BCA Compliance Assessment Report

12 Boyle Street & 307 Sydney Road, Balgowlah

Residential development

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Report no. J1069-BCA-2

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CONTENTS

1 Executive Summary

This report provides an assessment of the proposed residential development at 12 Boyle St and 307 Sydney Rd, Balgowlah, NSW, against the relevant deemed-to-satisfy provisions of the Building Code of Australia 2019, Amendment 1 (BCA), excluding accessibility provisions of Part D3 & Clause F2.4, which will be addressed by a separate Access Consultant.

The following table outlines the BCA compliance issues identified in the design that will require further information or consideration and/or assessment as Performance Solutions. These issues are further detailed in Part 5 of this report 'BCA Compliance Matters to be Addressed'.

Building Code of Australia compliance matters to be addressed		
Item	Description	BCA provision(s)
1.	Protection of openings in external walls – Buildings 3 & 4 There are several openings in external walls of Buildings 3 and 4 located less than 3 m of and exposed to, a side boundary. These openings must be protected in accordance with Clauses C3.2 & C3.4 or BCA compliance achieved via a performance solution from a suitably qualified fire engineer (registered certifier – fire safety).	C3.2 & C3.4
2.	Protection of openings in external walls – Building 2 The boundary on the western side of Building 2 is located approximately 1 m from the western wall of the building. Openings in the external wall of Building 2 that are less than 1.5 m to the boundary will require protection in accordance with Clauses C3.2 & C3.4, or BCA compliance addressed by a performance solution from a suitably qualified fire engineer (registered certifier – fire safety). It is noted that the performance solution may permit no protection to these openings.	C3.2 & C3.4
3.	Lifts opening directly to units To comply with Clause C3.11 (e), the lift doors that open directly into the private lobbies would need to achieve an FRL of not less than –/60/60. As fire rated lift doors generally achieve and FRL of -/60/- (i.e. a lift door will achieve 60 minutes integrity, but not 60 minutes for insulation), it is recommended that BCA compliance be addressed by a performance solution from a suitably qualified fire engineer (registered certifier – fire safety).	C3.11
4.	Roof light The skylight to Unit 2 in B4 is located approximately 2 m from the side allotment boundary in lieu of not less than 3 m. It is recommended that either the skylight be removed, or BCA compliance achieved via a performance solution from a suitably qualified fire engineer (registered certifier – fire safety).	3.6 of Spec. C1.1
5.	Fire hydrant system A fire hydrant system complying with AS 2419.1-2005, as varied by Clause E1.3, must be provided to serve Building 3 and 4 (inclusive of carpark). It appears that street fire hydrant coverage may be available to the building from a street fire hydrant near the corner of Bentley St, provided compliant flows and pressures are achieved.	E1.3

Building Code of Australia compliance matters to be addressed		
Item	Description	BCA provision(s)
	It is recommended that input be sought from a suitably qualified hydraulic consultant to confirm whether street fire hydrant coverage compliant with AS 2419.1-2005 is available. Where compliance is not achieved via the street hydrant, a booster assembly and external fire hydrant will be required.	
6.	Sprinkler system A sprinkler system is not required for the building under Clause E1.5, however it is understood that a sprinkler system will be provided within Buildings 3 and 4 (inclusive of the carpark), so that compliance with the Clause C2.6 in relation to vertical separation requirements for windows in external walls will not be required. In accordance with Clause C2.6, the sprinkler system will need to be an AS 2118.1-2017 system compliant with Specification E1.5. The sprinkler valves must be located in a secure room or enclosure which has direct egress to a road or open space. The sprinkler system must be connected to and activate a building occupant warning system complying with Clause 7 of BCA Specification E2.2a.	C2.6 & Spec. E1.5
7.	Extent of natural light The window of Bed 2 of U01 on the lower ground level is partially screened by a retaining wall located opposite at approximately 570 mm horizontal distance from the window. To comply with Clause F4.2(b), it must be ensured that the exposed portion of the window (not screened by the retaining wall or adjoining ground) is at least 1.3 m^2 (i.e. not less than 10% of the floor area of the bedroom, inclusive of built in wardrobe). Details demonstrating compliance to be provided in the Construction Certificate stage plans.	F4.2
8.	Weatherproofing of external walls In accordance with Performance Requirement FP1.4, the construction of the external walls (including openings around windows and doors) must 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. As there are no Deemed-to-Satisfy Provisions for this *Performance Requirement* in respect of external walls, compliance with FP1.4 must be demonstrated via a *performance solution.* The Performance Solution will need to be detailed in a separate report and must clearly indicate methodologies for achieving compliance with the BCA Performance Requirement.	FP1.4
9.	BCA Specifications The BCA provisions listed as 'CRA' in the BCA clause-by-clause assessment in Part 4 of this report will need to be certified by the relevant party or included in the project plans and specifications at Construction Certificate stage.	Various

2 Introduction

2.1 Location and Description

The development is located at 12 Boyle Street and 307 Sydney Road, Balgowlah. The proposed works involve alterations and additions to an existing dwelling (labelled on plan as Building 2) and the addition of four new residential units above a new lower level carpark (labelled on plan as Buildings 3 and 4). The existing dwelling will be modified to form one of the two required adaptable units for the development. The existing dwelling and the new development will be treated as a single building for the purposes of assessing compliance with the Building Code of Australia.

An excerpt from the site plan is provided below, which shows the existing dwelling highlighted in yellow. Boyle St is located on the west (top of plan) and Sydney Road is located to the north (right side, off plan). Pedestrian access to all residences as well as vehicular access to the new carpark, is provided from Boyle St. Carparking for the existing dwelling is via an existing shared right-of-way from Sydney Rd.

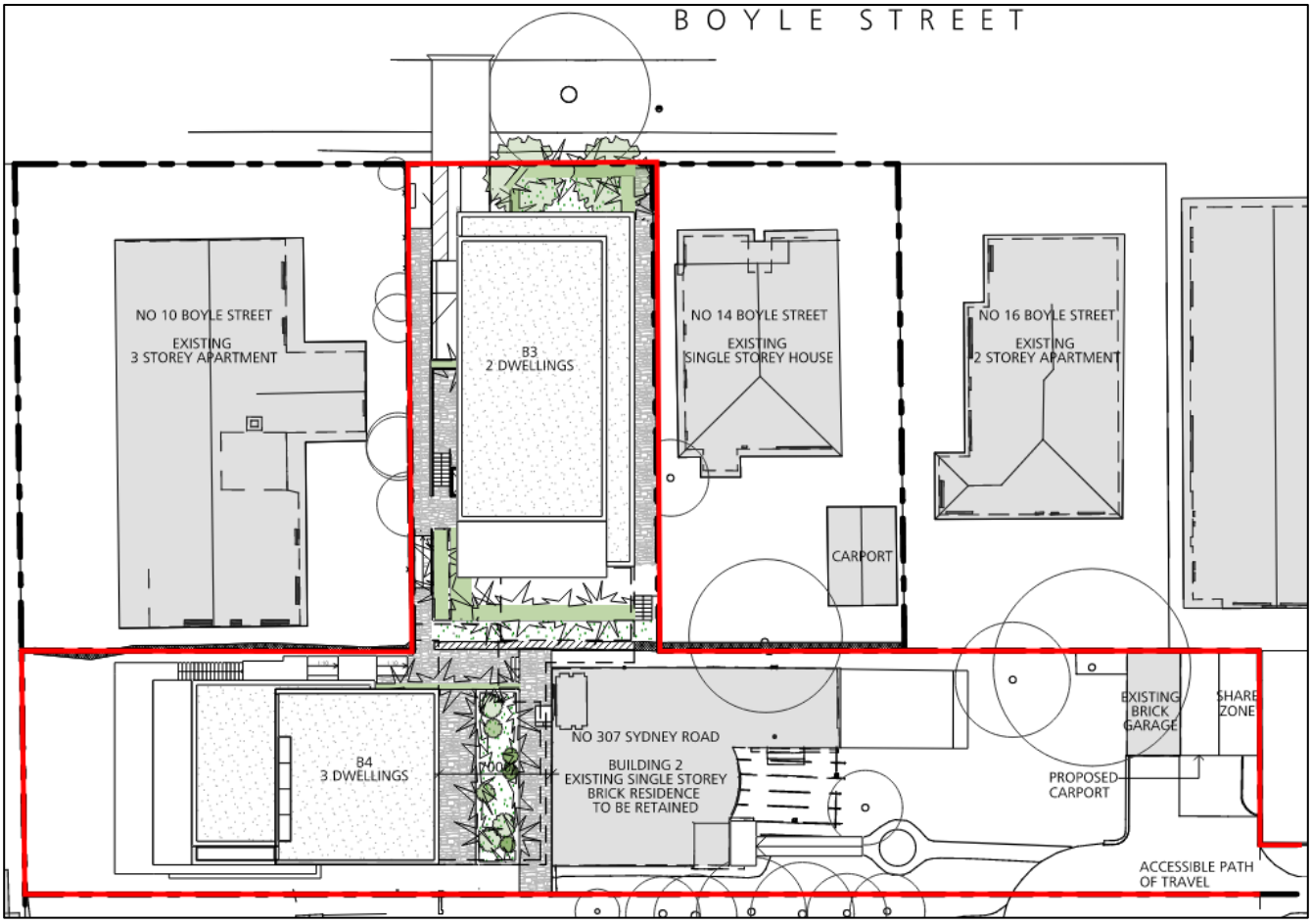

Figure 1: Excerpt from site plan

2.2 Purpose of the Report

The purpose of this report is to provide a detailed assessment of the proposed design, as detailed on the architectural design plans, against the deemed-to-satisfy provisions of the Building Code of Australia (BCA), excluding accessibility related provisions (Part D3, Clause E3.6 and Clause F2.4) which will be addressed by a separate Access report.

2.3 Basis of the Report

This report is based on the architectural plans provided, as listed in Annexure C and the current version of the Building Code of Australia Volume 1, Amendment 1 (BCA 2019).

2.4 Limitations of the Report

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 design of any proposed electrical, mechanical, hydraulic or fire protection services;
c) weatherproofing of external walls; or
d) waterproofing details such as membrane systems, compatibility of materials, control joint designs, movement joint designs, flashing details or the like.

This report does not include, nor imply compliance with:

a) the National Construction Code – Plumbing Code of Australia Volume 3;
b) the Disability Discrimination Act 1992;
c) Work Health and Safety Act 2011;
d) requirements of Australian Standards unless specifically referred to;
e) requirements of other Regulatory Authorities including, but not limited to, Telstra, Telecommunications Supply Authority, Water Supply Authority, Electricity Supply Authority, Work Cover, Roads and Maritime Services (RMS), Local Council, Department of Planning and the like; or
f) conditions of the Development Consent issued by the Local Consent Authority.

3 BCA Assessment Data

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

(Note: the terms identified by italics are defined terms under the BCA and their meanings can be found in Annexure D of this report.)

3.1 Building Classification

The building has been classified according to its use, in accordance with BCA Clause A6.0.

Class	Level	Description
2	Part lower ground, upper ground and first floor level	Residential (including the existing dwelling)
7a	Part lower ground	Carpark

3.2 Building Rise in Storeys

- The building portion comprising Buildings 3 & 4 (inclusive of the carpark) has a rise in storeys of three (3), determined in accordance with BCA Clause C1.2.
- Building 2 (the existing dwelling portion of the building) is single storey, determined in accordance with BCA Clause C1.2.

3.3 Type of Construction

The building may be of mixed Type of construction, in accordance with BCA Clause C1.1 & C1.4. The new units and basement carpark (Building 3 & 4) is required to comply with Type A fire-resisting construction. The existing dwelling portion (Building 2) and its additions will be subject to Type C fire-resisting construction.

3.4 Effective Height

The building has an *effective height* of less than 12 m.

3.5 Exits

The *exits* of the building are as follows:

Lower ground floor

- The exit stair on the western side of the carpark; and
- The exit stair on the southern side of the carpark.

Upper ground floor

- Each *sole occupancy unit* has its own exit door direct to open space.

3.6 Location of Fire-source Features

The *fire-source features* to which the building is exposed are the side and rear allotment boundaries of the site and the far boundaries of the roads adjoining the site.

3.7 Climate Zone

For the purposes of Section J of the BCA, the building is located within Climate Zone 5.

4 BCA Clause-by-Clause Assessment

The table on the following page provides a clause-by-clause assessment of the design against the applicable *deemed-to-satisfy provisions* of the BCA 2019, Amendment 1.

The following abbreviations have been used to indicate the compliance status:

NA	Not applicable – The deemed-to-satisfy clause is not applicable to the design
Complies	The design complies with the relevant parts of the deemed-to-satisfy clause
CRA	Compliance readily achievable – The design is consistent with the relevant deemed-to-satisfy clause, however strict compliance with the clause will need to be demonstrated by either certification by the appropriate party or by inclusion in the BCA specifications for the project at Construction Certificate stage.
DNC	Does Not Comply
PS	Performance Solution – BCA compliance is proposed or recommended to be achieved via a Performance Solution, in lieu of compliance with the subject deemed-to-satisfy clause.
Noted	The clause has been considered in the assessment, however, does not require any further design input.

BCA Clause-by-Clause Assessment Table

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
Part B - Structure			
B1.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
B1.1: Resistance to actions	The resistance of the building must be greater than the most critical action effect resulting from different combinations of actions, where the most critical action has been determined in accordance with Part B1 of the BCA.	Structural Engineer to certify at CC stage.	CRA
B1.2: Determination of individual actions	The magnitude of actions must be determined in accordance with BCA Clause B1.2.	Structural Engineer to certify at CC stage.	CRA
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 BCA Clause B1.4, including the following (as appropriate): > Masonry – AS 3700-2018 as varied by BCA Clause B1.4 (a) > Concrete – AS 3600-2018, AS 5146.1 (aerated) & AS 5216 > Steel structures – AS 4100-1998, AS/NZS 4600-2018 & NASH Standard > Composite steel and concrete: AS/NZS 2327-2017 > Cold-formed steel structures – AS/NZS 4600-2018 > Low-rise steel framing – NASH Standard > Timber construction – AS 1684.2-2010, AS 1720.1 & AS 1720.5 > Piling – AS 2159-2009	Structural Engineer / suitably qualified person to certify at CC stage.	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	> Glazed assemblies – AS 2047-2014 & AS 1288-2006 > Termite risk management – AS 3660.1-2014 > Roof tiling – AS 2050-2018 > Metal roofing – AS 1562.1-2018 Termite Risk Management: Where a *primary building element* is subject to attack by subterranean termites: AS 3660.1, and— (i) for the purposes of this provision, a *primary building element* consisting entirely of, or a combination of, any of the following materials is considered not subject to termite attack: (A) Steel, aluminium or other metals. (B) Concrete. (C) Masonry. (D) Fibre-reinforced cement. (E) Timber — naturally termite resistant in accordance with Appendix C of AS 3660.1. (F) Timber — preservative treated in accordance with Appendix D of AS 3660.1; and (ii) a durable notice must be permanently fixed to the building in a prominent location, such as a meter box or the like, indicating— (A) the termite management system used; and (B) the date of installation of the system; and (C) where a chemical is used, its life expectancy as listed on the appropriate authority's pesticides register label; and (D) the installer's or manufacturer's recommendations for the scope and		

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	frequency of future inspections for termite activity.		
B1.5: Structural software	Not applicable	-	NA
B1.6 Construction of buildings in flood hazard areas	Not applicable	-	NA
Part C1 – Fire resistance and stability			
C1.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
C1.1: Type of construction required	In accordance with Table C1.1, the minimum Type of *fire-resisting construction* required for the building is Type A Construction for the new units and basement carpark (Building 3 & 4) and Type C fire-resisting construction for the existing residence (Building 2).	Refer to Type A and Type C fire-resisting construction requirements detailed in Specification C1.1 section below.	CRA
C1.2: Calculation of rise in storeys	(a) The rise in *storey*s is the sum of the greatest number of *storey*s at any part of the external walls of the building and any *storey*s within the roof space— (i) above the finished ground next to that part; or (ii) if part of the external wall is on the boundary of the allotment, above the natural ground level at the relevant part of the boundary. (b) A *storey* is not counted if— (i) it is situated at the top of the building and contains only heating, ventilating or lift equipment, water tanks, or similar service units or equipment; or (ii) it is situated partly below the finished ground and the underside of the ceiling is not more than 1 m above the average finished level of the ground at	The new units and the lower level carpark portion of the building (Building 3 & 4) has a rise in storeys of three (3). The existing dwelling (Building 2) has a rise in storeys of one (1), noting that the laundry at the lower level laundry does not constitute a *storey* as it does not meet the BCA definition of a *storey* (refer to Annexure D).	Noted

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	the external wall, or if the external wall is more than 12 m long, the average for the 12 m part where the ground is lowest.		
C1.3: Buildings of multiple classification	Informational	-	Noted
C1.4: Mixed Types of construction	A building may be of mixed Types of construction where it is separated in accordance with C2.7 and the Type of construction is determined in accordance with C1.1 or C1.3.	In accordance with this clause, Type C fire-resisting construction may be applied to the existing dwelling (Building 2), noting that the wall of the carpark at lower ground level extends to the roof of the lower part, as per C2.7(b)(iii). Note: The existing dwelling and its additions form part of the same building as the new development, however, may be treated as a separate building for the purposes of the *Deemed-to-satisfy Provisions* of Sections C, D and E.	Noted
C1.5: Two Storey Class 2, 3 or 9c buildings	Not applicable	-	NA
C1.6: Class 4 Parts of building	Not applicable	-	NA
C1.7: Open spectator stands and indoor sports stadium	Not applicable	-	NA
C1.8: Lightweight construction	*Lightweight construction* used in a fire-rated wall system must comply with Specification C1.8.	-	CRA
C1.9: Non-combustible building elements	(a) In a building required to be of Type A construction, the following building elements and their components must be *non-combustible*:	The new Building 3 & 4 construction must comply with this clause, however timber framing may be used as per the concession detailed below. Clause 3.10 concession for Class 2 parts	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(i) External walls, including all components incorporated in them including the facade covering, framing and insulation. (ii) The flooring and floor framing of the lift pit. (iii) Non-*loadbearing* internal walls required to be fire-resisting. (b) A shaft, being a lift, ventilating, pipe, garbage, or similar shaft that is non-*loadbearing*, must be of *non-combustible* construction. (c) A *loadbearing* internal 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.	Notwithstanding C1.9(a) and (b), Clause 3.10 of Specification C1.1 permits, timber framing to be used within the Class 2 parts (not Class 7a parts) for: > external walls; > non-*loadbearing* internal walls required to be fire-resisting; > non-*loadbearing* shafts; and > *loadbearing* internal walls, other than shafts. Note: 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.	

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(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.		
C1.10: Fire hazard properties	*Fire hazard properties* of internal linings, materials and assemblies must comply with BCA Clause C1.10 and Specification C1.10.	-	CRA
C1.11: Performance of external walls in fire	Not applicable	-	NA
C1.12:	This clause has deliberately been left blank in the BCA.	-	NA
C1.13: Fire-protected timber: Concession	Not applicable	-	NA
C1.14: Ancillary elements	An ancillary element must not be fixed, installed or attached to the internal parts or external face of an external wall that is required to be *non-combustible* unless it is one of the following: (a) An ancillary element that is *non-combustible*.	This clause applies to the Buildings 3 & 4 portion only.	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(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 (iii) does not serve an *exit*, where it would render the *exit* unusable in a fire.		

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(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 – Compartmentation and separation			
C2.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
C2.1: Application of Part	Not applicable	-	NA
C2.2: General floor area and volume limitations	The size of *fire compartments* in the Class 7 part must not exceed that specified in Table C2.2.	The carpark will form a separate fire compartment from the residential parts of the building and does not exceed the maximum fire compartment size.	Complies
C2.3: Large isolated buildings	Not applicable	-	NA
C2.4: Requirements for open spaces and vehicular access	Not applicable	-	NA
C2.5: Class 9a and 9c Buildings	Not applicable	-	NA
C2.6: Vertical separation of openings in external walls	Not applicable	This clause is not applicable as the architect has advised that the building will be provided with a sprinkler system. To receive the concession from this clause, the sprinkler system must be an AS 2118.1 system. (Refer to comments under E1.5 below).	NA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
C2.7: Separation by fire walls	(a) **Construction** - A *fire wall* must be constructed in accordance with the following: (i) 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. (ii) 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. (b) **Separation of buildings** – A part of a building separated from the remainder of the building by a *fire wall* may be treated as a separate building for the purposes of the Deemed-to-Satisfy provisions of Sections C, D and E if it is constructed in accordance with (a) and the following: (i) the *fire wall* extends through all storeys and spaces in the nature of storeys that are common to that part and any adjoining part of the building. (ii) The *fire wall* is carried through to the underside of the roof covering. (iii) Where the roof of one of the adjoining parts is lower than the roof of the other part, the *fire wall* extends to the underside of— (A) the covering of the higher roof, or not less than 6 m above the covering of the lower roof; or	Fire wall separation between the carpark and the residential parts must comply with this clause. The provision of FRL 90/90/90 walls to the perimeter of the carpark will also achieve compliance with part (b) of this clause, permitting Building 2 to be treated as a separate building for the purposes of Sections C, D & E. Note: for all other purposes, Building 2 remains part of the same building as the new development.	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(B) the lower roof if it has an *FRL* not less than that of the *fire wall* and no openings closer than 3 m to any wall above the lower roof; or (C) the lower roof if its covering is *non-combustible* and the lower part has a sprinkler system complying with Specification E1.5. (c) **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 (a) and the *fire wall* extends to the underside of – (i) a floor having an *FRL* required for a *fire wall*; or (ii) the roof covering.		
C2.8: Separation of classifications in the same storey	If a building has parts of different classifications located alongside one another in the same storey— (a) each building element in that storey must have the higher FRL prescribed in Specification C1.1 for that element for the classifications concerned; or (b) the parts must be separated in that storey by a *fire wall* having the higher FRL prescribed in Table 3; or (c) where one part is a carpark complying with Table 3.9 of Specification C1.1, the parts may be separated by a *fire wall* complying with that Table.	Separation between the carpark and residential parts at lower ground floor may be achieved by the provision of *fire wall* separation achieving not less than FRL 90/90/90 in accordance with part (c) of this clause.	CRA
C2.9: Separation of classifications in different storeys	A floor 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.	The floor slab above the basement level carpark must achieve an FRL of not less than 120/120/120.	CRA
C2.10: Separation of lift shafts	Not applicable – only applies to lifts connecting more than 3 storeys if the building is sprinkler protected.	-	NA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
C2.11: Stairways and lifts in one shaft	A stairway and lift must not be in the same shaft if either the stairway or the lift is required to be in a fire-resisting shaft.	-	NA
C2.12: Separation of equipment	(a) Equipment other than that described in (b) and (c) must be separated from the remainder of the building with construction complying with (d), if that equipment comprises— (i) lift motors and lift control panels; or (ii) emergency generators used to sustain emergency equipment operating in the emergency mode; or (iii) central smoke control plant; or (iv) boilers; or (v) a battery system installed in the building that has a total voltage of 12 volts or more and a storage capacity of 200 kWh or more. (b) Equipment need not be separated in accordance with (a) if the equipment comprises— (i) a lift installation without a machine-room; or (ii) equipment otherwise adequately separated from the remainder of the building. (c) Separation of on-site fire pumps must comply with the requirements of AS 2419.1. (d) Separating construction must have— (i) except as provided by (ii)— (A) an FRL as required by Specification C1.1, but not less than 120/120/120; and (B) any doorway protected with a self-closing fire door having an FRL of not less than –/120/30.	No equipment requiring compliance with this clause is currently indicated on the plans.	NA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
C2.13: Electricity supply system	> A main switchboard located within the building which sustains emergency equipment operating in the emergency mode must— (i) be separated from any other part of the building by construction having an FRL of not less than 120/120/120; and (ii) have any doorway in that construction protected with a self-closing fire door having an FRL of not less than –/120/30. > Electrical conductors located within a building that supply a main switchboard sustaining emergency equipment must— (i) have a classification in accordance with AS/NZS 3013 of not less than— (A) if located in a position that could be subject to damage by motor vehicles — WS53W; or (B) otherwise — WS52W; or (ii) be enclosed or otherwise protected by construction having an FRL of not less than 120/120/120. > Where emergency equipment is required in a building, all switchboards in the electrical installation, which sustain the electricity supply to the emergency equipment, must be constructed so that emergency equipment switchgear is separated from non-emergency equipment switchgear by metal partitions designed to minimise the spread of a fault from the non-emergency equipment switchgear. > For the purposes of this clause, emergency equipment includes but is not limited to the following:	No equipment requiring compliance with this clause is currently indicated on the plans.	NA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(i) Fire hydrant booster pumps. (ii) Pumps for automatic sprinkler systems. (iii) Control and indicating equipment. (iv) Emergency warning and intercom systems.		
C2.14: Public corridors in Class 2 and 3 Buildings	Not applicable	-	NA
Part C3 – Protection of openings			
C3.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
C3.1: Application of Part	Informational– (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 if they are not larger than necessary for the purpose; and (ii) non-combustible ventilators for subfloor or cavity ventilation, if each does not exceed 45 000 mm^2 in face area and is spaced not less than 2 m from any other ventilator in the same wall; and (iii) openings in the vertical plane formed between building elements at the construction edge or perimeter of a balcony or verandah, colonnade, terrace, or the like. (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	-	Noted

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	openable glazed areas that do not have the required FRL. (c) For the purposes of the Deemed-to-Satisfy Provisions of this Part, openings, other than those covered under (a)(iii), between building elements such as columns, beams and the like, in the plane formed at the construction edge or perimeter of the building, are deemed to be openings in an external wall.		
C3.2: Protection of openings in external walls	Openings in an external wall that is required to have an *FRL* must be protected in accordance with C3.4 if the distance between the opening and the *fire-source feature* (side or rear boundary) to which it is exposed is– > less than 3 m for Type A construction; and > less than 1.5 for Type C construction. The openings required to be protected must not occupy more than 1/3 of the area of the external wall of the storey in which they are located and, where wall-wetting sprinklers are used, they must be located externally.	Buildings 3 & 4 There are several openings in external walls of Buildings 3 & 4 located less than 3 m of and exposed to, a side boundary. These openings must be protected in accordance with Clauses C3.2 & C3.4 or BCA compliance achieved via a *performance solution.* Building 2 The boundary on the western side of Building 2 is located approximately 1 m from the western wall of the building. Openings in the external wall of Building 2 that are less than 1.5 m to the boundary will require protection in accordance with Clauses C3.2 & C3.4, or BCA compliance addressed by a *performance solution* from a suitably qualified fire engineer (registered certifier – fire safety). It is noted that the performance solution may permit no protection to these openings.	**CRA/PS**
C3.3: Separation of external walls and associated openings in different fire compartments	The distance between parts of external walls and any openings within them in different fire compartments separated by a fire wall must not be less than that set out in Table C3.3, unless—	This clause relates to separation of fire compartments within the same building. This clause is not applicable as Clause C1.4 permits Building 2 to be treated as a separate building for the purposes of the *deemed-to-satisfy provisions* of Sections C, D & E.	NA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(a) those parts of each wall have an FRL not less than 60/60/60; and (b) any openings protected in accordance with C3.4.	It is noted that Buildings 2, 3 & 4 are all part of the same building in relation to all other sections of the BCA.	
C3.4: Acceptable methods of protection	Where protection is required, openings must be protected as follows: <u>Doorways:</u> (i) External wall-wetting sprinklers used with doors that are self-closing; or (ii) –/60/30 fire doors that are self-closing. <u>Windows:</u> (i) External wall-wetting sprinklers used with windows that are automatic closing or permanently fixed in the closed position; or (i) –60/– fire windows that are automatically closing or permanently fixed in the closed position; or (ii) –/60/– automatic closing fire shutters. <u>Other openings:</u> (i) Excluding voids – external wall-wetting sprinklers; or (ii) Construction having an *FRL* not less than –/60/– Fire doors, fire windows and fire shutters must comply with BCA Specification C3.4.	Refer to comments in C3.2 above.	**CRA/PS**
C3.5: Doorways in fire walls	Doors in a fire wall must achieve an FRL of not less than that required by Specification C1.1 for the fire wall except that each door must have an insulation level of at least 30.	The doorways within the fire walls separating the carpark fire compartment from the residential parts, must achieve an FRL of not less than -/90/30.	CRA
C3.6: Sliding fire doors	Not applicable	-	NA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
C3.7: Protection of doorways in horizontal exits	Not applicable	-	NA
C3.8: Openings in fire-isolated exits	Not applicable	-	NA
C3.9: Service penetrations in fire-isolated exits	Not applicable	-	NA
C3.10: Openings in fire-isolated lift shafts	Not applicable – only applies to fire-isolated lift shafts	-	NA
C3.11: Bounding Construction: Class 2, 3 and 4 Buildings	Part (e) of Clause C3.11 requires openings in internal walls which are required to have an FRL with respect to *integrity* and *insulation* to not reduce the *fire-resisting* performance of the wall.	For Type A construction, Table 3 of Spec. C1.1 requires the internal walls bounding Class 2 sole-occupancy units to achieve an FRL of not less than 90/90/90 for load bearing or FRL –/60/60 for non-loadbearing. The lift walls form part of the bounding construction of the Class 2 units in Buildings 3 & 4 and have lift doors that open directly into the private lobbies of these units. To comply with part (e) of Clause C3.11, the lift walls need to achieve an FRL of not less than 90/90/90 (for loadbearing parts) and the doors that open directly into the private lobbies would need to achieve an FRL of not less than –/60/60 (as per non-loadbearing parts). As fire rated lift doors generally achieve and FRL of -/60/- (i.e. the door will achieve 60 minutes integrity, but not 60 minutes for insulation), it is recommended that BCA compliance be addressed by a *performance solution* from a suitably qualified fire engineer (registered certifier – fire safety).	**PS**

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
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.	Services passing through fire-rated floors must be fire sealed by a method compliant with this clause.	CRA
C3.13: Openings in shafts	Openings in service shafts (where proposed) 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.	-	CRA
C3.15: Openings for service installations	Where services pass through an element (other than an external wall or roof), which is required to achieve an *FRL* or a *resistance to the incipient spread of fire*, the service must be fire protected in accordance with BCA Clause C3.15.	Services passing through fire-rated building elements must be fire sealed by a method compliant with this clause.	CRA
C3.16: Construction joints	Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation must be protected in a manner identical with a prototype tested in accordance with AS 1530.4:2014 to achieve the required *FRL*.	-	CRA
C3.17: Columns protected with lightweight construction to achieve an FRL	Not applicable	-	NA
Specification C1.1 – Fire-resisting construction			
1: Scope	Informational	-	Noted

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
2.1: Exposure to fire-source features	Informational– A building element is exposed to a *fire-source feature* if any of the horizontal straight lines between that part and the *fire-source feature*, or vertical projection of the feature, is not obstructed by another part of the building that– > has an *FRL* of not less than 30/–/–; and > is neither transparent nor translucent.	-	Noted
2.2: Fire protection for a support of another part	Where a part of a building required to have an *FRL* depends upon direct vertical or lateral support from another part to maintain its *FRL*, that supporting part must have an *FRL* not less than that required by other provisions of this Specification; and if located within the same *fire compartment* as the part it supports have an FRL in respect of structural adequacy the greater of that required for the supporting part itself and for the part it supports.	-	CRA
2.3: Lintels	A lintel must have the FRL required for the part of the building in which it is situated unless it does not contribute to the support of a fire door, fire window or fire shutter and meets the requirements of Spec C1.1 clause 2.3 (a) or (b).	-	CRA
2.4: Attachments not to impair fire-resistance	The method of attaching or installing a finish, lining, ancillary element or service installation to a building element must not reduce the fire-resistance of that element to below that required.	-	CRA
2.5: General concessions	Not applicable	-	NA
2.6: Mezzanine floors: Concession	Not applicable	-	NA
2.7: Enclosure of shafts	Fire rated shafts must be enclosed at the top and bottom by construction having an FRL not less than that required for	-	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	the walls of a non-*loadbearing* shaft in the same building, except that this provision need not apply to– > the top of a shaft extending beyond the roof covering; or > the bottom of a shaft if it is *non-combustible* and laid directly on the ground.		
2.8: Carparks in Class 2 and 3 Buildings	Not applicable	-	NA
2.9: Residential Aged Care	Not applicable	-	NA
Type A Fire-Resting Construction	**Type A is applicable to Buildings 3 and 4 only.**	-	-
3.1: Fire-resistance of building elements	> Building elements must comply with the fire resistance levels (FRLs) set out in Table 3 of Specification C1.1. > Internal walls required to be fire rated must extend to the underside of the floor next above. > All *load bearing* shaft walls, must be of concrete or masonry. > *Load bearing* internal walls in Class 7a parts must be of concrete or masonry. (Note clause 3.10 concession permits timber framing for Class 2 parts).	Refer to the fire resistance levels in Annexure A of this report.	CRA
3.2: Concessions for floors	Floors laid directly on the ground need not comply with Table 3.	-	Noted
3.3: Floor Loading of Class 5 and 9b buildings: Concession	Not applicable	-	NA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
3.4: Roof superimposed on concrete slab: Concession	Not applicable	-	NA
3.5: Roof: Concession	The roof of the Class 2 parts, being non-combustible, need not achieve an FRL as per Table 3 of Spec. C1.1, due to the concession provided under this clause.	-	Noted
3.6: Roof lights	If a roof is required to have an FRL or its covering is required to be non-combustible, roof lights or the like installed in that roof must— (a) have an aggregate area of not more than 20% of the roof surface; and (b) be not less than 3 m from— (i) any boundary of the allotment other than the boundary with a road or public place; and (ii) any part of the building which projects above the roof unless that part has the FRL required of a fire wall and any openings in that part of the wall for 6 m vertically above the roof light or the like are protected in accordance with C3.4; and (iii) any roof light or the like in an adjoining sole-occupancy unit if the walls bounding the unit are required to have an FRL; and (iv) any roof light or the like in an adjoining fire-separated section of the building; and (c) if a ceiling with a resistance to the incipient spread of fire is required, be installed in a way that will maintain the level of protection provided by the ceiling to the roof space.	The skylight to Unit 2 in B4 is located approximately 2 m from the side allotment boundary in lieu of not less than 3 m required by this clause. It is recommended that the skylight be removed, or BCA compliance achieved via a *performance solution* from a suitably qualified fire engineer (registered certifier – fire safety).	**DNC/PS**

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
3.7: Internal columns and walls: Concession	Not applicable	-	NA
3.8: Open spectator stands and indoor sports stadiums concession	Not applicable	-	NA
3.9: Carparks	Notwithstanding Clause 3.1, a carpark may comply with Table 3.9 if it is protected with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5 and is part of a building– > which only occupies part of a storey and is separated from the remaining part by a *fire wall;* or > which is located above or below another classification, and the floor separating the classifications complies with C2.9.	The carpark may comply with the reduced FRLs of Table 3.9 provided it is separated from the residential parts by a *fire wall* (FRL not less than 90/90/90) and the slab above achieves FRL 120/120/120 in accordance with Clause C2.9. Refer to Annexure A of this report for the relevant FRLs.	Noted
3.10: Class 2 and 3 buildings: Concession	Clause 3.10 concession for Class 2 parts Notwithstanding C1.9(a) and (b) and Clause 3.10 of Specification C1.1 permits, timber framing to be used within the Class 2 parts (not Class 7a parts) for: > external walls; > non-*loadbearing* internal walls required to be fire-resisting; > non-*loadbearing* shafts; and > *loadbearing* internal walls, other than shafts.	-	Noted
Type C Fire-Resting Construction	**Applicable to Building 2 only.**	-	-

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
5.1: Fire-resistance of building elements	Type C Construction requirements: > Building elements (including any beam or column incorporated therein) must comply with the fire resistance levels (FRLs) set out in Table 5 of Specification C1.1. > External walls required by Table 5 to have an FRL need only be tested from the outside to satisfy the requirement.	In accordance with this clause, the new external walls of Building 2, located within 1.5 m of the allotment boundary, must achieve an FRL of not less than 90/90/90 when tested from the outside.	CRA
5.2: Carparks	Not applicable	-	NA
Part D1 – Provision for escape			
D1.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
D1.1: Application of Part	The Deemed-to-Satisfy Provisions of this Part do not apply to the internal parts of the *sole-occupancy units*.	-	Noted
D1.2: Number of exits required	Every storey must have at least one exit and not less than 2 *exits* must be provided from the basement.	-	Complies
D1.3: When fire-isolated stairways and ramps are required	Clause details when fire-isolated exits are required.	Fire-isolated exits are not required.	NA
D1.4: Exit travel distances	Class 2 residential — > The entrance doorway of each *sole-occupancy unit* must be not more than – o 6 m from an *exit* or from a point from which travel in different directions to 2 *exits* is available; or o 20 m from a single *exit* serving the storey at the level of egress to a road or open space.	-	Complies

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	Note: For a sprinkler-protected building, Specification E1.5a permits the above distances to be extended to 12 m and 30 m respectively. 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.		
D1.5: Distance between alternative exits	Exits for the basement level must be no less than 9 m apart and no more than 60 m apart.	-	Complies
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 1 m; > the unobstructed width of doorways must be not less than 750 mm. > the required width of a stairway or ramp must be measured clear of all obstructions such as handrails. > the unobstructed width of a required exit must not diminish in the direction of travel to a road or open space.	-	CRA
D1.7: Travel via fire-isolated exits	Not applicable	-	NA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
D1.8: External stairways or ramps in lieu of fire-isolated exits	Not applicable	-	NA
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 7 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 80 m. > In a Class 7 building, a required non-fire-isolated stairway or non-fire-isolated ramp must discharge at a point not more than— o 20 m from a doorway providing egress to a road or open space or from a fire-isolated passageway leading to a road or open space; or o 40 m from one of 2 such doorways or passageways if travel to each of them from the non-fire-isolated stairway or non-fire-isolated ramp is in opposite or approximately opposite directions.	-	Complies
D1.10: Discharge from exits	> An exit must not be blocked at the point of discharge and where necessary, suitable barriers must be provided to prevent vehicles from blocking the exit, or access to it. > 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.	-	Complies

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	> 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 point of alternative exits must be located as far apart as practical.		
D1.11: Horizontal exits	Not applicable	-	NA
D1.12: Non-required stairways, ramps or escalators	Not applicable	-	NA
D1.13: Number of persons accommodated	Informational	-	Noted
D1.14: Measurement of distances	Informational	-	Noted
D1.15: Method of Measurement	Informational	-	Noted
D1.16: Plant rooms, lift motor rooms and electricity network substations: concession	Not applicable	-	NA
D1.17: Access to lift pits	Access to the lift pits must be via the lowest landing doors.	-	CRA
D1.18: Egress from early childhood centres	Not applicable	-	NA
Part D2 – Construction of exits			

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
D2.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
D2.1: Application of Part	Informational – Except for D2.13, D2.14(a), D2.16, D2.17(d), D2.17 (e), D2.18 & D2.24, the deemed-to-satisfy Provisions of this Part do not apply to internal parts of the Class 2 *sole-occupancy units.*	-	Noted
D2.2: Fire-isolated stairways and ramps	Not applicable	-	NA
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".	-	CRA
D2.4: Separation of rising and descending stair flights	Not applicable	-	NA
D2.5: Open access ramps and balconies	Not applicable	-	NA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
D2.6: Smoke lobbies	Not applicable	-	NA
D2.7: Installations in exits and paths of travel	> Gas or other fuel services must not be installed in a required *exit*. > Any electricity distribution boards, ducts or equipment installed in corridors leading to an exit must be enclosed with *non-combustible* construction or a *fire-protective covering* with doorways suitably sealed against smoke spread.	-	CRA
D2.8: Enclosure of space under stairs and ramps	The space below a required non-fire-isolated stairway (including an external stairway) or non-fire-isolated ramp must not be enclosed to form a cupboard or other enclosed space unless the enclosing walls and ceilings have an FRL of not less than 60/60/60 and the doorway is fitted with a self-closing –/60/30 fire door.	No enclosures are indicated beneath the stairways or ramps.	Complies
D2.9: Width of stairways and ramps	Informational	-	Noted
D2.10: Pedestrian ramps	The floor surface of ramps must have a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013.	The external 1:14 ramps must have a slip rating of P4 or R11.	CRA
D2.11: Fire-isolated passageways	Not applicable	-	NA
D2.12: Roof as open space	The roof of basement level 1 must achieve an FRL of 120/120/120 as *exits* discharge onto it.	-	CRA
D2.13: Goings and risers	Stairways must comply with the following: > Goings must be between 240 mm and 355 mm within the residential units;	-	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	> Goings must be between 250 mm and 355 mm in other areas; > Risers must be between 115 mm high and 190 mm high; > The slope relationship (2 x riser dimension + going dimension) must be within the range of 550-700; > The goings and risers must be constant (uniform) throughout each flight and the dimensions of goings (G) and risers (R) are considered constant if the variation between– o adjacent risers, or between adjacent goings, is no greater than 5 mm; and o 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 between the treads. > Treads must have a surface or nosing strip with a slip-resistant classification not less than that listed in Table D2.14 when tested in accordance with AS 4586-2013 Slip resistance classification of new pedestrian surface materials.		
D2.14: Landings	Stairway landings must have a gradient no steeper than 1:50 and 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. Surface Condition	-	CRA

<table>
<tr><th>BCA Clause</th><th>Relevant Deemed-To-Satisfy Requirements</th><th>Comment</th><th>Status</th></tr>
<tr><td></td><td>
<table>
<tr><th>Application</th><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>
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</td><td></td><td></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 open space; and
(ii) is provided with a threshold ramp or step ramp in accordance with AS 1428.1:2009.</td><td>This clause applies only to doorways not within sole-occupancy units so only applies to entrances to the lifts from common areas.</td><td>CRA</td></tr>
<tr><td>D2.16: Barriers to prevent falls</td><td>A continuous barrier must be provided along the side of the stairways, landings and balconies where the trafficable surface is 1 m or more above the surface beneath. The barrier must comply with the following:
<u>Barrier minimum heights</u>
> 865 mm above stair nosings; and
> 1 m in all other locations.
Note: a transition zone may be incorporated where the barrier height changes from 865 mm on a stair flight to 1m at landings.</td><td>-</td><td>CRA</td></tr>
</table>

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	Balustrade openings > 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. Note: the western carpark stair may comply with the opening requirements of Table D2.16a for stairs used primarily for emergency purposes, in lieu of the above. Climbability > For floors more than 4m above the surface beneath, any horizontal or near horizontal elements between 150 mm and 760 mm above the floor must not facilitate climbing.		
D2.17: Handrails	Handrails in common areas Handrails to stairways and ramps must: > be located on at least one side of the ramp or flight. > be fixed at a height of not less than 865 mm above the nosings of the stair treads and the floor surface of the ramp, landing, or the like; and > be continuous between stair flight landings and have no obstruction that will break a hand-hold. > In required exit stairs, be constructed to comply with clause 12 of AS 1428.1:2009. Handrails within sole-occupancy units Handrails to stairways within the units must: > be located along at least one side of the flight; and > be located along the full length of the flight, except in the case where a handrail is associated with a barrier,	Handrails to be detailed on the construction stage plans.	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	the handrail may terminate where the barrier terminates; and > have the top surface of the handrail not less than 865 mm vertically above the nosings of the stair treads; and > have no obstruction on or above them that will break a handhold, except for newel posts, ball type stanchions, or the like. The above requirements do not apply to a stairway or ramp within the sole-occupancy units providing a change in elevation of less than 1m.		
D2.18: Fixed platforms, walkways stairways and ladders	Not applicable	-	NA
D2.19: Doorways and doors	Exit doors must not be fitted with revolving doors, roller shutters or tilt-up doors. Exit doors must not be fitted with sliding doors unless leading directly to open space.	-	Complies
D2.20: Swinging doors	A swinging door in a required *exit* or forming part of a required exit– (a) must not encroach– (i) at any part of its swing by more than 500 mm on the required 1m width of the *exit* if it is likely to impede the path of travel of people already using 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; and	-	Complies

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(b) must swing in the direction of egress unless– (i) it serves a building or part with a floor area not more than 200 m^2, it is the only required *exit* from the building or part and it is fitted with a device for holding it in the open position; or (ii) it serves a sanitary compartment or airlock (in which case it may swing in either direction). (c) must not otherwise impede the path or direction of egress.		
D2.21: Operation of latch	All doors in a required *exit* or forming part of a required *exit* AND doors in a path of travel to a required *exit* must be readily openable without a key from the side that faces a person seeking egress, by– (i) a single hand downward action or pushing action on a single device which is located between 900mm and 1.1 m from the floor and if serving an area required to be accessible by Part D3 – (A) be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and (B) have a clearance between the handle and the back plate or door face at the centre grip section of the handle of not less than 35mm and not more than 45mm; or (ii) a single hand pushing action on a single device which is located between 900mm and 1.2m from the floor. (iii) where the latch operation device referred to in (ii) is not located on the door leaf itself—	-	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(A) manual controls to power-operated doors must be at least 25 mm wide, proud of the surrounding surface and located— (aa) not less than 500 mm from an internal corner; and (bb) for a hinged door, between 1 m and 2 m from the door leaf in any position; and (cc) for a sliding door, within 2 m of the doorway and clear of a surface mounted door in the open position. (B) braille and tactile signage complying with Clause 3 and 6 of Specification D3.6 must identify the latch operation device. The above requirements do not apply to a door that – (i) serves only or is within a *sole-occupancy unit* in a Class 2 building; or (ii) is 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	Not applicable	-	NA
D2.23: Signs on doors	Not applicable	-	NA
D2.24: Protection of openable windows	(a) Bedroom windows must be provided with protection if the floor below the window is 2 m or more above the surface beneath.	-	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(b) Where the lowest level of the window opening is less than 1.7 m 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 (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) must not– (i) permit a 125 mm sphere to pass through it; and		

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(ii) have any horizontal or near horizontal elements between 150 mm and 760 mm above the floor that facilitate climbing.		
D2.25: Timber stairways: Concession	Not applicable	-	NA
Part D3 Access for people with a disability - Refer to separate Access report.			
Part E1 Fire-fighting equipment			
E1.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
E1.3: Fire hydrants	As Building 3 & 4 have a floor area greater than 500 m^2, a fire hydrant system complying with AS 2419.1-2005, as varied by Clause E1.3, must be provided to serve the building.	It appears that street fire hydrant coverage may be available to the building from a street fire hydrant near the corner of Bentley St, provided compliant flows and pressures are achieved. It is recommended that input be sought from a suitably qualified hydraulic consultant to confirm whether street fire hydrant coverage compliant with AS 2419.1-2005 is available. Where compliance is not achieved via the street hydrant, a booster assembly and external fire hydrant will be required.	**FI**
E1.4: Fire hose reels	A fire hose reel system complying with AS 2441-2005 must be provided to the lower ground floor carpark. The fire hose reel must be located within 4 m from the bottom riser of one of the exit stairs.	-	CRA
E1.5: Sprinklers	Clause details when sprinkler systems are required within a building.	A sprinkler system is not required for the building under Clause E1.5, however it is understood that a sprinkler system will be provided within Buildings 3 and 4 (inclusive of the carpark), so that compliance with the	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
		Clause C2.6 vertical separation requirements for windows in external walls will not be required. In accordance with Clause C2.6 an AS 2118.1-2017 sprinkler system is required, in accordance with BCA Specification E1.5. The sprinkler valves must be located in a secure room or enclosure which has direct egress to a road or open space. The sprinkler system must be connected to and activate a building occupant warning system complying with Clause 7 of BCA Specification E2.2a.	
E1.6: Portable fire extinguishers	AS 2444-2001 compliant portable fire extinguishers must. be provided to the Class 2 parts and 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.	Compliance with this clause is required for the building as a whole (Buildings 3 and 4 as well as Building 2).	CRA
E1.8: Fire control centres	Not applicable	-	NA
E1.9: Fire precautions during construction	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*.	-	CRA
E1.10: Provision for special hazards	Not applicable	-	NA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
Part E2 Smoke hazard management			
E2.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
E2.1: Application of Part	Informational	-	Noted
E2.2: General requirements	Class 2 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 carpark 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.	-	CRA
E2.3: Provisions for special hazards	Not applicable	-	NA
Part E3 Lift installations			
E3.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
E3.1: Lift installations	An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with Specification E3.1	-	CRA
E3.2: Stretcher facility in lifts	Not applicable	-	NA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
E3.3: Warning against use of lifts in fire	A warning sign stating: "DO NOT USE LIFTS IF THERE IS A FIRE" Or "Do not use lifts If there is a fire" (10 mm letting for capitals and 8mm lettering for lower case type) shall be displayed near every lift call button. The warning sign must consist of – > incised, inlaid or embossed letters on a metal, wood, plastic or similar plate securely and permanently attached to the wall; or > letters incised or inlaid directly into the surface of the material forming the wall.	-	CRA
E3.4: Emergency lifts	Not applicable	-	NA
E3.5: Landings	Access and egress to and from lift-well landings must comply with the Deemed-to-Satisfy Provisions of Section D.	-	CRA
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.	Refer to Access report for further details.	CRA
E3.7: Fire service controls	Not applicable	-	NA
E3.8: Residential care buildings	Not applicable	-	NA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
E3.9: Fire service recall switch	Not applicable	-	NA
E3.10: Lift car service drive control switch	Not applicable	-	NA
Part E4 Visibility in an emergency, exit signs and warning systems			
E4.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
E4.2: Emergency lighting requirements	An emergency lighting system must be installed throughout the lower ground floor carpark of Buildings 3 & 4, including the exit stairs, in accordance with the requirements of Clause E4.2	-	CRA
E4.3: Measurement of distance	Informational	-	Noted
E4.4: Design and operation of emergency lighting	The emergency lighting system must comply with AS/NZS 2293.1-2018.	-	CRA
E4.5: Exit signs	Exit signage must be installed to indicate the two exit stairs from the carpark and the final discharge door from the western carpark stair, in accordance with the requirements of Clause E4.5.	-	CRA
E4.6: Direction signs	Exit signs must be installed in appropriate positions within the carpark to indicate the direction to the two exits.	-	CRA
E4.7: Class 2 and 3 buildings and Class 4 Parts: Exemptions	Not applicable	-	NA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
E4.8: Design and operation of exit signs	Exit signs must comply with AS/NZS 2293.1-2018, or for a photoluminescent exit sign, BCA Specification E4.8 and be clearly visible at all times the building is legally occupied.	-	CRA
E4.9: Emergency warning and intercom systems	Not applicable	-	NA
Part F1 – Damp and weatherproofing			
F1.0: Deemed-to-Satisfy Provisions	*Performance Requirement* FP1.4, for the prevention of the penetration of water through external walls, must be complied with.	There are no Deemed-to-Satisfy Provisions for this *Performance Requirement* in respect of external walls. The assessment contained within this report does not include an assessment against Performance Provision FP1.4.	**PS**
F1.1: Stormwater drainage	Stormwater drainage works must comply with AS/NZS 3500.3-2018.	-	CRA
F1.4: External above ground membranes	Waterproofing membranes for external above ground use must comply with AS 4654.1-2012 'Materials' and AS 4654.2-2012 'Design and Installation'.	Waterproofing membranes to roofs and balconies must comply with this clause. In accordance with clause 2.8.3 of AS 4654.2-2012, ensure sufficient upturn is provided in membranes at doors and windows to external waterproofed areas, or alternatively provide strip drainage for the full extent of the openings.	CRA
F1.5: Roof coverings	Roof coverings must comply with this clause.	Refer to F1.4 for roofing membranes.	NA
F1.6: Sarking	*Sarking-type materials* used for weatherproofing must comply with AS/NZS 4200 Part 1 and 2-2017.	-	CRA
F1.7: Water proofing of wet areas in buildings	Building elements in wet areas must be *water resistant* or *waterproof* in accordance with Table F1.7 of the BCA and comply with AS 3740-2010.	Walls in shower areas are required to be water-resistant to a height of not less than 1800 mm above the finished shower floor level, in accordance with AS 3740-2010. For a shower wall to be water-resistant, it	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
		must have a water-resistant substrate such as fibre-cement and a water-resistant surface material such as tiles. To comply with AS 3740, it must be ensured that the windows shown adjacent to the shower areas of TH1 and TH2 have a sill height above the required 1800 mm high water-resistant shower area zone.	
F1.9: Damp-proofing	Moisture is to be prevented from reaching the walls above a damp-proof course. Where a damp-proof course is provided, it must consist of— > a material that complies with AS/NZS 2904; or > impervious sheet material in accordance with AS 3660.1	-	CRA
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	-	CRA
F1.11: Provision of floor wastes	A bathroom or laundry located at any level above a sole-occupancy unit or public space must have— > a floor waste; and > the floor graded to the floor waste to permit drainage of water.	-	CRA
F1.12: Sub-floor ventilation	Any subfloor spaces must be provided with openings in accordance with Table F1.12 or additional measures to ensure the overall level of ventilation of the subfloor space is maintained in accordance with Clause F1.12.	-	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
F1.13: Glazed Assemblies	Glazed assemblies in external walls must comply with AS 2047-2014 requirements for resistance to water penetration.	-	CRA
Part F2 Sanitary and other facilities			
F2.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
F2.1: Facilities in residential buildings	Each sole-occupancy unit must have the following facilities: (i) Within each sole-occupancy unit, provide— (A) a kitchen sink and facilities for the preparation and cooking of food; and (B) a bath or shower; and (C) a closet pan; and (D) a washbasin. (ii) For laundry facilities, provide either— (A) in each sole-occupancy unit— (aa) clothes washing facilities, comprising at least one washtub and a space for a washing machine; and (bb) clothes drying facilities comprising clothes line or a hoist with not less than 7.5 m of line, or space for one heat operated drying cabinet or appliance in the same room as the clothes washing facilities; or (B) a separate laundry for each 4 sole-occupancy units, or part thereof, that must comprise—	-	Complies

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(aa) clothes washing facilities, comprising at least one washtub and a space for a washing machine; and (bb) clothes drying facilities comprising clothes line or a hoist with not less than 7.5 m of line per sole-occupancy unit, or space for one heat operated drying cabinet or appliance. (iii) For the purposes of (a)(i) and (a)(ii), a kitchen sink or washbasin must not be counted as a laundry washtub.		
F2.2: Calculation of number of occupants and facilities	Informational	-	Noted
F2.3: Facilities in Class 3 to 9 buildings	Not applicable	-	NA
F2.4: Accessible sanitary facilities (including Table F2.4)	Not applicable	-	NA
F2.5: Construction of sanitary compartments	The door to a fully enclosed sanitary compartment must— (i) open outwards; or (ii) slide; or (iii) be readily removable from the outside of the sanitary compartment, unless there is a clear space of at least 1.2 m, measured in accordance with Figure F2.5, between the closet pan within the sanitary compartment and the doorway.	-	Complies

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
F2.6: Interpretation: urinals and washbasins	Not applicable	-	NA
F2.8: Waste Management	Not applicable	-	NA
F2.9: Accessible adult change facilities	Not applicable	-	NA
Part F3 Room heights			
F3.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
F3.1: Height of rooms and other spaces	The height of rooms and other spaces must be not less than— > *Habitable rooms* (excluding kitchens) - 2.4 m > Kitchens – 2.1 m > Corridors, passageways, or the like — 2.1 m > A bathroom, sanitary compartment store room or the like — 2.1 m > Carparking area (other than adaptable spaces) – 2.1 m > 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.	Ensure 2 m clearance is provided above the stairway near the kitchen in U03.	CRA
Part F4 Light and ventilation			
F4.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
F4.1: Provision of natural light	Natural light must be provided to all habitable rooms.	-	Complies
F4.2: Methods and extent of natural lighting	(a) Natural light must be provided by: (i) Windows, excluding rooflights, that–: (A) have an aggregate light transmitting area of not less than 10% the *floor area* of the room; and (B) 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) Roof lights, that: (A) have an aggregate light transmitting area of not less than 3% the *floor area* of the room; and (B) are open to the sky; 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 – (i) 1m; and (ii) 50% of the square root of the exterior height of the wall in which the window is located, measured from its sill.	The window of Bed 2 of U01 on the lower ground level is partially screened by a retaining wall located opposite at approximately 570 mm horizontal distance from the window. To comply with Clause F4.2, it must be ensured that the exposed portion of the window (not screened by the retaining wall or adjoining ground) is at least 1.3 m^2 (i.e. not less than 10% of the floor area of the bedroom, inclusive of built in wardrobe). Details demonstrating compliance to be provided in the Construction Certificate stage plans.	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
F4.3: Natural light borrowed from adjoining room	(a) Natural light to a room in a Class 2 building, may come through one or more glazed panels or openings from an adjoining room (including an enclosed verandah) if— (i) both rooms are within the same sole-occupancy unit or the enclosed verandah is on common property; and (ii) the glazed panels or openings have an aggregate light transmitting area of not less than 10% of the floor area of the room to which it provides light; and (iii) the adjoining room has— (A) windows, excluding roof lights, that— (aa) have an aggregate light transmitting area of not less than 10% of the combined floor areas of both rooms; and (bb) are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like; or (B) roof lights, that— (aa) have an aggregate light transmitting area of not less than 3% of the combined floor areas of both rooms; and (bb) are open to the sky; or (C) a proportional combination of windows and roof lights required by (A) and (B). (b) The areas specified in (a)(ii) and (a)(iii) may be reduced as appropriate if direct natural light is provided from another source.	Natural light is currently not borrowed from an adjoining room but is an option for compliance.	NA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
F4.4: Artificial Lighting	Artificial lighting to all areas is to comply with AS/NZS 1680.0-2009.	-	CRA
F4.5: Ventilation of rooms	All rooms to be provided with Clause F4.6 compliant natural ventilation **OR** a mechanical ventilation system complying with AS 1668.2:2012.	-	CRA
F4.6: Natural ventilation	Natural ventilation provided in accordance with F4.5 must consist of permanent openings, windows, doors or other devices which can be opened— (i) with an aggregate opening or openable size not less than 5% of the floor area of the room required to be ventilated; and (ii) open to— (A) a suitably sized court, or space open to the sky; or (B) an open verandah, carport, or the like; or (C) an adjoining room in accordance with F4.7.	-	CRA
F4.7: Ventilation borrowed from adjoining room	Not applicable	-	NA
F4.8: Restriction on position of water closets and urinals	Sanitary compartments must not open directly into a kitchen or pantry.	-	Complies
F4.9: Airlocks	If sanitary compartment is prohibited from opening directly to another room– > access must be by an airlock, hallway or other room; or > the sanitary compartments must be provided with mechanical exhaust ventilation.	Sanitary compartments not separated from the kitchens by a hallway are to be provided with mechanical ventilation in accordance with this clause.	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
F4.11: Carparks	The carpark must have a system of mechanical ventilation complying with AS 1668.2-2012.	-	CRA
F4.12: Kitchen local exhaust ventilation	Not applicable	-	NA
Part F5 Sound transmission and insulation			
F5.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
F5.1: Application of Part	Informational – The deemed-to-satisfy provisions of this Part apply to the Class 2 parts.	-	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.	-	CRA
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 ($L_{n,w}$) 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	-	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(c) For the purposes of this Part, discontinuous construction means a wall having a minimum 20 mm cavity between 2 separate leaves, and (i) for masonry, where wall ties are required to connect leaves, the ties are of the resilient type; and (ii) for other than masonry, there is no mechanical linkage between leaves except at the periphery.		
F5.4: Sound insulation rating of floors	A floor in a Class 2 building must achieve an $R_w + C_{tr}$ (airborne) not less than 50, and an $L_{n,w}$ (impact) not more than 62, if separating- > sole-occupancy units; or > a *sole-occupancy unit* from a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification.	-	CRA
F5.5: Sound insulation rating of walls	(a) A wall in a Class 2 building must: (i) have an Rw + Ctr (airborne) not less than 50 if it separates *sole-occupancy units*; and (ii) have an Rw (airborne) not less than 50, if it separates a sole-occupancy unit from a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification; and (iii) be of discontinuous construction in accordance with F5.3(b) if it separates a *sole-occupancy unit* from a plant room or lift shaft. (b) A door may be incorporated in a wall in a Class 2 building that separates a sole-occupancy unit from a stairway, public corridor, public lobby or the like, provided the door assembly has an Rw not less than 30.	-	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(c) (not applicable) (d) (not applicable) (e) 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. (f) 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 (i) a ceiling that provides the sound insulation required for the wall.		
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 Rw + Ctr (airborne) not less than— (i) 40 if the adjacent room is a habitable room (other than a kitchen); or (ii) 25 if the adjacent room is a kitchen or non-habitable room. (b) If a storm water pipe passes through a *sole-occupancy unit* it must be separated in accordance with (a)(i) and (ii).	-	CRA
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 or other pump.	-	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
Part F6 Condensation Management			
F6.0: Deemed-to-satisfy provisions	Informational	-	Noted
F6.1: Application of Part	The Deemed-to-Satisfy Provisions of this Part only apply to the Class 2 units.	-	Noted
F6.2 Pliable building membrane	> Where a *pliable building membrane* is installed in an external wall, it must— (i) comply with AS/NZS 4200.1; and (ii) be installed in accordance with AS 4200.2; and (iii) be located on the exterior side of the primary insulation layer of wall assemblies that form the external envelope of a building. > Except for single skin masonry and single skin concrete, where a *pliable building membrane* is not installed in an external wall, the primary *water control layer* must be separated from *water sensitive materials* by a drained cavity.	-	CRA
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—	-	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(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		
F6.4: Ventilation of roof spaces	Not applicable	-	NA
Part G1 Minor structures and components			
G1.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
G1.1: Swimming pools	Not applicable	-	NA
G1.2: Refrigerated chambers, strong-rooms and vaults	Not applicable	-	NA
G1.3: Outdoor play spaces	Not applicable	-	NA
NSW G1.101: Provision for cleaning windows	A safe manner for cleaning of windows located 3 or more storeys above ground level must be provided, and compliance is achieved where: > the windows can be cleaned wholly from within the building; or > via a method complying with the Work Health and Safety Act 2011 and regulations made under that Act.	-	CRA
Part G2 Boilers, pressure vessels, heating appliances, fireplaces, chimneys and flues – not applicable			
Part G3 Atrium construction – not applicable			
Part G4 Construction in alpine areas – not applicable			
Part G5 Construction in bushfire prone areas – not applicable			

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
Part G6 Occupiable outdoor areas – not applicable			
Section H Special use buildings – not applicable			
NSW Part J(A)1 Building fabric			
NSW J(A)1.0: Deemed-to-satisfy Provisions	Informational	-	Noted
NSW J(A)1.1: Application of Part	> The deemed-to-satisfy provisions of this Part only apply to thermal insulation in a Class 2 building where a development consent specifies that the insulation is to be provided as part of the development. > The Deemed-to-Satisfy Provisions of this Part for thermal breaks apply to all Class 2 buildings.	-	Noted
NSW J(A)1.2: Compliance with BCA provisions	The sole-occupancy units of a Class 2 building must comply with the national BCA provisions of J0.2(b) to (d) - except that the reference to "Where required" in J1.2 is deemed to refer to "Where a development consent or a complying development certificate specifies that insulation is to be provided as part of the development."	Refer to these clauses below.	Noted
NSW Part J(A)2 Building sealing			
NSW J(A)2.0: Deemed-to-satisfy provisions	Informational	-	Noted
NSW (A)2.1: Application of Part	The deemed-to-satisfy provisions of this Part apply to elements forming the *envelope* of a Class 2 building.	-	Noted
NSW J(A)2.2: Compliance with BCA provisions	Class 2 buildings must comply with the following national BCA provisions: > J3.2 Chimneys and flues	Refer to these clauses below.	Noted

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	> J3.3 Roof lights > J3.4 (a) to (d) Windows and doors > J3.5 Exhaust fans > J3.6 Construction of ceilings, walls and floors. > J3.7 Evaporative cloolers		
NSW Part J(A)3 Air-conditioning and ventilation systems			
NSW J(A)3.0: Deemed-to-satisfy provisions	Informational	-	Noted
NSW J(A)3.1: Application of Part	The deemed-to-satisfy provisions of this Part apply to a Class 2 building.	-	Noted
NSW J(A)3.2: Compliance with BCA provisions	Class 2 buildings must comply with the following national BCA provisions, as applicable– (a) for air-conditioning system control: J5.2; and (b) for mechanical ventilation system control: J5.3; and (c) for fan systems: J5.4; and (d) for ductwork insulation: J5.5; and (e) for ductwork sealing: J5.6; and (f) for pump systems: J5.7; and (g) for pipework insulation: J5.8; and (h) for refrigerant chillers: J5.10; and (i) for unitary air-conditioning equipment: J5.11; and (j) for heat rejection equipment: J5.12.	Refer to these clauses below.	Noted
NSW Part J(A)4 Heated water supply			

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
NSW J(A)4.0: Deemed-to-satisfy provisions	Informational	-	Noted
NSW J(A)4.1: Application of Part	Informational	-	Noted
NSW J(A)4.2: Compliance with BCA provisions	Class 2 buildings must comply with the national BCA provisions of J7.2 Heated water supply.	Refer to clause below.	Noted
NSW Part J(A)5 Facilities for energy monitoring			
NSW J(A)5.0: Deemed-to-satisfy provisions	Informational	-	Noted
NSW J(A)5.1: Application of Part	The deemed-to-satisfy provisions of this Part apply to a Class 2 building except within a *sole-occupancy unit.*	-	Noted
NSW J(A)5.3: Compliance with BCA provisions	Class 2 buildings must comply with the national BCA provisions of J8.3.	Refer to clause below.	Noted
NSW Subsection J(B) Energy efficiency – Class 3 and Class 5 to 9 buildings			
NSW J(B)1: Compliance with BCA provisions	The Class 7a part must comply with all of the provisions of the national Section J that are applicable, as varied by NSW J3.1 Application of Part.	Refer to clauses below.	Noted
Part J0 Energy Efficiency			
J0.2: Heating & cooling loads of Sole Occupancy Units to Class 2 & 4 parts	J0.2 (b) to (d) require compliance with the following national provisions: > J1.2 for general thermal construction; and > J0.4 and J0.5 for thermal breaks; and > J1.6(b) and J1.6(c) for floor edge insulation	Refer to clauses below.	Noted

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
J0.4: Roof thermal breaks	A roof that has metal sheet roofing fixed to metal purlins, metal rafters or metal battens and has a ceiling fixed directly to those metal purlins, metal rafters or metal battens, must have a thermal break, consisting of a material with an *R-Value* of not less than R0.2, installed at all points of contact between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens.	-	NA
J0.5: Wall thermal breaks	Where a wall lining is fixed directly to the metal wall frame and lightweight external cladding is used, a thermal break consisting of a material with an *R-Value* of not less than R0.2 must be installed at all points of contact between the external cladding and the metal frame.	-	NA
Part J1 Building Fabric			
J1.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
J1.1: Application of Part	The provisions of Part J1 apply to building elements forming part of the *envelope* of the building.	-	Noted
J1.2: Thermal construction general	(a) Where required, insulation must comply with AS/NZS 4859.1 and be installed so that it— (i) abuts or overlaps adjoining insulation other than at supporting members such as studs, noggings, joists, furring channels and the like where the insulation must be against the member; and (ii) forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and (iii) does not affect the safe or effective operation of a service or fitting.	This Clause applies to the Class 2 parts only.	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(b) Where required, *reflective insulation* must be installed with— (i) the necessary airspace to achieve the required R-Value between a reflective side of the reflective insulation and a building lining or cladding; and (ii) the *reflective insulation* closely fitted against any penetration, door or window opening; and (iii) the *reflective insulation* adequately supported by framing members; and (iv) each adjoining sheet of roll membrane being— (A) overlapped not less than 50 mm; or (B) taped together. (c) Where required, bulk insulation must be installed so that— (i) it maintains its position and thickness, other than where it is compressed between cladding and supporting members, water pipes, electrical cabling or the like; and (ii) in a ceiling, where there is no bulk insulation or reflective insulation in the wall beneath, it overlaps the wall by not less than 50 mm. (d) Roof, ceiling, wall and floor materials, and associated surfaces are deemed to have the thermal properties listed in Specification J1.2. (e) The required Total R-Value and Total System U-Value, including allowance for thermal bridging, must be— (i) calculated in accordance with AS/NZS 4859.2 for a roof or floor; or		

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	(ii) determined in accordance with Specification J1.5a for wall-glazing construction; or (iii) determined in accordance with Specification J1.6 or Section 3.5 of CIBSE Guide A for soil or sub-floor spaces.		
J1.3: Roof and ceiling construction	Not applicable.	This clause does not apply to Class 2 buildings in NSW	NA
J1.4: Roof lights	Not applicable.	This clause does not apply to Class 2 buildings in NSW	NA
J1.5: Walls	Not applicable.	This clause does not apply to Class 2 buildings in NSW	NA
J1.6: Floors	J1.6(b) & J1.6(c) for floor edge insulation apply to Class 2 *sole-occupancy units:* (b) A floor must be insulated around the vertical edge of its perimeter with insulation having an R-Value greater than or equal to 1.0 when the floor has an in-slab or in-screed heating or cooling system, except where used solely in a bathroom, amenity area or the like. (c) Insulation required by (b) for a concrete slab-on-ground must— (i) be water resistant; and (ii) be continuous from the adjacent finished ground level— (A) to a depth not less than 300 mm; or (B) for the full depth of the vertical edge of the concrete slab-on-ground	This clause is only applicable if an in-slab or in-screed heating or cooling system is proposed.	CRA
Part J2 Glazing Part J2 has deliberately been left blank from the BCA2019			
Part J3 – Building sealing			

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
J3.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
J3.1: Application of Part	The requirements of this Part apply to elements forming the *envelope* of the building other than: > a permanent building opening necessary for the safe operation of a gas appliance; and > parts of building that cannot be fully enclosed.	-	Noted
J3.2: Chimneys and flues	Not applicable	-	NA
J3.3: Roof lights	(a) A roof light must be sealed, or capable of being sealed, when serving a conditioned space or a habitable room. (b) A roof light required by (a) to be sealed, or capable of being sealed, must be constructed with— (i) an imperforate ceiling diffuser or the like installed at the ceiling or internal lining level; or (ii) a weatherproof seal; or (iii) a shutter system readily operated either manually, mechanically or electronically by the occupant.	-	CRA
J3.4: Windows and doors	(a) A door, openable window or the like must be sealed. (b) The above does not apply to a window complying with AS 2047. (c) A seal to restrict air infiltration— (i) for the bottom edge of a door, must be a draft protection device; and (ii) for the other edges of a door or the edges of an openable window or other such opening, may be a	This Clause applies to the Class 2 parts only.	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	foam or rubber compression strip, fibrous seal or the like.		
J3.5: Exhaust fans	Any exhaust fan serving a *conditioned space* or *habitable room* must be fitted with a sealing device, such as a self-closing damper of the like.	This Clause applies to the Class 2 parts only.	CRA
J3.6: Construction of ceilings, walls and floors	Ceilings, walls, floors and any openings, such as a window frame, doors frame or the like, are to be constructed to minimise air leakage by being enclosed by internal lining systems that are close fitting at junctions.	This Clause applies to the Class 2 parts only.	CRA
J3.7: Evaporative Coolers	Not applicable	-	NA
Part J4 – Part J4 has deliberately been left blank in BCA 2019.			
Part J5 – Air-conditioning and ventilation systems			
J5.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
J5.1: Application of Part	Informational	-	Noted
J5.2: Air-conditioning system control	Air-conditioning system control must comply with clause J5.2 of BCA 2019.	Design certification to be provided by air-conditioning systems supplier/installer.	CRA
J5.3: Mechanical ventilation system control	A mechanical ventilation system control must comply with clause J5.3 of BCA 2019.	Design certification to be provided by air-conditioning systems supplier/installer.	CRA
J5.4: Fan systems	Fan systems must comply with Clause J5.4 of BCA 2019.	Design certification to be provided by air-conditioning systems supplier/installer.	CRA
J5.5: Ductwork Insulation	Ductwork insulation must comply with Clause J5.5 of BCA 2019.	Design certification to be provided by air-conditioning systems supplier/installer.	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
J5.6: Ductwork Sealing	Ductwork must be sealed in accordance with Clause J5.4 of BCA 2019, where applicable.	Design certification to be provided by air-conditioning systems supplier/installer.	CRA
J5.7: Pump Systems	Pump systems must comply with Clause J5.7 of BCA 2019, where applicable.	Design certification to be provided by air-conditioning systems supplier/installer.	CRA
J5.8: Pipework Insulation	Pipework insulation must comply with Clause J5.7 of BCA 2019, where applicable.	Design certification to be provided by air-conditioning systems supplier/installer.	CRA
J5.9: Space Heating	Not applicable	Compliance is not required with the national BCA provisions of J5.9 as those matters are regulated under BASIX.	NA
J5.10: Refrigerant Chillers	Refrigerant chillers used as part of an air-conditioning system must comply with Clause J5.10 of BCA 2019.	Design certification to be provided by air-conditioning systems supplier/installer.	CRA
J5.11: Unitary Air-Conditioning Equipment	Unitary air-conditioning equipment must comply with Clause J5.11 of BCA 2019.	Design certification to be provided by air-conditioning systems supplier/installer.	CRA
J5.12: Heat Rejection Equipment	Heat rejection equipment must comply with Clause J5.12 of BCA 2019.	Design certification to be provided by air-conditioning systems supplier/installer.	CRA
Part J6 Artificial lighting and power			
J6.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
J6.1: Application of Part	Not applicable	-	NA
J6.2: Artificial lighting	Artificial lighting for the Class 7a part must comply with BCA Clause J6.2 (b).	Design certification to be provided by the electrical designer.	CRA
J6.3: Interior artificial lighting and power control	Lighting switches and control devices for the Class 7a part must comply with BCA Clause J6.3.	Design certification to be provided by the electrical designer.	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
J6.4: Interior decorative and display lighting	Not applicable	-	NA
J6.5: Exterior artificial lighting	Exterior lighting attached to or directed at the façade of the building (Class 7a part only) must be controlled by daylight sensors or time switches in accordance with the specific requirements of this clause.	Design certification to be provided by the electrical designer.	CRA
J6.6: Boiling water and chilled water storage units	Not applicable	-	NA
J6.7: Lifts	Lifts must— (a) be configured to ensure artificial lighting and ventilation in the car are turned off when it is unused for 15 minutes; and (b) achieve the idle and standby energy performance level in BCA Table 6.7a; and (c) achieve— (d) the energy efficiency class in BCA Table 6.7b; or (e) if a dedicated goods lift, energy efficiency class D in accordance with ISO 25745-2.	Design certification to be provided by the lift supplier/manufacturer.	CRA
J6.8: Escalators and moving walkways	Not applicable	-	NA
Part J7 Heated water supply and swimming pool and spa pool plant			
J7.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
J7.2: Heated water supply system	A heated water supply system for food preparation and sanitary purposes must be designed and installed in	-	CRA

BCA Clause	Relevant Deemed-To-Satisfy Requirements	Comment	Status
	accordance with Part B2 of NCC Volume Three — Plumbing Code of Australia.		
J7.3: Swimming pool heating and pumping	Not applicable	-	NA
J7.4: Spa pool heating and pumping	Not applicable	-	NA
Part J8 Facilities for energy monitoring			
J8.0: Deemed-to-Satisfy Provisions	Informational	-	Noted
J8.1: Application of Part	Informational	-	Noted
J8.3: Facilities for energy monitoring	A building with a floor area of more than 500m^2 must have an energy meter configured to record the time-of-use consumption of gas and electricity.	-	CRA

5 BCA Compliance Matters to Be Addressed

As identified by the clause-by-clause assessment in Part 4 of this report, the following BCA compliance matters will require further design input and/or require amendment to the architectural design. The relevant BCA clause(s) to which each matter is related is shown in brackets.

5.1 Protection of openings in external walls (BCA Clauses C3.2 & C3.4)

Openings in an external wall that is required to have an FRL must be protected in accordance with C3.4 if the distance between the opening and the fire-source feature (side or rear boundary) to which it is exposed is–

- less than 3 m for Type A construction; and
- less than 1.5 for Type C construction.

The openings required to be protected must not occupy more than 1/3 of the area of the external wall of the storey in which they are located and, where wall-wetting sprinklers are used, they must be located externally.

Protection options under Clause C3.4 are as follows:

Doorways:

(i) External wall-wetting sprinklers used with doors that are self-closing; or

(ii) –/60/30 fire doors that are self-closing.

Windows:

(i) External wall-wetting sprinklers used with windows that are automatic closing or permanently fixed in the closed position; or

(ii) –60/– fire windows that are automatically closing or permanently fixed in the closed position; or

(iii) –/60/– automatic closing fire shutters.

Other openings:

(i) Excluding voids – external wall-wetting sprinklers; or

(ii) Construction having an *FRL* not less than –/60/–

Buildings 3 & 4 openings

There are several openings in external walls of Buildings 3 and 4 located less than 3 m of and exposed to, a side boundary. These openings must be protected in accordance with Clauses C3.2 & C3.4 or BCA compliance achieved via a *performance solution*.

Building 2 openings

The boundary on the western side of Building 2 is located approximately 1 m from the western wall of the building. Openings in the external wall of Building 2 that are less than 1.5 m to the boundary will require protection in accordance with Clauses C3.2 & C3.4, or BCA compliance addressed by a performance solution from a suitably qualified fire engineer (registered certifier – fire safety). It is noted that the *performance solution* may permit no protection to these openings.

The openings requiring protection under Clause C3.2 are highlighted in the figures below.

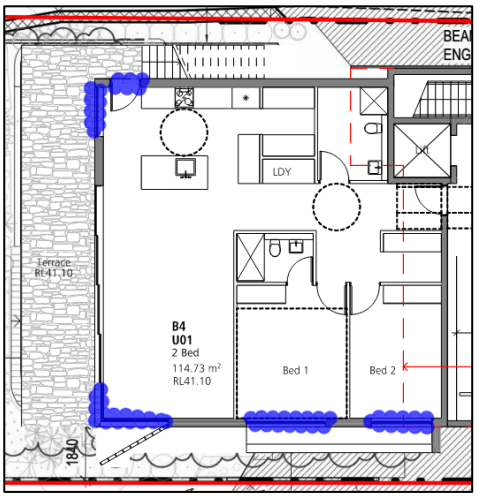

Figure 2: Openings requiring protection in B4 at Lower Ground Floor level

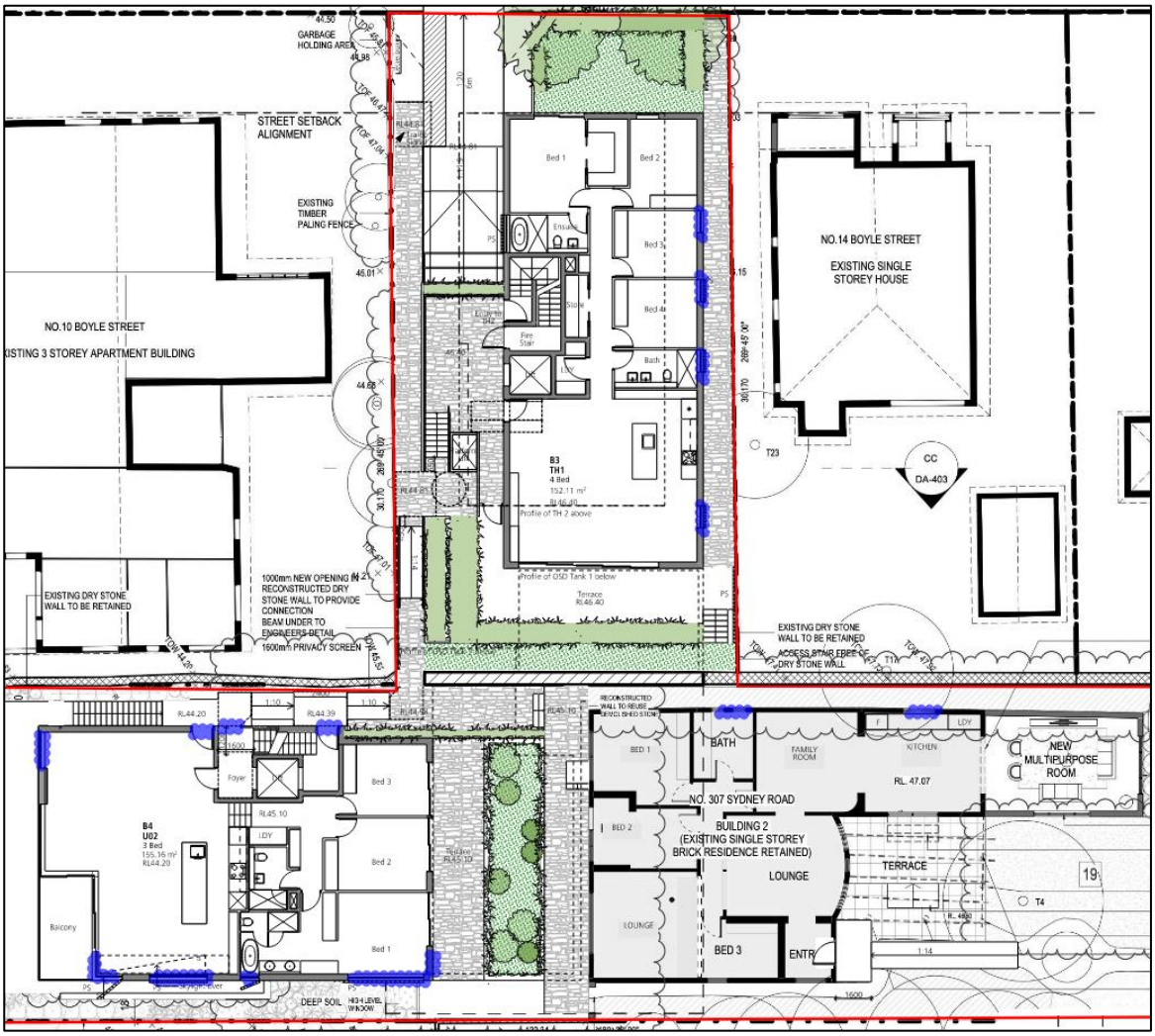

Figure 3: Openings requiring protection at Upper Ground Floor level

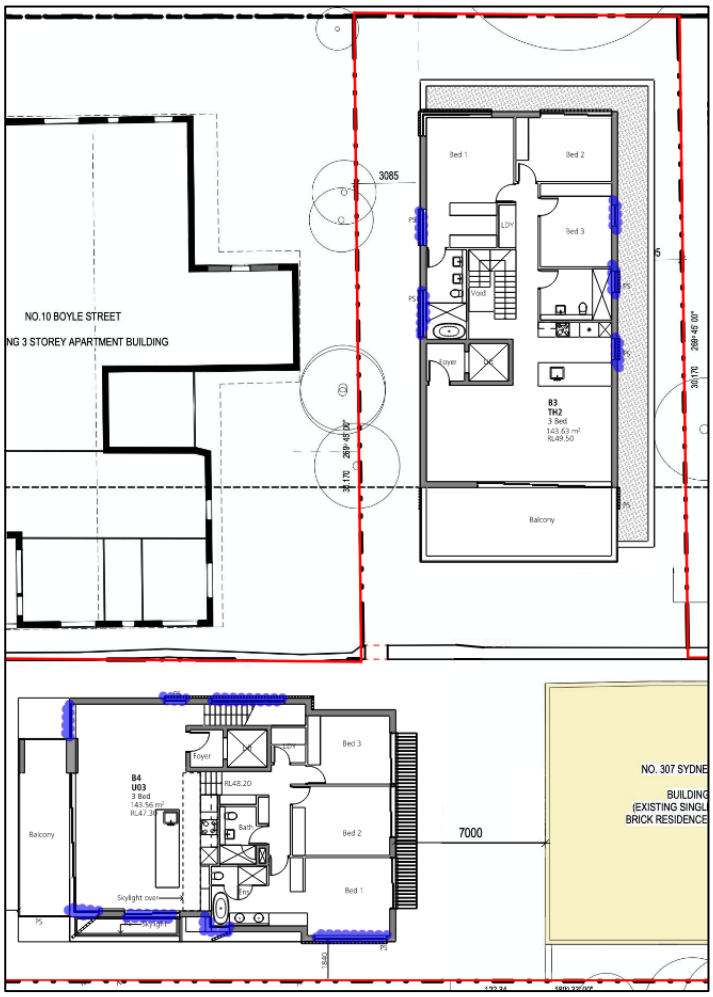

Figure 4: Openings requiring protection at First Floor level

5.2 Lifts opening directly to units (BCA Clause C3.11)

For Type A construction, Table 3 of Spec. C1.1 requires the internal walls bounding Class 2 sole-occupancy units to achieve an FRL of not less than 90/90/90 for load bearing or FRL –/60/60 for non-loadbearing.

The walls of the common area lifts form part of the bounding construction of the Class 2 units in Buildings 3 and 4 and TH1, U02 & U03 each have lift doors from a common lift that open directly into a private lobby.

To comply with part (e) of Clause C3.11, the lift walls need to achieve an FRL of not less than 90/90/90 (for loadbearing parts) and the lift doors that open directly into the private lobbies would need to achieve an FRL of not less than –/60/60.

As fire rated lift doors generally achieve and FRL of -/60/- (i.e. a lift door will achieve 60 minutes integrity, but not 60 minutes for insulation), it is recommended that BCA compliance be addressed by a *performance solution* from a suitably qualified fire engineer (registered certifier – fire safety).

The lift foyer configuration of each of the affected units is shown in the figures below.

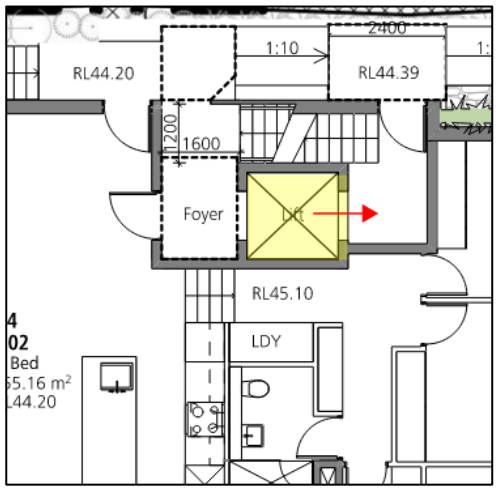

Figure 5: Lift opening directly into U02 internal stair t Lower Ground level

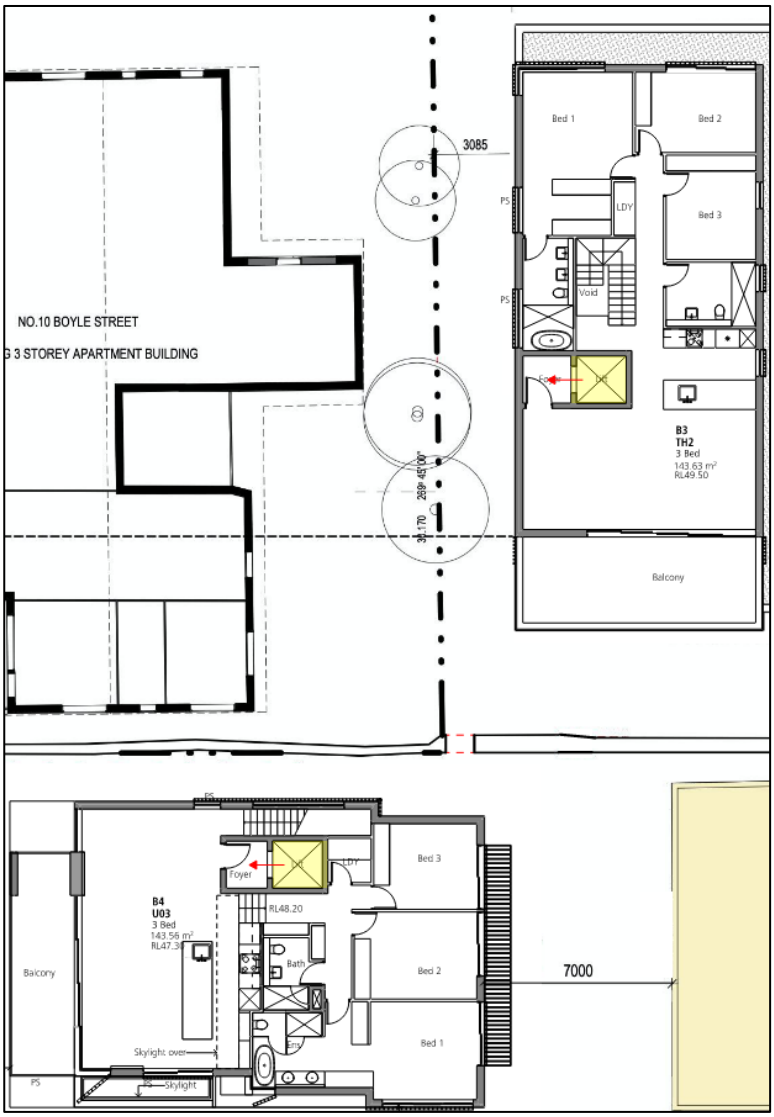

Figure 6: Lift opening directly into TH2 and U03 at First Floor

5.3 Roof lights (Clause 3.6 of Specification C1.1)

In accordance with Clause 3.6 of Specification C1.1, a roof light must not be located less than 3 m from–

(i) any boundary of the allotment, other than the boundary with a road or public place; and

(ii) any part of the building which projects above the roof unless that part has the FRL required of a *fire wall* and any openings in that part of the wall for 6 m vertically above the roof light or the like are protected in accordance with C3.4.

The skylight to Unit 2 in B4 is located approximately 2 m from the side allotment boundary in lieu of not less than 3 m required by this clause. It is recommended that either the skylight be removed, or BCA compliance achieved via a performance solution from a suitably qualified fire engineer (registered certifier – fire safety).

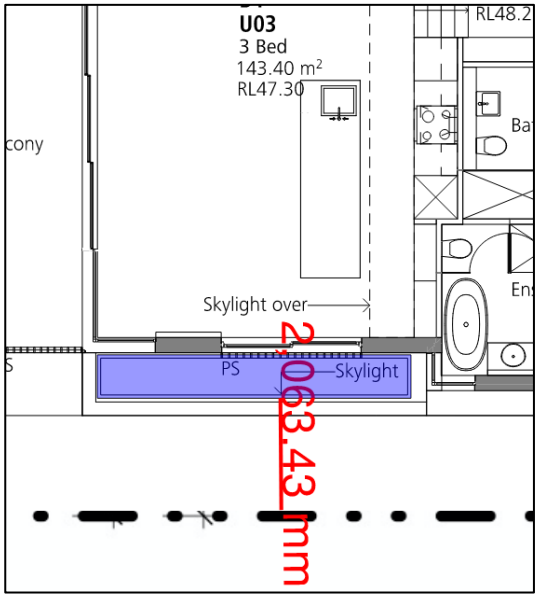

Figure 7: U02 skylight within 3 m of boundary

5.4 Fire hydrant system (BCA Clause E1.3)

A fire hydrant system complying with AS 2419.1-2005, as varied by Clause E1.3, must be provided to serve Building 3 and 4 (inclusive of carpark).

It appears that street fire hydrant coverage may be available to the building from a street fire hydrant near the corner of Bentley St, provided compliant flows and pressures are achieved.

It is recommended that input be sought from a suitably qualified hydraulic consultant to confirm whether street fire hydrant coverage compliant with AS 2419.1-2005 is available. Where compliance is not achieved via the street hydrant, a booster assembly and external fire hydrant will be required.

5.5 Sprinkler system (BCA Clauses C2.6 & Spec. E1.5)

A sprinkler system is not required for the building under Clause E1.5, however it is understood that a sprinkler system will be provided within Buildings 3 and 4 (inclusive of the carpark), so that compliance with the Clause C2.6 in relation to vertical separation requirements for windows in external walls will not be required.

In accordance with Clause C2.6, the sprinkler system will need to be an AS 2118.1-2017 system compliant with Specification E1.5.

The sprinkler valves must be located in a secure room or enclosure which has direct egress to a road or open space. The sprinkler system must be connected to and activate a building occupant warning system complying with Clause 7 of BCA Specification E2.2a.

5.6 Extent of natural light (BCA Clause F4.2)

All habitable rooms are required to be provided with natural light by one of the following:

(i) Windows, excluding rooflights, that–:

(A) have an aggregate light transmitting area of not less than 10% the *floor area* of the room; and

(B) 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) Roof lights, that:

(A) have an aggregate light transmitting area of not less than 3% the *floor area* of the room; and

(B) are open to the sky; 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 –

(i) 1m; and

(ii) 50% of the square root of the exterior height of the wall in which the window is located, measured from its sill.

The window of Bed 2 of U01 on the lower ground level is partially screened by a retaining wall located opposite at approximately 570 mm horizontal distance from the window. To comply with Clause F4.2(b), it must be ensured that the exposed portion of the window (not screened by the retaining wall or adjoining ground) is at least 1.308 m^2 (i.e. not less than 10% of the floor area of the bedroom, inclusive of built in wardrobe).

Details demonstrating compliance to be provided in the Construction Certificate stage plans..

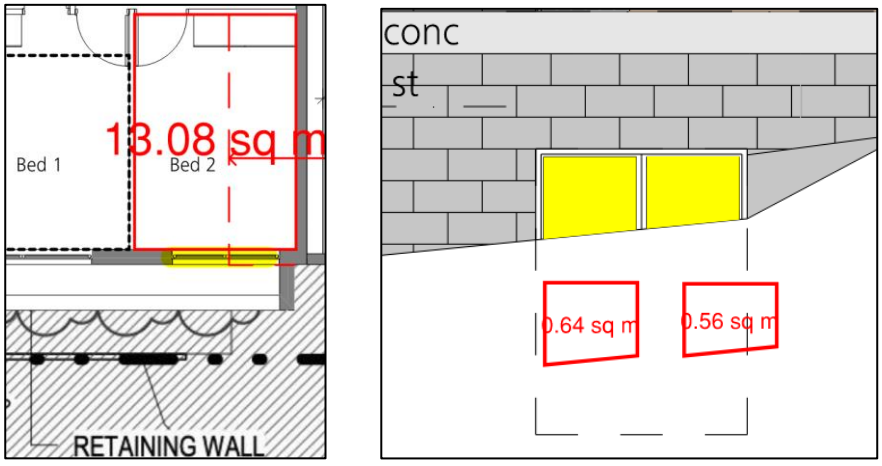

Figure 8: Natural light provision to U01 Bed 2

5.7 Weatherproofing of external walls (BCA FP1.4)

In accordance with Performance Requirement FP1.4, the construction of the external walls (including openings around windows and doors) must 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.

As there are no Deemed-to-Satisfy Provisions for this *Performance Requirement* in respect of external walls, compliance with FP1.4 must be demonstrated via a *performance solution.* The assessment contained within this report does not include an assessment against Performance Provision FP1.4.

Annexure A – 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 Fire-resistance Levels – applicable to Buildings 3 & 4

Item	Class 2	Class 7a (Table 3.9 applied)
Loadbearing parts of External Walls (including columns and other building elements incorporated therein)		
> Less than 1.5 m to a fire- source feature	90/90/90	60/60/60
> 1.5 – less than 3 m from a fire-source feature	90/60/60	60/60/60
> 3 m or more from a fire source feature	90/60/30	-/-/-
Non-Loadbearing parts of External Walls		
> Less than 1.5 m to a fire-source feature	-/90/90	-/60/60
> 1.5 – less than 3 m from a fire-source feature	-/60/60	-/60/60
> 3 m or more from a fire-source feature	-/-/-	-/-/-
Fire walls	90/90/90	90/90/90 Note 1
Internal walls bounding public corridors, public lobbies and the like:		
> Loadbearing	90/90/90	60/-/-
> Non-loadbearing	-/60/60	-/-/-
Internal walls between or bounding sole-occupancy units		
> Loadbearing	90/90/90	N/A
> Non-loadbearing	-/60/60	N/A
Ventilating, pipe, garbage and like shafts		
> Loadbearing	90/90/90	N/A
> Non-loadbearing	-/90/90	N/A
Other loadbearing internal walls, beams trusses and columns	90/-/-	60/-/-
Floors	90/90/90 Note 2	120/120/120 Notes 2 & 3
Roofs	N/A Note 5	120/120/120 Note 4

Notes regarding Type A fire-resistance table above:

1. The fire walls separating the Class 2 parts and Class 7a parts must achieve an FRL of not less than 90/90/90, as per Clause C2.8.
2. A floor laid directly on the ground need not achieve an FRL, as per Clause 3.2 of Spec. C1.1.
3. FRL 120/120/120 applies to the slab above the carpark as the floors separating different classifications must have the FRL prescribed for the classification of the lower storey, as per Clause C2.9.
4. The roof of the carpark must achieve an FRL of not less than 120/120/120 as exits discharge onto it, as per Clause D2.12.
5. The roof of the Class 2 parts need not achieve an FRL, as per Clause 3.5 of Spec. C1.1.

Type C Fire-resistance Levels – applicable to Building 2

Item	Class 2
Loadbearing parts of External Walls (including columns and other building elements incorporated therein)	
> Less than 1.5 m to a fire- source feature	90/90/90 Note 1
> 1.5 – less than 3 m from a fire-source feature	-/-/-
> 3 m or more from a fire source feature	-/-/-
Fire wall	90/90/90
Roof	-/-/-

Notes regarding Type C fire-resistance table above:

1. The external wall FRL need only be tested from the outside.

Annexure B – Proposed Fire Safety Schedule

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.

Item	Fire Safety Measure	Standard of Performance
Building 3 & 4 portion		
1.	Automatic smoke detection and alarm system	BCA2019 Amdt 1 Clause 3 of Spec. E2.2a AS 3786-2014 AS 1670.1-2018
2.	Automatic fire suppression system	BCA2019 Amdt 1 Spec. E1.5 & AS 2118.1-2017
3.	Building occupant warning system	BCA2019 Amdt 1 Clause 7 of Spec. E2.2a
4.	Emergency lighting (to carpark and carpark exit stairs)	BCA2019 Amdt 1 Clause E4.2 & AS/NZS 2293.1-2018
5.	Exit signs (to carpark)	BCA2019 Amdt 1 Clauses E4.5, E4.6, E4.8 & AS/NZS 2293.1-2018
6.	Fire dampers	BCA2019 Amdt 1 Clauses C3.15 & E2.2 AS/NZS 1668.1:2015 (Amdt 1) AS 1682.1:2015 & AS 1682.2:2015
7.	Fire doors	BCA2019 Amdt 1 C3.2 (Protection of openings in external walls) BCA2019 Amdt 1 C3.5 (Doorways in fire walls) ***Fire Engineering Report**** & AS 1735.11-1986 (Lift doors opening into SOUs) AS 1905.1-2015
8.	Fire hydrant system	BCA2019 Amdt 1 Clause E1.3 & AS 2419.1-2005
9.	Fire hose reel system (to carpark)	BCA2019 Amdt 1 Clause E1.4 & AS 2441-2005
10.	Fire seals protecting openings in fire-resisting components of the building	BCA2019 Amdt 1 Clause C3.15 (Openings for service installations) BCA2019 Amdt 1 C3.16 (Construction joints) BCA2019 Amdt 1 Spec. C3.15 AS1530.4:2014 & AS4072.1-2005
11.	Mechanical air-handling systems	BCA2019 Amdt 1 Table E2.2a & Clause 5.5 of AS 1668.1:2015 (Amdt 1)

Item	Fire Safety Measure	Standard of Performance
	• Carpark ventilation system	
12.	Portable fire extinguishers	BCA2019 Amdt 1 Clause E1.6 & AS 2444-2001
13.	Window protective devices	BCA2019 Amdt 1 Clause C3.2, C3.4 & ***Fire Engineering Report****
14.	Warning and operational signs	BCA2019 Amdt 1 E3.3 (Lift Signs) Clause 5.5.3 of AS 1668.1:2015 (Amdt 1) (Signage at carpark entry for ventilation control switches)
15.	****Fire Engineering report** - to be prepared a suitably qualified fire engineer (registered certifier – fire safety) under separate cover*	
Building 2 portion		
16. 6.	Automatic smoke detection and alarm system	BCA2019 Amdt 1 Clause 3 of Spec. E2.2a & AS 3786-2014
17.	Portable fire extinguisher	BCA2019 Amdt 1 Clause E1.6 & AS 2444-2001

Annexure C – Design Documentation

This report has been prepared based on the following design documentation.

Architectural plans prepared by Architectural Projects			
Drawing no.	**Revision**	**Date**	**Title**
DA-103	P8	22/06/22	SITE PLAN
DA-201	P8	22/06/22	LOWER GROUND FLOOR PLAN
DA-202	P8	22/06/22	UPPER GROUND FLOOR PLAN
DA-203	P8	22/06/22	FIRST FLOOR PLAN
DA-204	P8	22/06/22	ROOF PLAN
DA-301	P8	22/06/22	ELEVATIONS – BUILDING 3
DA-302	P8	22/06/22	ELEVATIONS – BUILDING 4
DA-401	P8	22/06/22	SECTION A-A
DA-402	P8	22/06/22	SECTION B-B DRIVEWAY SECTION
DA-403	P8	22/06/22	SECTION C-C

Annexure D – Definitions

Terms in italics used throughout this report have the BCA definitions, as listed below.

Air-conditioning means a service that actively cools or heats the air within a space, but does not include a service that directly:

(a) cools or heats cold or hot rooms; or

(b) maintains specialised conditions for equipment or processes, where this is the main purpose of the service.

Ancillary element means an element that is secondary to and not an integral part of another element to which it is attached.

Assembly building means a building where people may assemble for–

(a) civic, theatrical, social, political or religious purposes including a library, theatre, public hall or place of worship; or

(b) educational purposes in a school, early childhood centre, preschool or the like; or

(c) entertainment, recreational or sporting purposes including–

  (i) a discotheque, nightclub or a bar area of a hotel or motel providing live entertainment or containing a dance floor; or

  (ii) a cinema; or

  (iii) a sports stadium, sporting or other club; or

(d) transit purposes including a bus station, railway station, airport or ferry terminal.

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

Climate zone means an area defined in Figure 2 and in Table 2 for specific locations, having energy efficiency provisions based on a range of similar climatic characteristics.

Combustible means—

(a) applied to a material — combustible as determined by AS 1530.1; and

(b) applied to construction or part of a building — constructed wholly or in part of combustible materials.

Conditioned space means a space within a building, including a ceiling or under-floor supply air plenum or return air plenum, where the environment is likely, by the intended use of the space, to have its temperature controlled by *air-conditioning*.

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

Deemed-to-Satisfy Provisions means provisions which are deemed to satisfy the Performance Requirements.

Deemed-to-Satisfy Solution means a method of satisfying the Deemed-to-Satisfy Provisions.

Display glazing means *glazing* used to display retail goods in a shop or showroom directly adjacent to a walkway or footpath, but not including that used in a café or restaurant.

Effective height means the vertical distance between the floor of the lowest storey included in the calculation 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, 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—

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

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

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

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.

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

External wall means an outer wall of a building which is not a *common wall*.

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 hazard properties means the following properties of a material or assembly that indicate how they behave under specific fire test conditions:

(a) Average specific extinction area, critical radiant flux and Flammability Index, determined as defined in Schedule 3 of the BCA.

(b) Smoke-Developed Index, smoke development rate and Spread-of-Flame Index, determined in accordance with Schedule 6 of the BCA.

(c) *Group number* and *smoke growth rate index* (SMOGRARC), determined in accordance with Specification C1.10 of BCA Volume One.

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 means–

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

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

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

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

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

Flight means that part of a stair that has a continuous series of risers, including risers of winders, not interrupted by a landing or floor.

Flood hazard area means the site (whether or not mapped) encompassing land lower than the flood hazard level which has been determined by the appropriate authority.

Going means the horizontal dimension from the front to the back of a tread less any overhang from the next tread or landing above (see Figure 3.9.1.4).

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.

Habitable room means a room used for normal domestic activities, and—

(a) includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, home theatre and sunroom; but

(b) excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes-drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods.

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

Insulation in relation to an FRL, means the ability to maintain a temperature on the surface not exposed to the furnace below the limits specified in AS 1530.4.

Integrity in relation to an FRL, means the ability to resist the passage of flames and hot gases specified in AS 1530.4.

Loadbearing means intended to resist vertical forces additional to those due to its own weight.

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.

Occupiable outdoor area means a space on a roof, balcony or similar part of a building—

(a) that is open to the sky; and

(b) to which access is provided, other than access only for maintenance; and

(c) that is not open space or directly connected with open space.

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

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

Pliable building membrane means a water barrier as classified by AS/NZS 4200.1.

Primary building element, for the purposes of Volume One, means a member of a building designed specifically to take part of the loads specified in B1.2 and includes roof, ceiling, floor, stairway or ramp and wall framing members including bracing members designed for the specific purpose of acting as a brace to those members.

R-Value (m^2.K/W) means the thermal resistance of a component calculated by dividing its thickness by its thermal conductivity.

Rise in storeys means the greatest number of storeys calculated in accordance with C1.2 of Volume One.

Riser means the height between consecutive treads and between each landing and continuous tread.

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

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 (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.

Solar admittance means the fraction of incident irradiance on a wall-glazing construction that adds heat to a building's space.

Spread-of-Flame Index means the index number for spread of flame as determined by AS/NZS 1530.3.

Structural adequacy in relation to an FRL, means the ability to maintain stability and adequate loadbearing capacity as determined by AS 1530.4.

Storey means a space within a building which is situated between one floor level and the floor level next above, or if there is no floor above, the ceiling or roof above, but not—

(a) a space that contains only—

(b) a lift shaft, stairway or meter room; or

(c) a bathroom, shower room, laundry, water closet, or other sanitary compartment; or

(d) accommodation intended for not more than 3 vehicles; or

(e) a combination of the above; or

(f) a mezzanine.

Structural adequacy in relation to an FRL, means the ability to maintain stability and adequate loadbearing capacity as determined by AS 1530.4.

Total R-Value (m^2.K/W), for the purposes of Volume One, means the sum of the R-Values of the individual component layers in a composite element including any building material, insulating material, airspace, thermal bridging and associated surface resistances.

Total System U-Value (W/m^2.K), for the purposes of Volume One, means the thermal transmittance of the composite element allowing for the effect of any airspaces, thermal bridging and associated surface resistances.

Wall-glazing construction, for the purposes of Section J in Volume One, means the combination of wall and glazing components comprising the envelope of a building, excluding—

(a) display glazing; and

(b) opaque non-glazed openings such as doors, vents, penetrations and shutters.

Water resistant means the property of a system or material that restricts moisture movement and will not degrade under conditions of moisture.

Waterproof means the property of a material that does not allow moisture to penetrate through it.

Water control layer means a *pliable building membrane* or the exterior cladding when no *pliable building membrane* is present.

Water sensitive materials means materials that have an inherent capacity to absorb water vapour and include timber, plasterboard, plywood, oriented strand board and the like.