The Scots College Dorm Rooms

369 JACKS CORNER ROAD KANGAROO VALLEY

Regulatory Compliance Report

BCA Assessment

Prepared for: Baxter and Jacobson Architects

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8.04.24	1	35	DRAFT – Stakeholder Review	Kurtis Lamaro	Vijay Perumal	11.04.24
18.04.24	2	35	Updated Report	-	Kurtis Lamaro	29.04.24
13.06.24	3	31	Final Report	Kurtis Lamaro	Vijay Perumal	26.06.24
25.07.24	4	31	Updated Final Report	Kurtis Lamaro	Vijay Perumal	4.09.24
15.10.24	5	32	Updated Final Report	Kurtis Lamaro	Vijay Perumal	22.10.24

EXECUTIVE SUMMARY

The proposed development is the Scots College Dorm Rooms development located at 369 Jacks Corner Road Kangaroo Valley.

Summary of Compliance

As Registered Certifiers or relevant building surveyor we have reviewed the development application architectural design documents prepared by Baxter Jacobson Architects (refer appendix A) for compliance with the building assessment provisions currently outlined in BCA 2022.

This report has been prepared to assess the project against the Building Code of Australia to enable the issuance of construction approvals. Further assessment of the design will be undertaken as the design develops to ensure compliance is achieved prior to approval being issued.

Deviations from the Deemed-to-Satisfy Provisions

The assessment of the design documentation has revealed that the following areas deviate from the deemed-to-satisfy provisions of the BCA. These items are to be addressed to ensure compliance is achieved, either through design amendment to achieve compliance with the deemed-to-satisfy provisions, or through a performance solution demonstrating compliance with the Performance Requirements of the BCA:

No.	Description	Relevant DTS Clauses	Performance Requirements
Fire Safety Items			
1	**Separation of external walls and openings in different fire compartments** The class 9b outdoor teaching areas will be in proximity to the external wall and associated openings of the class 3 living area. Where compliance with spec 5 and clause C4D5 is not proposed, a fire engineering performance solution is required.	C4D4, C4D5	C1P2, C1P8
2	**Exit travel distances** *Level 2* ▪ Up to 22m to an exit in lieu of 20m	D2D5	D1P4, E2P2
3	**Bounding construction and travel distances within the 'Cluster" apartment units** The configuration of the cluster apartment rooms will be subject to a fire engineered solution due to the following DTS departures: ▪ The whole unit will be deemed a SOU in lieu of each room ▪ Bounding construction will be omitted from within the unit ▪ Exit travel distances will be taken from the main entrance of the unit i lieu of each room	D2D5, C4D12	C1P2, D1P4, E2P2
Miscellaneous Items			
4	**Parts of buildings to be accessible**	D4D4	D1P1

No.	Description	Relevant DTS Clauses	Performance Requirements
	It is currently proposed to not provide a ramp or passenger lift to the level 3 staff accommodation level. The provision of a stairway only will need to be addressed through an access performance solution at the construction stage.		
5	**Weatherproofing of External Walls** As the external walls are proposed to be constructed of a material not nominated in F3D5, a performance solution is to be provided by the façade engineer/registered architect demonstrating that the external walls comply with the requirements of Performance Requirement F3P1 (previously FP1.4).	F3D5	F3P1 (previously FP1.4).

The feasibility and any additional requirements that will apply as a result of performance solution/s will need to be confirmed by the professional preparing the performance solution/s. Any performance solution/s will need to be prepared by a suitably qualified/accredited professional.

Refer to parts 10 of this report for further details regarding the required services.

Any fire engineered solutions will need to be approved after consultation with the NSW Fire Brigade as part of the Construction Certificate process via a Section 26 and 27 submission.

INTRODUCTION

The proposed development comprises of the Scots College Dorm Rooms development located at 369 Jacks Corner Road Kangaroo Valley.

This report is based upon the review of the design documentation listed in Appendix A of this Report.

The report is intended as an overview of the relevant provisions of the Building Code of Australia for assistance only. Detailed drawings and associated review will still be required as the final design is developed.

The applicable legislation governing the design of buildings is the Environmental Planning and Assessment Act 1979. Section 19 of the of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulations 2021 requires all new building works to comply with the current BCA.

The BCA applicable to the development is the version that is in force at the time of a valid Construction Certificate application which includes the entrance floor. For the purposes of this Report, BCA 2022 has been utilised.

COMPLIANCE WITH THE BCA

The Building Code of Australia is a performance based document, whereby compliance is achieved by complying with the Governing Requirements and the Performance Requirements.

Performance Requirements are satisfied by one of the following:

1) A Performance Solution
2) A Deemed-to-Satisfy Solution
3) A combination of (1) and (2)

DOCUMENTATION OF PERFORMANCE SOLUTIONS

A Performance Solution must demonstrate compliance with all relevant Performance Requirements, or the solution must be at least equivalent to the Deemed-to-Satisfy provisions.

Compliance with the Performance Requirements is to be demonstrated through one or a combination of the following:

a) Evidence of suitability in accordance with Part A5 of the BCA that shows the use of a material, product, plumbing and drainage product, form of construction or design meets the relevant Performance Requirements.
b) A Verification Method including the following:
    i. The Verification Methods provided in the NCC.
    ii. Other Verification Methods, accepted by the appropriate authority that show compliance with the relevant Performance Requirements
c) Expert Judgement
d) Comparison with the Deemed-to-Satisfy Provisions

Where a Performance Solution is proposed as the method to achieve compliance, the following steps must be undertaken:

a) Prepare a performance-based design brief in consultation with relevant stakeholders,
b) Carry out analysis, using one or more of the assessment methods nominated above, as proposed by the performance-based design brief,
c) Evaluate results from (b) against the acceptance criteria in the performance-based design brief,
d) Prepare a final report that includes:
    i. All Performance Requirements and/or Deemed-to-Satisfy Provisions identified as applicable,
    ii. Identification of all assessment methods used,
    iii. Details of required steps above,
    iv. Confirmation that the Performance Requirement has been met; and
    v. Details of conditions or limitations, if an exist, regarding the Performance Solution.

PRELIMINARIES

BUILDING ASSESSMENT DATA

Summary of Construction Determination:

Part of Project	Building 1	Building 2
Classification	Class 3 & 9b	Class 3
Number of Storeys	3	2
Rise In Storeys	3	2
Type of Construction	Type A	Type C
Effective Height (m)	6.5m	3m

Note:

- *The effective height of the project includes all stories included in the rise in stories of the project,*
- *Building option 2 has been assessed as type C construction based on clause C2D6.*

Summary of the floor areas and relevant populations where applicable: -

Part of Project	BCA Classification	Approx. Floor Area (m^2)	Approximate Volume (m^3)	Assumed Population
Level 1	Class 9b	517.05 m^2	1,809.67 m^2	120
Level 2	Class 3	695.32 m^2	2,085.96 m^2	40
Level 3	Class 3	118.27 m^2	482.54 m^2	4
Total		1,330.64 m^2	4,378.17 m^2	164

- Notes: *The above populations have been based on floor areas and calculations in accordance with Table D2D18 (prev. Table D1.13) of the BCA.*

COPY OF CERTIFICATE OF TITLE

A copy of the Certificate of Title and associated plan of subdivision is required. Where it is proposed to construct any part of the building over, under or within an easement, the consent of the relevant authority and Council is required prior to the issue of the Construction Certificate.

STRUCTURE

1.1. STRUCTURAL PROVISIONS (BCA B1)

New structural works are to comply with the applicable requirements of BCA Part B1, including AS/NZS 1170.0-2002, AS/NZS 1170-1-2002, AS/NZS 1170.2-2021 and AS 1170.4-2007.

Depending on the importance level of the building as determined by AS/NZS 1170.0-2002, the non structural elements of the building, including partitions (and non-structural fire walls), ceilings, services and racking/shelving may be required to comply with the seismic restraint requirements of AS 1170.4-2007. Where this is required, certification will be required confirming that the design of the seismic restraints comply with AS 1170.4-2007. This may be provided by a specialist seismic consultant or by the architect and services design engineers.

It is noted that Verification Method, B1V2 (previously BV2)is a pathway available to verify compliance with BCA Performance Requirement B1P1 (1)(c) (previously BP1.1(a)(iii)).

Glazing is to comply with AS1288-2021, and AS2047-2014.

Prior to the issue of a Construction Certificate structural certification is required to be provided by a Professional Engineer registered on the National Engineering Register in the structural field

FIRE PROTECTION

FIRE COMPARTMENTATION (BCA C2D2 (PREVIOUSLY C1.1))

The BCA stipulates three levels of fire resistant construction, which is based upon the rise in storeys and classification of the building. Each of these types of construction has maximum floor area and volume limitations as per BCA Table C3D3 (previously C2.2).

Based upon the rise in storeys and use of the building, it is required to be constructed in accordance with the requirements of Type A & C Construction, in accordance with Tables S5C11a-g & S5C24a-e of Specification 5 (previously Table 3 & 3.9 & 5 & 5.9 of Specification C1.1) of the Building Code of Australia 2022.

The building has been assessed on the basis of the following fire separation / compartmentation within the development:

The maximum floor area and volume limitations of a fire compartment as nominated in the deemed to satisfy provisions are as follows:

Classification		Type of Construction		
		A	B	C
5, 9b or 9c aged care building	max floor area—	8 000 m^2	5 500 m^2	3 000 m^2
	max volume—	48 000 m^3	33 000 m^3	18 000 m^3
6, 7, 8 or 9a (except for patient care areas)	max floor area—	5 000 m^2	3 500 m^2	2 000 m^2
	max volume—	30 000 m^3	21 000 m^3	12 000 m^3

FIRE RESISTANCE (BCA C2D2 (PREVIOUSLY C1.1))

The building should be constructed generally in accordance with the relevant provisions of Specification 5 (previously Specification C1.1) of the BCA applicable to Type A & C Construction, please refer to Appendix C which outlines the required fire rating to be achieved by the development.

The outdoor teaching area is to be provided with the required fire rating in accordance with Spec 5. Details will be provided at the construction stage to confirm compliance.

LIGHTWEIGHT CONSTRUCTION (BCA C2D9 (PREVIOUSLY C1.8))

Lightweight construction must comply with Specification 6 (previously Spec C1.8) if it is used in in a wall system –

(i) that is required to have an FRL; or

(ii) for a lift shaft, stair shaft, or service shaft or an external wall bounding a public corridor including a non fire-isolated passageway or the non fire-isolated ramp, in a spectator stand, sports stadium, cinema or theatre, railway station, bus station or airport terminal.

FIRE HAZARD PROPERTIES (BCA C2D10 AND C2D11 (PREVIOUSLY C1.10 AND BCA C1.9))

External Wall Cladding

Since the building is of Type A construction, the following components are required to be completely non-combustible:

- External walls and common walls, including façade coverings, framing, insulation;
- Flooring and floor framing of lift pits;
- Non-loadbearing internal walls required to have an FRL;
- All non-loadbearing shafts;
- All loadbearing internal walls and loadbearing fire walls, including those that are part of loadbearing shafts.

For materials and assemblies that are required to be non-combustible, the material or system must be not deemed combustible when tested in accordance with AS 1530.1-1994.

The above noted requirements do not apply to the following:

a) Gaskets,
b) Caulking,
c) Sealants,
d) Termite management systems,
e) Glass, including laminated glass, and associated adhesives, including tapes,
f) Thermal breaks associated with—
    i. glazing systems; or
    ii. external wall systems, where the thermal breaks—
        A. are no larger than necessary to achieve thermal objectives; and
        B. do not extend beyond one storey; and
        C. do not extend beyond one fire compartment.
g) Damp-proof courses,
h) Compressible fillers and backing materials, including those associated with articulation joints, closing gaps not wider than 50 mm,
i) Isolated—
    i. construction packers and shims; or
    ii. blocking for fixing fixtures; or
    iii. fixings, including fixing accessories; or
    iv. acoustic mounts.
j) Waterproofing materials applied to the external face, used below ground level and up to 250 mm above ground level,
k) Joint trims and joint reinforcing tape and mesh of a width not greater than 50 mm,
l) Weather sealing materials, applied to gaps not wider than 50 mm, used within and between concrete elements,
m) Wall ties and other masonry components complying with AS 2699 Part 1 and Part 3 as appropriate, and associated with masonry wall construction,
n) Reinforcing bars and associated minor elements that are wholly or predominately encased in concrete or grout,
o) A paint, lacquer or a similar finish or coating,
p) Adhesives, including tapes, associated with stiffeners for cladding systems,
q) Fire-protective materials and components required for the protection of penetrations.

Combustible Materials

The following materials, though combustible or containing combustible fibres, may be used wherever a non-combustible material is required:

a) Plasterboard.
b) Perforated gypsum lath with a normal paper finish.
c) Fibrous-plaster sheet.
d) Fibre-reinforced cement sheeting.
e) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0.
f) Sarking type materials that do not exceed 1mm in thickness and have a Flammability Index not greater than 5.
g) Bonded laminated materials where -
    (i) each laminate is non-combustible; and
    (ii) each adhesive layer does not exceed 1 mm in thickness; and
    (iii) the total thickness of the adhesive layers does not exceed 2 mm; and
    (iv) the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole does not exceed 0 and 3 respectively.

It is recommended that once material selections are made, copies of the fire test certificates/reports be provided for review and approval.

BCA 2022 introduced a number of additional clarifications and considers the following materials, when entirely composed of itself, are non-combustible and may be used wherever a non-combustible material is required:

a) Concrete.
b) Steel, including metallic coated steel,
c) Masonry, including mortar,
d) Aluminium, including aluminium alloy,
e) Autoclaved aerated concrete, including mortar,
f) Iron,
g) Terracotta,
h) Porcelain,
i) Ceramic,
j) Natural stone,
k) Copper,
l) Zinc,
m) Lead,
n) Bronze,
o) Brass.

Any Aluminium Composite Panels must be labelled in accordance with SA TS 5344.

The BCA does nominate that ancillary elements may not be fixed to an external wall that is required to be non-combustible unless they comprise of the following:

a) An ancillary element that is non-combustible.
b) A gutter, downpipe or other plumbing fixture or fitting.
c) A flashing.
d) A grate or grille not more than 2 m² in area associated with a building service.
e) An electrical switch, socket-outlet, cover plate or the like.
f) A light fitting.
g) A required sign.
h) A sign other than one provided under (a) or (g) that—
    i) achieves a group number of 1 or 2; and
    ii) does not extend beyond one storey; and
    iii) does not extend beyond one fire compartment; and
    iv) is separated vertically from other signs permitted under (h) by at least 2 storeys.
i) An awning, sunshade, canopy, blind or shading hood other than one provided under (a) that—
    i) meets the relevant requirements of Table S7C7 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.
j) A part of a security, intercom or announcement system.
k) Wiring.
l) Waterproofing material installed in accordance with AS 4654.2 and applied to an adjacent floor surface, including vertical upturn, or a roof surface.
m) Collars, sleeves and insulation associated with service installations.
n) Screens applied to vents, weepholes and gaps complying with AS 3959.
o) Wiper and brush seals associated with doors, windows or other openings.
p) A gasket, caulking, sealant or adhesive directly associated with (a) to (o)

Please provide fire hazard properties reports for any proposed signs and confirm their extent i.e. not spanning more than one storey or fire compartment:

Interior Linings

The fire hazard properties of fixed surface linings and mechanical ductwork will also need to be addressed within the detailed documentation phase pursuant to Specification 7 (previously Specification C1.10) of the Building Code of Australia. The following requirements apply:

Sprinkler Protected Areas

a) Floor Coverings – Critical radiant Flux not less than 1.2 kW/m^2
b) Wall and Ceiling Linings – Material Group No. 1,2,3
c) Other Materials – Spread of Flame Index not exceeding 9 and Smoke Developed Index not exceeding 8.

Non-Sprinkler Protected Areas

a) Floor Coverings – Critical radiant Flux not less than 2.2 kW/m^2 a maximum smoke development rate of 750 percent-minutes
b) Wall and Ceiling Linings – Material Group No. 1,2,3 and with a smoke growth rate index not more than 100, or an average specific extinction area less than 250m^2/kg
c) Other Materials – Spread of Flame Index not exceeding 9 and Smoke Developed Index not exceeding 8 (if Spread of Flame if >5)

Rigid and flexible air handling ductwork must comply with AS4254 Parts 1 & 2 2012.

Floor linings and floor coverings used in lift cars must have a critical radiant flux not less than 2.2, and wall and ceiling linings must be a Material Group No. 1 or 2.

FIRE-PROTECTED TIMBER: CONCESSION (BCA C2D13 (PREVIOUSLY C1.13))

Fire-protected timber may be used whenever an element is required to be non-combustible, provided-

(a) the building is-
  (i) a separate building; or
  (ii) a part of a building-
    (A) which only occupies part of a storey, and is separated from the remaining part by a fire wall; or
    (B) which is located above or below a part not containing fire-protected timber and the floor between the adjoining parts is provided with an FRL not less than that prescribed for a fire wall for the lower storey; and
(b) the building has an effective height of not more than 25m ; and
(c) the building has a sprinkler system (other than a FPAA101D or FPAA101H system) throughout complying with Specification 17 (previously Spec E1.5); and
(d) any insulation in the cavity of the timber building element required to have an FRL is non-combustible; and

cavity barriers are provided in accordance with Specification 9 (prev. Spec C1.13).

VERTICAL SEPARATION OF OPENINGS IN EXTERNAL WALLS (BCA C3D7 (PREVIOUSLY C2.6))

A building of Type A construction must be provided with spandrel separation between openings on different storeys unless the building is protected with a sprinkler system (other than a FPAA101D or FPAA101H system) throughout in accordance with Specification 17 (previously Specification E1.5). It is noted where the building sprinkler system is subject to performance solution, the concession noted above would need to be addressed on a performance basis.

For the purposes of C3D7 (previously C2.6), window or other opening means that part of the external wall of a building that does not have an FRL of 60/60/60 or greater.

Spandrels are required in accordance with BCA Clause C3D7 (previously C2.6), which stipulates a 900mm high spandrel; with 600mm of this spandrel being above the finished floor level. Alternatively, an 1100mm horizontal slab may be utilized. The spandrel material is required to be non-combustible and to achieve an FRL of 60/60/60.

It is noted that any penetrations in the spandrel construction e.g. for drainage, overflow etc. are to be protected.

Further assessment will be provided at the construction certificate stage.

PUBLIC CORRIDORS: CLASS 2 AND 3 BUILDINGS (BCA C3D15 (PREVIOUSLY C2.14))

Public corridors exceeding 40m in length to be divided into intervals of not more than 40m by smoke proof walls complying with Clause 2 of BCA Specification 11 (previously Specification C2.5).

Compliance is currently achieved.

PROTECTION OF OPENINGS IN EXTERNAL WALLS (BCA C4D3, C4D4, C4D5 (PREVIOUSLY C3.2 / C3.3 / C3.4))

The prescriptive provisions of the BCA stipulate that any external opening within 3m of the boundary, within 6m of the far boundary of a road, river, lake or the like that adjoins the allotment, or within 6m of another building on the allotment requires protection by -/60/- fire rated construction, or externally located wall wetting sprinklers.

Where a building is separated into fire compartments, the distance between parts of external walls and openings within them must be not less than the table below unless those parts of each external wall has an FRL not less than 60/60/60 and openings are protected.

Angle Between Walls	Minimum Distance
0º (walls opposite)	6m
More than 0º to 45º	5m
More than 45º to 90º	4m
More than 90º to 135º	3m
More than 135º to 180º	2m
More than 180º	Nil

There are currently no openings located within proximity to fire source features with exception to the below area:

- The class 9b outdoor teaching areas will be in proximity to the external wall and associated openings of the class 3 living area.

Fire source feature is defined as;

a) The far boundary of a road, river, lake or the like adjoining an allotment,
b) The side or rear boundary of the allotment,
c) The external wall of another building on the allotment which is not a class 10 building.

PROTECTION OF OPENINGS FIRE RATED BUILDING ELEMENTS (BCA C4D6, C4D11 (PREVIOUSLY C3.5 AND BCA C3.10))

The prescriptive provisions of the BCA stipulate that openings within building elements required to have an FRL shall be protected as follows:

a) Penetrations through fire rated floors to be protected either by a tested prototype (e.g. fire collar, fire damper, etc) or be installed within a fire rated shaft achieving an FRL the same as the FRL of the floor it is passing through;
b) Any penetration through a wall or room required to have an FRL (e.g. substation, boiler room, apartment separating wall etc) is to be protected either by a tested prototype (e.g. fire collar, fire damper, etc) or be installed within a shaft achieving an FRL the same as the FRL of the floor it is passing through;;

Note that where fire dampers, fire collars, etc are utilised, allowance needs to be made for access hatches to be provided within the walls / ceilings to ensure that maintenance access is provided.

As the design develops, details will need to be included in relation to sealing of penetrations / construction of fire rated shafts.

TYPE A FIRE-RESISTING CONSTRUCTION — FIRE-RESISTANCE OF BUILDING ELEMENTS (BCA S5C11 (PREVIOUSLY C1.1: 3.1 AND TABLE 3))

(1) In a building required to be of Type A construction—
- (a) each building element listed in Tables S5C11a, S5C11b, S5C11c, S5C11d, S5C11e, S5C11f and S5C11g, and any beam or column incorporated in it, must have an FRL not less than that listed in those Tables for the particular class of building concerned; and
- (b) any internal wall required to have an FRL with respect to integrity and insulation must extend to—
  - (i) the underside of the floor next above; or
  - (ii) the underside of a roof complying with Table S5C11g; or
  - (iii) if under S5C15 the roof is not required to comply with Table S5C11g, the underside of the non-combustible roof covering and, except for roof battens with dimensions of 75 mm x 50 mm or less or sarking-type material, must not be crossed by timber or other combustible building elements; or
  - (iv) a ceiling that is immediately below the roof and has a resistance to the incipient spread of fire to the roof space between the ceiling and the roof of not less than 60 minutes; and
- (c) a loadbearing internal wall and a loadbearing fire wall (including those that are part of a loadbearing shaft) must be constructed from—
  - (i) concrete; or
  - (ii) masonry; or
  - (iii) subject to (2), fire-protected timber; or
  - (iv) any combination of (i) to (iii); and
- (d) the FRLs specified in Table S5C11c for an external column apply also to those parts of an internal column that face and are within 1.5 m of a window and are exposed through that window to a fire-source feature.

(2) For the purposes of (1)(c)(iii), fire-protected timber may be used, provided that—
- (a) the building is—
  - (i) a separate building; or
  - (ii) a part of a building—
    - (A) which only occupies part of a storey, and is separated from the remaining part by a fire wall; or
    - (B) which is located above or below a part not containing fire-protected timber and the floor between the adjoining parts is provided with an FRL not less than that prescribed for a fire wall for the lower storey; and
- (b) the building has an effective height of not more than 25 m; and
- (c) the building has a sprinkler system (other than a FPAA101D or FPAA101H system) throughout complying with Specification 17; and

(d) any insulation installed in the cavity of the timber building element required to have an FRL is non-combustible; and
(e) cavity barriers are provided in accordance with Specification 9.

(3) For the purposes of Table S5C11a and Table S5C11b, external wall includes any column and other building element incorporated within it or other external building element.

Tables S5C11a, S5C11b, S5C11c, S5C11d, S5C11e, S5C11f and S5C11g are listed in Appendix C.

TYPE A FIRE-RESISTING CONSTRUCTION — CLASS 2 AND 3 BUILDINGS: CONCESSION (BCA S5C20 (PREVIOUSLY C1.1:3.10))

(1) In a Class 2 or 3 building with a rise in storeys of not more than 3—
(a) notwithstanding C2D10(1) and (2) and C3D7, timber framing may be used for—
(i) external walls; and
(ii) common walls; and
(iii) the floor framing of lifts pits; and
(iv) non-loadbearing internal walls which are required to be fire-resisting; and
(v) non-loadbearing shafts, except shafts used for the discharge of hot products of combustion; and
(vi) spandrels or horizontal construction provided for the purposes of C3D7; and
(b) notwithstanding S5C11(1)(c), for loadbearing internal walls and loadbearing fire walls—
(i) timber framing may be used; and
(ii) non-combustible materials may be used; and
(iii) notwithstanding S5C3(1)(c), timber framing may be used for a part of a building that provides support to a part of a building constructed of timber framing or non-combustible material in accordance with (a) and (b).

(2) A Class 2 or 3 building having a rise in storeys of not more than 4 may have the top three storeys constructed in accordance with (1) provided—
(a) the lowest storey is used solely for the purpose of parking motor vehicles or for some other ancillary purpose; and
(b) the lowest storey is constructed of concrete or masonry including the floor between it and the Class 2 or 3 part of the building above; and
(c) the lowest storey and the storey above are separated by construction having an FRL of not less than 90/90/90 with no openings or penetrations that would reduce the fire-resisting performance of that construction except that a doorway in that construction may be protected by a –/60/30 self-closing fire door.

(3) In a Class 2 or 3 building complying with (1) or (2) and fitted with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification 17, any FRL criterion prescribed in Tables S5C11a, S5C11d, S5C11e, S5C11f and S5C11g—
(c) for any floor and any loadbearing wall, may be reduced to 60, except any FRL criterion of 90 for an external wall must be maintained when tested from the outside; and
(d) for any non-loadbearing internal wall, need not apply if—
(i) it is lined on each side with 13 mm standard grade plasterboard or similar non-combustible material; and
(ii) it extends—
(A) to the underside of the floor next above; or
(B) to the underside of a ceiling with a resistance to the incipient spread of fire of 60 minutes; or
(C) to the underside of a non-combustible roof covering; and
(iii) any insulation installed in the cavity of the wall is non-combustible; and
(iv) any construction joint, space or the like between the top of the wall and the floor, ceiling or roof is smoke sealed with intumescent putty or other suitable material; and
(v) any doorway in the wall is protected by a self-closing, tight fitting, solid core door not less than 35 mm thick.

ACCESS AND EGRESS

PROVISION FOR ESCAPE (BCA D2 (PREVIOUSLY D1))

The egress provisions for the proposed building are provided by the following:

- Non-fire isolated stairs,
- External doors,

The egress provisions that apply to the building also apply to any occupiable outdoor areas.

Detailing issues that will need to be addressed as the design develops include:

- Door hardware,
- Exit door operation,
- Stair construction,
- Handrail and balustrade construction,
- Details of the egress provisions to the road,
- Door swings

EXIT TRAVEL DISTANCES (BCA D2D5, D2D6 (PREVIOUSLY D1.4, D1.5))

The locations of the proposed exits would appear to indicate that the deemed to satisfy requirements in terms of travel distances, distances between alternative exits and egress widths would be deviate from the DTS provisions as outlined below

The travel distances to exits should not exceed:

Class 9

- no point on the floor must be more than 20m to a single exit or point of choice and where two exits are provided, a maximum of 40m to one of those exits; and
- exits shall be located to not be more than 60m apart and not closer than 9m

Class 2 & 3

- 6m from an exit or from a point of choice from the entrance doorway of a sole occupancy unit
- 20m from a single exit at the level of egress to a road or open space
- Alternate exits not more than 45m apart

The above indicates that the deemed to satisfy requirements in terms of travel distances would be satisfied, with the exception of the following areas:

Exit travel distances
Level 2

- *Up to 22m to an exit in lieu of 20m*

The extended travel distances and distance between the exit stairs will need to addressed to comply with the requirements of the deemed to satisfy provisions noted above, or be assessed as performance solutions by the Fire Safety Engineer using BCA Performance Requirements D1P4 and E2P2 (previously DP4 & EP2.2)

DIMENSIONS OF EXITS (BCA D2D7, D2D8, D2D9, D2D10, D2D11 (PREVIOUSLY D1.6))

Minimum dimensions of 1000mm and 2000mm height to be provided within exits, with the paths of travel should provide a minimum width of 1000mm (note that all maintenance access, cat walks, etc may comply with AS1657-2018 in which case a 600mm clear width is required).

The following table summarises the exit widths required by BCA Clause D2D7, D2D8, D2D9, D2D10, D2D11 (previously D1.6):

Storey	Number of people	Exit Width Required	Exit Width Provided
Level 1	120	1.25m	1.5m
Level 2	40	1m	1m
Level 3	4	1m	1m

Doorways are permitted to contain a clear opening width of the required width of the exit minus 250mm, with a height of 1980mm as part of egress requirements. Access for persons with disabilities however requires a clear doorway opening width of 850mm (i.e. minimum 920 mm doors).

BALUSTRADES AND HANDRAILS (BCA D3D17, D3D18, D3D19, D3D20, D3D22, D3D29 (PREVIOUSLY D2.16 / BCA D2.17 / D2.24))

Generally

Balustrading to a minimum height of 1000mm with a maximum opening of 124mm in any direction should be provided adjacent to balconies, landings, corridors etc where located adjacent to a change in level exceeding 1000mm, or where it is possible to fall through an openable window located more than 4m above the surface beneath.

Where it is possible to fall more than 4m to the surface below, the balustrade shall not contain any horizontal or near horizontal members that facilitate climbing between 150 – 760mm above the floor. It is noted that these provisions also apply to any building elements, including AC covers and the like, that are within 1m of the required balustrade.

Where a required barrier is fixed to the vertical face forming an edge of a landing, balcony, deck, stairway or the like, the opening formed between the barrier and the face must not exceed 40 mm.

Handrails should generally be provided at a minimum height of 865mm alongside of all ramps and stairs.

The public stairs and ramps located along an accessible path of travel should be designed in accordance with the requirements of AS1428.1 for persons with disabilities. This requires a handrail on each side of the stair and ramp and for the handrail to extend approximately 550mm – 600mm past the last tread / end of ramp.

In addition to the above, handrails are required to both sides of all stairs with a width of 2m or more.

(Class 9b primary schools) Intermediate rails located between 665mm and 750 mm should be provided within Class 9b Primary Schools.

Please provide balustrade details to conduct a full assessment at the construction certificate stage.

SLIP RESISTANCE (BCA D3D15 (PREVIOUSLY D2.14))

The slip resistance requirements for ramps and stairs are outlined below:

Table D3D15 (prev. Table D2.14) SLIP-RESISTANCE CLASSIFICATION

Application	Surface conditions	
	Dry	Wet
Ramp steeper than 1:14	P4 or R11	P5 or R12
Ramp steeper than 1:20 but not steeper than 1:14	P3 or R10	P4 or R11
Tread or landing surface	P3 or R10	P4 or R11
Nosing or landing edge strip	P3	P4

SERVICES AND EQUIPMENT

The following section of this report describes the essential fire safety measures and the minimum performance requirements of those measures. A draft essential fire safety schedule can be found in Appendix B.

It is noted that the provisions below also apply to occupiable outdoor areas.

FIRE HYDRANTS (BCA E1D2 (PREVIOUSLY E1.3))

A Fire Hydrant system is required to be provided in accordance with BCA Clause E1D2 (prev. E1.3) and AS2419.1-2021.

All fire hydrants shall have the centre line of the fire hydrant valve or outlet not less than 750mm and not more than 1200mm above the ground, finished floor level or platform as outlined in AS2419.1-2021.

Pressure and flow information will be required to confirm the required pressures and flow to the system, depending on the type of hydrant to be utilized;

The fire services/hydraulic engineer is to confirm the required flow rates for the development.

The building is required to be provided with a booster assembly as part of the fire hydrant requirements. The booster is required to be located at the main entry. If remote from the building, the booster is to be located at the main vehicle entry or with sight of the main entry of the building within 20m of a hardstand area.
The booster protection requirements apply to any booster which is located within 10m of the building it serves unless provided with a DTS sprinkler system. The protection requirements are summarised below:

i. Wall behind the booster which achieves a minimum FRL of 90/90/90 must be achieved from a DTS perspective
ii. This must extend not less than 2m from each side of the centre line of the fire hydrant riser and,
iii. Extend to a height not less than 3m above ground level

A fire ring main is not required.

Hydrant coverage plans are to be provided at the construction certificate stage.

FIRE EXTINGUISHERS (BCA E1D14 (PREVIOUSLY E1.6))

The provision of portable fire extinguishers is required to BCA Clause E1D14 (previously E1.6) and AS2444 - 2001 to provide coverage throughout the building.

Portable fire extinguishers must be located not more than 1200mm from the finished floor and not less than 100mm as outlined in AS2444-2001.

E1D14 details when portable fire extinguishers are required:

Occupancy Class	Risk Class (as defined in AS 2444)
General provisions – Class 2 to 9 buildings (except within sole-occupancy units of a Class 9c building)	a) To cover Class AE or E fire risks associated with emergency services switchboards. (Note 1) b) To cover Class F fire risks involving cooking oils and fats in kitchens. c) To cover Class B fire risks in locations where flammable liquids in excess of 50 litres are stored or used (not excluding that held in fuel tanks of vehicles). d) To cover Class A fire risks in normally occupied fire compartments less than 500m^2 not provided with fire hose reels (excluding open deck carparks). e) To cover Class A fire risks in classrooms and associated schools not provided with fire hose reels. f) To cover Class A fire risks associated with Class 2 or 3 building or class 4 part of building.
Specific provisions (in addition to general provisions) – a) Class 9a health care building b) Class 3 parts of detention and correctional occupancies c) Class 3 accommodation for children, aged persons and people with disabilities d) Class 9c building	To cover class A and E fire risks. (Note 2)

In addition, extinguishers are to be provided to the class 2 & 3 portions of the building in accordance with the below:

- an ABE type fire extinguisher is to be installed with a minimum size of 2.5 kg; and
- extinguishers are to be 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.

Fire extinguishers are to be located in accordance with AS 2444 - 2001, often collocated with fire hydrants and/or fire hose reels.

SMOKE HAZARD MANAGEMENT (BCA E2D3 – E2D20 (PREVIOUSLY E2.2)

Smoke hazard management shall be provided throughout the building by means of the following systems:

- Automatic Smoke Detection System complying with BCA Specification 20 Clause 4 (previously E2.2a) and AS 1670.1-2018
- Building Occupant Warning System activated by the smoke alarm/detection in accordance with BCA Specification 20 Clause 7 (previously Spec E2.2a) and Clause 3.22 of AS 1670.1-2018

A fire indicator panel is required as part of the detection system. This panel is to be located within 4m of the main entry and should be incorporated within the fire control room. Any variation to the prescriptive provisions will require the consent of the fire brigade and should form part of the fire safety engineering report to verify the performance requirements of the BCA.

LIFT SERVICES (BCA E3D3, E3D4, E3D5, E3D9, E3D10, E3D11E3.4 AND BCA E3.6)

The passenger lifts to be installed are to be:-

- Fitted with warning signs, fire service controls in accordance with Clauses E3D4, Figure E3D4, E3D9, E3D11, andE3D12 (previously E3.3, Figure E3.3, E3.7, E3.9 and E3.10) of the BCA.
- Stretcher facilities are to be provided within the lifts with minimum dimensions of 600m wide, 2000mm long and 1400mm high;
- Be provided with the following in order to satisfy accessibility requirements:
  - A handrail in accordance with AS1735.12-1999,
  - Minimum internal floor dimensions of 1400 x 1600mm for lifts which travel more than 12m, or 1100 x 1400mm for lifts which travel not more than 12m,
  - Fitted with a series of door opening sensory devices which will detect a 75mm diameter or across the door opening between 50mm and 1550mm above floor level,
  - Have a set of buttons for operating the lift located at heights above level complying with AS1735.12 - 1999
  - For lifts serving more than 2 levels, automatic audible information within the lift car identifying the level each time the car stops, and audible and visual indication at each lift landing to indicate the arrival of a car

It is currently proposed to not provide a ramp or passenger lift to the level 3 staff accommodation level.

The provision of a stairway only will need to be addressed through an access performance solution at the construction stage.

EXIT SIGNS AND EMERGENCY LIGHTING (BCA E4D2, E4D4, E4D5, E4D6 AND E4D8 (PREVIOUSLY E4.2 E4.5, E4.6, E4.8))

Emergency Lighting and Exit Signs indicating exit location paths of travel to exits to be provided in accordance with BCA Part E4 and AS/NZS 2293.1-2018, including the potential use of photo luminescent exit signs.

SOUND SYSTEMS AND INTERCOM SYSTEMS FOR EMERGENCY PURPOSES (BCA E4D9 (PREVIOUSLY E4.9))

A Sound System and Intercom System is required in accordance with AS1670.4-2018 and BCA Clause E4D9 (previously E4.9).

HEALTH AND AMENITY

STORMWATER DRAINAGE (BCA CLAUSE F1D3 (PREVIOUSLY CLAUSE F1.1)

Stormwater drainage systems serving the building are to comply with AS3500.3 - 2021.

The use of a syphonic stormwater drainage system is not covered by Australian Standards and any design incorporating one would need an appropriate performance solution will need to be documented by the hydraulic consultant addressing the system compliance against BCA Performance Requirements F1P2 and F1P3 (prev. FP1.2 & FP1.3).

SURFACE WATER MANAGEMENT (BCA PART F1)

Exposed Joints

Exposed joints in the drainage surface on a roof, balcony, podium or similar horizontal surface part of a building must not be located beneath or run through a planter box, water feature or similar part of the building.

Joints are to be protected in accordance with Section 2.9 of AS 4654.2.

External Waterproofing Membranes

All external above ground areas (roof slabs, balconies etc.) shall be protected by a waterproofing system in accordance with AS4654 Parts 1 and 2 – 2012.

FLOOR WASTES (BCA CLAUSE F2D4 (PREVIOUSLY F1.11)

Floor wastes to be provided within bathrooms and laundries where located above another sole occupancy unit. The floor shall be sloped towards these wastes.

Floor wastes are required to be provided where wall hung urinals are provided and the floor shall be sloped towards these wastes.

ROOF & WALL CLADDING (BCA PART F3 (PREVIOUSLY PART F1))

BCA 2022 has introduced some deemed to satisfy provisions that relate to the waterproofing of external walls. These provisions apply as follows:

- Masonry, including masonry veneer, unreinforced and reinforced masonry is to comply with AS 3700
- Autoclaved aerated concrete is to comply with AS 5146.3
- Metal wall cladding is to comply with AS 1562.1

Where the installation is not proposed to comply with the above, or a different material is proposed to be used, a performance solution can be utilised to demonstrate compliance.

Performance Requirement F3P1 (previously FP1.4) which relates to the prevention of the penetration of water through external walls, must be complied with. Where a performance solution is proposed, it is to be prepared by a suitably qualified professional (façade engineer with NER for structural engineering) that demonstrates that the external walls of the proposed building comply with Performance Requirement F3P1 (previously FP1.4) which reads as follows:

A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause—

a) unhealthy or dangerous conditions, or loss of amenity for occupants; and

b) undue dampness or deterioration of building elements.

WET AREAS & OVERFLOW PROTECTION (BCA PART F2 (PREVIOUSLY PART F1)

Internal wet areas throughout the development (e.g. bathrooms, laundries) shall be waterproofed in accordance with AS3740 - 2021 requirements.

Further review will be undertaken as the design develops with respect to the specification of waterproofing membrane, provision of water-stops at doorways etc.

SANITARY FACILITIES (BCA F4D2, F4D3, F4D4, F4D5, F4D6 (PREVIOUSLY F2.2 AND F2.3)

Apartments

Each apartment is required to be provided with the following:

- A kitchen sink and facilities for the preparation and cooking of food; and
- A bath or shower; and
- A closet pan and wash basin; and
- Clothes washing facilities comprising at least one wash tub and space for a washing machine; and
- Clothes line of at least 7.5m, or space for one heat operated drying device within the same space as the clothes washing.

Schools / Education

Separate sanitary facilities are required to be provided for male & female staff and for male & female students; this also includes the provision of a unisex disabled facility for both staff and students separately.

The following table summarises the sanitary facilities required for the Class 9b portions:

Sanitary Facilities Required for Students			
Students	WC	Urinals	Basins
Male (120)	3	3	4
Accessible	1	-	1

Sanitary Facilities Required for Staff			
Staff	WC	Urinals	Basins
Male (4)	1	0	1
Female (4)	1	-	1
Accessible	1	-	1

It is currently proposed to not provide urinals to this building. The urinals will need to be substituted with male WC's across the development, further details of the existing facility numbers are to be provided for review at the construction certificate stage.

Note: The Unisex facilities provided for people with disabilities may be counted once for each sex. These facilities are to be provided in accordance with AS1428.1-2009.

Bathroom Construction

Where bathrooms or rooms containing water closets have the WC within 1200mm of the doorway, the door shall be either sliding, open outwards, or be provided with removable hinges.

LIGHT AND VENTILATION (BCA PART F6 (PREVIOUSLY PART F4)

Class 2 & 3

Natural light and ventilation is to be provided to all habitable rooms at a rate of 10% and 5% of the floor area of the rooms respectively.

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 not be less than a horizontal distance from that boundary or wall that is the greater of:

(i) generally — 1 m; and
(ii) 50% of the square root of the exterior height of the wall in which the window is located, measured in metres from its sill.

Class 9

Natural Ventilation is required to be provided to rooms at a rate of 5% of the floor area in openings. Alternatively, mechanical ventilation is required in accordance with AS1668.2-2012

Artificial lighting complying with AS/NZS1680.0-2009 is to be incorporated with the final detailed design to be developed to confirm this.

These provisions also apply to areas considered as occupiable outdoor areas.

SOUND TRANSMISSION AND INSULATION (BCA PART F7 (PREVIOUSLY PART F5))

Building elements within Class 3 buildings should provide the following sound insulation levels.

Location	Notes	Sound Insulation Requirement
Walls separating habitable rooms		$R_w + C_{tr} \geq 50$
Walls separating habitable room and kitchen or bathroom	Wall must be of Discontinuous Construction	$R_w + C_{tr} \geq 50$
Floor separating habitable rooms	Impact isolation required	$R_w + C_{tr} \geq 50$ $L_{n,w} + C_I \leq 62$
Duct, soil, waste or water supply pipe, including pipes that is located in a floor or wall cavity, serves or passes through more than one room	Adjacent habitable room or Adjacent non-habitable room	$R_w + C_{tr} \geq 40$ or $R_w + C_{tr} \geq 25$
Door to habitable room		$R_w \geq 30$

Please note for walls requiring impact resistance an air gap between leafs of the wall construction is required to be provided. The above is to be confirmed by an acoustic consultant.

CONDENSATION MANAGEMENT (BCA PART F8 (PREVIOUSLY PART F6)

External Wall Construction

Pliable building membranes installed to an external wall must:

- achieve compliance with AS 4200.1, and
- be installed in accordance with AS4200.2, and
- be located on the exterior side of the primary insulation layer or the wall assembly and except for the single skin mason and single skin concrete be separated from water sensitive materials.

Where a pliable building membrane, sarking-type material or insulation layer is installed on the exterior sode of he primary insulation layer, it must have a vapour permeance of not less than: 0.143µg/N.s in climate zones 4 and 5, and not less than 1.14µg/N.s in climate zones 6,7 and 8.

Exhaust Systems

Exhaust systems must achieve a minimum flow rate of 25L/s for bathrooms and sanitary compartments and 40L/s for kitchens and laundries. These exhaust systems must all discharge directly or via a shaft/duct to outdoor air.

An exhaust system that is not run continuously and is serving a bathroom or sanitary compartment that is not ventilated in accordance with F6D7 is to be:

- Interlocked with the rooms light switch; and
- Include a run on timer so that the exhaust system continues to operate for 10 minutes after the light switch is turned off.

Ventilation of Roof Spaces

A roof in climate zones 6 must have a roof space that:

a) Is located
   i. Immediately above the primary insulation layer; or
   ii. Immediately above sarking with a vapour permeance of not less than 1.14µg/N.s, which is immediately above the primary insulation layer; or
   iii. Immediately above ceiling insulation which meets the requirements of J3D7 (3) and (4)
b) Has a height of not less than 20mm; and
c) Is either
   i. Ventilated to outdoor air through evenly distributed openings in accordance with Table F8D5; or
   ii. Located immediately underneath roof tiles of an unsarked tiled roof

APPENDIX A – REFERENCE DOCUMENTATION

The following documentation was used in the assessment and preparation of this report:

Drawing No.	Title	Revision	Date	Prepared By
DA D1-01	D1 SITE PLAN	1	10/10/2024	Baxter Jacobson Architects
DA D1-10	D1 LEVEL 1 FLOOR PLAN	1	10/10/2024	Baxter Jacobson Architects
DA D1-11	D1 LEVEL 2 FLOOR PLAN	1	10/10/2024	Baxter Jacobson Architects
DA D1-12	D1 LEVEL 3 FLOOR PLAN	1	10/10/2024	Baxter Jacobson Architects
DA D1-13	D1 ROOF PLAN	1	10/10/2024	Baxter Jacobson Architects
DA D1-20	D1 ELEVATIONS	1	10/10/2024	Baxter Jacobson Architects
DA D1-21	D1 ELEVATIONS	1	10/10/2024	Baxter Jacobson Architects
DA D1-30	D1 SECTIONS	1	10/10/2024	Baxter Jacobson Architects
DA D1-31	D1 SECTIONS	1	10/10/2024	Baxter Jacobson Architects
DA D1-32	D1 SECTIONS	1	10/10/2024	Baxter Jacobson Architects
DA D1-40	D1 3D VIEWS	1	10/10/2024	Baxter Jacobson Architects
DA D2-01	D2 SITE PLAN	1	10/10/2024	Baxter Jacobson Architects
DA D2-10	D2 LEVEL 1 FLOOR PLAN	1	10/10/2024	Baxter Jacobson Architects
DA D2-11	D2 LEVEL 2 FLOOR PLAN	1	10/10/2024	Baxter Jacobson Architects
DA D2-12	D2 LEVEL 3 FLOOR PLAN	1	10/10/2024	Baxter Jacobson Architects
DA D2-13	D2 ROOF PLAN	1	10/10/2024	Baxter Jacobson Architects
DA D2-20	D2 ELEVATIONS	1	10/10/2024	Baxter Jacobson Architects
DA D2-21	D2 ELEVATIONS	1	10/10/2024	Baxter Jacobson Architects
DA D2-30	D2 SECTIONS	1	10/10/2024	Baxter Jacobson Architects

Drawing No.	Title	Revision	Date	Prepared By
DA D2-31	D2 SECTIONS	1	10/10/2024	Baxter Jacobson Architects
DA D2-40	D2 3D VIEWS	1	10/10/2024	Baxter Jacobson Architects
DA D3-01	D3 SITE PLAN	1	10/10/2024	Baxter Jacobson Architects
DA D3-10	D3 LEVEL 1 FLOOR PLAN	1	10/10/2024	Baxter Jacobson Architects
DA D3-11	D3 LEVEL 2 FLOOR PLAN	1	10/10/2024	Baxter Jacobson Architects
DA D3-12	D3 ROOF PLAN	1	10/10/2024	Baxter Jacobson Architects
DA D3-20	D3 ELEVATIONS	1	10/10/2024	Baxter Jacobson Architects
DA D3-21	D3 ELEVATIONS	1	10/10/2024	Baxter Jacobson Architects
DA D3-30	D3 SECTIONS	1	10/10/2024	Baxter Jacobson Architects
DA D3-31	D3 SECTIONS	1	10/10/2024	Baxter Jacobson Architects
DA D3-40	D3 3D VIEWS	1	10/10/2024	Baxter Jacobson Architects
WD-01	WINDOW & DOOR SCHEDULE	1	09/10/2024	Baxter Jacobson Architects
WD-02	WINDOW & DOOR SCHEDULE	1	09/10/2024	Baxter Jacobson Architects
WD-03	WINDOW & DOOR SCHEDULE	1	09/10/2024	Baxter Jacobson Architects
WD-04	WINDOW & DOOR SCHEDULE	1	09/10/2024	Baxter Jacobson Architects
WD-05	WINDOW & DOOR SCHEDULE	1	09/10/2024	Baxter Jacobson Architects

APPENDIX B – DRAFT FIRE SAFETY SCHEDULE

No.	Measure	Standard of Performance	Status
Statutory Fire Safety Measures			
1.	Automatic Fire Detection and Alarm System	BCA 2022 Clause E2D8, Spec 20 Clause S20C3/S20C4/S20C5, AS 1670.1 – 2018, AS/NZS 1668.1 – 2015, AS 3786-2014	
2.	Automatic Fire Suppression System	BCA 2022 Clause C3D4, E1D5, E1D7, E1D8, E1D9, E1D10, E1D11, E1D13, E2D8, E2D9, E2D10, E2D11, E2D13, E2D14, E2D15, E2D16, E2D17, E2D19, E2D20, G3D8, Spec 17, Spec 31 & AS 2118.1 – 2017 Amdt 1 & 2, AS 2118.6 – 2012 (Combined sprinkler & hydrant) Residential: BCA 2022 Clause E1D6 Spec. 17/18, and ▪ AS 2118.1; or ▪ AS 2118.4, as applicable; or ▪ FPAA101D; or ▪ FPAA101H	
3.	Emergency Lighting	BCA 2022 Clause E4D2, E4D4 & AS/NZS 2293.1 – 2018	
4.	Exit Signs	BCA 2022 Clauses E4D5, E4D6 & E4D8 and AS/NZS 2293.1 – 2018	
5.	Fire Hydrant System	BCA 2022 Clause C3D13, E1D2, Spec 18, I3D9 & AS 2419.1 – 2021	
6.	Fire Seals, Collars (electrical, hydraulic, mechanical, fire)	BCA 2022 Clause C4D15, C4D16, Spec 13, Spec 14, & AS 1530.4 –2014	
7.	Lightweight Construction	BCA 2022 Clause C2D9, Spec 6	
8.	Portable Fire Extinguishers	BCA 2022 Clause E1D14 & I3D11, AS 2444 – 2001	
9.	Warning and Operational Signs	EP&A (Development Certification and Fire Safety) Regulation 2021 Clause 108, BCA 2022 Clause C4D7, D2.23, E3D4, NSW I4D14 & AS 1905.1 –2015	
Other Fire Safety Measures			
10.	Building Occupant Warning System	BCA 2022 Spec 17 & Spec 20 Clause S20C7 & AS 1670.1 – 2018 – Clause 3.22	
11.	Emergency Evacuation Plan	Fire Engineering Report XXXX Revision XX prepared by XXXX dated XXXX and AS 3745 – 2010	
12.	Paths of Travel	EP&A (Development Certification & Fire Safety) Reg 2021 Section 108, 109	

APPENDIX C – FIRE RESISTANCE LEVELS

The table below represents the Fire resistance levels required in accordance with BCA 2022:

Type A Construction

Table S5C11a: Type A Construction: FRL of loadbearing parts of external walls

Distance from a fire source feature	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Less than 1.5m	90/90/90	120/120/120	180/180/180	240/240/240
1.5 to less than 3m	90/60/30	120/90/90	180/180/120	240/240/180
3m or more	90/60/30	120/60/30	180/120/90	240/180/90

Table S5C11b: Type A Construction: FRL of non-loadbearing parts of external walls

Distance from a fire source feature	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Less than 1.5m	-/90/90	-/120/120	-/180/180	-/240/240
1.5 to less than 3m	-/60/60	-/90/90	-/180/120	-/240/180
3m or more	-/-/-	-/-/-	-/-/-	-/-/-

Table S5C11c: Type A Construction: FRL of external columns non incorporated in an external wall

Column tyle	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Loadbearing	90/-/-	120/-/-	180/-/-	240/-/-
Non-loadbearing	-/-/-	-/-/-	-/-/-	-/-/-

Table S5C11d: Type A Construction: FRL of common walls and fire walls

Wall type	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Loadbearing or non-loadbearing	90/90/90	120/120/120	180/180/180	240/240/240

Table S5C11e: Type A Construction: FRL of loadbearing internal walls

Location	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Fire-resisting lift and stair shafts	90/90/90	120/120/120	180/120/120	240/120/120

Bounding public corridors, public lobbies and the like	90/90/90	120/-/-	180/-/-	240/-/-
Between or bounding sole-occupancy units	90/90/90	120/-/-	180/-/-	240/-/-
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion	90/90/90	120/90/90	180/120/120	240/120/120

Table S5C11f: Type A Construction: FRL of non-loadbearing internal walls

Location	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Fire-resisting lift and stair shafts	-/90/90	-/120/120	-/120/120	-/120/120
Bounding public corridors, public lobbies and the like	-/60/60	-/-/-	-/-/-	-/-/-
Between or bounding sole-occupancy units	-/60/60	-/-/-	-/-/-	-/-/-
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion	-/90/90	-/90/90	-/120/120	-/120/120

Table S5C11g: Type A Construction: FRL of other building elements not covered by Tables S5C11a to S5C11f

Location	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Other loadbearing internal walls, internal beams, trusses and columns	90/-/-	120/-/-	180/-/-	240/-/-
Floors	90/90/90	120/120/120	180/180/180	240/240/240
Roofs	90/60/30	120/60/30	180/60/30	240/90/60

(3) Carparks

For building elements in a carpark as described in (1) and (2), the following minimum FRLs are applicable:

a) External wall:
   i. Less than 3 m from a fire-source feature to which it is exposed:
      A. Loadbearing: 60/60/60.
      B. Non-loadbearing: –/60/60.
   ii. 3 m or more from a fire-source feature to which it is exposed: –/–/–.

b) Internal wall:
   i. Loadbearing, other than one supporting only the roof (not used for carparking): 60/–/–.
   ii. Supporting only the roof (not used for carparking): –/–/–.

iii. Non-loadbearing: –/–/–.

c) Fire wall:
   i. From the direction used as a carpark: 60/60/60.
   ii. From the direction not used as a carpark: as required by Tables S5C11a to S5C11g.

d) Columns:
   i. Supporting only the roof (not used for carparking) and 3 m or more from a fire-source feature to which it is exposed: –/–/–.
   ii. Steel column, other than one covered by (i) and one that does not support a part of a building that is not used as a carpark—
      A. 60/–/–; or
      B. an ESA/M of not greater than 26m2/tonne.
   iii. Any other column not covered by (i) or (ii): 60/–/–.

e) Beams:
   i. Steel floor beam in continuous contact with a concrete floor slab
      A. 60/–/–; or
      B. an ESA/M of not greater than 30m2/tonne.
   ii. Any other beam: 60/–/–.

f) Fire-resisting lift and stair shaft (within the carpark only): 60/60/60.

g) Floor slab and vehicle ramp: 60/60/60.

h) Roof (not used for carparking): –/–/–.

(4) For the purposes of subclause (3):

a) ESA/M means the ratio of exposed surface area to mass per unit length.
b) Refer to Specification 17 for special requirements for a sprinkler system in a carpark complying with (3) and (b) located within a multi-classified building.

Type C Construction

Table S5C24a: Type C Construction: FRL of parts of external walls

Distance from a fire source feature	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Less than 1.5m	90/90/90	90/90/90	90/90/90	90/90/90
1.5 to less than 3m	-/-/-	60/60/60	60/60/60	60/60/60
3m or more	-/-/-	-/-/-	-/-/-	-/-/-

Table S5C24b: Type C Construction: FRL of external columns not incorporated in an external wall

Column tyle	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Less than 1.5m	90/-/-	90/-/-	90/-/-	90/-/-
1.5 to less than 3m	-/-/-	60/-/-	60/-/-	60/-/-
3m or more	-/-/-	-/-/-	-/-/-	-/-/-

Table S5C24c: Type C Construction: FRL of common walls and fire walls

Wall type	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Loadbearing or non-loadbearing	90/90/90	90/90/90	90/90/90	90/90/90

Table S5C24d: Type C Construction: FRL of internal walls

Location	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Bounding public corridors, public lobbies and the like	60/60/60	-/-/-	-/-/-	-/-/-
Between or bounding sole-occupancy units	60/60/60	-/-/-	-/-/-	-/-/-
Bounding a stair if required to be fire rated	60/60/60	60/60/60	60/60/60	60/60/60

Table S5C24e: Type C Construction: FRL of roof

Location	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Roofs	-/-/-	-/-/-	-/-/-	-/-/-

Carparks

1) Notwithstanding S5C21, a carpark may comply with this clause if it is an open-deck carpark or is protected with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification 17 and is—

   a) a separate building; or
   b) a part of a building, and if occupying only part of a storey, is separated from the remaining part by a fire wall.

2) For the purposes of this clause, a carpark—

   a) includes—

      i. an administration area associated with the functioning of the carpark; and
      ii. where the carpark is sprinklered, is associated with a Class 2 or 3 building and provides carparking for separate sole-occupancy units each carparking area with an area not greater than 10% of its floor area for purposes ancillary to the sole-occupancy units; but

   b) excludes—
   c)

      i. except for (a), any area of another classification, or other part of a Class 7 building not used for carparking; and
      ii. a building or part of a building specifically intended for the parking of trucks, buses, vans and the like.

3) For building elements in a carpark as described in (1) and (2), the following minimum FRLs are applicable:

   a) External walls:

      i. Less than 1.5 m from a fire-source feature to which it is exposed:
         A. Loadbearing: 60/60/60.
         B. Non-loadbearing:–/60/60.
      ii. 1.5 m or more from a fire-source feature to which it is exposed: –/–/–.

   b) Internal walls: -/-/-

   c) Fire walls:

      i. From the direction used as a carpark: 60/60/60.
      ii. From the direction not used as a carpark: 90/90/90.

   d) Columns:

      i. Steel column less than 1.5m from a fire source feature—
         A. 60/–/–; or
         B. an ESA/M of not greater than 26 m2/tonne.
      ii. Any other colums not less than 1.5m from a fire source feature: 60/-/-
      iii. Any other column not covered by (i) or (ii): -/–/–.

   e) Beams:

      i. Steel floor beam, less than 1.5m from a fire source feature, in continuous contact with a concrete floor slab—
         A. 60/–/–; or
         B. an ESA/M of not greater than 30 m2/tonne.

ii. Any other beam: 60/–/–.
iii. More than 1.5m from a fire source feature: -/-/-

f) Roof, floor slab and vehicle ramp: –/–/–.

4) For the purposes of (3), ESA/M means the ratio of exposed surface area to mass per unit length