clause D1.8 of BCA2016.
26. Discharge from exits will be in accordance with Clause D1.10 of BCA2016.
27. 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 BCA2016.
28. Access to the lift pit will be in accordance with Clause D1.17 of BCA2016.
29. 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 BCA2016.
30. The construction separating rising and descending stairs in the fire-isolated exit stairway will be non-combustible and smoke proof, in accordance with Clause D2.4 of BCA2016.
31. The construction of EDB's and telecommunications distribution boards will be in accordance with Clause D2.7 of BCA2016 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.
32. New pedestrian ramps will comply with AS1428.1-2009, Clause D2.10 and Part D3 of BCA2016. The floor surface of a ramp must have a slip-resistance classification complying with Table D2.14 when tested in accordance with AS4586.
33. 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 BCA2016.
34. Stair geometry to the new stairways will be in accordance with Clause D2.13 of BCA2016. Stair treads are to have a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS4586.
35. Landings and door thresholds throughout the development will be provided in accordance with Clause D2.14 and D2.15 of BCA2016. Landings to have either a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS4586 or a strip at the edge of the landing with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS4586 where the edge ledge to a flight below.
36. The handrails and balustrades to all stairs and throughout the building will be in accordance with Clause D2.16, and D2.17 of BCA2016.

37. The fixed platform, walkway, stairway and ladder and any associated going and riser, landing handrail, balustrade, located within the machinery room, boiler house, lift-machine room, plant-room, or non-habitable attic/storeroom within the sole occupancy unit will comply with AS1657-2013 or Part D2 of BCA2016.
38. The doorways and doors will be in accordance with Clause D2.19 and D2.20 of BCA2016.
39. The door latching mechanisms to the proposed required exit doors will be in accordance with Clause D2.21 of BCA2016.
40. Re-entry doors from the fire-isolated exits will be in accordance with Clause D2.22 of BCA2016.
41. Signage will be provided on fire and smoke doors in accordance with Clause D2.23 of BCA2016.
42. The openable portion of a window in a Class 2 building must 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 BCA2016. 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 must be installed to the openable window.
43. The new works will be accessible in accordance with Clause D3.1 and table D3.1, D3.2, D3.3 of BCA2016, and with AS1428.1-2009, with particular note to door circulation spaces, accessway widths, turning spaces and floor coverings, in accordance with Part D3 of BCA2016.
44. Accessible carparking will be in accordance with Clause D3.5, and Table D3.5 of BCA2016.
45. Braille and tactile signage will in accordance with Clause D3.6, and Specification D3.6 of BCA2016.
46. Tactile ground surface indicators will be provided in accordance with Clause D3.8 of BCA2016 and AS1428.4.1-2009.
47. The ramps associated with the accessway will not have a combined vertical rise of more than 3.6m and a landing for a step ramp will not overlap a landing for another step ramp of ramp in accordance with Clause D3.11 of BCA2016.
48. On an accessway, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, will be clearly marked in accordance with AS1428.1-2009 and Clause D3.12 of BCA2016.
49. Fire precautions whilst the building is under construction fire precautions will be in accordance with Clause E1.9 of BCA2016.
50. External above ground waterproofing membranes will comply with Clause F1.4 of BCA2016 and AS 4654 Parts 1 & 2.
51. The new roof covering will be in accordance with Clause F1.5 of BCA2016.
52. Any sarking proposed will be installed in accordance with Clause F1.6 of BCA2016.
53. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F1.7 of BCA2016 and AS3740.
54. Damp proofing of the proposed structure will be carried out in accordance with Clause F1.9 and F1.10 of BCA2016.
55. Floor wastes will be installed to bathrooms and laundries above sole occupancy units or public space in accordance with Clause F1.11 of BCA2016.
56. All new glazing to be installed throughout the development will be in accordance with Clause F1.13 of BCA2016 and AS1288 / AS2047.
57. Sanitary facilities will be provided in the building in accordance with Clause F2.1, Table F2.1 of BCA2016.

58. Accessible sanitary facilities will be provided in the building in accordance with Clause F2.4, Table F2.4 (a) of BCA2016 and AS1428.1-2009.

59. The construction of the sanitary facilities will be in accordance with Clause F2.5 of BCA2016.

60. Ceiling heights to the new areas will be in accordance with Clause F3.1 of BCA2016.

61. Natural light will be provided in accordance with Clause F4.1, F4.2, and F4.3 of BCA2016.

62. Natural ventilation will be provided in accordance with Clause F4.5, F4.6 and F4.7 of BCA2016.

63. Water closets and urinals will be located in accordance with Clause F4.8 of BCA2016.

64. The sanitary compartments will be either be provided with mechanical exhaust ventilation or an airlock in accordance with Clause F4.9 of BCA2016.

65. 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 BCA2016.

66. A means of cleaning of windows in accordance with the Work Health & Safety Act 2011 and regulations made under that Act in accordance with NSW G1.101 of BCA2016.

67. 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.

68. 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.

69. Building Fabric and Thermal Construction will be in accordance with Part J1 of BCA2016.

70. Glazing will be in accordance with Part J2 of BCA2016.

71. Building sealing will be in accordance with Part J3 of BCA2016.

72. Facilities for Energy Monitoring will be provided in accordance with Clause J8.3 of BCA2016.

Electrical Services Design Certification:

73. A smoke detection and alarm system will be installed throughout the building or parts in accordance with Table E2.2a and Specification E2.2a of BCA2016.

74. Emergency lighting will be installed throughout the development in accordance with Clause E4.2, E4.4 of BCA2016 and AS2293.1.

75. Exit signage will be installed in accordance with Clause E4.5, E4.7, and E4.8 of BCA2016 and AS2293.1.

76. Artificial lighting will be installed throughout the development in accordance Clause F4.4 of BCA2016 and AS/NZS 1680.0.

77. Lighting power and controls will be installed in accordance with Part J6 of BCA2016.

Hydraulic Services Design Certification:

78. Storm water drainage will be provided in accordance with Clause F1.1 of BCA2016 and ASNZS3500.3

79. Fire hydrant system will be installed in accordance with Clause E1.3 of BCA2016 and AS2419.1 as required.

80. Fire hose reels will be installed in accordance with Clause E1.4 of BCA2016 and AS2441.

81. A sprinkler system will be installed in Building A & B basement carpark in accordance with Clause E1.5 of BCA2016, Specification E1.5 and appropriate part(s) of AS2118.

82. Portable fire extinguishers will be installed in accordance with Clause E1.6 of BCA2016 and AS2444.

83. The heated water supply systems will be designed and installed to NCC Volume 3 – Plumbing code and Clause J7.2 of BCA2016.

Mechanical Services Design Certification:

84. An air-handling system which does not form part of a smoke hazard management system will be installed in accordance with Clause E2.2 of BCA2016, and AS/NZS 1668.1.

85. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F4.5 of BCA2016 and AS1668.2.

86. Every storey of the car park will be ventilated in accordance with Clause F4.11 of BCA2016 and where not naturally ventilated it will be mechanically ventilated in accordance with AS1668.2 as applicable.

87. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J5 of BCA2016.

Structural Engineers Design Certification:

88. The material and forms of construction for the proposed works will be in accordance with Clause B1.2, B1.4 and B1.6 of BCA2016 as follows:

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

89. The FRL's of the structural elements for the proposed works have been designed in accordance with Table 3 of Specification C1.1 of BCA2016 for a building of Type A Construction.

90. The lift shaft will have an FRL in accordance with Clause C2.10 and Specification C1.1 of BCA2016.

91. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2016.

92. The construction joints to the structure will be in accordance with Clause C3.16 of BCA2016 to reinstate the FRL of the element concerned.

93. 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 BCA2016 for the fire isolated stairs.

Lift Services Design Certification:

94. The lifts throughout the development will be provided with stretcher facilities in accordance with Clause E3.2 of BCA2016 and will be capable of accommodating a stretcher with a patient lying horizontally by proving a clear space not less than 600mm wide x 2000mm long x 1400mm high above the floor level.

95. Warning signage in accordance with Clause E3.3 of BCA2016 will be provided to the lifts to advise not to use the lifts in a fire.

96. 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.

97. A lift car fire service drive control switch is to be installed within the lift car in accordance with Clause E3.10.

98. Access and egress to the lift well landings will comply with the Deemed-to-Satisfy Provisions of D3 of the BCA2016, and will be suitable to accommodate disabled persons.

99. 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 BCA2016.

100. The lifts will comply with AS1735.12 in accordance with Clause E3.6 of BCA2016.

101. All electric passenger lifts and electrohydraulic passenger lifts shall comply with Specification E3.1 of BCA2016.

Acoustic Services Design Certification:

102. The sound transmission and insulation of the residential portions of the development will comply with Part F5 of BCA2016.