BCA and Access Assessment Report

27A – 29 Pine Avenue, Brookvale

Project:	27A – 29 Pine Avenue, Brookvale
Reference No:	114528-BCA-r2
Date:	3 June 2022
Client:	Walsh Architects
Client Contact:	Scott Walsh
Email:	scott@walsharchitects.com.au
BCA Logic Contact:	Ben Long
Direct:	8484 4009
Email:	blong@bcalogic.com.au

Suite 302, Level 3, 151 Castlereagh St, Sydney NSW 2000 | **Postal Address** PO Box Q1440, Queen Victoria Building NSW 1230

Document Control

Revision	Date	Description	
114528-BCA-r1	5 November 2021	BCA Assessment Report	
114528-BCA-r2	3 June 2022	BCA Assessment Report	
		Prepared by	Verified by
		Ben Long	Matthew McNamara
		Registered Certifier Grade A1, No. BDC 3380 Senior Building Regulations Consultant	Registered Certifier Grade A1, No. BDC 0263 Manager Building Regulations
			

Table of Contents

Tables

EXECUTIVE SUMMARY

This document provides an assessment of the architectural design drawings for the proposed new residential development at 27A – 29 Pine Avenue, Brookvale, against the Deemed-to-Satisfy provisions of the Building Code of Australia (BCA) 2019, Volume 1 Amendment 1.

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

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

Item	Description	BCA Provision
Performance Solutions Required		
1.	Allow for an exit travel distance of up to 8m from the residential levels in lieu of the required 6m	Clause D1.4 DP4
2.	The construction of external walls is such that they will prevent the penetration of water that could cause unhealthy or dangerous conditions or loss of amenity to occupants and undue dampness or deterioration of building elements.	No DtS Provisions – FP1.4 Performance Provisions Only
Building Code of Australia Compliance Matters to be Addressed		
1.	General building access requirements	Clause D3.1
2.	Parts of buildings to be accessible	Clause D3.3
3.	Fire hose reels	Clause E1.4
Further Information Required		
1.	Façade Construction – Non Combustible	Clause C1.9
2.	Bounding Construction: Class 2, 3 and 4 Buildings	Clause C3.11 / Clause D2.5
3.	Fire hydrants	Clause E1.3

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

1 BASIS OF ASSESSMENT

1.1. Location and Description

The building development, the subject of this report, is located at 27A – 29 Pine Avenue, Brookvale.

1.2. Purpose

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

1.3. Building Code of Australia

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

1.4. Limitations

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

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

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

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

This report does not include, or imply compliance with:

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

(b) the Disability Discrimination Act 1992 including the Disability ((Access to Premises – Buildings) Standards 2010 – unless specifically referred to),

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

(d) Work Health and Safety Act 2011;

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

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

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

1.5. Design Documentation

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

2 BUILDING DESCRIPTION

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

2.1. Rise in Storeys (Clause C1.2)

The building has a rise in storeys of three (3).

2.2. Classification (Clause A6.0)

The building has been classified as follows.

Table 1. Building Classification

Class	Level	Description
Class 7a	Basement	Carparking
Class 2	Ground Floor Level 1 Level 2	Residential Common Areas

2.3. Effective Height (Clause A1.0)

The building has an *effective height* of less than 12 metres. (RL44.00 – RL38.00 = 6m)

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

The building is required to be of Type A Construction.

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

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

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

2.6. Fire Compartments

The following *fire compartments* have been assumed:

(a) The basement is considered to form a single fire compartment

(b) Each of the residential storeys form their own fire compartment

2.7. Exits

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

(a) The first tread of each non-fire isolated stairways

(b) The construction edge of the building

2.8. Climate Zone (Clause A1.0)

The building is located within Climate Zone 5

2.9. Location of Fire-source features

The fire source features for the subject development are:

North: The side boundary of the allotment | more than 3m

South: The side boundary of the allotment | more than 3m

East: The rear boundary of the allotment | more than 3m

West: The far boundary of Pine Avenue | more than 6m

In accordance with Clause 2.1 of Specification C1.1, a part of a building element is exposed to a *fire-source feature* if any of the horizontal straight lines between that part and the fire-source feature, or vertical projection of the feature, is not obstructed by another part of the building that–

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

(b) is neither transparent nor translucent.

2.10. Council's Development Control Plan Requirements (DCP)

Warringah DCP 2011 provides Council's planning controls on the provision of Accessibility / Adaptability / Universal Design under Part D of that Plan.

The Controls for Accessibility under Clause 18 of Part D of Warringah DCP 2011 are as follows:

Table 2. Controls for Accessibility

Item No	Control	Comment	Compliance
1.	The design is to achieve a barrier free environment with consideration given to the design of door handles and switches, entrances and corridors. Steep, rough and slippery surfaces, steps and stairs and narrow paths should be avoided.	The design will be barrier free with suitable gradients and access being maintained throughout the building. Surfaces will be provided in accordance with AS1428.1-2009.	CRA – Refer Annexure G
2.	There are to be continuous, independent and barrier-free access ways incorporated into the design of buildings.	Access will be provided throughout the building in accordance with AS1428.1-2009.	CRA – Refer Annexure G
3.	Pathways are to be reasonably level with minimal cross fall and sufficient width, comfortable seating and slip-resistant floor surfaces.	Access will be provided throughout the building in accordance with AS1428.1-2009.	CRA – Refer Annexure G
4.	Where there is a change of level from the footpath to commercial or industrial floor levels, ramps rather than steps should be incorporated.	The change of levels throughout the site have been addressed with walkways and suitable gradient.	CRA – Refer Annexure G
5.	There is to be effective signage and sufficient illumination for people with a disability.	Signage and lighting will be provided to the site to a level that	CRA – Refer Annexure G

Item No	Control	Comment	Compliance
		would be suitable for BCA compliance.	
6.	Tactile ground surface indicators for the orientation of people with visual impairments are to be provided in accordance with the relevant Australian Standard.	TGSIs have been provided at the top and base of stairs and ramps as required.	Complies
7.	Access for people with a disability is to be provided at the main entrance to the development.	Access has been provided at the main entry with the entry gate maintaining the required clear width and lathside clearances	Complies
8.	Development is to comply with Australian Standard AS1428.2.	The building is provided with access provisions in accordance with the BCA and AS1428.1-2009. Part 1 of the standard is a more current accessibility standard and would be more appropriate in line with the requirements of the BCA. It is noted that this building is provided with access throughout and will maintain wider corridors as required under AS1428.2-1992. Remainder of the provisions such as doorways and handrails refer to AS1428.1 therefore compliance would be capable of being provided.	CRA – Refer Annexure G
9.	Where a development comprises at least five (5) dwellings, 10% (rounded up to next whole number) of dwellings shall be capable of being adapted (Class C) under AS4299	It is noted that there are three (3) proposed adaptable units and would comply with this Clause.	Complies

2.11. Residential Sole Occupancy Units

The following table summarises the required accessible features for the proposed Residential SOUs. This is based upon the Premises Standards Access Code, SEPP65 Apartment Design Guide, Council DCP and BCA2019;

Table 3. Residential Sole Occupancy Units

Unit Type	SOU's
Adaptable SOU's	SOU's 2, 8, 10 are identified and designed as Adaptable SOU's.
Livable SOU's	SOU's 2, 8, 9, 10, 17 are identified and designed as Livable Housing SOU's.

Note: Adaptable SOU's can provide the dual purpose of adaptability and Liveable Housing design features.

2.12. Liveable Housing Design Guidelines Requirements (LHDG)

The SEPP 65 Apartment Design Code requires that residential developments achieve a benchmark that at least 20% of the total apartments incorporate the Livable Housing Guideline's silver level universal design

features. The Annexure E of this Report includes an assessment against the relevant requirements of the LHDG.

Note: These Guidelines do not take precedence over the requirements of the Disability (Access to Premises – Buildings) Standards 2010 or the Building Code of Australia.

2.13. Adaptable Housing Code Assessment Summary (AS4299)

Three (3) adaptable units are required in the development. The adaptable units are required to comply with AS4299 – Class C. Pre and post adaption plans will be needed to demonstrate how the design would permit later alterations to suit individual requirements at minimal extra cost.

The Annexure F of this Report includes an assessment against the relevant requirements of the LHDG.

3 MATTERS FOR FURTHER CONSIDERATION

3.1. General

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

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

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

3.2. Dimensions and Tolerances

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

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

3.3. Performance Based Design – Performance Solutions

There are specific areas throughout the development where strict Deemed-to-Satisfy BCA Compliance will not be achieved by the proposed design and site constraints. These matters will need to be address in a detailed 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.	The construction of the external walls is such that they will prevent the penetration of water that could cause unhealthy or dangerous conditions or loss of amenity to occupants and undue dampness or deterioration of building elements.	No DtS Provisions – FP1.4 Performance Provisions Only
2.	Allow for an exit travel distance of up to 8m from the residential levels in lieu of the required 6m	Clause D1.4

3.4. Façade Construction – Non Combustible

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

(a) In a building required to be of Type A construction, the following building elements and their components must be *non-combustible*:

(i) External walls and common walls, including all components incorporated in them including the facade covering, framing and insulation.

(ii) The flooring and floor framing of lift pits.

(iii) Non-*loadbearing* internal walls where they are required to be fire-resisting.

(b) A shaft, being a lift, ventilating, pipe, garbage, or similar shaft that is not for the discharge of hot products of combustion, that is non-loadbearing, must be of *non-combustible* construction.

(c) A l*oadbearing* internal wall and a *loadbearing fire wall*, including those that are part of a *loadbearing* shaft, must comply with Specification C1.1.

(d) The requirements of (a) and (b) do not apply to gaskets, caulking, sealants, termite management systems, Glass including laminated glass, thermal breaks associated with glazing systems and damp-proof courses.

(e) The following materials, may be used wherever a *non-combustible* material is required:

(i) Plasterboard.

(ii) Perforated gypsum lath with a normal paper finish

(iii) Fibrous-plaster sheet.

(iv) Fibre-reinforced cement sheeting.

(v) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0.

(vi) *Sarking-type materials* that do not exceed 1 mm in thickness and have a *Flammability Index* not greater than 5.

(vii) Bonded laminated materials where—

(A) each lamina, including any core, is *non-combustible*; and

(B) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and

(C) the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectively.

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

It is also noted that this clause also prohibits the use of in situ formwork containing combustible elements including PVC lined formwork products where the PVC lining remains in place for the life of the building where proposed to be used as an external wall element, common walls, the flooring and floor framing of lift pits, services riser shafts or non-*loadbearing* internal walls required to be fire resisting.

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

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

3.5. Bounding Construction: Class 2, 3 and 4 Buildings – Clause C3.11 / Clause D2.5

Due to the open nature of the building, it is considered that these walkways and Sole Occupancy Units may be deemed applicable under Clause C3.11(g) and may be provided with concrete or masonry walls or the walls lined internally with a fire-protective covering, doors and openings will also be required to be suitably protection in accordance with this Clause.

It is noted that there are screen openings provided to the elevations and it would be required to confirm the openings will be equivalent in accordance with Clause D2.5. During the detailed design it would be required to ensure that the screens maintain a 75% open nature when located above the balustrade in accordance with Clause D2.5.

3.6. Exit travel distances – Clause D1.4

Within the Level 1 of each of the residential storeys, it is noted that there is an extended travel distance of up to 8m to an exit in lieu of the required 6m.

This will need to be modified to be reduced to less than 6m or a Performance Solution may be sought by a Fire Engineer.

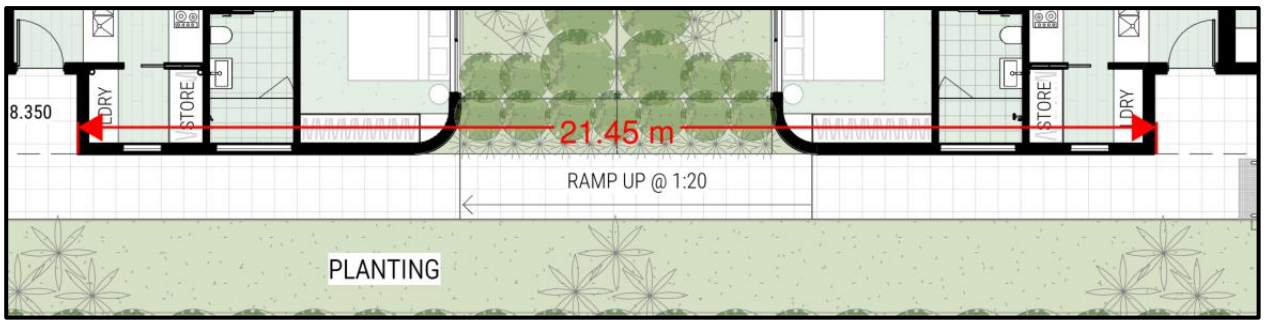
3.7. General building access requirements – Clause D3.1

It would be required to confirm that the corridor serving the waste room is at least 1240mm wide at the doorway to allow for sufficient circulation in accordance with AS1428.1-2009.

3.8. Parts of buildings to be accessible – Clause D3.3

Accessways must have turning spaces (1540 mm x 2070 mm) within 2m of the end of the accessway and at maximum 20 m intervals along the accessway. It is noted that suitable turning spaces have been provided throughout however there are no turning spaces provided at 20m intervals throughout the building on the Ground Floor footpath connecting each of the towers.

It would be required that there is a provision for a turning space provided within proximity to the walkways to ensure that sufficient turning spaces are provided at 20m intervals. This item may be addressed during design development as it is noted that sufficient space is made available for compliance to be achieved.



3.9. Fire hydrants – Clause E1.3

Due to the size of the allotment, it is not considered that suitable coverage would be maintained from the street hydrant. Therefore, it would be required that hydrants are provided throughout the site.

These have not been detailed at this stage; however, it would be considered that commentary should be sought from the Hydraulic Designers as to whether these would be internal or external hydrants based on the open nature of the building.

This consideration will have implications on any external hydrants needing to be separated from the building.

3.10. Fire hose reels – Clause E1.4

The carpark is required to be provided with fire hose reel coverage in accordance with this Clause and AS2441. It is required that the fire hose reels are not located more than 4m from an exit, however it is considered that that the western egress stair is located more than 4m from the hose reel and this will need to be relocated to comply. This item may be addressed during design development as it is noted that sufficient space is made available for compliance to be achieved.

ANNEXURE A DESIGN DOCUMENTATION

Annexure A – Design Documentation

This report has been based on the following design documentation.

Table 5. Architectural Plans

Architectural Plans Prepared by Walsh Architects			
Drawing Number	**Revision**	**Date**	**Title**
DA040	B	26.05.2022	Proposed Site Plan
DA100	B	26.05.2022	Basement Plan
DA101	B	26.05.2022	Ground Floor Plan
DA102	B	26.05.2022	Level 1 Plan
DA103	B	26.05.2022	Level 2 Plan
DA104	B	26.05.2022	Roof Plan
DA200	B	26.05.2022	Sections - Sheet 1
DA201	B	26.05.2022	Sections - Sheet 2
DA301	B	26.05.2022	Elevations
DA960	B	26.05.2022	Adaptable Apartment Plan

ANNEXURE B ESSENTIAL SERVICES

Annexure B - Essential Services

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

Table 6. Essential Fire Safety Measures

Item	Essential Fire and Other Safety Measures	Standard of Performance
Fire Resistance (Floors – Walls – Doors – Shafts)		
1.	Access Panels & doors/hoppers (fire rated)	**BCA2019 C3.13** (Openings in Shafts) **BCA2019 Spec C3.4** AS 1905.1:2015 (Fire Resistant Doorsets)
2.	Construction Joints	**BCA2019 C1.1, Spec C1.1** **BCA2019 C3.16** AS 1530.4:2014 & AS 4072.1:2005
3.	Fire doors	**BCA2019 C2.13** (Electricity Supply Systems) **BCA2019 C3.10** (Opening in Fire Isolated Lift Shafts) AS1735.11- 1986 **BCA2019 C3.13** (Opening in Shafts) Spec C3.4 AS1905.1: 2015
4.	Fire seals protecting openings in fire resisting components of the building	**BCA2019 C3.15** (Openings for service installations) **BCA2019 Spec C3.15** AS1530.4:2014 & AS4072.1-2005
5.	Lightweight construction	**BCA2019 C1.1, Spec. C1.1** **BCA2019 C1.8, Spec C1.8**
6.	Solid core doors > Based on being deemed open walkways	**BCA2019 Spec. C3.4** C3.11 (Bounding Construction)
General		
7.	Portable fire extinguishers	**BCA2019 E1.6** AS 2444–2001
8.	Operation of Door latches	**D2.21** (Operation of Latch)
9.	Swing of Exit Doors	**D2.20** (Swinging Doors)
10.	Warning & operational signs	**BCA2019 D3.6** (Braille Exit Signs) (Note: E4.5 (Exit Signs)) **BCA2019 E3.3** (Lift Signs)

Item	Essential Fire and Other Safety Measures	Standard of Performance
Lifts		
11.	Access to Lift Pits > Located at lowest level or if >3m provided through an access door	**BCA2019 D1.17** (Access to Lift Pits) 'DANGER LIFT WELL – ENTRY OF UNAUTHORISED PERSONS PROHIBITED – KEEP CLEAR AT ALL TIMES'
Electrical Services		
12.	Automatic fire detection & alarm: > Clause 3 – AS 3786:2014 Smoke Alarm systems powered from consumer mains to all residential SOU's, and spaced, interlinked to AS 1670.1:2018 to all common areas connected to a BOWS @ 85dB(A). > Clause 4 – AS 1670.1:2018 system throughout the building/part connected to a BOWS @ 100dB(A)	**BCA2019 E2.2**, NSW Table E2.2a, **Spec E2.2a** - Clause 3 (Smoke alarm system) **Spec E2.2a** - Clause 4 (Smoke detection system) **Spec E2.2a** - Clause 5 (Combined smoke alarm and smoke detection system) **Spec E2.2a** - Clause 7 (BOWS) AS 3786:2014 (Amdt 1-4) AS 1670.1:2018 (Fire) – Section 4 and 5 (Detectors)
13.	Emergency lighting	**BCA2019 E4.2, E4.4** AS/NZS 2293.1:2018
14.	Exit signs	**BCA2019 E4.5** (Exit Signs) **BCA2019 E4.6** (Direction Signs) **BCA2019 E4.7** (Residential Concession) **BCA2019 E4.8** (Design and Operation - Exits) AS/NZS 2293.1:2018
Hydraulic Services		
15.	Automatic fire suppression systems (carpark only)	**BCA2019 E1.5** AS 2118.1:2017 (Sprinklers)
16.	Fire hydrant systems > NSW Storz Couplings	**BCA2019 E1.3** **BCA2019 C2.12 (Separation of Equipment)** AS 2419.1:2005 FRNSW Technical Sheet D15/45534.V9 issued 10.01.19, 'Compatible Hose Connections'
17.	Hose reel systems	**BCA2019 E1.4** AS 2441:2005

Item	Essential Fire and Other Safety Measures	Standard of Performance
Mechanical Services		
18.	Fire dampers	**BCA2019 E2.2, Spec E2.2a,** **BCA2019 C3.15** AS 1668.1:2015 (Amdt 1) AS 1682.1:2015 & AS 1682.2:2015
19.	1. Mechanical air handling systems 2. Mechanical ventilation to carpark.	**BCA2019 E2.2, Table E2.2a,** **Spec E2.2a,** AS 1668.1:2015 (Amdt 1) **Note: 5.5.3 Override control** To enable manual control by attending emergency services personnel, fans that are not required to shut down on initiation of fire mode in the car park shall be provided with a control switch at the designated building entry point. **Note:** Signage should be located at the car park entry indicating the location of the control switches.

Notes:

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

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

(ii)

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

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

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

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

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

Performance Solutions				
	Description of Performance Solution	**DTS Provision**	**Performance Requirements**	**Method of meeting performance solutions**

Item	Essential Fire and Other Safety Measures		Standard of Performance	
20.	TBC	TBC	TBC	TBC

ANNEXURE C FIRE RESISTANCE LEVELS

Annexure C - Fire Resistance Levels

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

Type A Construction

Table 7. Type A Construction

Item	Class 2	Class 7a
Loadbearing External Walls (including columns and other building elements incorporated therein) - Less than 1.5m to a *fire-source feature* - 1.5 – less than 3m from a *fire-source feature* - 3m or more from a *fire source feature*	90/90/90 90/60/60 90/60/30	120/120/120 120/90/90 120/60/30
Non-Loadbearing External Walls - Less than 1.5m to a *fire-source feature* - 1.5 – less than 3m from a *fire-source feature* - 3m or more from a *fire-source feature*	-/90/90 -/60/60 -/-/-	-/120/120 -/90/90 -/-/-
External Columns - Loadbearing - Non-loadbearing	90/-/- -/-/-	120/-/- -/-/-
Common Walls & Fire Walls	90/90/90	120/120/120
Stair and Lift Shafts required to be fire-resisting - Loadbearing - Non-loadbearing	90/90/90 -/90/90	120/120/120 -/120/120
Internal walls bounding sole occupancy units - Loadbearing - Non-loadbearing	90/90/90 -/60/60	120/-/- -/-/-
Internal walls bounding public corridors, public lobbies and the like: - Loadbearing - Non-loadbearing	90/90/90 -/60/60	120/-/- -/-/-

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

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

ANNEXURE D DETAILED BCA 2019 ASSESSMENT

Annexure D – Detailed BCA 2019 Assessment

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

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

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

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

Deemed to Satisfy Clause Assessment

Table 8. Deemed to Satisfy Clause Assessment

Clause	Clause Requirements	Comment	Status
Section B: Structure			
Part B1 – Structural Provisions			
B1.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
B1.1: Resistance to actions	The resistance of the building must be greater than the most critical action effect resulting from different combinations of actions, where the most critical action has been determined in accordance with this Part	Structural Engineer to certify at CC stage.	CRA – Refer Annexure G
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 G
B1.4: Determination of structural resistance of materials and forms of construction	The structural resistance of materials and forms of construction must be determined in accordance with this Clause.	Structural Engineer to certify at CC stage.	CRA – Refer Annexure G
B1.5: Structural software	Structural software used in computer aided design of a building or structure within the geometrical limits of (b) of this Clause must comply with the ABCB Protocol for Structural Software.	Structural Engineer to certify at CC stage.	CRA – Refer Annexure G
B1.6 Construction of buildings in flood hazard areas	A Class 2 building, in a flood hazard area (refer to Council maps) must comply the ABCB Standard for Construction of Buildings in Flood Hazard Areas.	If the building is provided within a flood hazard area this Construction Standard will need to be applied.	**FI**

Section C: Fire Resistance				
Part C1 – Fire Resistance and Stability				
C1.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
C1.1:	Type of construction required	The building is required to be of Type A Construction. Refer to Specification C1.1 requirements at the end of this Section.	The building will need to comply with Specification C1.1 for Type A construction.	CRA – Refer Annexure G
C1.2:	Calculation of rise in storeys	The building has a rise in storeys of three (3).	Number of storeys have been noted. This is based upon the driveway entry being fully enclosed on the Ground Floor.	Noted
C1.3:	Buildings of multiple classification	Informational	Noted	Noted
C1.4:	Mixed Types of construction	N/A	Clause not applicable due to a single type of construction being provided.	N/A
C1.5:	Two Storey Class 2, 3 or 9c buildings	N/A	Clause is not applicable due to the building classification	N/A
C1.6:	Class 4 Parts of building	N/A	Clause not applicable due to building classification	N/A
C1.7:	Open spectator stands and indoor sports stadium	N/A	Clause not applicable due to the use of the building	N/A
C1.8:	Lightweight construction	Lightweight construction used in a fire-rated application is to comply with Specification C1.8.	Lightweight construction will need to be provide in accordance with this clause.	CRA – Refer Annexure G
C1.9:	Non-combustible building elements	(a) In a building required to be of Type A or B construction, the following building elements and their components must be *non-combustible*:	All elements within the wall must be non-combustible in accordance with this clause. The details of the proposal wall systems have not been included at this stage and will need to be provided with	CRA – Refer Annexure G

Section C: Fire Resistance			
	(i) External walls and common walls, including all components incorporated in them including the facade covering, framing and insulation. (ii) The flooring and floor framing of lift pits. (iii) Non-loadbearing internal walls where they are required to be fire-resisting. (b) A shaft, being a lift, ventilating, pipe, garbage, or similar shaft that is not for the discharge of hot products of combustion, that is non-loadbearing, must be of *non-combustible* construction. (c) A loadbearing internal wall and a loadbearing *fire wall*, including those that are part of a loadbearing shaft, must comply with Specification C1.1. (d) The requirements of (a) and (b) do not apply to gaskets, caulking, sealants, termite management systems, Glass including laminated glass, thermal breaks associated with glazing systems and damp-proof courses. (e) The following materials, may be used wherever a *non-combustible* material is required: (i) Plasterboard. (ii) Perforated gypsum lath with a normal paper finish. (iii) Fibrous-plaster sheet. (iv) Fibre-reinforced cement sheeting. (v) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0. (vi) *Sarking-type materials* that do not exceed 1 mm in thickness and have a *Flammability Index* not greater than 5. (vii) Bonded laminated materials where—	detailed designed to ensure compliance is maintained in accordance with this Clause. Sufficient details and test reports will need to be provided.	

Section C: Fire Resistance			
	(A) each lamina, including any core, is *non-combustible*; and (B) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and (C) the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectively. This clause also prohibits the use of in situ formwork containing combustible elements including PVC lined formwork products where the PVC lining remains in place for the life of the building. Where the use of such products is proposed – in all instances the material must be the subject of a site specific Performance Assessment Report. See comments at part 3.4 above.		
C1.10: Fire hazard properties	Fire hazard properties of internal linings, materials and assemblies must comply with C1.10 of the BCA and Specification C1.10, including floor, wall and ceiling linings, air-handling ductwork, lift cars, insulation, *sarking-type materials* and attachments, or be considered *non-combustible*.	Linings provided within the building must be compliance with this clause and Specification C1.10. No specific details of the proposed materials have been provided at this stage	CRA – Refer Annexure G
C1.11: Performance of external walls in fire	N/A	Clause is not applicable due to the rise in storeys of the building	N/A
C1.12: Non-combustible materials	Clause now deleted and relocated to C1.9.	Noted	Noted
C1.13: Fire-protected timber: Concession	N/A	There is no fire protected timber proposed.	N/A
C1.14: Ancillary elements	An ancillary element must not be fixed, installed or attached to the internal parts or external face of an	Any ancillary elements provided to the building must be in accordance with this clause.	CRA – Refer Annexure G

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

Section C: Fire Resistance			
	(iii) does not serve an *exit*, where it would render the *exit* unusable in a fire. (j) A part of a security, intercom or announcement system. (k) Wiring. (l) A paint, lacquer or a similar finish. (m) A gasket, caulking, sealant or adhesive directly associated with (a) to (k).		
Part C2 – Compartment and Separation			
C2.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
C2.1: Application of Part	Informational - C2.2, C2.3 and C2.4 do not apply to a carpark provided with a sprinkler system complying with Specification E1.5 (other than an FPAA101D or FPAA101H system), an open-deck carpark or an open spectator stand.	Noted	Noted
C2.2: General floor area and volume limitations	The size of *fire compartments* in the building must not exceed that specified in Table C2.2.	The size of fire compartments in the building are considered to comply with Type A construction.	CRA – Refer Annexure G
C2.3: Large isolated buildings	N/A	The building is not considered to be a large isolated building	N/A
C2.4: Requirements for open spaces and vehicular access	N/A	The building is not considered to be a large isolated building.	N/A
C2.5: Class 9a and 9c Buildings	N/A	Not applicable due to the building classification.	N/A

Section C: Fire Resistance				
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. The above does not apply to openings within the same stairway. For the purposes of this clause, opening means that part of the external wall of a building that does not have an *FRL* of 60/60/60 or greater.	It will be required to provide a vertical spandrel or a horizontal projection. Based on the plans it is generally noted that suitable spandrels and projections have been provided as required. Throughout it is noted that the side access openings to balconies are provided more than 450mm from the edge of the building as required.	CRA – Refer Annexure G
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	There are no fire walls used to separate fire compartments throughout this building, it is generally only noted that the walls of the fire stairs will need to be provided in accordance with this clause to maintain the required separation.	CRA – Refer Annexure G

Section C: Fire Resistance			
	> the roof covering.		
C2.8: Separation of classifications in the same storey	Where a storey has different classifications located alongside one another: > each building element in that storey must have the higher *FRL* prescribed in Specification C1.1 for that element for the classifications concerned; or > the parts must be separated in that storey by a *fire wall* having the higher *FRL* prescribed in Table 3; or > where one part is a carpark complying with Table 3.9, 4.2 or 5.2 of Specification C1.1, the parts may be separated by a *fire wall* complying with the appropriate Table.	It will be required that the Ground Floor portion of the carpark is separated from the Class 2 portion of the building will a suitable FRL in accordance with this Clause.	CRA – Refer Annexure G
C2.9: Separation of classifications in different storeys	Floors separating storeys of different classifications must have an *FRL* of not less than that prescribed in Specification C1.1 for the classification of the lower storey. Note: Determination of Floor *FRL*'s must also consider compliance with C2.7 whereby the floor must have the same *FRL* as the fire wall of the *fire compartment* below and D2.12 whereby roof as open space must have an *FRL* not less than 120/120/120.	Each of the floors provided throughout the building must maintain an FRL in accordance with Speciation C1.1. It is noted that the egress path from the Ground Floor is along the roof of the carpark and therefore will be deemed as roof as open space and maintain an FRL of 120/120/120 in accordance with D2.12.	CRA – Refer Annexure G
C2.10: Separation of lift shafts	Passenger lifts must be separated from the remainder of the building by enclosure in a fire rated shaft achieving an *FRL* prescribed by Table 3 of Specification C1.1.	The lift shafts will need to maintain separation in accordance with this clause and Specification C1.1	CRA – Refer Annexure G
C2.11: Stairways and lifts in one shaft	A stairway and lift must not be in the same shaft if either the stairway or the lift is required to be in a fire-resisting shaft.	The stairway and lift are found to be provided in separate shafts.	CRA – Refer Annexure G
C2.12: Separation of equipment	Noted	Throughout the building it is noted that there are no rooms proposed at this stage which would require separation in accordance with this Clause.	Noted

Section C: Fire Resistance			
		Any equipment that will be added are required to comply with this Clause	
C2.13: Electricity supply system	> A main switchboard which sustains emergency equipment operating in the emergency mode must be fire separated from any other part of the building by construction having an *FRL* of not less than 120/120/120 and have the doorway fitted with self-closing fire door having an *FRL* of not less than –/120/30. > Any electrical conductors located within the building that supply a substation or main switchboard for emergency equipment must comply with BCA clause C2.13. > Emergency equipment switchgear must be separated from non-emergency equipment switchgear by metal partitions designed to minimize the spread of a fault from the non-emergency equipment switchgear. > Emergency equipment includes but is not limited to the following: o fire hydrant booster pumps; o sprinkler pumps; o hose reel pumps; o air-handling systems designed to exhaust and control the spread of smoke; o emergency lifts; o control and indicating equipment; and o sound systems and intercom systems for emergency purposes. Note: Consideration should be given to the location of Electrical Substations on adjoining sites in regards to proximity to Fire Hydrant Boosters being within 10.0m	Any main switchboard which sustains emergency equipment operating in the emergency mode will need to be separated in accordance with this clause.	CRA – Refer Annexure G

Section C: Fire Resistance			
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.	There are no corridors exceeding 40m in length	Complies
Part C3 – Protection of Openings			
C3.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
C3.1: Application of Part	(a) The Deemed-to-Satisfy Provisions of this Part do not apply to– (i) Control joints, weep holes and the like in external walls of masonry construction and joints between panels in external walls of pre-cast concrete panel construction if, in all cases they are not larger than necessary for the purpose; and (ii) Non-combustible ventilators for subfloor or cavity ventilation, if each does not exceed 45 000 mm2 in face area and is spaced not less than 2 m from any other ventilator in the same wall; and (iii) Openings in the vertical plane formed between building elements at the construction edge or perimeter of a balcony or verandah, colonnade, terrace, or the like; and (iv) In a carpark– (A) Service penetrations through; and (B) Openings formed by a vehicle ramp in, (aa) A floor other than a floor that separates a part not used as a carpark, providing the connected floors comply as a single fire compartment for the purposes of all other requirements of the	The provisions of this part are applicable throughout the building, except for the areas raised in this clause.	Noted

Section C: Fire Resistance			
	Deemed-to-Satisfy Provisions of Sections C, D and E. (b) For the purposes of the Deemed-to-Satisfy Provisions of this Part, openings in building elements required to be fire-resisting include doorways, windows (including any associated fanlight), infill panels and fixed or openable glazed areas that do not have the required FRL. (c) For the purposes of the Deemed-to-Satisfy Provisions of this Part, openings, other than those covered under (a)(iii), between building elements such as columns, beams and the like, in the plane formed at the construction edge or perimeter of the building, are deemed to be openings in an external wall.		
C3.2: Protection of openings in external walls	Noted	The external walls of the building are noted to be more than 3m and 6m respectively from any fire source features and will not require protection in accordance with this Clause.	N/A
C3.3: Separation of external walls and associated openings in different fire compartments	Noted	There are no external walls of separate fire compartments which are exposed to one another in accordance with this Clause.	N/A
C3.4: Acceptable methods of protection	Noted	Methods of protection has been noted	Noted
C3.5: Doorways in fire walls	N/A	There are no fire walls proposed throughout and therefore no doorways in a fire wall	N/A
C3.6: Sliding fire doors	N/A	There are no sliding fire doors proposed	N/A
C3.7: Protection of doorways in horizontal exits	N/A	There are no horizontal exits proposed	N/A

Section C: Fire Resistance				
C3.8:	Openings in fire-isolated exits	N/A	Clause is not applicable due to no fire stairs being provided	N/A
C3.9:	Service penetrations in fire-isolated exits	N/A	Clause is not applicable due to no fire stairs being provided	N/A
C3.10:	Openings in fire-isolated lift shafts	> Lift landing doors are required to be fire doors with an *FRL* of -/60/- that comply with AS 1735.11:1986, and be set to remain closed except when discharging or receiving, passengers, goods or vehicles. > Panels in the wall of the lift shaft must be backed by construction having an *FRL* of not less than –/60/60 if it exceeds 35 000 mm2 in area.	The openings within the lift shafts throughout the building will need to be provided in accordance with this clause.	CRA – Refer Annexure G
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. > In a Class 2 building where a path of travel to an *exit* does not provide a person seeking egress with a choice of travel in different directions to alternative *exit*s and is along an open balcony, landing or the like and passes an external wall of– (i) another sole-occupancy unit; or (ii) a room not within a sole-occupancy unit, then that external wall must– (i) be constructed of concrete or masonry, or be lined internally with a fire-protective covering; and (ii) have any doorway fitted with a self-closing, tight-fitting solid core door not less than 35 mm thick; and (iii) have any windows or other openings–	Due to the open nature of the building, it is considered that these may be deemed applicable under Clause C3.11 G and may be provided with solid core doors and openings that are suitably protection in accordance with this Clause. It is noted that there are screen openings provided to the elevations and it would be required to confirm the openings will be equivalent in accordance with Clause D2.5.	**FI**

Section C: Fire Resistance			
	(A) protected internally in accordance with C3.4; or (B) located at least 1.5 m above the floor of the balcony, landing or the like.		
C3.12: Openings in floors and ceilings for services	Where services pass through a floor which is required to achieve an *FRL* or a ceiling required to have a *resistance to the incipient spread of fire*, the service must be enclosed within a fire resisting shaft or fire protected in accordance with Clause C3.15. Where a service passes through a floor which is required to be protected by a *fire-protective* covering, the penetration must not reduce the fire performance of the covering.	Where services are passing through a fire rated element it will need to be protected in accordance with Clause C3.15.	CRA – Refer Annexure G
C3.13: Openings in shafts	Openings in shafts must be protected by: (a) if it is in a sanitary compartment – a door or panel which together with its frame, is *non-combustible* or has an *FRL* of not less than –/30/30; or (b) a self-closing –/60/30 fire door or hopper; or (c) an access panel having an *FRL* of not less than –/60/30; or (d) if the shaft is a garbage shaft – a door or hopper of *non-combustible* construction.	Any openings in fire rated shafts will need to be protected in accordance with this clause.	CRA – Refer Annexure G
C3.15: Openings for service installations	Where services pass through an element which is required to achieve an *FRL* (other than an external wall or roof), the service must be fire protected in accordance with BCA Clause C3.15. **Note:** contractors should check with PCA to confirm compliance with their proposed fire stopping method.	Where services are passing through a fire rated element it will need to be protected in accordance with this Clause.	CRA – Refer Annexure G
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	Construction joints and the like in fire rated walls must be provided in accordance with this clause.	CRA – Refer Annexure G

Section C: Fire Resistance				
		manner identical with a prototype tested in accordance with AS 1530.4:2014 to achieve the required *FRL*.		
C3.17:	Columns protected with lightweight construction to achieve an FRL	A column protected by lightweight construction to achieve an *FRL* which passes through a building element that is required to have an *FRL* or a resistance to the incipient spread of fire, must be installed using a method and materials identical with a prototype assembly of the construction which has achieved the required *FRL* or resistance to the incipient spread of fire.	Where columns are to be protected with lightweight construction it must maintain the FRL required in accordance with this clause	CRA – Refer Annexure G
Specification C1.1 – Fire-Resisting Construction				
2.0:	General Requirements	Informational	Noted	Noted
2.1:	Exposure to fire-source features	A building element is exposed to a *fire-source feature* if any of the horizontal straight lines between that part and the *fire-source feature*, or vertical projection of the feature, is not obstructed by another part of the building that– (i) has an *FRL* of not less than 30/–/–; and (ii) is neither transparent nor translucent.	The building is noted to be exposed to the fire source features being the adjacent property boundaries.	Noted
2.2:	Fire protection for a support of another part	Where a part of a building required to have an *FRL* depends upon direct vertical or lateral support from another part to maintain its *FRL*, that supporting part must have an *FRL* not less than that required by other provisions of this Specification; and if located within the same *fire compartment* as the part it supports have an FRL in respect of structural adequacy the greater of that required for the supporting part itself and for the part it supports.	The FRL of supporting elements must be provided in accordance with this clause and maintain the required FRL.	CRA – Refer Annexure G
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	Any lintels within the building must be in accordance with this clause and maintain the required FRL.	CRA – Refer Annexure G

Section C: Fire Resistance				
		shutter and meets the requirements of Spec C1.1 clause 2.3 (a) & (b).		
2.4:	Attachments not to impair fire-resistance	The method of attaching or installing a finish, lining, ancillary element or service installation to a building element must not reduce the fire-resistance of that element to below that required.	Any attachments to the building must be in accordance with this clause. It is noted that attachments will also need to comply with Clause C1.14 of the BCA which requires non-combustible construction.	CRA – Refer Annexure G
2.5:	General concessions	Structures on roofs — A *non-combustible* structure situated on a roof need not comply with the other provisions of this Specification if it only contains— (i) lift motor equipment; or (ii) one or more of the following: (A) Hot water or other water tanks. (B) Ventilating ductwork, ventilating fans and their motors. (C) Air-conditioning chillers. (D) Window cleaning equipment. (E) Other service units that are *non-combustible* and do not contain flammable or combustible liquids or gases.	There are concessions available in accordance with this clause for any structures located on the roof. At this stage there are no structures proposed.	CRA – Refer Annexure G
2.6:	Mezzanine floors: Concession	N/A	There are no mezzanines provided within the building	N/A
2.7:	Enclosure of shafts	Fire-isolated shafts are required to be enclosed at the top and bottom of the shaft with fire rated construction having an *FRL* required for the walls of a non-load-bearing shaft in the same building, as per specification C1.1. This fire rating is required in two directions. The above does not apply to shafts extending beyond the roof covering, other than fire isolated stair and lift	Any fire isolated shafts provided within the building must be enclosed at the top of this shaft in accordance with this clause.	CRA – Refer Annexure G

Section C: Fire Resistance				
		shafts and the bottom of *non-combustible* shafts laid directly on the ground.		
2.8:	Carparks in Class 2 and 3 Buildings	Noted	This concession may have been applied to reduce the FRL throughout the carpark, however it is noted that this is deemed roof as open space and would require a 120min FRL and therefore supporting elements would require the same FRL.	CRA – Refer Annexure G
2.9:	Residential Aged Care building: Concession	N/A	Clause not applicable due to the use of the building	N/A
3.0:	Type A fire-resisting construction	Type A fire-resisting construction is applicable to the development.	Refer to part 3 clauses below for the relevant Type A Construction requirements appliable to the project.	-
3.1:	Fire-resistance of building elements	> The FRL's of all elements are to be in accordance with the FRL's detailed in the Table contained within Part 4.0 of this report. > External walls, common walls and the flooring and floor framing of lift pits must be *non-combustible*. (Note: insulation and sarking used must be *non-combustible*) > Internal walls required to be fire rated must extend to– (i) to the underside of the floor next above; or (ii) the underside of a roof complying with Table 3; or (iii) if under Clause 3.5 the roof is not required to comply with Table 3, the underside of the *non-combustible* roof covering and, except for roof battens with dimensions of 75 mm x 50 mm or 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 elements within the building are required to maintain an FRL in accordance with this clause and Specification C1.1.	CRA – Refer Annexure G

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

Section C: Fire Resistance				
		(d) it is within a *sole-occupancy unit* in a Class 2 or 3 building or Class 4 part of a building; or (e) it is an open-access floor (for the accommodation of electrical and electronic services and the like) above a floor with the *required FRL*.		
3.3:	Floor Loading of Class 5 and 9b buildings: Concession	(a) N/A	Clause not applicable due to building classification	N/A
3.4:	Roof superimposed on concrete slab: Concession	A roof superimposed on a concrete slab roof need not comply with Clause 3.1 as to fire-resisting construction if— (a) the superimposed roof and any construction between it and the concrete slab roof are non-combustible throughout; and (b) the concrete slab roof complies with Table 3.	A roof superimposed on a concrete slab roof need not comply with Clause 3.1 as to fire-resisting construction if the superimposed roof and any construction between it and the concrete slab roof are non-combustible throughout. Details to the proposed roof structure have not been provided at this stage.	CRA – Refer Annexure G
3.5:	Roof: Concession	A roof need not comply with Table 3 if its covering is *non-combustible* and the building— (a) has a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5 installed throughout; or (b) has a rise in storeys of 3 or less; or (c) is of Class 2 or 3; or (d) has an *effective height* of not more than 25 m and the ceiling immediately below the roof has a *resistance to the incipient spread of fire* to the roof space of not less than 60 minutes.	A roof need not comply with Table 3 if its covering is non-combustible due to the classification of the building.	CRA – Refer Annexure G
3.6:	Roof lights	N/A	Clause is not applicable due to no roof lights being 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— (i) in a Class 2 or 3 building: FRL 60/60/60;	In the storey immediately below that roof, internal columns other than those referred to in Clause 3.1(f) and internal walls other than *fire walls* and shaft walls may have an FRL of 60/60/60;	CRA – Refer Annexure G
3.8:	Open spectator stands and indoor sports stadiums concession	N/A	Clause not applicable due to the use of the building	N/A
3.9:	Carparks	Noted	This concession is only considered to be applied if the sprinkler system being provided is in accordance with AS2118. However, it is noted that portions of the Basement roof are used as open space on the Ground Floor and will need to maintain an FRL of 120/120/120 and therefore all supporting elements must maintain the same FRL in accordance with this specification.	Noted
3.10:	Class 2 and 3 buildings Concession	(e) In a Class 2 or 3 building with a rise in storeys of not more than 3— (i) notwithstanding C1.9(a) and (b) and C2.6, timber framing may be used for— (A) external walls; and (B) common walls; and (C) the floor framing of lift pits; and (D) non-loadbearing internal walls which are required to be fire-resisting; and (E) non-loadbearing shafts, except shafts used for the discharge of hot products of combustion; and	Due to the rise in storey, it would be considered that this concession may be applied.	CRA – Refer Annexure G

Section C: Fire Resistance				
		(F) spandrels or horizontal construction provided for the purposes of C2.6; and (ii) (notwithstanding Clause 3.1(d) of Specification C1.1, for loadbearing internal walls and loadbearing fire walls— (A) timber framing may be used; and (B) non-combustible materials may be used. (f) A Class 2 or 3 building having a rise in storeys of not more than 4 may have the top three storeys constructed in accordance with (a) provided— (i) the lowest storey is used solely for the purpose of parking motor vehicles or for some other ancillary purpose; and (ii) the lowest storey is constructed of concrete or masonry including the floor between it and the Class 2 or 3 part of the building above; and (iii) the lowest storey and the storey above are separated by construction having an FRL of not less than 90/90/90 with no openings or penetrations that would reduce the fire-resisting performance of that construction except that a doorway in that construction may be protected by a –/60/30 self-closing fire door.		
Specification C1.10 – Fire Hazard Properties				
1.	Scope	Informational	Noted	-
2.	Application	Informational	Noted	Noted
3.	Floor linings and floor coverings	A floor lining or floor covering must have– (a) a *critical radiant flux* not less than that listed in Table 2; and (b) in a building not protected by a sprinkler system complying with Specification E1.5, a maximum	The floor linings or covering must be provided in accordance with this clause.	CRA – Refer Annexure G

Section C: Fire Resistance				
		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.		
4.	Wall and ceiling linings	(a) A wall or ceiling lining system must comply with the *group number* specified in Table 3 and for buildings not fitted with a sprinkler system complying with Specification E1.5 have– (i) a *smoke growth rate index* not more than 100; or (ii) an *average specific extinction area* less than 250 m2/kg. (b) A *group number* of a wall or ceiling lining and the *smoke growth rate index* or *average specific extinction area* must be determined in accordance with AS 5637.1:2015.	The wall and ceiling linings must be provided in accordance with this clause.	CRA – Refer Annexure G
5.	Air-handling ductwork	Rigid and flexible ductwork must comply with the fire hazard properties set out in AS 4254 Parts 1 and 2.	The air handling ductwork must be provided in accordance with this clause.	CRA – Refer Annexure G
6.	Lift cars	Materials used as— (a) floor linings and floor coverings must have a *critical radiant flux* not less than 2.2; and (b) wall and ceiling linings must be a Group 1 material or a Group 2 material in accordance with AS 5637.1:2015.	The materials in the lift car must be provided in accordance with this clause.	CRA – Refer Annexure G
7.	Other materials	Materials and assemblies not included in Clauses 3, 4, 5 or 6 must not exceed the indices set out in Table 4.	Any other material proposed within the building must be provided in accordance with this clause.	CRA – Refer Annexure G

Section D: Access and Egress
Part D1 – Provision for Escape

Section D: Access and Egress				
D1.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
D1.1:	Application of Part	The Deemed-to-Satisfy Provisions of this Part do not apply to the internal parts of a *sole-occupancy unit* in a Class 2 or 3 building or a Class 4 part of a building.	Noted	Noted
D1.2:	Number of exits required	Each of the storeys are required to be provided with access to at least one exit. **Basements–** Not less than 2 *exits* must be provided from any storey if egress from that storey involves a vertical rise within the building of more than 1.5 m, unless – (i) the floor area of the storey is not more than 50 m2; and (ii) the distance of travel from any point on the floor to a single *exit* is not more than 20 m.	Throughout the building it is noted that only a single exit has been provided on each of the floors throughout and three exits have been provided in the basement	Complies
D1.3:	When fire-isolated stairways and ramps are required	Every stairway or ramp serving as a required exit must be fire-isolated unless connects, passes through or passes by not more than 2 consecutive storeys	Due to the number of storeys connected it is noted that the stairways throughout are not required to be fire isolated.	CRA – Refer Annexure G
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 > No point on the floor of a room which is not in a sole-occupancy unit must be more than 20 m from an exit or from a point at which travel in different directions to 2 exits is available.	Class 2 residential — > Within the Level 1 of each of the towers, it is noted that there is an extended travel distance of up to 8m to an exit in lieu of the required 6m. This will need to be modified to be reduced to less than 6m or a Performance Solution may be sought by a Fire Engineer. Note: this will be considered applicable when egress paths are provided to the rear of each lift shaft to provide a point of choice on the Ground Floors Class 7a carpark—	PS

Section D: Access and Egress				
		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 travel distances throughout the basement are provided in accordance with this clause due to the number of exits being provided and the points of choice available.	
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 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 alternative exits provided within the basement are noted to be suitably located in accordance with the clause. It is noted that the paths of travel generally converge, but this is located outside of the building and in open space and not caught by this Clause.	CRA – Refer Annexure G
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	Throughout the building it is noted that there is at least a 1000mm egress path maintained. Based on the ceiling heights provided throughout it is noted that the sufficient clearance will be maintained along the egress paths in accordance with this clause.	CRA – Refer Annexure G

Section D: Access and Egress				
		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		
D1.7:	Travel via fire-isolated exits	N/A	Clause is not applicable as it is considered that there are no fire stairs	N/A
D1.8:	External stairways or ramps in lieu of fire-isolated exits	N/A	Clause is not applicable as there are no external stairs used in lieu in accordance with this Clause	N/A
D1.9:	Travel by non-fire-isolated stairways or ramps	> A non-fire-isolated stairway serving as a required *exit* must provide a continuous means of travel by its own flights and landings from every storey served to the level at which egress to a road or open space is provided. > In a Class 2, 3 or 4 building, the distance between the doorway of a room or *sole-occupancy unit* and the point of egress to a road or open space by way of a stairway or ramp that is not fire-isolated and is required to serve that room or *sole-occupancy unit* must not exceed 60m. > In a Class 5, 6, 7, 8 or 9 building, the distance from any point on a floor to a point of egress to a road or open space by way of a required non-fire-isolated stairway or non-fire-isolated ramp must not exceed 80m. > In a Class 2, 3 or 9a building, a required non-fire-isolated stairway or non-fire-isolated ramp must discharge at a point not more than –	The non-fire isolated stairways provided throughout the building are noted to discharge directly to open space via their own flight and will maintain distances in accordance with this Clause to reach open space. It is noted that egress paths will be made available to the rear of the each of the lift lobbies within the 'planting' to not require the occupants to travel back within the building.	CRA – Refer Annexure G

Section D: Access and Egress			
	(i) 15 m from a doorway providing egress to a road or open space or from a fire-isolated passageway leading to a road or open space; > In a Class 5 to 8 or 9b building, a required non-fire-isolated stairway or non-fire-isolated ramp must discharge at a point not more than – (i) 20 m from a doorway providing egress to a road or open space or from a fire-isolated passageway leading to a road or open space; > In a Class 2 or 3 building, if 2 or more *exits* are required and are provided by means of internal non-fire-isolated stairways or non-fire-isolated ramps, each *exit* must— (i) provide separate egress to a road or open space; and (ii) be suitably smoke-separated from each other at the level of discharge.		
D1.10: Discharge from exits	*Exits* must not be blocked at the point of discharge and where necessary, suitable barriers must be provided to prevent vehicles from blocking the *exit*. If a required *exit* leads to open space, the path of travel to the road must have an unobstructed width of not less than 1m. If an *exit* discharges to open space that is at a different level that the public road to which it is connected, the path of travel to the road must be by a ramp or other incline not steeper than 1:8, or a BCA compliant stairway. The discharge points of alternative *exits* must be as far apart as practical	Discharge from the exits is found to lead to open space in accordance with this Clause. It is considered that the discharge points of the three basement exits points are located a suitable distance away. It is generally considered that a suitable accessways will be provided to each the street with a 1:20 walkway also provided. The egress paths to the rear of the lift shafts will need to be provided in accordance with this Clause and maintain suitable clearance.	CRA – Refer Annexure G
D1.11: Horizontal exits	N/A	There are no horizontal exits being relied upon.	N/A

Section D: Access and Egress			
D1.12: Non-required stairways, ramps or escalators	N/A	The current plans do not detail any non-required stairways or the like	N/A
D1.13: Number of persons accommodated	Informational–	Due to the number of residential units per storey it is considered that there would be no more than 100 people per storey.	Noted
D1.14: Measurement of distances	Informational	Noted	Noted
D1.15: Method of Measurement	Informational	Noted	Noted
D1.16: Plant rooms, lift motor rooms and electricity network substations: concession	Informational	It is considered that there are no plant rooms that would access in accordance with this clause	Noted
D1.17: Access to lift pits	Access to the lift pit is assumed to be through the bottom landing doors as the pit is assumed to be less than 3m deep.	Access to the lift pit must be provided in accordance with this clause	CRA – Refer Annexure G
D1.18: Egress from early childhood centres	N/A	Clause not applicable due to the use of the building	N/A
Part D2 – Construction of Exits			
D2.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
D2.1: Application of Part	Informational– Except for D2.13, D2.14(a), D2.16, D2.17(d), D2.17 (e), D2.18 & D2.24, the deemed-to-satisfy Provisions of this Part do not apply to internal parts of the Class 2 *sole-occupancy units.*	Noted	Noted

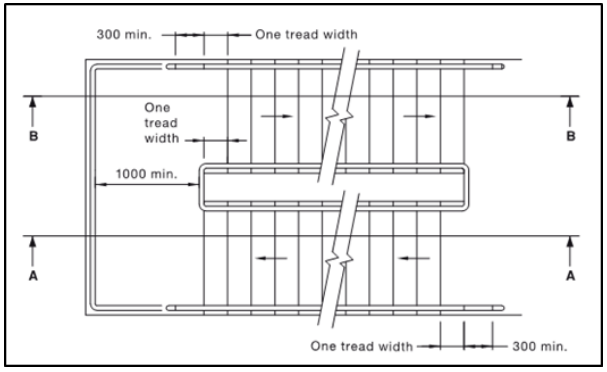
Section D: Access and Egress				
D2.2:	Fire-isolated stairways and ramps	N/A	Clause is not applicable as there are no fire isolated stairways	N/A
D2.3:	Non-fire-isolated stairways and ramps	Required stairs and ramps (including landings and any supporting building elements) must be constructed according to D2.2, or only of- (a) reinforced or prestressed concrete; or (b) steel in no part less than 6 mm thick; or (c) timber that— (i) has a finished thickness of not less than 44 mm; and (ii) has an average density of not less than 800 kg/m3 at a moisture content of 12%; and (iii) has not been joined by means of glue unless it has been laminated and glued with resorcinol formaldehyde or resorcinol phenol formaldehyde glue".	The stairways are required to be constructed in accordance with this clause	CRA – Refer Annexure G
D2.4:	Separation of rising and descending stair flights	N/A	Clause is not applicable as there are no fire isolated stairways	N/A
D2.5:	Open access ramps and balconies	Where an open access ramp or balcony is provided to meet the smoke hazard management requirements of Table E2.2a, it must— (a) have ventilation openings to the outside air which— (i) have a total unobstructed area not less than the floor area of the ramp or balcony; and (ii) are evenly distributed along the open sides of the ramp or balcony; and (b) not be enclosed on its open sides above a height of 1 m except by an open grille or the like having a free air space of not less than 75% of its area.	It would be considered that the balconies and Ground Floor walkways will need to be deemed open in accordance with this Clause to allow for the provisioning of the windows on the Ground Floor. To achieve this, it would be required to confirm that the that the unobstructed areas would be not less than the balcony and the screening would need to be 75% open for the area above the balcony	**FI**

Section D: Access and Egress			
D2.6: Smoke lobbies	N/A	Clause is not required as the exits are all pressurised in accordance with AS1668.1	N/A
D2.7: Installations in exits and paths of travel	> Access to service shafts and services other than to fire-fighting or detection equipment must not be provided from a fire-isolated stairway or fire-isolated passageway. > Gas or other fuel services must not be installed in a required *exit*. > Any electricity meters, distribution boards or ducts, or telecommunications distribution boards or equipment installed in corridors/hallways/lobbies or the like must be enclosed with *non-combustible* construction or a fire protective covering with doorways suitably sealed against smoke spread.	Any electricity meters, distribution boards or ducts, or telecommunications distribution boards or equipment installed in the common areas or along an egress path must be smoke sealed in accordance with this clause.	CRA – Refer Annexure G
D2.8: Enclosure of space under stairs and ramps	N/A	Clause is not applicable due to there being no enclosures or the lie below stairs or ramps.	N/A
D2.9: Width of stairways and ramps	Informational– A required stairway or ramp that exceeds 2 m in width is counted as having a width of only 2 m unless it is divided by a handrail or barrier continuous between landings and each division has a width of not more than 2 m.	Throughout the building it is noted that there are no stairs or the like which are required to be more than 2m.	Noted
D2.10: Pedestrian ramps	Noted	The plans have not been detailed as being provided with ramps throughout the building. Only a walkway have been provided.	CRA – Refer Annexure G
D2.11: Fire-isolated passageways	N/A	Clause is not applicable as there are no fire isolated passageways proposed	N/A
D2.12: Roof as open space	Roof of basement to achieve an FRL of 120/120/120 as *exits* discharge onto it.	There are portions of the basement 1 roof which are used as open space on the Ground Floor and will need to maintain the required FRL in accordance with this clause.	CRA – Refer Annexure G

Section D: Access and Egress			
		Additionally, it would be required that the proposed egress path via the landscaping maintain a 3m distance from the front of the lift to be clear of any openings.	
D2.13: Goings and risers	Stairways must comply with the following: > Stairways must have not more than 18 and not less than 2 risers in each flight; > Goings must be between 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. > **In the case of a required stairway, no winders in lieu of a landing** > Treads must have a surface or nosing strip with a slip-resistant classification not less than that listed	Details of the risers and goings have not been provided at this stage. > Goings must be between 250 mm and 355 mm; > Risers must be between 115 mm high and 190 mm high; Compliance must be provided with this Clause, and this will require nosing strips being provided to each of the goings. The stairways within the internals of the SOUs are noted to contain two goings in lieu of a quarter landing which would be suitable.	CRA – Refer Annexure G

<table>
<tr><th colspan="4">Section D: Access and Egress</th></tr>
<tr><td></td><td>in Table D2.14 when tested in accordance with AS 4586-2013 Slip resistance classification of new pedestrian surface materials.</td><td></td><td></td></tr>
<tr><td>D2.14: Landings</td><td>Landings must be not less than 750 mm long and have either a surface with a slip-resistance classification complying with Table D2.14 or a strip at the edge of the landing with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013.
<table>
<tr><th rowspan="2">Application</th><th colspan="2">Surface Condition</th></tr>
<tr><th>Dry</th><th>Wet</th></tr>
<tr><td>Ramp steeper than 1:14</td><td>P4 or R11</td><td>P5 or R12</td></tr>
<tr><td>Ramp steeper than 1:20 but not steeper than 1:14</td><td>P3 or R10</td><td>P4 or R11</td></tr>
<tr><td>Tread or landing surface</td><td>P3 or R10</td><td>P4 or R11</td></tr>
<tr><td>Nosing or landing edge strip</td><td>P3</td><td>P4</td></tr>
</table></td><td>The landings are considered to be provided in accordance with this clause. Each of the elements must be provided with the required slip resistance in accordance with this clause and table D2.14.</td><td>CRA – Refer Annexure G</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 1428.1:2009; or
(b) in other cases–
(i) the doorway opens to a road or open space, external stair landing or external balcony; and</td><td>The threshold provided throughout the building must be provided in accordance with this clause. Based on majority of the doorways being internal or accessible it is considered that compliance would be available.</td><td>CRA – Refer Annexure G</td></tr>
</table>

Section D: Access and Egress			
	(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.		
D2.16: Barriers to prevent falls	Balustrades must be provided to stairs and balconies, driveway ramps etc where there is a fall of more than 1m. Balustrades must comply with the following: <u>Balustrade minimum heights</u> > 865 mm above stair nosings; > 865 mm above landings to a stair where the barrier is provided along the inside edge of the landing and does not exceed 500 mm in length; and > 1 m in all other locations. <u>Balustrade openings – 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</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.	Barriers to prevent falls will need to be provided in accordance with this clause and maintain a height of no less than 1m. The stairways will need to maintain a height of no less than 865mm and landings no less than 1000mm.	CRA – Refer Annexure G
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	Throughout the stairways it is required that handrails are provided in accordance with this clause. At this stage no details of the handrails have been provided. To comply with Clause 12 of AS1428.1-2009 it is required to provide an offset to allow for a continuous height being maintained throughout the flights and landing.	CRA – Refer Annexure G

Section D: Access and Egress			
	> be continuous between stair flight landings and have no obstruction that will break a hand-hold. > be constructed to comply with clause 12 of AS 1428.1:2009 (including handrails to the fire stairs). > Handrails in common areas (other than fire stairs) must also accord with D3.3. <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 AS 1428.1:2009. The handrail shall follow the angle of the nosings and be consistent height through the stair flight and any landings with no vertical sections at the landing. Compliance can be achieved via offset risers at the bottom of the flight in accordance with Figure 28 in AS 1428.1:2009 or with larger landings to accommodate required handrail extensions.  Figure 28 in AS 1428.1:2009	The current plans provide an offset riser to teach stairway which would allow for compliance being maintained with this clause.	
D2.18: Fixed platforms, walkways stairways and ladders	Noted	It is considered that there are no plant rooms that would access in accordance with this clause	Noted

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

Section D: Access and Egress			
	900mm and 1.1 m from the floor and if serving an area required to be accessible by Part D3 – (A) be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and (B) have a clearance between the handle and the back plate or door face at the centre grip section of the handle of not less than 35mm and not more than 45mm; or (iv) a single hand pushing action on a single device which is located between 900mm and 1.2m from the floor. (v) where the latch operation device referred to in (ii) is not located on the door leaf itself— (A) manual controls to power-operated doors must be at least 25 mm wide, proud of the surrounding surface and located— (aa) not less than 500 mm from an internal corner; and (bb) for a hinged door, between 1 m and 2 m from the door leaf in any position; and (cc) for a sliding door, within 2 m of the doorway and clear of a surface mounted door in the open position. (B) braille and tactile signage complying with Clause 3 and 6 of Specification D3.6 must identify the latch operation device. The above requirements do not apply to a door that – (i) serves only or is within a *sole-occupancy unit* in a Class 2 building; or		

Section D: Access and Egress			
	(ii) serves a *sole-occupancy unit* in a Class 5, 6, 7 or 8 building with a floor area not more than 200m2; or (iii) are fitted with a fail-safe device which automatically unlocks the door upon the activation of an AS 1670.1 detection system installed throughout the building and is readily openable when unlocked.		
D2.22: Re-entry from fire-isolated exits	N/A	Clause not applicable due to the rise in storeys of the building	N/A
D2.23: Signs on doors	N/A	Signage is not required in accordance with this Clause due to no fire doors being provided.	N/A
D2.24: Protection of openable windows	(a) Bedroom windows must be provided with protection if the floor below the window is 2m or more above the surface beneath. (b) Where the lowest level of the window opening is less than 1.7m above the floor, a window opening covered by (a) must comply with the following: (i) The openable portion of the window must be protected with– (A) a device to restrict the window opening; or (B) a screen with secure fittings. (ii) A device or screen required by (i) must– (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	Window protection must be provided to any new window openings in accordance with this clause.	CRA – Refer Annexure G

Section D: Access and Egress			
	(C) have a child resistant release mechanism if the screen or device is able to be removed, unlocked or overridden. (c) A barrier with a height not less than 865 mm above the floor is required to an openable window– (i) in addition to window protection, when a child resistant release mechanism is required by (b)(ii)(C); and (ii) where the floor below the window is 4m or more above the surface beneath if the window is not covered by (a). (d) A barrier covered by (c) except for (e) must not– (i) permit a 125 mm sphere to pass through it; and (ii) have any horizontal or near horizontal elements between 150 mm and 760 mm above the floor that facilitate climbing. (e) A barrier required by (c) to an openable window in— (i) fire-isolated stairways, fire-isolated ramps and other areas used primarily for emergency purposes, excluding external stairways and external ramps; and (ii) Class 7 (other than carparks) and Class 8 buildings and parts of buildings containing those classes; (A) must not permit a 300mm sphere to pass through it. **Note:** when considering the preferred option to comply with this clause consideration will need to be given to natural ventilation required under Clause F4.6.		
D2.25: Timber stairways: concession	N/A	There are no timber stairways proposed in accordance with this clause.	N/A
Part D3 – Access for People with A Disability			

Section D: Access and Egress				
D3.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
D3.1:	General building access requirements	An accessway in compliance with AS1428.1 is required to the following: **Class 2 –** From a pedestrian entrance to at least 1 floor containing SOU's, to the entrance doorway of each SOU located on that level, and any other level served by a passenger lift or an accessible ramp. To and within not less than 1 of each type of room or space for use in common by the residents (e.g. cooking facility, gymnasium, swimming pool, laundry, etc.) **Class 7a –** To and within any level containing accessible car parking spaces.	Access is considered to be provided throughout the building in accordance with this Clause due to the lift access being provided throughout. However, it would be required to confirm that the corridor serving the waste room is at least 1240mm wide at the doorway to allow for sufficient circulation in accordance with AS1428.1-2009.	**FI** **Refer to Part 3 of this Report**
D3.2:	Access to buildings	(a) An accessway must be provided to a building required to accessible – (i) from the main points of a pedestrian entry at the allotment boundary; and (ii) from another accessible building connected by a pedestrian link; and (iii) from any required accessible carparking space on the allotment. (b) In a building required to be accessible, an accessway must be provided through the principal pedestrian entrance, and – (i) through not less than 50% of all pedestrian entrances including the principal pedestrian entrance; and (ii) in a building with a total floor area more than 500 m2, a pedestrian entrance which is not	Due to the layout of the building, it is noted that there is no specific building entry. Each of the SOUs are noted to be their own entry and would not be captured by this Clause due to the nature of an SOU. Although, it is noted that an entry gate has been provided that will need to be accessible. It is found that suitable clear width is provided and latchside clearance will be maintained in accordance with AS1428.1-2009. It is noted that there are 1:20 walkways from the footpath to the building and is considered to be of a suitable gradient to allow for access as per AS1428.1-2009.	CRA – Refer Annexure G

Section D: Access and Egress			
	accessible must not be located more than 50 m from an accessible pedestrian entrance, except for pedestrian entrances serving only areas exempted by D3.4. (c) Where a pedestrian entrance required to be accessible has multiple doorways— (i) if the pedestrian entrance consists of not more than 3 doorways — not less than 1 of those doorways must be accessible; and (ii) if a pedestrian entrance consists of more than 3 doorways — not less than 50% of those doorways must be accessible. (d) For the purposes of (c)— (i) an accessible pedestrian entrance with multiple doorways is considered to be one pedestrian entrance where— (A) all doorways serve the same part or parts of the building; and (B) the distance between each doorway is not more than the width of the widest doorway at that pedestrian entrance (see Figure D3.2); and (ii) a doorway is considered to be the clear, unobstructed opening created by the opening of one or more door leaves (see Figure D3.2). Where a doorway on an accessway has multiple leaves, (except an automatic opening door) one of those leaves must have a clear opening width of not less than 850 mm in accordance with AS 1428.1.		
D3.3: Parts of buildings to be accessible	> Walkways and ramps must comply with clause 10 of AS 1428.1-2009. > Non-fire-isolated stairways must comply with Clause 11 of AS 1428.1-2009.	> Walkways and ramps must comply with clause 10 of AS 1428.1-2009. Throughout the building, it is noted that a 1:20 walkway is providing entry to the site, the walkway is of a suitable gradient to achieve compliance with this Clause. Additionally, the 1:14	**FI** **Refer to Part 3 of this Report**

Section D: Access and Egress			
	> Fire-isolated stairways must comply with clause 11 (f) & (g) of AS 1428.1-2009. The accessways must be provided with: > Passing spaces (1800x2000mm) complying with AS1428.1 at 20m max. intervals where direct line of sight is not available. > Turning spaces (1540x2070mm) complying with AS1428.1 within 2m of the end of accessways (including corridors or the like); and at 20m max. intervals along an accessway. > An intersection of accessways satisfies the spatial requirements for a passing and turning space. Note: The Access to Premises Standards to not provide the concessions provided in sub-cluses (g) and (h) in this clause, hence compliance with the Access to Premises Standards will require the floor covering in the accessible areas to strictly comply with Clause 7.4.1(a) of AS1428.1-2009.	ramps serving access to the waste room would allow for suitable compliance. > Non-fire-isolated stairways must comply with Clause 11 of AS 1428.1-2009. Based on each of the stairways provided, it is noted that two handrails have been provided along with handrail extensions at the top and base as required by AS1428.1-2009 > Accessways must have turning spaces (1540 mm x 2070 mm) within 2m of the end of the accessway and at maximum 20 m intervals along the accessway. It is noted that suitable turning spaces have been provided throughout however there are no turning spaces provided at 20m intervals throughout the building. It would be required that there is a provision for a turning space provided within proximity to the walkways to ensure that sufficient turning spaces are provided at 20m intervals. It is noted that the waste room will not be locked, and it will not be the end of an accessway requiring a turning space. > It is considered that a passing space would not be required due to a direct line of sight being made available throughout the larger stretches between the buildings.	
D3.4: Exemptions	Noted	It is considered that there are no parts of the building which will need to be exempted in accordance with this Clause.	Noted
D3.5: Accessible car parking	Noted	It is considered that there are no parking spaces required to be provided in accordance with this Clause. Any requirement for accessible parking will be under the Council DCP.	Noted

Section D: Access and Egress			
D3.6: Signage	> Braille and tactile signage complying with Specification D3.6 and incorporating the international symbol of access, or deafness as appropriate, must identify each: ○ sanitary facility; and ○ identify each door required by E4.5 to be provided with an *exit* sign and state "Exit" and "Level" and either: (aa) the floor level number; or (bb) a floor level descriptor; or (cc) a combination of (aa) and (bb)	Signage is required to be provided throughout the building in accordance with this Clause.	CRA – Refer Annexure G
D3.7: Hearing augmentation	N/A	Clause not applicable due to building classification	N/A
D3.8: Tactile indicators	(a) For a building required to be accessible, tactile ground surface indicators must be provided to warn people who are blind or have a vision impairment that they are approaching— (i) a stairway, other than a fire-isolated stairway; and (ii) an escalator; and (iii) a passenger conveyor or moving walk; and (iv) a ramp other than a fire-isolated ramp, step ramp, kerb ramp or swimming pool ramp; and (v) in the absence of a suitable barrier— (A) an overhead obstruction less than 2 m above floor level, other than a doorway; and (B) an accessway meeting a vehicular way adjacent to any pedestrian entrance to a building, excluding a pedestrian entrance serving an area referred to in D3.4, if there is no kerb or kerb ramp at that point,	The non-fire isolated stairways and tamps throughout the building are required to be provided with TGSIs in accordance with this Clause. Each of the stairs and ramps have been provided with TGSIs as required by this Clause and would generally be suitable. It will be required that the chosen tactiles maintain the required sizing based on the landing size and the required contrast with the floor surface in accordance with AS1428.4.1.	CRA – Refer Annexure G

Section D: Access and Egress			
	(C) except for areas exempted by D3.4. (b) (b) Tactile ground surface indicators required by (a) must comply with sections 1 and 2 of AS/NZS 1428.4.1:2009.		
D3.9: Wheelchair seating spaces in Class 9b assembly buildings	N/A	Clause not applicable due to building classification	N/A
D3.10: Swimming pools	N/A	Clause not applicable as there are no swimming pools proposed	N/A
D3.11: Ramps	N/A	There are no ramps provided throughout the building	N/A
D3.12: Glazing on an Accessway	On an accessway, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, must be clearly marked in accordance with AS 1428.1:2009.	Any glazing located along an accessway will need to be provided with contrasting bands compliance with this Clause and AS1428.1-2009.	CRA – Refer Annexure G

Section E: Services and Equipment			
Part E1 – Fire Fighting Equipment			
E1.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
E1.3: Fire hydrants	As the building has a floor area greater than 500 m2, a fire hydrant system complying with AS 2419.1:2005 must be provided to serve the building. Details should be provided showing: > Hydrant booster assembly location. The booster location must comply with the following:	The building is required to be provided with a fire hydrant system in accordance with AS2419.1-2009. Due to the size of the allotment, it is not considered that suitable coverage would be maintained from the street hydrant. Therefore, it would be required that hydrants are provided throughout the site. These have not been detailed at this stage; however it would be considered that commentary should be sought	FI

Section E: Services and Equipment			
	○ be within 8m of a hardstand for fire brigade appliance; ○ be within sight of the main entry; > Assuming it is attached to the building, be separated from the building by construction achieving FRL 90/90/90 for 2m either side of and 3m above the upper hose connections > Hydrant pump room location (if a pumpset is required). An internal pump room must have a door opening to a road or open space or egress to open space via a fire-isolated *exit*; > Internal hydrants in each fire-isolated *exit* at each storey providing coverage to all parts of the building. For internal fire hydrant coverage, all points on the floor must be covered by a 10m hose stream, issuing from 30 m hose length, extending not less than 1m into the room. Note: Consideration should be given to the location of Electrical Substations on adjoining sites in regards to proximity to Fire Hydrant Boosters being within 10.0m	from the Hydraulic Designers as to whether these would be internal or external hydrants based on the open nature of the building. This consideration will have implications on any external hydrants needing to be separated from the building.	
E1.4: Fire hose reels	A fire hose reel system complying with BCA clause E1.4 and AS 2441:2005 must be provided to the building (excluding Classes 2, 3, 4, 5, 8 and 9c). All points on a floor shall be within reach of a 4 m hose stream issuing from a nozzle at the end of the hose laid on floor. The hose length shall not exceed 36 m. Fire hose reels must be located so that the fire hose will not need to pass through doorways fitted with fire or smoke doors, except— (i) doorways in walls referred to in C2.5(a)(v) in a Class 9a building and C2.5(b)(iv) in a Class 9c building, separating ancillary use areas of high potential fire hazard; and	Fire hose reels are required to be provided throughout the basement storey due to the building classifications. The plans have detailed hose reels being provided within 4m to the stairways as required in most cases. It is considered that that the western egress stair is located more than 4m from the hose reel and this will need to be relocated.	**DNC** **Refer to Part 3 of this Report**

Section E: Services and Equipment			
	(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.		
E1.5: Sprinklers	N/A	Cause is not applicable due to the rise in storeys of the building	N/A
E1.6: Portable fire extinguishers	Portable fire extinguishers must be provided in accordance with clause E1.6 & Table E1.6 of the BCA and must be selected, located and distributed in accordance with Sections 1, 2, 3 and 4 of AS 2444:2001. For the Class 2 parts, portable fire extinguishers must be– (i) an ABE type fire extinguisher; and (ii) a minimum size of 2.5 kg; and (iii) distributed outside a *sole-occupancy unit*— (A) to serve only the storey at which they are located; and (B) so that the travel distance from the entrance doorway of any *sole-occupancy unit* to the nearest fire extinguisher is not more than 10 m.	Portable fire extinguishers are required to be provided to each of the residential levels. This will be required to provide extinguishers on each of the landings in accordance with AS2444-2001.	CRA – Refer Annexure G
E1.8: Fire control centres	N/A	Clause not applicable due to the effective height of the building	N/A
E1.9: Fire precautions during construction	Informational– > 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*;	These provisions will need to be applied throughout the building construction.	Noted
Part E2 – Smoke Hazard Management			

Section E: Services and Equipment				
E2.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
E2.1:	Application of Part	Informational	Noted	Noted
E2.2:	General requirements (including Tables E2.2a and E2.2b)	**General smoke hazard management requirements** An air-handling system which does not form part of a smoke hazard management system in accordance with Table E2.2a or Table E2.2b and which recycles air from one *fire compartment* to another *fire compartment* or operates in a manner that may unduly contribute to the spread of smoke from one *fire compartment* to another *fire compartment* (such as lobby air supply) must— (i) be designed and installed to operate as a smoke control system in accordance with AS 1668.1:2015; or (ii) (A) incorporate smoke dampers where the air-handling ducts penetrate any elements separating the *fire compartments* served; and (B) be arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke detectors complying with clause 7.5 of AS 1668.1:2015; and for the purposes of this provision, each *sole-occupancy unit* in a Class 2 or 3 building is treated as a separate *fire compartment*. Miscellaneous air-handling systems covered by Sections 5 and 6 of AS 1668.1:2015 serving more than one *fire compartment* (other than a carpark ventilation system) and not forming part of a smoke hazard management system must comply with that Section of the Standard.	**Class 2 parts** Class 2 parts must be provided with an automatic smoke detection and alarm system complying with BCA Specification E2.2a. **Class 7a buildings** A Class 7a building including a basement provided with a mechanical ventilation system in accordance with AS 1668.2:2012 must comply with clause 5.5 of AS 1668.1:2015 except that fan with metal blades for operation at normal temperatures may be used, and the electrical power and control cabling need not be fire rated.	CRA – Refer Annexure G

Section E: Services and Equipment				
		A smoke detection system must be installed in accordance with Clause 6 of Specification E2.2a to operate AS1668.1:2015 systems that are provided for zone pressurisation and automatic air pressurisation for fire-isolated *exits*. **Class 2 parts** Class 2 parts must be provided with an automatic smoke detection and alarm system complying with BCA Specification E2.2a. Note: Smoke alarms in sole occupancy units are now required to be interconnected. **Class 7a buildings** A Class 7a building including a basement provided with a mechanical ventilation system in accordance with AS 1668.2:2012 must comply with clause 5.5 of AS 1668.1:2015 except that fans with metal blades for operation at normal temperatures may be used, and the electrical power and control cabling need not be fire rated.		
E2.3:	Provisions for special hazards	N/A	The building is not deemed to be a special hazard	N/A
Specification E2.2a – Smoke Detection and Alarm System				
1.	Scope	Informational	Noted	Noted
2.	Type of system	A required automatic smoke detection and alarm system must be provided in accordance with the following: (c) Class 2 buildings parts of a building— (i) a smoke alarm system complying with Clause 3; or (ii) a smoke detection system complying with Clause 4; or	The building may be provided with a Clause 3, 4 or 5 system. However due to a lack of common areas being provide it, it would be considered to provide a Clause 3 only.	CRA – Refer Annexure G

Section E: Services and Equipment			
	(iii) a combination of a smoke alarm system and a smoke detection system complying with Clause 5. Class 5, 6, 7, 8, 9b and 9c buildings— a smoke detection system complying with Clause 4.		
3. Smoke alarm system	(d) All Class 2 - 9 buildings— (i) A smoke alarm system must— (A) consist of smoke alarms complying with AS 3786; and (B) be powered from the consumer mains source. (ii) In kitchens and other areas where the use of the area is likely to result in smoke alarms causing spurious signals— (A) any other alarm deemed suitable in accordance with AS 1670.1 may be installed provided that smoke alarms are installed elsewhere in the sole-occupancy unit in accordance with Clause 3(b)(i) and Clause 3(b)(ii); or (B) an alarm acknowledgement facility may be installed, except where the kitchen or other area is in a building protected with a sprinkler system complying with Specification E1.5 (other than a FPAA101D system), the alarms need not be installed in the kitchen or other areas likely to result in spurious signals. (e) Class 2 or 3 buildings or Class 4 parts of a building — In a Class 2 or 3 building or Class 4 part of a building provided with a smoke alarm system, the following applies:	The smoke alarms throughout the units will need to be provided in accordance with this clause. The alarms must be mains powered and interconnected where more than one is provided. Smoke alarms may be provided throughout the common areas in accordance with this clause and spaced accordingly. These common area smoke alarms will need to activate a building occupant warning system provided in accordance with Clause 7 of this specification.	CRA – Refer Annexure G

Section E: Services and Equipment			
	(i) Alarms must be installed within each sole-occupancy unit, and located on or near the ceiling in any storey— (A) containing bedrooms— (aa) between each part of the sole-occupancy unit containing bedrooms and the remainder of the sole-occupancy unit; and (bb) where bedrooms are served by a hallway, in that hallway; and (B) not containing any bedrooms, in egress paths. (ii) Where there is more than one alarm installed within a sole-occupancy unit, alarms must be interconnected within that sole-occupancy unit. (iii) Subject to (iv), alarms must be— (A) installed in public corridors and other internal public spaces, located in accordance with the requirements for smoke detectors in AS 1670.1; and (B) connected to activate a building occupant warning system in accordance with Clause 7. In a Class 2 or 3 building or Class 4 part of a building protected with a sprinkler system complying with Specification E1.5 (other than a FPAA101D system), alarms are not required in public corridors and other internal public spaces.		
4. Smoke detection system	(a) All Class 2 - 9 buildings— (i) A smoke detection system must— (A) subject to (b) and (c), comply with AS 1670.1; and	Any smoke detectors installed within the common areas will need to be installed in accordance with this clause and AS1670.1. The system will be required to activate the building occupant warning system.	CRA – Refer Annexure G

Section E: Services and Equipment			
	(B) activate a building occupant warning system in accordance with Clause 7. (ii) In kitchens and other areas where the use of the area is likely to result in smoke detectors causing spurious signals— (A) any other detector deemed suitable in accordance with AS 1670.1 may be installed provided that smoke detectors are installed elsewhere in the sole-occupancy unit in accordance with the requirements for alarms in Clause 3(b)(i) and Clause 3(b)(ii); or (B) an alarm acknowledgement facility may be installed, except where the kitchen or other area is in a building protected with a sprinkler system complying with Specification E1.5 (other than a FPAA101D or FPAA101H system), the detectors need not be installed in the kitchen or other areas likely to result in spurious signals. (b) Class 2 or 3 buildings or Class 4 parts of a building — In a Class 2 or 3 building or Class 4 part of a building provided with a smoke detection system, the following applies: (i) Smoke detectors must be installed— (A) within each sole-occupancy unit, in accordance with the requirements for alarms in Clause 3(b)(i) and Clause 3(b)(ii); and (B) subject to (ii), in public corridors and other internal public spaces. (ii) In a Class 2 or 3 building or Class 4 part of a building protected with a sprinkler system complying with Specification E1.5 (other than a FPAA101D or FPAA101H system), smoke		

Section E: Services and Equipment				
		detectors are not required in public corridors and other internal public spaces.		
5.	Combined smoke alarm and smoke detection system	(a) A Class 2 or 3 building or Class 4 part of a building provided with a combination of a smoke alarm system and smoke detection system in accordance with Clause 2 must— (i) be provided with a smoke alarm system complying with Clause 3 within sole-occupancy units; and (ii) subject to (b), be provided with a smoke detection system complying with Clause 4 in areas not within sole-occupancy units. (b) In a Class 2 or 3 building or Class 4 part of a building protected with a sprinkler system complying with Specification E1.5 (other than a FPAA101D or FPAA101H system), smoke detectors are not required in public corridors and other internal public spaces.	This will be a combination of the comments above for a Clause 3 and Clause 4 systems if applicable	CRA – Refer Annexure G
6.	Smoke detection for smoke control system	N/A	Clause is not applicable as there are no smoke control systems provided	N/A
7.	Building occupant warning system	Subject to E4.9, a building occupant warning system provided as part of a smoke hazard management system must comply with clause 3.22 of AS 1670.1 to sound through all occupied areas except— (a) in a Class 2 and 3 building or Class 4 part of a building provided with a smoke alarm system in accordance with Clause 3(b)(iii)— (i) the sound pressure level need not be measured within a sole-occupancy unit if a level of not less than 85 dB(A) is provided at the door providing access to the sole-occupancy unit; and	A building occupant warning system is required to be maintained in accordance with this Clause and activated by the common areas systems.	CRA – Refer Annexure G

Section E: Services and Equipment			
	(ii) the inbuilt sounders of the smoke alarms may be used to wholly or partially meet the requirements; and (b) in a Class 2 and 3 building or Class 4 part of a building provided with a smoke detection system in accordance with Clause 4(b), the sound pressure level from a building occupant warning system need not be measured within a sole-occupancy unit if a level of not less than 100 dB(A) is provided at the door providing access to the sole-occupancy unit;		
8. System Monitoring	N/A	System monitoring is not required to be provided	N/A
Part E3 – Lift Installations			
E3.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
E3.1: Lift installations	An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with Specification E3.1	The passenger lift must be provided in accordance with Specification E3.1	CRA – Refer Annexure G
E3.2: Stretcher facility in lifts	N/A	Clause not applicable due to the effective height of the building	N/A
E3.3: Warning against use of lifts in fire	Warning signs indicating “DO NOT USE LIFTS IF THERE IS A FIRE” shall be displayed near every call button for a passenger lift or group of lifts throughout a building as per E3.3.	Suitable signage must be provided to the lift in accordance with this clause.	CRA – Refer Annexure G
E3.4: Emergency lifts	N/A	Clause not applicable due to the effective height of the building	N/A
E3.5: Landings	Access and egress to and from lift-well landings must comply with the Deemed-to-Satisfy Provisions of Section D.	Each of the lift landing are considered to allow for suitable access and egress in accordance with this clause.	CRA – Refer Annexure G

Section E: Services and Equipment				
E3.6:	Passenger lifts	In an accessible building, every passenger lift must be one of the types specified in Table E3.6a, have accessible features in accordance with Table E3.6b, and not rely on a constant pressure device for its operation if the lift car is fully enclosed.	The passenger lift proposed is required to be provided in accordance with this Clause and AS1735.12 as required. It is considered that the size of the lift shaft will allow for compliance being achieved with this Clause.	CRA – Refer Annexure G
E3.7:	Fire service controls	(a) N/A	Clause not applicable due to the effective height of the building	N/A
E3.8:	Aged care buildings	N/A	Clause not applicable due to the use of the building	N/A
E3.9:	Fire service recall switch	N/A	Clause not applicable due to the effective height of the building	N/A
E3.10:	Lift car service drive control switch	N/A	Clause not applicable due to the effective height of the building	N/A
Part E4 – Visibility In An Emergency, Exit Signs And Warning Systems				
E4.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
E4.2:	Emergency lighting requirements	An emergency lighting system must be installed throughout the building in accordance with Clause E4.2 of the BCA and AS/NZS 2293.1:2018.	It would be required that each of the stairways and ramps throughout the egress paths and the carpark is provided with emergency lighting in accordance with this clause.	CRA – Refer Annexure G
E4.3:	Measurement of distance	Informational	Noted	Noted
E4.4:	Design and operation of emergency lighting	The emergency lighting system must comply with AS/NZS 2293.1:2018.	The emergency lighting will need to comply with AS2293.1	CRA – Refer Annexure G
E4.5:	Exit signs	*Exits* signs are to be provided above or adjacent to a door providing egress as well as directional signage throughout the entire development where necessary.	Exits signage must be provided in accordance with this clause.	CRA – Refer Annexure G

Section E: Services and Equipment				
E4.6:	Direction signs	Where an *exit* is not readily apparent, directional signage is to be installed indicating the direction of egress.	Where an *exit* is not readily apparent, directional signage is to be installed indicating the direction of egress.	CRA – Refer Annexure G
E4.7:	Class 2 and 3 buildings and Class 4 Parts: Exemptions	Informational	This concession may be applied to the Class 2 portion	Noted
E4.8:	Design and operation of exit signs	*Exit* signs must comply with AS/NZS 2293.1:2018 and be clearly visible at all times when the building is occupied.	Exits signage must be provided in accordance with this clause.	CRA – Refer Annexure G
E4.9:	Emergency warning and intercom systems	N/A	Clause not applicable due to the effective height of the building	N/A

Section F: Health and Amenity				
Part F1 – Damp and Weatherproofing				
F1.0:	Deemed-to-Satisfy Provisions	*Performance Requirement* FP1.4, for the prevention of the penetration of water through external walls, must be complied with. There are no Deemed-to-Satisfy Provisions for this *Performance Requirement* in respect of external walls. The assessment contained within this report does not include an assessment against Performance Provision FP1.4.	A performance solution would be required to address this provision.	PS Required
F1.1:	Stormwater drainage	Stormwater drainage to comply with AS/NZS 3500.3:2018.	Stormwater drainage will need to be provided in accordance with this clause.	CRA – Refer Annexure G
F1.4:	External above ground membranes	Waterproofing membranes for external above ground use to comply with AS 4654 Parts 1 and 2:2012.	Waterproofing membranes will need to be provided in accordance with this clause.	CRA – Refer Annexure G
F1.5:	Roof coverings	Roof coverings are to comply with BCA Clause F1.5.	The roof coverings will need to be provided in accordance with this clause.	CRA – Refer Annexure G

Section F: Health and Amenity			
F1.6: Sarking	*Sarking-type materials* used for weatherproofing must comply with AS/NZS 4200 Part 1 and 2:2017.	Sarking will need to be provided in accordance with this clause.	CRA – Refer Annexure G
F1.7: Water proofing of wet areas in buildings	Wet areas must be constructed in accordance with AS 3740:2010 and F1.7 of the BCA.	Wet areas will need to be provided in accordance with this clause. However, it is noted that several of the showers provided on the Ground Floor are noted as being provided with a glazed open that would have implications on the waterproofing. These are considered to be high level windows and will need to be installed above the line of waterproofing as required by this Clause.	CRA – Refer Annexure G
F1.9: Damp-proofing	Moisture is to be prevented from reaching the walls above a damp-proof course, and the underside of the suspended floors.	Damp-proofing will need to be provided in accordance with this clause.	CRA – Refer Annexure G
F1.10: Damp-proofing of floors on the ground	If a floor of a room is laid on the ground or on fill, moisture from the ground must be prevented from reaching the upper surface of the floor and adjacent walls by the insertion of a vapour barrier in accordance with AS 2870:2011 (N/A to areas that do not require weatherproofing – refer specific clause exemptions).	Damp-proofing will need to be provided in accordance with this clause.	CRA – Refer Annexure G
F1.11: Provision of floor wastes	In Class 2 or 3 buildings or Class 4 part of a building, a bathroom or laundry is to have a floor waste where the floor is graded to the floor waste to permit the drainage of water.	Floor wastes in the Class 2 portion will need to be provided in accordance with this clause.	CRA – Refer Annexure G
F1.12: Sub-floor ventilation	N/A	The building is proposed to be slab on ground and therefore not contain any sub-floor ventilation.	N/A
F1.13: Glazed Assemblies	Glazed assemblies are to comply with AS 2047:2014 and AS 1288:2006.	Glazed assemblies will need to be provided in accordance with this clause.	CRA – Refer Annexure G
Part F2 – Sanitary and Other Facilities			

Section F: Health and Amenity				
F2.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
F2.1:	Facilities in residential buildings (including Table F2.1)	Each SOU must be provided with sanitary facilities; a kitchen sink; facility for the preparation and cooking of food; a bath or shower; a closet pan; wash basin; laundry wash tub and space for a washing machine and dryer.	Each of the sole occupancy units are provided with a laundry, bathroom and kitchen facilities in accordance with this clause	CRA – Refer Annexure G
F2.2:	Calculation of number of occupants and facilities	N/A	Clause not applicable due to building classification	N/A
F2.3:	Facilities in Class 3 to 9 buildings (including Table F2.3)	N/A	Clause not applicable due to building classification	N/A
F2.4:	Accessible sanitary facilities (including Table F2.4)	N/A	No common area accessible sanitary facility is provided	N/A
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	Each of the WCs are noted to be located a suitable distance away from the door swing in accordance with this Clause.	CRA – Refer Annexure G

Section F: Health and Amenity			
	with Figure F2.5, between the closet pan within the sanitary compartment and the doorway.		
F2.6: Interpretation: urinals and washbasins	Informational	Noted	Noted
F2.8: Waste Management	N/A	Clause not applicable due to building classification	N/A
F2.9: Accessible adult change facilities	N/A	Clause not applicable due to the use of the building	N/A
Part F3 – Room Heights			
F3.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
F3.1: Height of rooms and other spaces	(a) The height of rooms and other spaces must be not less than— (b) in a Class 2 part of a building— (i) a kitchen, laundry, or the like — 2.1 m; and (ii) a corridor, passageway or the like — 2.1 m; and (iii) a habitable room excluding a kitchen — 2.4 m; and (iv) in a room or space with a sloping ceiling or projections below the ceiling line (v) within— (A) a habitable room— (aa) in an attic — a height of not less than 2.2 m for not less than two thirds of the floor area of the room or space; and	Throughout the residential levels, the slabs will maintain 3000mm between the floor levels and the basement will be 2450mm to the underside of the slab in the lowest. Based upon these distances it is considered that suitable clear heights will be maintained in accordance with this clause.	CRA – Refer Annexure G

Section F: Health and Amenity			
	(bb) in other rooms — a height of not less than 2.4 m for not less than two thirds of the floor area of the room or space; and (B) a non-habitable room — a height of not less than 2.1 m for not less than two thirds of the floor area of the room or space; and (aa) when calculating the floor area of a room or space, any part that has a ceiling height of less than 1.5 m is not included; and (c) in a Class 7 building— (i) except as allowed in (ii) and (f) — 2.4 m; and (ii) a corridor, passageway, or the like — 2.1 m; and (d) in any building— (i) a bathroom, shower room, sanitary compartment, airlock, tea preparation room, pantry, store room, garage, car parking area, or the like — 2.1 m; and (ii) a commercial kitchen — 2.4 m; and (iii) above a stairway, ramp, landing or the like — 2 m measured vertically above the nosing line of stairway treads or the floor surface of the ramp, landing or the like. (iv) A required accessible adult change facility – 2.4m		
Part F4 – Light and Ventilation			
F4.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
F4.1: Provision of natural light	Natural light must be provided to all habitable rooms.	Natural lighting is required to be provided to the Class 2 portion of the building.	CRA – Refer Annexure G

Section F: Health and Amenity				
F4.2:	Methods and extent of natural lighting	(a) Natural light must be provided by: (i) Windows: (A) with an aggregate light transmitting area of not less than 10% the floor area of the room; and (B) that are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like; or (ii) Rooflights, that: (A) have an aggregate light transmitting area of not less than 3% the floor area of the room; or (iii) a proportional combination of windows and roof lights required by (i) and (ii). (b) A required window that faces a boundary of an adjoining allotment or a wall of the same building or another building on the allotment must be not less than a horizontal distance from that boundary or wall that is the greater of – (c) 1m; and (d) 50% of the square root of the exterior height of the wall in which the window is located, measured from its sill.	Natural light is provided throughout the residential levels due to the direct access to glazed openings to each of the habitable rooms. This is considered that the openings will provide 10% of the floor area in accordance with this clause. Confirmation will need to be sought by the Architect to confirm that the windows are suitable in accordance with this clause.	CRA – Refer Annexure G
F4.3:	Natural light borrowed from adjoining room	Noted	Due to the direct natural light provided throughout, it is considered that light would not need to be borrowed in accordance with this Clause. It is considered that the dining, living and kitchen are all a single room and would not require borrowing.	Noted
F4.4:	Artificial Lighting	Lighting to all areas is to comply with AS/NZS 1680.0:2009.	Lighting is required to be provided in accordance with this clause.	CRA – Refer Annexure G

Section F: Health and Amenity			
F4.5: Ventilation of rooms	All rooms to be provided with Clause F4.6 compliant natural ventilation **OR** a mechanical ventilation or air-conditioning system complying with AS 1668.2:2012.	Ventilation to the rooms must be provided in accordance with this clause.	CRA – Refer Annexure G
F4.6: Natural ventilation	(a) Natural ventilation provided in accordance with F4.5(a) must consist of permanent openings, windows, doors or other devices which can be opened— (i) with an aggregate opening or openable size not less than 5% of the floor area of the room required to be ventilated; and (ii) open to— (A) a suitably sized court, or space open to the sky; or (B) an open verandah, carport, or the like; or (C) an adjoining room in accordance with F4.7.	Natural ventilation is provided throughout the residential levels due to the direct access to glazed openings to each of the rooms. This is considered that the openings will provide 5% of the floor area in accordance with this clause. Confirmation will need to be sought by the Architect to confirm that the windows are suitable in accordance with this clause when considering the openable portion of the windows.	CRA – Refer Annexure G
F4.7: Ventilation borrowed from adjoining room	Ventilation may be 'borrowed' from adjoining rooms in some instances in accordance with this clause.	Due to the direct natural ventilation provided throughout, it is considered that ventilation would not need to be borrowed in accordance with this Clause. It is considered that the dining, living and kitchen are all a single room and would not require borrowing.	CRA – Refer Annexure G
F4.8: Restriction on position of water closets and urinals	Sanitary compartments must not open directly into a – > kitchen or pantry > public dining room or restaurant > dormitory in a Class 3 building > room used for public assembly (which is not an early childhood centre, primary school or open spectator stand)	Within the sole occupancy units, it is noted that the sanitary compartments are provided in a suitable location in accordance with this clause.	CRA – Refer Annexure G

Section F: Health and Amenity			
	> workplace normally occupied by more than one person.		
F4.9: Airlocks	N/A	It is considered that compliance is maintained with F4.8	Noted
F4.11: Carparks	Every storey of a carpark (except an open deck carpark) must have: > a system of mechanical ventilation complying with AS 1668.2:2012; or > a system of natural ventilation complying with Section 4 of AS 1668.4:2012.	The carpark will need to be provided mechanical or natural ventilation in accordance with this clause	CRA – Refer Annexure G
F4.12: Kitchen local exhaust ventilation	N/A	There are no commercial kitchens provided.	N/A
Part F5 – Sound Transmission and Insulation			
F5.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
F5.1: Application of Part	Informational– The Deemed-to-Satisfy Provisions of this Part apply to Class 2 and 3 buildings and Class 9c buildings.	This part is applicable to the Class 2 portion of the building	Noted
F5.2: Determination of airborne sound insulation ratings	A form of construction required to have an airborne sound insulation rating must— (a) have the required value for weighted sound reduction index (R_w) or weighted sound reduction index with spectrum adaptation term (R_w + Ctr) determined in accordance with AS/NZS ISO 717.1 using results from laboratory measurements; or (b) comply with Specification F5.2.	Construction in accordance with this clause must be applied to comply.	CRA – Refer Annexure G

Section F: Health and Amenity			
F5.3:	Determination of impact sound insulation ratings	(a) A floor in a building required to have an impact sound insulation rating must— (i) have the required value for weighted normalised impact sound pressure level with spectrum adaptation term ($L_{n,w}$ + CI) determined in accordance with AS/ISO 717.2 using results from laboratory measurements; or (ii) comply with Specification F5.2. (b) A wall in a building required to have an impact sound insulation rating must be of discontinuous construction; and (c) For the purposes of this Part, discontinuous construction means a wall having a minimum 20 mm cavity between 2 separate leaves, and (i) for masonry, where wall ties are required to connect leaves, the ties are of the resilient type; and (ii) for other than masonry, there is no mechanical linkage between leaves except at the periphery.	Construction in accordance with this clause must be applied to comply.	CRA – Refer Annexure G
F5.4:	Sound insulation rating of floors	A floor in a Class 2 building must achieve an R_w + C_{tr} (airborne) not less than 50, and an $L_{n,w}$+C_I (impact) not more than 62, if separating: > SOU's; or > An SOU from a plant room, lift shaft, public corridor, public lobby or parts of a different classification.	The floors of the Class 2 part are required to be in accordance with this clause.	CRA – Refer Annexure G
F5.5:	Sound insulation rating of walls	(a) A wall in a Class 2 building must: (i) have an R_w + C_{tr} (airborne) not less than 50 if it separates *sole-occupancy units*; and (ii) have an R_w (airborne) not less than 50 if it separates a sole occupancy unit from a plant room, lift shaft, stairway, public corridor, public	The walls of the Class 2 part are required to be in accordance with this clause.	CRA – Refer Annexure G

Section F: Health and Amenity			
	lobby or the like, or parts of a different classification; and (iii) be of discontinuous construction in accordance with F5.3(b) if it separates: (A) a bathroom, sanitary compartment, laundry or kitchen in one *sole-occupancy unit* from a habitable room (other than a kitchen) in an adjoining unit; or (B) a *sole-occupancy unit* from a plant room or lift shaft. (b) Where a wall required to have sound insulation has a floor above, the wall must continue to: (i) the underside of the floor above; or (ii) a ceiling that provides the sound insulation required for the wall. (c) Where a wall required to have sound insulation has a roof above, the wall must continue to: (i) the underside of the roof above; or (ii) a ceiling that provides the sound insulation required for the wall. (d) Doorways in walls separating the Class 2 *sole-occupancy units* from a stairway, public corridor, public lobby or the like must be provided with a door assembly that has an R_w not less than 30.		
F5.6: Sound insulation rating of services	(a) If a duct, soil, waste or water supply pipe, including a duct or pipe that is located in a wall or floor cavity, serves or passes through more than one *sole-occupancy unit*, the duct or pipe must be separated from the rooms of any sole occupancy unit by construction with an $R_w + C_{tr}$ (airborne) not less than— (i) 40 if the adjacent room is a habitable room (other than a kitchen); or	The sound insulation of services within the Class 2 part are required to be in accordance with this clause.	CRA – Refer Annexure G

Section F: Health and Amenity				
		(ii) 25 if the adjacent room is a kitchen or non-habitable room. (b) If a storm water pipe passes through a *sole-occupancy unit* it must be separated in accordance with (a)(i) and (ii).		
F5.7:	Sound isolation of pumps	A flexible coupling must be used at the point of connection between the service pipes in a building and any circulating pump.	The sound insulation of pumps within the Class 2 part are required to be in accordance with this clause.	CRA – Refer Annexure G
Specification F5.2 – Sound Insulation for Building Elements				
1.	Scope	Informational	Noted	Noted
2.	Construction Deemed-to-Satisfy	Information only	Noted	Noted
Specification F5.5 – Impact Sound – Test of Equivalence				
1.	Scope	Noted	Noted	-
2.	Construction to be Tested	Information only	Noted	Noted
3.	Method	Information only	Noted	Noted
Part F6 – Condensation Management				
F6.0:	Deemed-to-satisfy provisions	Informational	Noted	Noted
F6.1:	Application of Part	Informational	Noted	Noted
F6.2	Pliable building membrane	Where a pliable building membrane is installed in an external wall it shall comply with AS/NZS 4200.1:2017 and installed in accordance with AS 4200.2:2017.	Pliable building membrane is required to be provided to the Class 2 portion in accordance with this clause.	CRA – Refer Annexure G

Section F: Health and Amenity			
F6.3: Flow rate and discharge of exhaust systems	(a) An exhaust system installed in a kitchen, bathroom, sanitary compartment or laundry must have a minimum flow rate of— (i) 25 L/s for a bathroom or sanitary compartment; and (ii) 40 L/s for a kitchen or laundry. (b) Exhaust from a kitchen must be discharged directly or via a shaft or duct to outdoor air. (c) Exhaust from a bathroom, sanitary compartment, or laundry must be discharged— (i) directly or via a shaft or duct to outdoor air; or (ii) to a roof space that is ventilated in accordance with F6.4	The exhausts provided within the Class 2 portion of the building must be in accordance with this clause.	CRA – Refer Annexure G
F6.4: Ventilation of roof spaces	(a) Where an exhaust system covered by F6.3 discharges directly or via a shaft or duct into a roof space, the roof space must be ventilated to outdoor air through evenly distributed openings. (b) Openings required by (a) must have a total unobstructed area of 1/300 of the respective ceiling area if the roof pitch is greater than 22º, or 1/150 of the respective ceiling area if the roof pitch is less than or equal to 22º. (c) 30% of the total unobstructed area required by (b) must be located more than 900 mm below the ridge or highest point of the roof space, measured vertically, with the remaining required area provided by eave vents.	Any exhaust ventilation into the roof space must be in accordance with this clause.	CRA – Refer Annexure G

Section G: Ancillary Provisions
Part G1 – Minor Structures and Components

Section G: Ancillary Provisions			
G1.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
NSW G1.101: Provision for cleaning windows	A safe manner for cleaning of windows located 3 or more storeys above ground level must be provided, and compliance is achieved where: > the windows can be cleaned wholly from within the building; or > via a method complying with the Work Health and Safety Act 2011 and regulations made under that Act.	Provisions for cleaning must be provided in accordance with this Clause.	CRA – Refer Annexure G

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

Section J: Energy Efficiency
Refer to separate Section J Report for an assessment on this a part

ANNEXURE E ANNEXURE A - LHDG ASSESSMENT

Table 9. LHDG Assessment

Item	Design Element	Comment	Compliance
1.	**Dwelling (SOU) Access**		
	Silver Level (e) Provide a safe, continuous step-free pathway from the front boundary of the property to an entry door to the dwelling. (f) This provision does not apply where the average slope of the ground where the path would feature is steeper than 1:14. (g) The path of travel referred to in (a) should have a minimum clear width of 1000mm and have; (i) No steps; (ii) An even, firm, slip resistant surface; (iii) A crossfall of not more than 1:40; (iv) A maximum pathway slope of 1:14 Where ramps are required they should have landings provided at no greater than 9m for a 1:14 ramp and no greater than 15m for ramps steeper than 1:20. Landings should be no less than 1200mm in length. (h) The path of travel referred to in (a) may be provided via an associated car parking space for the dwelling. Where a car parking space is relied upon as the safe and continuous pathway to the dwelling entrance, the space should incorporate: (i) Minimum dimensions of at least 3200 mm (width) x 5400mm (length); (ii) An even, firm and slip resistant surface; and (iii) A level surface (1:40 maximum gradient, 1:33 maximum gradient for bitumen).	Not applicable – covered under Part D3 and AS1428.1 as per the structure (page 11) of the LHDG.	Noted

Item	Design Element	Comment	Compliance
	(i) A step ramp may be incorporated at an entrance doorway where there is a change in height of 190mm or less. The step ramp should provide: (i) A maximum gradient of 1:10 (ii) A minimum clear width of 1000mm (please note: width should reflect the pathway width) (iii) A maximum length of 1900 mm (j) Where a ramp is part of the pathway, level landings no less than 1200mm in length, exclusive of the swing of the door or gate than opens onto them, must be provided at the head and foot of the ramp. **Note:** The width of the landing will be determined by the adjoining pathway. If the landing directly adjoins the doorway please refer to Element 2 for dimensional requirements.		
2.	**Dwelling (SOU) Entrance**		
	Silver Level (a) The dwelling should provide an entrance door with – (i) A minimum clear opening width of 820mm (see Figure 2(a)); (ii) A level (step-free) transition and threshold (maximum vertical tolerance of 5mm between abutting surfaces is allowable provided the lip is rounded or bevelled); and (iii) Reasonable shelter from the weather. (b) A level landing area of at least 1200mm x 1200mm should be provided at the level (step free) entrance door. A level landing area at the entrance door should be provided on the arrival side of the door (i.e. the external side of the door) to allow a person to safely stand and then open the door. (c) Where the threshold at the entrance exceeds 5mm and is less than 56mm, a ramped threshold may be provided (see Figure 1(b)).	Not applicable – covered under Part D3 and AS1428.1 as per the structure (page 11) of the LHDG.	Noted

Item	Design Element	Comment	Compliance
	(d) The level (step-free) entrance should be connected to the safe and continuous pathway as specified in Element 1. **Note:** The entrance must incorporate waterproofing and termite management requirements as specified in the NCC.		
3.	**Internal Doors and Corridors**		
	Silver Level (a) Doorways to rooms on the entry level used for living, dining, bedroom, bathroom, kitchen, laundry and sanitary compartment purposes should provide: (i) A minimum clear opening width of 820mm (see Figure 2(a)); and (ii) A level transition and threshold (maximum vertical tolerance of 5mm between abutting surfacers if allowable provided the lip is rounded or bevelled). (b) Internal corridors/passageways to the doorways referred to in (a) should provide a minimum clear width of 1000mm * Corridor widths should be measured as described in Clause 6.3 of AS 1428.1 – 2009	Each of the doorways throughout the unit are provided with a sufficient clear opening and each of the corridors throughout will maintain a 1000mm in accordance with this Clause. Each of the doorways are internal to the unit and will be provided with a level threshold.	CRA – Refer Annexure G
4.	**Toilet**		
	Silver Level (a) Dwellings should have a toilet on the ground (or entry) level that provides: (i) A minimum clear width of 900mm between the walls of the bathroom if located in a separate room; and (ii) A minimum 1200mm clear circulation space forward of the toilet pan exclusive of the swing of the door in accordance with Figure 3(a). (iii) The toilet pan should be located in the corner of the room (if the toilet is located in a combined toilet / bathroom) to enable installation of grabrails at a future	Each of the units are provided with a toilet located in the corner of the room to allow for reinforcement for future grabrails and will maintain the required clearances in accordance with this Clause. Refer below for reinforcement in walls.	CRA – Refer Annexure G

Item	Design Element	Comment	Compliance
	date. Reinforcement guidelines for walls in bathrooms and toilets are found in element 6.		
5.	**Shower**		
	Silver Level (a) One bathroom should feature a slip resistant, hobless shower recess. Shower screens are permitted provided they can be easily removed at a later date. (b) The shower recess should be located in the corner of the room to enable the installation of grabrails at a future date. For hobless specification please see Australian Standard AS3740-3.6. Reinforcement guidelines for walls in bathrooms and toilets are found in element 6.	Ensuite is provided with a hobless shower recess. Shower screen can be provided, however to be removable type only. Shower recess provided at the end of the bathroom to allow for the installation of grabrails as required. Refer below for reinforcement in walls.	CRA – Refer Annexure G
6.	**Reinforcement of bathroom & toilet walls**		
	Silver Level (a) Except for walls constructed of solid masonry or concrete, the walls around the shower, bath (if provided) and toilet should be reinforced to provide a fixing surface for the safe installation of grabrails. (b) The walls around the toilet are to be reinforced by installing: (i) Noggings with a thickness of at least 25mm in accordance with Figure 6(a); or (ii) Sheeting with a thickness of at least 12mm in accordance with Figure 6(b). (c) The walls around the bath are to be reinforced by installing: (i) Noggins with a thickness of at least 25mm in accordance with Figure 7(a); or	Specification to be provided on construction stage plans. Builder to determine appropriate compliance to be in accordance with LHDG.	CRA – Refer Annexure G

Item	Design Element	Comment	Compliance
	(ii) Sheeting with a thickness of at least 12mm in accordance with Figure 7(b). (d) The walls around the hobless shower recess are to be reinforced by installing: (i) Noggins with a thickness of at least 25mm in accordance with Figure 8(a); or (ii) Sheeting with a thickness of at least 12mm in accordance with Figure 8(b).		
7.	**Internal stairways**		
	Silver Level (a) Stairways in dwellings must feature: (i) A continuous handrail on one die of the stairway where there is a rise of more than 1m. **Note:** This is a requirement for all new homes under the NCC. Homes built prior to 2014 may benefit from this element.	There are no internal stairs provided.	N/A

ANNEXURE F ANNEXURE B - ADAPTABLE HOUSING

Table 10. Class C

Item	Room/Item	Clause	Comment	Compliance
Drawings				
1.	Provision of drawings showing the housing unit in its pre-adaptation and post-adaptation stages	2.3	Pre and post adaption plans to be provided at construction stage.	CRA – Refer Annexure G
Siting				
3.	A continuous accessible path of travel from street frontage and vehicle parking to entry complying with AS1428.1	3.3.2	Accessway will be provided via ramps to the unit entries in accordance with AS 1428.1. Accessway will be provided from the basement carpark to the SOU via a shared lift in accordance with AS 1428.1.	CRA – Refer Annexure G
Letterboxes in Estate Developments				
11.	Letterboxes to be on hard standing area connected to accessible pathway.	3.8	Letterboxes for the residential units are provided adjacent to the street entry and on a hardstand area.	CRA – Refer Annexure G
Private Car Accommodation				
14.	Carparking space or garage min area 6.0x3.8m	3.7.2	The sizing of the space for the adaptable unit is capable of being provided in accordance with AS/NZS 2890.6 (2400x5400mm and a shared zone) which is considered the most recent accessible parking standard and would comply with the objectives of this Clause. The basement plans are noted to ensure that two parking spaces are allocated to the applicable units and will allow for compliance being maintained in accordance with this Clause at the post adaptation stage where required. Care is to be taken to ensure that a clear height of 2.5m over the car parking space and 2.2m leading to it will be achieved.	CRA – Refer Annexure G

Item	Room/Item	Clause	Comment	Compliance
Accessible Entry				
20.	Accessible entry	4.3.1	The entry door to the adaptable units has a minimum clear opening of 850mm and comply with door circulation spaces under AS1428.1.	Complies
21.	Accessible entry to be level (i.e. max. 1:40 slope)	4.3.2	Units are accessed from an external level common walkway.	Complies
23.	Threshold to be low-level	4.3.2	Public corridors assumed to be flat.	Complies
24.	Landing to enable wheelchair manoeuvrability	4.3.2	Landings to the SOU entry are noted to be of sufficient size to allow for wheelchair manoeuvrability	Complies
25.	Accessible entry door to have 850mm minimum clearance	4.3.1	The entry door to the adaptable units has a minimum clear opening of 850mm and comply with door circulation spaces under AS1428.1.	Complies
27.	Door lever handles and hardware to AS1428.1	4.3.4	Door handles are to comply with AS1428.1-2009 at construction stage.	CRA – Refer Annexure G
Interior: General				
32.	Internal doors to have 820mm min. clearance	4.3.3	Internal doors throughout are noted has having a minimum clear opening of 820mm as required.	Complies
33.	Internal corridors width of 1000mm min.	4.3.7	Internal corridors within the units have a minimum width of 1000mm0	Complies
34.	Provision for compliance with AS1428.1 for door approaches	4.3.7	Circulation spaces at doorways within the unit comply with AS1428.1-2009.	CRA – Refer Annexure G
Living Room & Dining Room				

Item	Room/Item	Clause	Comment	Compliance
36.	Provision for circulation space of 2250mm min. diameter	4.7.1	A circulation space of min. 2250mm diameter is made available in the living areas after the furniture has been placed.	Complies
38.	Telephone adjacent to GPO	4.7.4	Telephone outlet adjacent to GPO in living/dining area to be indicated on post adaption plan at construction stage.	CRA – Refer Annexure G
41.	Potential illumination level min. 300Lux	4.1.0	Lighting to comply at construction stage.	CRA – Refer Annexure G
Kitchen				
42.	Minimum width 2.7m (1550mm clear between benches)	4.5.2	1550mm min. clearance is provided in front of sink and appliances.	Complies
43.	Provision for circulation at doors to comply with AS1428.1	4.5.1	There are no kitchen doors proposed.	Noted
44.	Provision for benches planned to include at least one work surface of 800mm length, adjustable in height from 750 mm to 850mm or replaceable. Refer to Figure 4.8.	4.5.5	To be updated post adaption, with no works required at this stage. Counter can be replaced in future if required to a lower height in the island or other bench space.	CRA – Refer Annexure G
45.	Refrigerator adjacent to work surface	4.5.5	Work surface adjacent to refrigerator of 800mm is capable of being provided.	CRA – Refer Annexure G
46.	Kitchen sink adjustable to heights from 750mm to 850mm or replaceable	4.5.6	To be updated post adaption, with no works required at this stage.	CRA – Refer Annexure G
47.	Kitchen sink bowl max. 150mm deep	4.5.6	To be updated post adaption, with no works required at this stage.	CRA – Refer Annexure G
48.	Tap set capstan or lever handles or lever mixer	4.5.6(e)	To be updated post adaption, with no works required at this stage.	CRA – Refer Annexure G

Item	Room/Item	Clause	Comment	Compliance
49.	Tap set located within 300mm of front of sink	4.5.6(e)	To be updated post adaption, with no works required at this stage.	CRA – Refer Annexure G
51.	Cook tops to include either front or side controls with raised cross bars	4.5.7	To be updated post adaption, with no works required at this stage.	CRA – Refer Annexure G
52.	Cook tops to include isolating switch	4.5.7	Cook tops to be provisioned with isolating switches or gas stop valves that can be easily and safely operated with the cook top is in use. To be updated post adaption, with no works required at this stage.	CRA – Refer Annexure G
53.	Work surface min. 800mm length adjacent to cook top at same height	4.5.7	Work surface adjacent to, and at the same height as the, cook top is 800mm.	Complies
54.	Oven located adjacent to an adjustable height or replaceable work surface	4.5.8	The oven adjacent to an 800mm wide work surface	Complies
59.	GPOs to comply with AS 1428.1. At least one double GPO within 300mm of front of work surface	4.5.11	GPOs to comply with AS1428.1. At least one double GPO within 300mm of front of work surface.	CRA – Refer Annexure G
60.	GPO for refrigerator to be easily reachable when the refrigerator is in its operating position	4.5.11	GPO for refrigerator to be easily reachable when the refrigerator is in its operating position.	CRA – Refer Annexure G
61.	Slip-resistant floor surface	4.5.4	Floors to be slip resistant to comply with AS3661.1. Certificate to be provided at CC stage. Note: AS4586:2013/HB 198:2014 is satisfactory.	CRA – Refer Annexure G
Main Bedroom				
62.	At least one bedroom of area sufficient to accommodate queen size bed, wardrobe and circulation space requirements of AS1428.2	4.6.1	Adaptable bedrooms provided are capable of catering a queen size bed with a turning bay at base overlapping with circulation space at doorway, and clearances around the bed of 1000mm min.	Complies

Item	Room/Item	Clause	Comment	Compliance
			Note: Queen size bed is 1520mm W x 2030mm L.	
Bathroom				
75.	Provision for bathroom area to comply with AS1428.1	4.4.1	The bathroom + shower area is to comply with Clause 15 of AS1428.1-2009. Currently, bathroom internal dimensions are sufficient to allow for compliance being maintained with AS1428.1-2009. Note: Extra capped-off plumbing services to be provided if fixtures relocation is required at post-adaptation stage. It is recommended to arrange fixtures in post-adaptation location where possible.	CRA – Refer Annexure G
76.	Slip-resistant floor surface	4.4.2	Floors to be slip resistant to comply with AS3661.1. Certificate to be provided at CC stage. Note: AS4586:2013/HB 198:2014 is satisfactory.	CRA – Refer Annexure G
77.	Shower recess-no hob. Minimum size 1160x1100mm to comply with AS1428.1 (Refer Figures 4.6 and 4.7)	4.4.4(f)	Shower to be hob-less. The post adaption plans show AS1428.1 compliant sizes and fit-out.	CRA – Refer Annexure G
78.	Shower area waterproofed to AS3740 with floor to fall to waste	4.4.4(f)	Entire bathroom to comply with AS3740.	CRA – Refer Annexure G
79.	Recessed soap holder	4.4.4(f)	Recessed soap holder to be provisioned at the Construction Certificate stage and shown on the plans	CRA – Refer Annexure G
80.	Shower taps positioned for easy reach to access side of shower sliding track	4.4.4(f)	Shower head and taps to be located at a height and clearance compliant to AS1428.1.	CRA – Refer Annexure G
82.	Provision for adjustable, detachable hand held shower rose mounted on a slider grabrail or fixed hook (plumbing and wall – strengthening provision)	4.4.4(h)	To be updated post adaption, with no works required at this stage. Provisioning to be provided in the walls for shower and taps to be located at a height and clearance compliant to AS1428.1. Note: Extra capped-off plumbing services to be provided if fixture relocation is required at post-adaptation stage,	CRA – Refer Annexure G

Item	Room/Item	Clause	Comment	Compliance
			including 700mm height shower outlet with back-flow retention valve.	
83.	Provision for grabrail in shower (Refer to Figure 4.7) to comply with AS1428.1	4.4.4(h)	To be updated post adaption, with no works required at this stage. Provisioning to be provided in the walls for shower, grabrail and taps to be located at a height and clearance compliant to AS1428.1. Specification of the in-wall reinforcement to be provided on construction stage plans. Builder to determine appropriate compliance to be in accordance with this Clause.	CRA – Refer Annexure G
86.	Tap sets to be capstan or lever handles with single outlet	4.4.4(c)	Taps may be updated post adaption, with no works required at this stage.	CRA – Refer Annexure G
88.	Provision for washbasin with clearances to comply with AS1428.1	4.4.4(g)	Clearances comply for one basin without change. Basin may be updated post adaption if required, with no works required at this stage.	
90.	Double GPO beside mirror	4.4.4(d)	Double GPO to be provided beside mirror.	CRA – Refer Annexure G
Toilet				
92.	Provision of either “visitable toilet” or accessible toilet	4.4.3	The adaptable unit is provided at pre-adaptation stage with a “visitable” toilet at entry level with 900x1250mm clearance in front of WC pan (door not to encroach).	Complies
93.	Provision to comply with AS1428.1	4.4.1	The bathroom area is to comply with Clause 15 of AS1428.1-2009 in relation to dimensions of fixtures, location and circulation spaces. Currently, bathroom internal dimensions are sufficient to allow for compliance being maintained with AS1428.1-2009.	CRA – Refer Annexure G
94.	Location of WC pan at correct distance from fixed walls	4.4.3	Pan to be located correct distances from the walls in accordance with AS1428.1-2009.	CRA – Refer Annexure G

Item	Room/Item	Clause	Comment	Compliance
95.	Provision for grab rail zone (Refer Figure 4.6)	4.4.4(h)	Provisioning to be provided in the walls or the walls can be concrete. Specification of the in-wall reinforcement to be provided on construction stage plans. Builder to determine appropriate compliance to be in accordance with this Clause.	CRA – Refer Annexure G
96.	Slip resistant floor surf ace (vitreous tiles or similar)	4.4.2	Floors to be slip resistant to comply with AS3661.1. Certificate to be provided at CC stage. Note: AS4586:2013/HB 198:2014 is satisfactory.	CRA – Refer Annexure G
Laundry				
98.	Circulation at doors to comply with AS 1428.1	4.8	The proposed laundry is located within a room with a bi-fold door which allows a large door opening with compliant circulation access to the laundry appliances. This is considered acceptable.	CRA – Refer Annexure G
99.	Provision for adequate circulation space in front of or beside appliances (min. 1550x1550mm)	4.8	Sufficient space has been provided in front of the appliances.	CRA – Refer Annexure G
100.	Provision for automatic washing machine	4.8(e)	An automatic washing machine is required to be provided.	CRA – Refer Annexure G
102.	Where clothes line is provided, an accessible path of travel to this	4.8(a)	No clothes line has been proposed as part of the unit.	Noted
105.	Double GPO	4.8(g)	Double GPO to be provided within the laundry (shown on post adaptation plans).	CRA – Refer Annexure G
108.	Slip-resistant floor surface	4.9.1	Slip resistant floor surface is required to be provided.	CRA – Refer Annexure G
Door Locks				

Item	Room/Item	Clause	Comment	Compliance
110.	Door hardware operable with one hand, located 900–1100mm above floor	4.3.4	Door hardware operable with one hand, located 900–1100mm above floor.	CRA – Refer Annexure G

ANNEXURE G DEFINITIONS

Annexure G - Definitions

Average specific extinction area

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

Critical radiant flux

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

Designated bushfire prone area

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

Effective height

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

Envelope

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

(a) the exterior of the building; or

(b) a non-conditioned space including—

(i) the floor of a rooftop plant room, lift-machine room or the like; and

(ii) the floor above a carpark or warehouse; and

(iii) the common wall with a carpark, warehouse or the like.

Exit

Exit means –

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

(i) An internal or external stairway.

(ii) A ramp.

(iii) A fire-isolated passageway.

(iv) A doorway opening to a road or open space.

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

Fire compartment

Fire compartment means –

(a) the total space of a building; or

(b) when referred to in—

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

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

Fire-resistance level (FRL)

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

(a) structural adequacy; and

(b) integrity; and

(c) insulation,

and expressed in that order.

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

Fire-source feature

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

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

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

Fire wall

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

Flammability index

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

Group number

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

Loadbearing

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

Non-combustible

Non-combustible means—

(a) applied to a material — not deemed combustible as determined by AS 1530.1:1994 — Combustibility Tests for Materials; and

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

Open space

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

Performance Requirement

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

Performance Solution

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

Sarking-type material

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

Smoke developed index

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

Smoke development rate

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

Smoke growth rate index

Smoke growth rate index (SMOGRA RC) means the index number for smoke used in the regulation of fire hazard properties and applied to materials used as a finish, surface, lining or attachment to a wall or ceiling.

Sole-occupancy unit

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

(a) a dwelling; or

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

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

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

ANNEXURE H BCA COMPLIANCE SPECIFICATION

Annexure H – BCA Compliance Specification

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

Architectural Design Certification

1. The FRL's of building elements for the proposed works have been designed in accordance with Table 3 of Specification C1.1 of BCA2019 for a building of Type A Construction.
2. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2019.
3. Building elements must be non-combustible in accordance with C1.9 of BCA2019.
4. Materials, floor and wall linings/coverings, surface finishes and air-handling ductwork used in the works will comply with the fire hazard properties of Clause C1.10 and Specification C1.10 of BCA2019.
5. Any ancillary elements fixed, installed or attached to the internal parts or external face of an external wall that is required to be non-combustible will comply with Clause C1.14 of BCA2019.
6. Vertical separation will be provided to the new openings in the external walls in accordance with Clause C2.6 of BCA2019. It is noted that no spandrel separation is required in the stairway or to a void.
7. The parts of different classifications located alongside one another in the same storey will be separated in accordance with Clause C2.8 and Specification C1.1 of BCA2019.
8. Floors separating storeys of different classifications will comply with BCA Clause C2.9 of BCA2019.
9. Equipment will be separated in accordance with Clause C2.12 of BCA2019.
10. Any main switch room sustaining emergency equipment required to operate in emergency mode, will be separated from the remaining building with construction having an FRL 120/120/120 and provided with self-closing -/120/130 fire doors in accordance with Clause C2.13 of BCA2019.
11. Services penetrating elements required to possess an FRL including the floor slabs, walls, shafts, etc. will be protected in accordance with Clause C3.12, C3.13 and C3.15 and Specification C3.15 of BCA2019.
12. Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation will be protected in accordance with BCA Clause C3.16.
13. The lift doors will be --/60/- fire doors complying with AS 1735.11:1986 in accordance Clause C3.10 of BCA2019.
14. Doorways and other opening in internal walls required to have an FRL will be protected in accordance with Clause C3.11 of BCA2019.
15. Columns protected by light weight construction will achieve an FRL not less than the FRL for the element it is penetrating, in accordance with Clause C3.17 of BCA2019.
16. A lintel will have the FRL required for the part of the building in which it is situated, unless it does not contribute to the support of a fire door, fire window or fire shutter, and it spans an opening in masonry which is not more than 150 mm thick and is not more than 3m wide if the masonry is non-loadbearing; or not more than 1.8m wide if the masonry is loadbearing and part of a solid wall or one of the leaves of a cavity wall, or it spans an opening in a non-loadbearing wall of the Class 2 or 3 building, in accordance with Specification C1.1 Clause 2.3 BCA2019.

17. All attachments to the external façade of the building will be fixed in a way that does not affect the fire resistance of that element in accordance with Clause 2.4 of Specification C1.1 of BCA2019.
18. The top and bottom of the riser shafts will achieve an FRL not less than the FRL required for the walls of the shaft in accordance with Clause 2.7 of Specification C1.1 of BCA2019.
19. Fire doors will comply with AS 1905.1:2015 and Specification C3.4 of BCA2019.
20. Travel distances to exits will be in accordance with Clause D1.4 of BCA2019.
21. The alternative exits will be distributed uniformly around the storey and will not be less than 9m apart, and not more 60m in accordance with Clause D1.5 of BCA2019.
22. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D1.6 of BCA2019.
23. Discharge from exits will be in accordance with Clause D1.10 of BCA2019.
24. The ladder from the plant, lift machine rooms, and electricity network substation in lieu of a stairway will be in accordance with Clause D1.16 of BCA2019.
25. Access to the lift pit will be in accordance with Clause D1.17 of BCA2019.
26. The non-fire isolated stairs will be constructed in accordance with Clause D2.3 of BCA2019.
27. The construction of EDB's and telecommunications distribution boards will be in accordance with Clause D2.7 of BCA2019 with the enclosure bounded by non-combustible construction or fire protective covering and smoke seals provided around the perimeter of the non-combustible doors and any openings sealed with non-combustible mastic to prevent smoke spreading from the enclosure.
28. New pedestrian ramps will comply with AS 1428.1:2009, Clause D2.10 and Part D3 of BCA2019. The floor surface of a ramp must have a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013.
29. The roof of the building where the exit discharges will have an FRL of 120/120/120, and will not have roof lights or openings within 3m of the path of travel in accordance with Clause D2.12 of BCA2019.
30. Stair geometry to the new stairways will be in accordance with Clause D2.13 of BCA2019. Stair treads are to have a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013.
31. Landings and door thresholds throughout the development will be provided in accordance with Clause D2.14 and D2.15 of BCA2019. Landings to have either a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013 or a strip at the edge of the landing with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013 where the edge ledge to a flight below.
32. The handrails and balustrades to all stairs and throughout the building will be in accordance with Clause D2.16, and D2.17 of BCA2019.
33. The fixed platform, walkway, stairway and ladder and any associated going and riser, landing handrail, balustrade, located within the machinery room, boiler house, lift-machine room, plant-room, or non-habitable attic/storeroom within the sole occupancy unit will comply with AS 1657:2013 or Part D2 of BCA2019.
34. The doorways and doors will be in accordance with Clause D2.19 and D2.20 of BCA2019.
35. Door latching mechanisms will be in accordance with Clause D2.21 of BCA2019
36. The openable portion of a window in a bedroom of a Class 2 building will be protected with a restricting device or secure screen that does not allow a 125mm sphere to pass through the opening or screen and resist an outward horizontal action of 250N in accordance with Clause D2.24 of

BCA2019. In addition to window protection, and for other openable windows 4 meters or more above the ground below, a barrier with a height not less than 865mm above the floor will be installed to the openable window.

37. The new works will be accessible in accordance with Clause D3.1 and table D3.1, D3.2, D3.3 of BCA2019, and with AS 1428.1:2009, with particular note to door circulation spaces, accessway widths, turning spaces and floor coverings, in accordance with Part D3 of BCA2019.
38. Braille and tactile signage will in accordance with Clause D3.6, and Specification D3.6 of BCA2019.
39. Tactile ground surface indicators will be provided in accordance with Clause D3.8 of BCA2019 and AS/NZS 1428.4.1:2009.
40. On an accessway, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, will be clearly marked in accordance with AS 1428.1:2009 and Clause D3.12 of BCA2019.
41. Fire precautions whilst the building is under construction fire precautions will be in accordance with Clause E1.9 of BCA2019.
42. Non-illuminated exit signage will be installed in accordance with Clause E4.7, and of BCA2019.
43. External above ground waterproofing membranes will comply with Clause F1.4 of BCA2019 and AS 4654 Parts 1 & 2:2012.
44. The new roof covering will be in accordance with Clause F1.5 of BCA2019.
45. Any sarking proposed will be installed in accordance with Clause F1.6 of BCA2019.
46. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F1.7 of BCA2019 and AS 3740:2010.
47. Damp proofing of the proposed structure will be carried out in accordance with Clause F1.9 and F1.10 of BCA2019.
48. Floor wastes will be installed to bathrooms and laundries above sole occupancy units or public space in accordance with Clause F1.11 of BCA2019.
49. All new glazing to be installed throughout the development will be in accordance with Clause F1.13 of BCA2019 and AS 1288:2006 / AS 2047:2014.
50. Sanitary facilities will be provided in the building in accordance with Clause F2.1 and Table F2.1 of BCA2019.
51. The construction of the sanitary facilities will be in accordance with Clause F2.5 of BCA2019.
52. Ceiling heights to the new areas will be in accordance with Clause F3.1 of BCA2019.
53. Natural light will be provided in accordance with Clause F4.1, F4.2, and F4.3 of BCA2019.
54. Natural ventilation will be provided in accordance with Clause F4.5, F4.6 and F4.7 of BCA2019.
55. Water closets and urinals will be located in accordance with Clause F4.8 of BCA2019.
56. The sanitary compartments will be either be provided with mechanical exhaust ventilation or an airlock in accordance with Clause F4.9 of BCA2019.
57. Pliable building membranes installed in external walls will comply with Clause F6.2 of BCA2019 and where a pliable building membrane is not installed in an external wall, the primary water control layer will be separated from water sensitive materials by a drained cavity.
58. Every storey of the carpark will be provided with an adequate system of permanent natural or mechanical ventilation in accordance with Clause F4.11 of BCA2019.

59. A safe manner for cleaning of windows located 3 or more storeys above ground level will be provided in accordance with the Work Health & Safety Act 2011 and regulations made under that Act in accordance with NSW G1.101 of BCA2019.
60. 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.
61. 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.
62. Building Fabric and Thermal Construction will be in accordance with Part J1 of BCA2019.
63. Glazing will be in accordance with Part J1 of BCA2019.
64. Building sealing will be in accordance with Part J3 of BCA2019.
65. Facilities for Energy Monitoring will be provided in accordance with Clause J8.3 of BCA2019.

Electrical Services Design Certification:

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

Hydraulic Services Design Certification:

72. Storm water drainage will be provided in accordance with Clause F1.1 of BCA2019 and AS/NZS 3500.3:2018
73. Fire hydrant system will be installed in accordance with Clause E1.3 of BCA2019 and AS 2419.1:2005 as required.
74. Fire hose reels will be installed in accordance with Clause E1.4 of BCA2019 and AS 2441:2005.
75. A sprinkler system will be installed in accordance with Clause E1.5 of BCA2019, Specification E1.5 and appropriate part(s) of AS 2118.
76. Portable fire extinguishers will be installed in accordance with Clause E1.6 of BCA2019 and AS 2444:2001.
77. The heated water supply systems will be designed and installed to NCC Volume 3 – Plumbing code and Clause J7.2 of BCA2019.

Mechanical Services Design Certification:

78. An air-handling system which does not form part of a smoke hazard management system will be installed in accordance with Clause E2.2 of BCA2019, and AS 1668.1:2015.
79. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F4.5 of BCA2019 and AS 1668.2:2012.

80. Every storey of the car park will be ventilated in accordance with Clause F4.11 of BCA2019 and where not naturally ventilated it will be mechanically ventilated in accordance with AS 1668.2:2012 as applicable.
81. Exhaust systems installed in a kitchen, bathroom, sanitary compartment or laundry of a Class 2 or 4 *sole-occupancy unit* will have a minimum flow rate and discharge location in accordance with Clause F6.3 of BCA2019.
82. Where exhaust discharges directly or via shaft into a roof space of a Class 2 or 4 *sole-occupancy unit*, ventilation of the roof space will comply with Clause F6.4 of BCA2019.
83. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J5 of BCA2019
84. Rigid and flexible ductwork will comply with the fire hazard properties set out in AS 4254 Parts 1 and 2.

Structural Engineers Design Certification:

85. The material and forms of construction for the proposed works will be in accordance with Clause B1.2, B1.4 and B1.6 of BCA2019 as follows:
    a. Dead and Live Loads – AS/NZS 1170.1:2002
    b. Wind Loads – AS/NZS 1170.2:2011
    c. Earthquake actions – AS 1170.4:2007
    d. Masonry – AS 3700:2018
    e. Concrete Construction – AS 3600:2018
    f. Steel Construction AS 4100:1998
    g. Aluminium Construction – AS/NZS 1664.1 or 2:1997
    h. Timber Construction – AS 1720.1:2010
    i. ABCB Standard for Construction of Buildings in Flood Hazard Areas.
86. The FRL's of the structural elements for the proposed works have been designed in accordance with Specification C1.1 of BCA2019, including Table 3 for a building of Type A Construction.
87. The lift shaft will have an FRL in accordance with Clause C2.10 and Specification C1.1 of BCA2019.
88. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2019.
89. The construction joints to the structure will be in accordance with Clause C3.16 of BCA2019 to reinstate the FRL of the element concerned.

Lift Services Design Certification:

90. Warning signage in accordance with Clause E3.3 of BCA2019 will be provided to the lifts to advise not to use the lifts in a fire.
91. Access and egress to the lift well landings will comply with the Deemed-to-Satisfy Provisions of D3 of the BCA2019 and will be suitable to accommodate disabled persons.
92. The type of lifts will also be suitable to accommodate persons with a disability in accordance with Clause E3.6, Table E3.6a, and will have accessible features in accordance with Table E3.6b of BCA2019.
93. The lifts will comply with AS 1735.12:1999 in accordance with Clause E3.6 of BCA2019.

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

Acoustic Services Design Certification:

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

Accessibility

1. Tactile ground surface indicators will be installed at the top and bottom of stairways / ramps (other than fire isolated stairways / ramps); and where an overhead obstruction is less than 2 metres above the floor level. Tactile ground surface indicators will comply with Sections 1 and 2 of AS1428.4.1.
2. On an accessway where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights or glazing capable of being mistaken for a doorway or opening will be clearly marked and comply with Clause 6.6 of AS1428.1-2009. A solid non-transparent contrasting line not less than 75mm wide is to extend across the full width of the glazing panel. The lower edge of the contrasting line is to be located between 900-1000mm above the plane of the finished floor level. The contrasting line is to provide a minimum of 30% luminance contrast when viewed against the floor surface or surfaces within 2 metres of the glazing on the opposite side.
3. All doorways will have a minimum luminance contrast of 30% in accordance with Clause 13.1 of AS1428.1-2009.
4. Fixtures and fittings in accessible sanitary facilities will be provided and installed in accordance Clause 15 of AS1428.1-2009.
5. Fixtures and fittings in ambulant facilities will be provided and installed in accordance Clause 16 of AS1428.1-2009.
6. Walkways will comply with Clause 10 of AS1428.1-2009.
7. For the walkways, the floor or ground surface abutting the sides of the walkway will be firm and level of a different material to that of the walkway at the same level and follow the grade of the walkway and extend horizontally for a minimum of 600mm, or be provided with a kerb or kerb rail in accordance with Clause 10.2 of AS1428.1-2009.
8. Stairways will comply with Clause 11 of AS1428.1-2009.
9. Handrails will comply with Clause 12 of AS1428.1-2009.
10. Grabrails will comply with Clause 17 of AS1428.1-2009.
11. Accessible car spaces will achieve compliant headroom clearances in accordance with Clause 2.4 of AS2890.6-2009.
12. Demarcation will be provided in the accessible car space and adjacent shared zone in accordance with Clause 3.1 and 3.2 of AS2890.6. Refer to Annexure B1 for a diagrammatic explanation.
13. Bollards will be provided in the shared disabled car space area in accordance with Clause 2.2.1(e) of AS2890.6-2009. Refer to Annexure B1 for a diagrammatic explanation.
14. Switches and power points will comply with Clause 14 of AS1428.1-2009.
15. Floor and ground floor surfaces on accessible paths and circulation spaces including the external areas will comply with Clause 7 of AS1428.1-2009. Any level difference over 3mm must be ramped according AS1428.1 Clause 10.5.
16. Braille and tactile signage will comply with BCA2019 Clause D3.6.
17. Signage will to comply with Clause 8 of AS1428.1-2009.
18. The passenger lifts will comply with BCA2019 Table E3.6b and AS1735.12.
19. The unobstructed height of a continuous accessible path of travel will be a minimum of 2000mm and 1980mm at doorways.

20. Door handles and the like, will be in accordance with Clause 13.5 of AS1428.1-2009.

Adaptable Housing Units

21. All ground surfaces will be slip resistant to comply with HB197/AS4856.
22. Letterboxes will be on a hard stand area connected to an accessible pathway in accordance with Clause 3.8 of AS4299.
23. The unit entry doors to the adaptable units will comply with the circulation spaces required under AS1428.2 in accordance with Clause 4.3.1 of AS4299.
24. Door hardware will be compliant with AS1428.1-2009 and all external doors will be keyed alike in accordance with Clause 4.3.4 of AS4299.
25. Internal door openings within the adaptable units will have a clear opening of 820mm with door circulation spaces complying with AS1428.1 in accordance with Clauses 4.3.3 and 4.3.7 respectively of AS4299.
26. A telephone outlet will be provided adjacent to GPO in living/dining area in accordance with Clause 4.7.4 of AS4299.
27. The kitchen cabinet design will allow for the removal of the cabinets under the sink and adjacent work surface in accordance with Clause 4.5.6 of AS4299.
28. Cook tops to be provisioned with isolating switches or gas stop valves that can be easily and safely operated with the cook top is in use in accordance with Clause 4.5.7 of AS4299.
29. GPO's will comply with AS 1428.1 with at least one double GPO provided within 300mm of front of work surface and a GPO for refrigerator will be easily reachable when the refrigerator is in its operating position in accordance with Clause 4.5.11 of AS4299.
30. The adaptable bathroom will be provisioned for the fit-out to comply with AS1428.1 in accordance with 4.4.1 of AS4299.
31. The shower of the adaptable bathroom will be hob-less in accordance with Clause 4.4.4(f) of AS4299.
32. The bathrooms will be waterproofed to comply with AS3740.
33. The soap holder will be recessed in accordance with Clause 4.4.4(f) of AS4299.
34. Shower heads and taps will be located at a height and clearance compliant with AS1428.1 in accordance with Clause 4.4.4(f) of AS4299.
35. Provision for the installation of all grabrails, shower hardware, and folding seat will be provided in the adaptable bathroom in accordance with Clause 4.4.4(h) of AS4299.
36. Provision for the installation of a washbasin with clearances as required by AS1428.1 will be provided in accordance with Clause 4.4.4(g) of AS4299.
37. A double GPO will be provided beside the mirror in the adaptable bathroom in accordance with Clause 4.4.4(d) of AS4299.
38. Provision for the toilet to comply with AS1428.1, will be provided, including locating the pan in the correct position, and the provision for the installation of all grabrails in accordance with Clauses 4.4.1, 4.4.3 and 4.4.4(h) of AS4299.
39. Where a clothes line is provided and accessible path of travel will be provided to this in accordance with Clause 4.8(a) of AS4299.
40. A double GPO will be provided in the laundry, as will a shelf at a height of 1200mm maximum in accordance with Clause 4.8 of AS4299.
41. Lighting will be provided to the adaptable units in accordance with Clause 4.10 of AS4299.

SEPP 65 – Livable Housing Design Guidelines (LHDG)

42. Entrance door to have 820mm min. clear door width opening, level transition (5mm max. vertical tolerance) and reasonable shelter from the weather.
43. “Ramped threshold” (Fig 1b) allowed between 5-56mm height change.
44. Level & “step-free” entrance connected to the “safe and continuous pathway”.
45. Waterproofing and termite management at entry door (as per NCC).
46. All internal doors to have 820mm min. clear door opening at entry level rooms, 5mm max. vertical tolerance surface, and 1000mm min. internal corridors at entry level rooms.
47. If WC is located within a bathroom. WC pan circulation space to be in the corner of the room to enable installation of grabrails (door not to encroach) (Fig 3b).
48. Bathroom to have slip resistant and hobless shower recess (portable shower screens allowed)
49. Shower recess located in a room corner to enable the installation of grabrails.
50. Walls to be constructed of solid masonry or concrete, otherwise to be reinforced (1100N min. withstand in all directions).
51. For WC, the reinforcement to be 25mm thick noggings (Fig 6a), or 12mm thick sheeting (Fig 6b)
52. For showers, reinforcement to be 25mm thick noggings (Fig 8a), or 12mm thick sheeting (Fig 8b)