



DESIGN CONFIDENCE

2A Gregory Place Pty Ltd

BCA Design Assessment Report

2A Gregory Place
Harris Park NSW 2150

Project: 2A Gregory Place Harris Park NSW 2150
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Revision History —

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EXECUTIVE SUMMARY

This BCA Design Assessment report has been prepared by Design Confidence at the request of 2A Gregory Place Pty Ltd and relates to the proposed multi residential development located at 2A Gregory Place Harris Park NSW 2150.

This report accompanies the SSDA application of a concept proposal for an affordable housing and build-to-rent development comprising approximately 483 dwellings within three freestanding four to eight storey buildings.

With respect to the assessment undertaken the following areas in particular need further review as the project develops into further development applications —

ITEM	ITEMS FOR FURTHER CONSIDERATION	RESPONSIBILITY
1	The following building elements and their components must be non-combustible – i. External walls and common walls, including all components incorporated in them, including the façade covering, framing and insulation; ii. The flooring and floor framing of lift pits; iii. Loadbearing internal walls; iv. Non-loadbearing internal walls where they are required to be fire-resisting	Project Architect
2.	A test report from a Registered Testing Authority must be provided to certify that the façade / external walls achieve compliance with BCA FP1.4 and FV1.	Project Architect/ Façade Engineer
3.	Location of exits and discharge configuration of the fire isolated stairways, discharging within the building is to be detailed to allow for further design review.	Project Architect
4.	Subject to further review of the scheme as it develops in subsequent stages, the project as currently designed has the ability to comply with the Building Code of Australia.	Project Architect

1.4 Report Exclusions

It is conveyed that this report should not be construed to infer that an assessment for compliance with the following has been undertaken—

- (i) Work Health & Safety Act and Regulations;
- (ii) Work Cover Authority requirements;
- (iii) Structural and Services Design Documentation;
- (iv) The individual requirements of service authorities (i.e. Telecommunication Carriers, Sydney Water, Energy Australia);
- (v) The Disability (Access to Premises - Buildings) Standards 2010;
- (vi) The Disability Discrimination Act (DDA) 1992; and
- (vii) The relevant Accessibility and Energy Efficiency Provisions as contained within the BCA.

2.0 DEVELOPMENT DESCRIPTION

2.1 General

In accordance with the BCA, the assessment undertaken relates to the proposed multi residential development comprising 3 residential towers over 2 levels of shared basement carparking, located at 2A Gregory Place Harris Park NSW 2150.

For the purpose of the BCA the subject development may be described as contained below.

2.2 Building Description

Table 2 – Building Characteristics

DESCRIPTION OR REQUIREMENT		
Building Classification		
	Residential	2
	Carpark	7a
Rise in Storeys		
		9
Construction Type		
		Type A
Effective Height		
		25.7m
Max Fire Compartment Sizes	Class 7a Carpark	24,250m ²
Climate Zone:		
	Climate Zone 5	

2.3 BCA Interpretation Notes

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

- (i) The proposed development has been assessed as a single building consisting of 3 residential towers, with corresponding shared basement carparking levels below;
- (ii) The basement 1 level has been counted in the rise in storeys on the basis the underside of the ceiling is more than 1m above the average finished level of the ground over a length of 12m, where the ground is the lowest – this occurs along the southern elevation.

3.0 BCA ACCESS DESIGN ASSESSMENT SUMMARY

3.1 General

The following tables summarises the compliance status of the architectural design in terms of each applicable prescriptive provision of the BCA and indicates a capability for compliance ('COMPLIES') with the provisions of the BCA.

A detailed analysis and commentary are provided in Section 3.0 of this report in the instance that prescriptive non-compliance occurs ('DOES NOT COMPLY') or further 'DESIGN DETAIL' is required.

Such instances should not necessarily be considered BCA deficiencies, but rather matters which need to be considered by the design team, the certifying authority and all other relevant stakeholders as design progresses.

For those instances of either prescriptive non-compliance ('DOES NOT COMPLY') or further 'DESIGN DETAIL' is required, a detailed analysis and commentary is provided within Section 4.0 of this report.

3.2 Section B – Structure

BCA CLAUSE	COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
B1.1 Resistance to actions			✓
B1.2 Determination of individual actions			✓
B1.4 Materials and form of construction			✓
B1.6 Construction of buildings in floor hazard areas			✓

3.3 Section C – Fire Resistance

BCA CLAUSE	COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
C1.1 Fire resisting construction			✓
C1.8 Lightweight construction			✓
C1.9 Non-combustible building elements			✓
C1.10 Fire hazard properties			✓
C1.14 Ancillary elements			✓
C2.2 General floor area and volume limitations	✓		
C2.7 Separation by fire walls			✓
C2.8 Separation of classifications in the same storey			✓
C2.9 Separation of classifications in different storeys			✓
C2.10 Separation of lift shafts			✓
C2.12 Separation of equipment			✓
C2.13 Electricity supply system			✓
C2.14 Public corridors in class 2 and 3 buildings			✓
C3.2 Protection of openings in external walls	✓		
C3.4 Acceptable methods of protection			✓
C3.5 Doorways in firewalls			✓

BCA CLAUSE	COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
C3.8	Protection of openings in fire-isolated exits		✓
C3.9	Service penetrations in fire-isolated exits		✓
C3.10	Openings in fire-isolated lift shafts		✓
C3.11	Bounding construction: Class 2 and 3 buildings		✓
C3.12	Openings in floors and ceilings for services		✓
C3.13	Openings in shafts		✓
C3.15	Openings for services installations		✓
C3.16	Construction joints		✓
C3.17	Columns protected with lightweight construction to achieve an FRL		✓

3.4 Section D – Access and Egress

BCA CLAUSE	COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
D1.2	Number exits required		✓
D1.3	When fire-isolated stairways and ramps are required	✓	
D1.4	Exit travel distances		✓
D1.5	Distance between alternative exits		✓
D1.6	Dimensions of exits and paths of travel to exits		✓
D1.7	Travel by fire-isolated stairways		✓
D1.10	Discharge from exits		✓
D1.16	Plant rooms, lift machine rooms and electricity network substations		✓
D1.17	Access to lift pits		✓
D2.2	Fire-isolated stairways and ramps		✓
D2.4	Separation of rising and descending stair flights		✓
D2.7	Installations in exits and paths of travel		✓
D2.12	Roof as open space		✓
D2.13	Goings and risers		✓
D2.14	Landings		✓
D2.15	Thresholds		✓
D2.16	Balustrades		✓
D2.17	Handrails		✓
D2.19	Doorways and doors		✓
D2.20	Swinging doors		✓
D2.21	Operation of latch		✓
D2.22	Re-entry facilities		✓
D2.23	Signs on doors		✓
D2.24	Protection of openable windows		✓

3.5 Section E – Services and Equipment

BCA CLAUSE		COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
E1.3	Fire hydrants			✓
E1.4	Fire hose reels			✓
E1.5	Sprinklers			✓
E1.6	Portable fire extinguishers			✓
E1.8	Fire control rooms			✓
E2.2	Smoke hazard management			✓
E3.1	Lift installations			✓
E3.2	Stretcher facility in lifts			✓
E3.3	Warning against use of lifts in fire			✓
E3.4	Emergency lifts			✓
E3.7	Fire service controls			✓
E3.9	Fire service recall control switch			✓
E3.10	Lift car fire service drive control switch			✓
E4.2	Emergency lighting requirements			✓
E4.5	Exit signs			✓
E4.6	Direction signs			✓
E4.9	Emergency warning and intercom systems			✓

3.6 Section F - Health and Amenity

BCA CLAUSE		COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
F1.0	Weatherproofing of external walls			✓
F1.1	Stormwater drainage			✓
F1.4	External above ground membranes			✓
F1.5	Roof coverings			✓
F1.6	Sarking			✓
F1.7	Waterproofing of wet areas in buildings			✓
F1.9	Damp-proofing			✓
F1.10	Damp-proofing of floors on the ground			✓
F1.11	Provision of floor wastes			✓
F1.13	Glazed assemblies			✓
F2.1	Facilities in residential buildings			✓
F2.3	Facilities in class 3 to 9 buildings			✓
F2.5	Construction of sanitary compartments			✓
F3.1	Heights of rooms and other spaces			✓
F4.1	Provision of natural light			✓
F4.2	Methods and extent of natural light			✓
F4.4	Artificial lighting			✓
F4.5	Ventilation of rooms			✓
F4.8	Restriction of position of water closets and urinals			✓

BCA CLAUSE		COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
F4.9	Airlocks			
F4.11	Carparks			✓
F4.12	Kitchens			✓
F5.4	Sound insulation rating of floors			✓
F5.5	Sound insulation rating of walls			✓
F5.6	Sound insulation rating of internal services			✓
F5.7	Sound isolation of pumps			✓
F6.2	Pliable building membrane			✓
F6.3	Flow rate and discharge of exhaust systems			✓
F6.4	Ventilation of roof spaces			✓

3.7 Section G – Ancillary Provisions

BCA CLAUSE		COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
G1.101	Provision for cleaning windows			✓
G5.2	Construction in bushfire prone areas			✓

4.0 BCA DETAILED ASSESSMENT – CLASS 2-9 BUILDINGS

4.1 General

With reference to the BCA Design Assessment Summary contained in **Section 3.0** above, the following analysis and commentary is provided.

This commentary is formulated to enable the design documentation to be further progressed, for the purpose of evidencing the attainment of compliance with the relevant provisions of the BCA.

4.2 Section B - Structure

B1.1 The resistance of a building or structure shall be greater than the most critical action effect determined by B1.2 of the BCA, AS/NZS 1170.0-2002 and B1.4 of the BCA.

B1.2 The structural design of the building is required to be determined in accordance with the varying "actions" considerations contained within this clause (i.e. permanent actions, imposed actions, wind / snow / earthquake actions).

B1.4 The structural resistance of materials and forms of construction shall be determined in accordance with the following:

- Masonry - AS3700-2018
- Concrete construction - AS3600-2018
- Footings and slabs – AS2870-2011
- Steel construction - AS4100-1998 or AS/NZS 4600-2005
- Termite Risk Management - AS3660.1-2014
- Piling - AS2159-2009
- Glazed assemblies - AS2047-2014-amendments 1 & 2 (external), and/or AS1288-2006 (internal)

B1.6 Where provided in a flood hazard area, the class 3 building must comply with the ABCB Standard for Construction of Buildings in Flood Hazard Areas.

4.3 Section C – Fire Resistance

C1.1

Building elements are required to achieve the nominated FRLs as nominated within BCA Spec C1.1 as applicable, these FRLs have been summarised within Table A2.1 as contained within Appendix 2.

In addition to the FRLs contained within the Appendix 2 the following information details the construction methodology and concessions available to the subject building.

General Notes

- (i) Internal walls required to have an FRL must extend:
 - To the underside the floor next above;
 - To the underside of a roof covering if it is non-combustible and must not be crossed by timber or other combustible building elements, except for roof battens with dimensions of 75mm x 50mm or less or sarking-type material; or
 - 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;
- (ii) Any loadbearing internal wall and a loadbearing fire wall (including shafts) is required to be of concrete or masonry or fire-protected timber;
- (iii) A non-loadbearing internal wall required to achieve an FRL is required to be of non-combustible construction;
- (iv) A shaft which is not for the discharge of hot products of combustion and not load-bearing is required to be of non-combustible construction;
- (v) The bottom of any shafts is required to be non-combustible and laid directly on the ground unless otherwise enclosed by construction having an FRL not less than that required for the walls; and
- (vi) Building elements are required to achieve an FRL from both sides.

Concessions

- (i) In the storey immediately below the roof, the FRL of internal walls (excluding shaft walls) and internal columns may be reduced to 60/60/60;
- (ii) A floor need not have an FRL if it is laid directly on the ground;
- (iii) The roof need not achieve an FRL if its covering is non-combustible;
- (iv) Where the carpark is protected by a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Spec. E1.5 and is separated from the class 3 part above and on the same storey in accordance with C2.9, the carpark may comply with Table A2.2 as contained within Appendix 2.

Method of attachment not to reduce the fire-resistance of building elements

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.

C1.8 Any lightweight construction to internal walls required to achieve an FRL or protection to steel columns required achieve an FRL are required to be tested for resistance in accordance with this clause.

C1.9 The following building elements and their components must be non-combustible

- (i) External walls and common walls, including all components in them including the facade covering, framing and insulation;
- (ii) The flooring and floor framing of lift pits;
- (iii) Non-loadbearing internal walls where they are required to be fire-resisting;
- (iv) A shaft, being a lift, ventilating, pipe, garbage, or similar shaft that is not for the discharge of hot products of combustion, that is non-loadbearing;
- (v) A loadbearing internal wall and a loadbearing fire wall, including those that are part of a loadbearing shaft.

C1.10 The fire hazard properties for materials proposed to be provided have been summarised within Table A3.1 as contained within Appendix 3.

C1.14 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 elements -

- (i) an ancillary element that is non-combustible;
- (ii) a gutter, downpipe or other plumbing fixtures;
- (iii) a flashing;
- (iv) a grate or grille not more than 2m² in area associated with a building service;
- (v) an electrical switch socket – outlet, cover plate or the like;
- (vi) a light fitting;
- (vii) a required sign;
- (viii) a sign other than one provided under (i) or (vii) that –
 - a. achieves a group number of 1 or 2; and
 - b. does not exceed beyond one storey; and
 - c. does not extend beyond one fire compartment; and
 - d. is separated vertically from other signs permitted under (viii) by at least 2 storeys.

C1.14
Cont'd

- (ix) an awning, sunshade, canopy, blind or shading hood other than one provided and (i) that –
 - a. meets the relevant requirements of Table 4 of specification C.10 as for an internal element; and
 - b. serves a storey -
 - (A) at ground level; or
 - (B) immediately above a storey at ground level; and
 - c. does not serve an exit, where it would render the exits unusable in a fire.
- (x) a part of a security, intercom or announcement system;
- (xi) wiring;
- (xii) a paint lacquer or a similar finish;
- (xiii) a gasket, caulking, sealant or adhesive directly associated with (i) to (xi)

C2.2

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 (m ²)	8,000	5,500	3,000
	Max volume (m ³)	48,000	33,000	18,000
6, 7, 8 or 9a (except for patient care areas)	Max floor area (m ²)	5,000	3,500	2,000
	Max volume (m ³)	30,000	21,000	12,000

The class 2 and 7a parts of the building are not subject to the maximum floor area limitations prescribed above.

C2.7

A fire wall must be constructed in accordance with the following:

- (i) The fire wall has the relevant FRL prescribed by Specification C1.1 for each of the adjoining parts and if these are different, the greater FRL, except where Tables 3.9, of Specification C1.1 permit a lower FRL on the carpark side.
- (ii) 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.
- (iii) Building elements, other than roof battens with dimensions of 75mm x 50mm 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.

C2.7 Cont'd	<p>The fire wall used to separate fire compartments must extend to the underside of –</p> <ul style="list-style-type: none"> (i) A floor having an FRL required for a fire wall; or (ii) The roof covering.
C2.8	<p>Any storey of the building that contains different classifications which are located alongside one another, therefore on of the following options are required to separate classifications in the same storey -</p> <ul style="list-style-type: none"> (i) Option 1 - each building element in that storey must have the higher FRL prescribed in Specification C1.1 for that element for the classifications concerned; or (ii) Option 2 – the parts must be separated in that storey by a fire wall having the higher FRL prescribed by Table 4 of Spec. C1.1 of the BCA.
C2.9	<p>As the carpark is to be protected with a sprinkler system (other than FPAA101D and FPAA101H system) complying with Spec. E1.5, the FRL of the intermediate floor slab separating the 7a part from the class 3 and 6 parts above may be reduced to achieve an FRL 60/60/60 as per Table 3.9 of Spec. C1.1 – refer Table A2.2 of Appendix 2 for permitted reductions in FRLs of building elements.</p>
C2.10	<p>The lifts proposed within the building connect more than 3 storeys and is therefore required to be separated from the remainder of the building by enclosure in a shaft achieving the following FRLs, appropriate to each classification bounded by the lift shaft for the storeys concerned -</p> <ul style="list-style-type: none"> (i) Class 2 - an FRL 90/90/90 (if loadbearing) or -/90/90 (if non loadbearing); (ii) Class 7a – an FRL 60/60/60 on the basis the caprark is protected with a sprinkler system (other than FPAA101D and FPAA101H system) complying with Spec. E1.5. <p>Additionally, the emergency lifts must be contained within a fire resisting shaft having an FRL not less than 120/120/120.</p>
C2.12	<ul style="list-style-type: none"> (i) Lift Installations - If the lift motor and lift control panel are not contained within the lift shaft, then the equipment is required to be separated with construction achieving an FRL of 120/120/120 or --/120/120 (if nonloadbearing) and any access doorway is required to protected with a self-closing fire door having an FRL of --/120/30. (ii) Plant Equipment - In the event the plant equipment contains boilers then these boilers and associated equipment are required to be separated with construction achieving an FRL of 120/120/120 or --/120/120 (if nonloadbearing) and any access doorway is required to protected with a self-closing fire door having an FRL of --/120/30. (iii) On-site Fire Pumps – Separation of on-site fire pumps must comply with the requirements of AS2419.1-2005 <p>NOTE - boilers is a defined term within the BCA, hence it is recommended that the services engineer review the terminology to first determine whether any components of the hot water plant system constitute as boilers.</p>

C2.13

- (i) An electricity substation within the building must be separated by construction having an FRL of not less than 120/120/120 and doorway to it must be protected with a fire door having a minimum FRL of --/120/30;
- (ii) The main switch board within the building which sustains emergency equipment operating in the emergency mode must also be separated as per (i) above;
- (iii) Electrical conductors within the building that supply a switch board covered under (b) above or a substation that supplies that switchboard must be protected with construction having an FRL of 120/120/120, and be classified in accordance with AS/NZS 3013 as WS53W or WS52W as applicable;
- (iv) In switch boards that supply the emergency equipment mentioned above the emergency equipment switch gear must be separated by metal partitions designed to minimize the spread of a fault from the nonemergency equipment switch gear.

C2.14

Where residential public corridors exceeding 40m in length, smoke proof walls complying with Clause 2 of Spec. C2.5 of the BCA, must be provided at intervals not exceeding 40m.

C3.4

Where protection is required, the DTS provisions requires that doorways, windows and other openings must be protected as follows:

- (i) Doorways:
 - a. External wall-wetting sprinklers used with doors that are self-closing or automatic closing; or
 - b. --/60/30 fire doors that are self-closing or automatic closing.
- (ii) Windows:
 - a. Wall-wetting sprinklers located externally if windows are automatic closing or permanently fixed in the closed position; or
 - b. --/60/-- fire windows that are automatically closing or permanently fixed in the closed position; or
 - c. --/60/-- automatic closing fire shutters.
- (iii) Other openings:
 - a. Excluding voids – internal or external wall-wetting sprinklers, as appropriate;
 - b. Construction having an FRL not less than -/60/-.
 - c. Fire doors, fire windows and fire shutters must comply with Specification C3.4.

C3.5

Doorways within a fire wall must be protected by –

- (i) 2 fire doors or fire shutters, one on each side of the doorway, each of which has an FRL of not less than $\frac{1}{2}$ that required by Specification C1.1 for the fire wall except that each door or shutter must have an insulation level of at least 30; or
- (ii) a fire door on one side and a fire shutter on the other side of the doorway, each of which complies with (i); or
- (iii) a single fire door or fire shutter which has an FRL of not less than that required by Specification C1.1 for the fire wall except that each door or shutter must have an insulation level of at least 30.

A fire door or fire shutter must be self-closing, or automatic closing in accordance with the following –

- (i) The automatic closing operation required by (b) must be initiated by the activation of a smoke detector, or any other detector deemed suitable in accordance with AS 1670.1 if smoke detectors are unsuitable in the atmosphere, installed in accordance with the relevant provisions of AS 1670.1 and located on each side of the fire wall not more than 1.5 m horizontal distance from the opening.
- (ii) Where any other required suitable fire alarm system, including a sprinkler system (other than a FPAA101D system) complying with Specification E1.5, is installed in the building, activation of the system in either fire compartment separated by the fire wall must also initiate the automatic closing operation.

C3.8

- (i) Doorways that open to fire-isolated stairways, fire-isolated passageways, and are not doorways opening to a road or open space, must be protected by – /60/30 fire doors that are self-closing, or automatic-closing in accordance with (ii) and (iii) below;
- (ii) The automatic-closing operation required by (i) must be initiated by the activation of a smoke detector, or any other detector deemed suitable in accordance with AS 1670.1 if smoke detectors are unsuitable in the atmosphere, installed in accordance with the relevant provisions of AS 1670.1 and located not more than 1.5 m horizontal distance from the approach side of the doorway;
- (iii) Where any other required suitable fire alarm system, including a sprinkler system (other than a FPAA101D system) complying with Specification E1.5, is installed in the building, activation of the system must also initiate the automatic-closing operation;
- (iv) A window in any external of a fire isolated stairway, fire isolated passageway, or fire isolated ramp must be protected in accordance with C3.4 if it is within 6m of, and exposed to, a window or other opening in a wall of the same building, other than in the same fire-isolated enclosure.

C3.9	<p>Fire isolated exits must not be penetrated by any services other than –</p> <ul style="list-style-type: none"> (i) Electrical wiring permitted by D2.7(e) to be installed within the exit; or (ii) Ducting associated with a pressurisation system if it – <ul style="list-style-type: none"> a. is constructed of material having an FRL of not less than --/120/60 where it passes through any other part of the building; and b. does not open into any other part of the building; or (iii) water supply pipes for fire services.
C3.10	<ul style="list-style-type: none"> (i) The doorways providing access to the lift shaft(s) shall be protected by --/60/-- fire doors complying with AS1735.11-1986 and remain closed except when discharging or receiving passengers or goods; and (ii) Any lift call button, indicator panel or other panel located within the wall of the fire-isolated lift shaft must be backed by construction having an FRL of - -/60/60 if it exceeds 35,000mm² in area.
C3.11	<p>All unit doorways and other opening directly into a public corridor, public lobby or the like must be protected by a self-closing or automatic closing --/60/30 fire door.</p> <p>Where an automatic closing fire door is proposed, the automatic closing operation must be initiated by the activation of any smoke detection and fire alarm system, including sprinkler system (other than a FPAA101D system) complying with Spec. E1.5 installed within the building.</p> <p>Other openings in internal walls which are required to have an FRL with respect to integrity and insulation must not reduce the fire-resisting performance of the wall.</p>
C3.12	<p>Where a service passes through a floor required to have an FRL or a ceiling required to have a resistance to the incipient spread of fire (refer to C1.1), that service is required to protected by either a shaft in accordance with C1.1 or in accordance with C3.15.</p>
C3.13	<p>Any opening in a wall providing access to a ventilating, pipe, garbage or other service shaft are required to be protected as follows:</p> <ul style="list-style-type: none"> (i) Sanitary compartment – Non-combustible door or panel assembly or an FRL of --/30/30; (ii) --/60/30 fire door or hopper that is self-closing; (iii) Access panel with an FRL of --/60/30; or (iv) Garbage shaft – A door or hopper of non-combustible construction.
C3.15	<p>Any openings for service installations (electrical, mechanical, plumbing, etc.) that penetrates a building element which is required to be of fire resisting construction is required to be protected (i.e. fire seals).</p>
C3.16	<p>Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation are required to be protected in a manner identical with a prototype tested in accordance with AS1530.4-2014 to achieve the required FRL.</p>

C3.17	Where a column is protected by lightweight construction to achieve the required FRL defined by C1.1 passes through a building element that is also required to have an FRL it is required to be installed using a method and materials identical with the prototype assembly of the construction which has achieved the required FRL.
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4.4 Section D – Access and Egress

D1.2	With the building achieving an effective height greater than 25m, all parts of the building must have not less than two available exits.
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D1.4	<p>The travel distances to exits should not exceed –</p> <p>Class 2</p> <ul style="list-style-type: none"> (i) The entrance doorway of any SOU must be not more than 6m from an exit or from a point of choice from which travel in different directions to 2 exits is available; (ii) No point of the floor of a room of which is not a SOU must be more than 20m from an exit or from a point at which travel in different directional to 2 exits is available. <p>Class 7a (Carpark)</p> <ul style="list-style-type: none"> (i) No point on a floor must be more than 20 from an exit or 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 40m.
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D1.5	<p>Exits that are required as alternative means of egress must be –</p> <ul style="list-style-type: none"> (i) Not less than 9m apart; and (ii) Not more than 60m apart; and (iii) Located so that alternative paths of travel do not converge such that they become less than 6m apart.
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D1.6	The path of travel to an exit and any required exit is to have an unobstructed height throughout of not less than 2m (except a doorway, which can be 1980mm) and an unobstructed width not less than 1m (except a doorway, which can be 750mm in an area not required to be accessible and 850mm in an area required to accessible).
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D1.7 Each fire-isolated stairway or fire-isolated ramp must provide independent egress from each storey served and discharge directly, or by way of its own fire-isolated passageway –

- (i) to a road or open space; or
- (ii) to a point -
 - (A) in a storey or space, within the confines of the building, that is used only for pedestrian movement, car parking or the like and is open for at least 2/3 of its perimeter; and
 - (B) from which an unimpeded path of travel, not further than 20 m, is available to a road or open space; or
- (iii) into a covered area that—
 - (A) adjoins a road or open space; and
 - (B) is open for at least 1/3 of its perimeter; and
 - (C) has an unobstructed clear height throughout, including the perimeter openings, of not less than 3 m; and
 - (D) provides an unimpeded path of travel from the point of discharge to the road or open space of not more than 6 m.

Additionally, where a path of travel from the point of discharge of a fire-isolated exit necessitates passing within 6 m of any part of an *external wall* of the same building, measured horizontally at right angles to the path of travel, that part of the wall must have –

- (i) an FRL of not less than 60/60/60; and
- (ii) any openings protected internally in accordance with C3.4,

for a distance of 3 m above or below, as appropriate, the level of the path of travel, or for the height of the wall, whichever is the lesser.

D1.10 The discharge points of the exits are required to have an unobstructed width of 1m (including gates) and be via a stairway, ramp or other incline having a gradient of no steeper than 1:8 or complying with AS1428.1-2009- amendment 2 (where required to be accessible for people with a disability).

D1.16 A ladder complying with AS1657-2018 may be used in lieu of a stairway to provide egress from a plant room with a floor area of not more than 100m² or all but one point of egress from a plant room or lift machine room with a floor area of not more than 200m².

D1.17	<p>Access to lift pits must –</p> <ul style="list-style-type: none"> (i) Where the pit depth is not more than 3m, be through the lowest landing doors; or (ii) Where the pit depth is more than 3m, be provided through an access doorway complying with the following – <ul style="list-style-type: none"> a. In lieu of D1.6, the doorway must be level with the pit floor and not be less than 600 mm wide by 1980 mm high clear opening, which may be reduced to 1500 mm where it is necessary to comply with (a). b. No part of the lift car or platform must encroach on the pit doorway entrance when the car is on a fully compressed buffer. c. Access to the doorway must be by a stairway complying with AS 1657. d. In lieu of D2.21, doors fitted to the doorway must be— <ul style="list-style-type: none"> (A) of the horizontal sliding or outwards opening hinged type; and (B) self-closing and self-locking from the outside; and (C) marked on the landing side with the letters not less than 35 mm high: <p style="text-align: center;">"DANGER LIFTWELL – ENTRY OF UNAUTHORIZED PERSONS PROHIBITED – KEEP CLEAR AT ALL TIMES"</p>
D1.18	<p>Every part of the proposed childcare centre must be wholly within the storey that provides direct egress to a road or open space.</p>
D2.2	<p>A stairway or ramp (including any landings) that is required to be within a fire resisting shaft must be constructed –</p> <ul style="list-style-type: none"> (i) of non-combustible materials; and (ii) so that if there is local failure it will not cause structural damage to, or impair the fire-resistance of, the shaft.
D2.4	<p>Fire isolated stairways serving as exits must have no direct connection between –</p> <ul style="list-style-type: none"> (i) a flight rising from a storey below the lowest level of access to a road or open space; and (ii) a flight descending from a storey above that level; and <p>Any construction that separates or is common to the rising and descending flights must be –</p> <ul style="list-style-type: none"> (i) non-combustible; and (ii) smoke proof in accordance with Clause 2 of Specification C2.5.
D2.7	<ul style="list-style-type: none"> (i) Gas or other fuel services shall not be installed within the required exits; and (ii) Any services or equipment (being electrical meters, distribution boards or the like) installed within the hallway are required to be enclosed by non-combustible construction or a fire-protective covering (i.e. 1 layer of 13mm fire-protective grade plasterboard) with doorway(s) or opening(s) suitably sealed against smoke spreading from the enclosure.

D2.13 The going, riser and steepness dimension of the stairways are required to be designed within the following range:

STAIRWAY LOCATION	RISER (R)	GOING (G)	QUANTITY (2R + G)
Public	Max: 190mm Min: 115mm	Max: 355mm Min: 250mm	Max: 700mm Min: 550mm
Private	Max: 190mm Min: 115mm	Max: 355mm Min: 240mm	Max: 700mm Min: 550mm

- (i) The risers and goings are required to be constant throughout the flight except variations of no greater than 5mm are permitted between adjacent risers or goings and no greater than 10mm are permitted between the smallest and largest goings or risers in a flight; and
- (ii) The stair treads are required to have a surface or nosing strip achieving a slip-resistance classification of P3 or R10 in dry or P4 or R11 in wet tested in accordance with AS4586-2013 (amendment 1).

D2.14 Stair landings are required to be a minimum of 750mm long with a gradient not steeper than 1:50 and have a slip-resistance surface or strip.

The surface or strip is required to achieve a slip-resistance classification of P3 or R10 in dry or P4 or R11 in wet tested in accordance with AS4586-2013 (amend 1).

D2.15 The threshold of a doorway is not permitted to incorporate a step or ramp at any point closer to the doorway than the width of the door leaf.

That is unless the doorway opens to a road or open space and:

- (i) In a building required to be accessible, is provided with a threshold or step ramp in accordance with AS1428.1-2009; or
- (ii) In all other cases, the door sill is not more than 190mm above the finished surface of the ground.

D2.16 Balustrades are required to be constructed as follows -

- (i) To a height not less than 865mm above the nosings of the stair treads or the floor of a ramp;
- (ii) 1000mm above the floor of any access path, balcony, landing or the like;
- (iii) Any opening does not permit a 125mm sphere to pass through it and for stairs, the space is measured above the nosings;
- (iv) For floors more than 4m above the surface beneath, any horizontal or near horizontal elements between 150mm and 760mm must not facilitate climbing;
- (v) For balustrades in fire-isolated stairways used primarily for emergency purposes openings between balustrades can be up to 300mm or where rails are used, the bottom rail must be a maximum of 150mm above the stair nosings line or from the landing or floor and the opening between rails must not be more than 460mm.

D2.17	<p>Handrails are required along one (1) side of each stairway flight and ramp, unless required to assist people with a disability as required by D3.3 of the BCA – refer Access Design Assessment Report prepared by this office for detailed Requirements.</p> <p>The handrails are required to fixed at a height of not less than 865mm measured above the nosings of the stair treads or ramp and be continuous such that no obstruction on or above them will tend to break a hand hold.</p>
D2.19	<p>A doorway serving as a required exit or forming part of a required exit –</p> <ul style="list-style-type: none"> (i) Must not be fitted with a revolving door; (ii) Must not be fitted with a sliding door unless – <ul style="list-style-type: none"> ▪ It leads directly to a road or open space; and ▪ The door is able to be opened manually under a force of not more than 110N; and (iii) If fitted with a door which is power-operated – <ul style="list-style-type: none"> ▪ It must be able to be opened manually under a force of not more than 110N if there is a malfunction or failure of the power source; and ▪ If it leads directly to a road or open space it must open automatically if there is a power failure to the door or on the activation of a fire or smoke alarm anywhere in the fire compartment served by the door.
D2.20	<p>A swinging door in a required exit or forming part of a required exit must swing in the direction of egress unless –</p> <ul style="list-style-type: none"> (i) It serves a building or part of a building with a floor area of not more than 200m², 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 either direction), and (iii) Must not impede the path or direction of egress.
D2.21	<p>Any door in a required exit, forming part of a required exit or in the path of travel to a required exit are required to be readily operable without a key from the side that faces a person seeking egress and:</p> <ul style="list-style-type: none"> (i) By a single hand pushing or downward action on a single device located between 900mm and 1100mm from the floor; <ul style="list-style-type: none"> ▪ Be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and ▪ 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 nor more than 45mm; or ▪ A single hand pushing action on a single device which is located between 900mm and 1.2m above the floor.

D2.21
Cont'd

- (ii) Where the latch operation device referred to above is not located on the door leaf itself –
 - Manual controls to power-operated doors must be at least 25mm wide, proud of the surrounding surface and located-
 - Not less than 500mm from an internal corner; and
 - For a hinged door, between 1m and 2m from the door leaf in any position; and
 - For a sliding door, within 2m of the doorway and clear of a surface mounted door in the open position
 - Braille and tactile signage complying with Clause 2 and 6 of Specification D3.6 must identify the latch operation.
- (iii) Fitted with a fail-safe device which automatically unlocks the door upon the activation of any sprinkler system or detection system deemed suitable in accordance with AS1670.1-2018 installed throughout the building.

D2.22

Doors of the fire isolated exits must not be locked from the inside, unless the doors are fitted with a fail-safe device that automatically unlocks the door upon the activation of a fire alarm and –

- (i) On at least every fourth storey, the doors are not able to be locked and a sign is fixed on such doors stating that re-entry is available; or
- (ii) An intercommunication system, or an audible or visual alarm system, operated from within the enclosure is provided near the doors and a sign is fixed adjacent to such doors explaining its purpose and method of operation.

D2.23

Signage complying with this clause to alert persons that the operation of certain doors is required to be installed on or adjacent to –

- (i) a required fire door providing direct access to a fire isolated exit, except a door providing direct egress from a SOU, on the side of the door that faces a person seeking egress and if the door is fitted with a device for holding it in the open position, on either the wall adjacent to the doorway or both sides of the door; and
- (ii) both sides of a door leading from a fire isolated to a road or open space.

Signage referred to above must be in capital letters not less than 20mm high in a colour contrasting with the background and state –

- (i) for an automatic door held open by an automatic hold-open device

"FIRE SAFETY DOOR-DO NOT OBSTRUCT"

- (i) for a self-closing door –

"FIRE SAFETY DOOR
DO NOT OBSTRUCT
DO NOT KEEP OPEN"

- (ii) for a door discharging from a fire isolated exit –

"FIRE SAFETY DOOR-DO NOT OBSTRUCT"

D2.24

Window openings to bedrooms require protection, if the floor below the window is 2m above the surface beneath.

Protection need not be provided where the lowest level of the window is 1.7m or more above the finished floor level.

(i) Protection can be in the form of the following:

- The openable portion of the window must be protected with a device to restrict the window opening or a screen with secure fittings;
- The device or screen must not permit a sphere greater than 125mm is permitted to pass through;
- Resist the outward horizontal action of 250N against the window or screen;
- Have a child resistant release mechanism if the screen or device can be removed, unlocked or over ridden; and

(ii) A barrier with a height of not less than 865mm above the floor is required to an openable window:

- In addition, to window protection as per (i) above;
- Where the floor below the window is 4m or more above the floor or if the window is not covered above; and
- Any horizontal or near horizontal elements between 150mm and 760mm must not facilitate climbing and have no gaps greater than 125mm.

4.5 Section E – Services and Equipment

E1.3

A fire hydrant system complying with AS2419.1-2005 is required to serve the building, including -

(i) All points on a floor are required to be within reach of a 10 m hose stream issuing from a nozzle at the end of a –

- 30 m length of hose laid on floor, connected to an internal attack fire hydrant outlet
- 60m length of a hose laid on the floor, connected to an external fire hydrant outlet.

(ii) Additional hydrants can be installed in appropriate locations, where additional coverage is required;

(iii) Where a sprinkler system is installed throughout the building in accordance with AS2118.1, AS2118.4, AS2118.6, FPAA101H or FPAA101D, the fire hydrant booster protection requirements of Clause 7.3(c)(ii) and 7.3(d)(iii) of AS2419.1-2005 do not apply;

(iv) If the fire brigade booster assembly is within, or affixed to, the external wall of the building, the booster shall be within sight of the main entrance to the building;

(v) If the fire brigade booster assembly is remote from the building, it is required to be at the boundary of the site, be within sight of the main entrance of the building and adjacent to the principal vehicular access to the site.

E1.4	<p>A hose reel system complying with AS2441-2005 is required to serve the non-class 2 parts.</p> <p>A hose reels must be located so that the fire hose will not pass through a fire or smoke door.</p> <p>A fire hose reel system must be provided in accordance with the following –</p> <ul style="list-style-type: none"> (i) Hose reels are required to be located within 4m of an exit; and (ii) All points on a floor are required to be in reach of a 4m hose stream at the end of a 36m hose length laid on the floor; (iii) Additional hose reels can be installed along the path of travel where additional coverage is required.
E1.5	<p>An automatic fire sprinkler system is required to be installed throughout the buildings based on each building having an effective height greater than 25m.</p> <p>The required sprinkler system shall be in accordance with Specification E1.5 of the BCA, as applicable.</p> <p>Similarly, with E1.3 above, where the sprinkler system requires a booster pumpset/s, the requirements for access to the pump room via a fire isolated passage or stair leading to a road or open space also apply.</p>
E1.6	<p>Portable extinguishers must be provided in accordance with Table E1.6 to cover risk classes throughout the building.</p> <p>Portable fire extinguishers complying with AS2444-2001 are required as follows:</p> <ul style="list-style-type: none"> (i) To cover Class B (if more than 50L excluding vehicle fuel tanks is stored); and (ii) To cover Class AE or E fire risks associated with emergency service switchboards; and (iii) To cover Class F fire risks involving cooking oils and fats in kitchens. <p>An extinguisher must be located within 10m of the entrance of each SOU.</p>
E1.8	<p>A fire control centre facility in accordance with Clause 2-5 of Spec. E1.8 must be provided, on the basis each building has an effective height of more than 25m.</p>

E2.2

The buildings must have the following smoke hazard management systems –

- (i) A smoke detection and alarm system complying with Specification E2.2a of the BCA; and
- (ii) An automatic air pressurization system within fire isolated exits in accordance with AS1668.1; and
- (i) For the class 7a basement levels, where a mechanical ventilation system is provided in accordance with AS1668.2 it must comply with Clause 5.5 of AS1668.1, except that –
 - Fans with metal blades suitable for operation at normal temperature may be used;
 - The electrical power and control cabling need not be fire rated.

In addition to the above, the following applies to any air-handling system provided within the building which does not form part of a smoke hazard management system and which recycles air from one fire compartment to another fire compartment or operates in a manner that may unduly contribute to the spread of smoke from one fire compartment to another fire compartment must –

- (i) be designed and installed to operate as a smoke control system in accordance with AS/NZS 1668.1-2012 (amendment 2); or
- (ii) incorporate smoke dampers where the air-handling ducts penetrate any elements separating the fire compartments served and be arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke detectors complying with clause 7.5 of AS 1670.1-2018.

E3.1

An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with Specification E3.1.

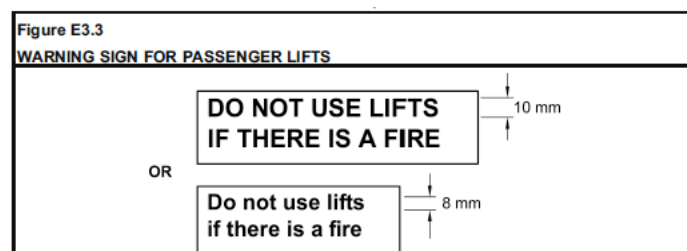
E3.2

A stretcher facility is required to be provided in each emergency lift required by E3.4.

A stretcher facility must accommodate a raised stretcher with a patient lying on it horizontally by providing a clear space not less than 600mm wide x 2000mm long x 1400mm high above the floor level.

E3.3

A warning sign must be displayed where it can be readily seen near every call button for a passenger lift and comply with the details and dimensions of Figure E3.3 of the BCA.



- E3.4 At least one emergency lift must be installed in accordance with the following -
- (i) Be contained within a fire resisting shaft in accordance with C2.10 (i.e. FRL 120/120/120); and
 - (ii) An emergency lift may be combined with a passenger lift and must serve those storeys served by the passenger lift so that all storeys of the building served by passenger lifts are served by at least one emergency lift.
 - (iii) Where two or more passenger lifts are installed and serve the same storeys, excluding a lift that is within an atrium and not contained wholly within a shaft –
 - At least two emergency lifts must be provided to serve those storeys; and
 - If located within different shafts, at least one emergency lift must be provided in each shaft.

- E3.7 Each lift proposed within the building must be provided with –
- (i) A fire service recall control switch complying with E3.9; and
 - (ii) A lift car fire service drive control switch complying with E3.10.

- E3.9
- (i) Each group of lifts must be provided with one fire service recall control switch required by E3.7 that activates the fire service recall operation at (v) below. The switch must—
 - a. be located at the landing nominated by the appropriate authority; and
 - b. be labelled "FIRE SERVICE" in indelible white lettering on a red background; and
 - c. have two positions with an "OFF" and an "ON" position identified; and
 - d. be operable only by the use of a key that is removable in either the "OFF" position or the "ON" position.
 - (ii) Adhesive labels must not be used for compliance with (i)(b) and (i)(c).
 - (iii) The key in (i)(d) must be able to turn all fire service recall control switches in the building and must have a different key combination to other keys used for lifts in the building.
 - (iv) The fire service recall operation must be activated by—
 - a. switching the fire service recall control switch in (a) to "ON"; or
 - b. a signal from a fire management system approved by the appropriate authority.

E3.9
Cont'd

- (v) The activation of the fire service recall operation at (iv) must—
 - a. cancel all registered car and landing calls; and
 - b. inactivate all door reopening devices that may be affected by smoke; and
 - c. ensure lift cars travelling toward the nominated floor continue to the nominated floor without stopping; and
 - d. ensure lift cars travelling away from the nominated floor stop at or before the next available floor without opening the doors (either automatically or by the door open button), reverse direction and travel without stopping to the nominated floor; and
 - e. for lifts stopped at a floor other than the nominated floor, close the doors and travel without stopping to the nominated floor; and
 - f. ensure that lifts stay at the nominated floor with doors open; and
 - g. permit all lifts to return to normal service if the fire service recall control switch at (a) is switched to the "OFF" position during or after the fire service recall operation.
- (vi) The requirements of (v) do not apply to lifts on inspection service or when the lift car fire service control switch required by E3.10 is in the "ON" position.
- (vii) Lifts having manual controls must signal an alert to the lift for the lift to return to the nominated floor containing the recall switch that activated the signal.

E3.10

- (i) The lift car fire service drive control switch required by E3.7 must be activated from within the lift car. The switch must—
 - a. be located between 600 mm and 1500 mm above the lift car floor; and
 - b. be labelled "FIRE SERVICE" by indelible white lettering on a red background; and
 - c. have two positions with an "OFF" and an "ON" position identified; and
 - d. operate only by the use of a key that is removable in either the "OFF" position or the "ON" position.
- (ii) Adhesive labels must not be used for compliance with (i)(b) or (i)(c).

E3.10
Cont'd

- (iii) When the lift car fire service drive control switch at (a) is turned to the "ON" position, the lift must—
 - a. not respond to the fire service recall control switch; and
 - b. cancel all registered lift car and landing calls; and
 - c. override all lift car call access control systems; and
 - d. inactivate all door reopening devices that may be affected by smoke; and
 - e. allow the registration of lift car call by lift car call buttons, however the lift doors must not close in response to the registration of lift car calls; and
 - f. activate door closing by constant pressure being applied on the "door close" button unless the button is released before the doors are fully closed, in which case the doors must re-open and any registered lift car calls must be cancelled; and
 - g. when the doors are closed, move the lift in response to registered lift car calls while allowing additional lift car calls to also be registered; and
 - h. travel to the first possible floor in response to registered lift car calls and cancel all registered lift car calls after the lift stops; and
 - i. ensure doors do not open automatically, rather by constant pressure being applied on the "door open" button unless the button is released before the doors are fully open, in which case the doors must re-close; and

the requirements of (iii)(a) to (iii)(i) do not apply to a lift operating on inspection service.
- (iv) A multi-deck lift installation must have systems in place that—
 - a. are able to communicate to the fire officer that the fire service drive control switch will not operate until all decks have been cleared of passengers; and
 - b. ensure there is an appropriate method of clearing all deck landings of passengers; and
 - c. maintain all doors to deck landings not containing the fire service control switch closed and inoperative while the lift is on fire service drive control

E4.2 Emergency lighting complying with AS2293.1-2018 is required to be installed throughout.

E4.5 Exit signage complying with AS2293.1-2018 are required installed above or adjacent to any doorways serving as required exits from the building and final doors from stairways.

E4.6 If an exit is not readily apparent to persons occupying or visiting either the building, then exit signs complying with AS2293.1-2018 are required to be installed in appropriate positions in corridors, hallways, lobbies and the like, indicating the direction to a required exit.

E4.9 An emergency warning and intercom system complying with AS1670.4-2018 must be installed throughout each building.

4.6 Section F – Health and Amenity

F1.0 Weatherproofing of external wall(s) are required to comply with Verification Method FV1 (i.e. certificate of conformity). There are no Deemed-to-Satisfy Provisions for this Performance Requirement in respect of external walls.

F1.1	Stormwater drainage must comply with AS/NZS3500.3-2018.
F1.4	Waterproofing membranes for external above ground use (i.e. balconies and roof) are required to comply with AS4654-2012 Parts 1 and 2.
F1.5	<p>A roof must be covered with —</p> <ul style="list-style-type: none"> (i) Concrete roofing tiles complying with AS 2049 and fixed, except in cyclonic areas, in accordance with AS 2050, as appropriate; or (ii) terracotta roofing tiles complying with AS 2049 and fixed, except in cyclonic areas, in accordance with AS 2050; (iii) cellulose cement corrugated sheeting complying with AS/NZS 2908.1 and installed in accordance with AS/NZS 1562.2; or (iv) metal sheet roofing complying with AS 1562.1; or (v) plastic sheet roofing designed and installed in accordance with AS/NZS 4256.1, AS/NZS 4256.2, AS/NZS 4256.3, AS/NZS 4256.5 and AS/NZS 1562.3; or (vi) Terracotta, fibre-cement and timber slates and shingles designed and installed in accordance with AS 4597, except in cyclonic areas.
F1.6	Any sarking-type materials used for weatherproofing of roofs and walls are required to comply with AS/NZS4200.1-2017 and AS4200.2- 2017 incorporating amendment 1.
F1.7	Building elements in wet areas must be water-resistant or waterproof in accordance with Table F1.7 and comply AS 3740-2010.
F1.9	Where a damp-proof course is provided, it must consist of a material that complies with AS/NZS2904 or impervious sheet material in accordance with AS3660.1.
F1.10	A floor laid directly onto ground or fill must be provided with a vapour barrier complying with AS2870-2011.
F1.11	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.
F1.13	The glazed assemblies in an external wall must comply with AS2047-2014 (amendments 1 and 2) for resistance to water penetration.

F2.1

Each residential sole occupancy unit must be provided with –

- (i) a kitchen sink and facilities for the preparation and cooking of food; and
- (ii) a bath or shower; and
- (iii) a closet pan; and
- (iv) a washbasin.

For laundry facilities, provide either—

- (i) in each sole-occupancy unit—
 - a. clothes washing facilities, comprising at least one washtub and a space for a washing machine; and
 - b. 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
- (iii) a separate laundry for each 4 sole-occupancy units, or part thereof, that must comprise—
 - a. clothes washing facilities, comprising at least one washtub and a space for a washing machine; and
 - b. 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.

F2.3

The proposed class 9b childcare centre must be provided with –

- (i) a kitchen or food preparation area with a kitchen sink, separate hand washing facilities, space for a refrigerator and space for cooking facilities, with –
 - (A) the facilities protected by a door or gate with child proof latches to prevent unsupervised access to the facilities by children younger than 5 years old; and
 - (B) the ability to facilitate supervision of children from the facilities if the early childhood centre accommodates children younger than 2 years old; and
- (ii) one bath, shower or shower-bath; and
- (iii) if the centre accommodates children younger than 3 years old—
 - (A) a laundry facility comprising a washtub and space in the same room for a washing machine; and
 - (B) a bench type baby bath, which is within 1 m of the nappy change bench; and
 - (C) a nappy changing bench which—
 - (aa) is within 1 m of separate adult hand washing facilities and bench type baby bath; and
 - (bb) must be not less than 0.9 m² in area and at a height of not less than 850 mm, but not more than 900 mm above the finished floor level; and
 - (cc) must have a space not less than 800 mm high, 500 mm wide and 800 mm deep for the storage of steps; and
 - (dd) is positioned to permit a staff member changing a nappy to have visibility of the play area at all times.

F2.3
Cont'd Regarding the proposed retail tenancies, the use of the retail spaces on the ground floor are not yet known as it will be subject to a future planning approval and hence a determination into required sanitary facilities cannot be undertaken.

Notwithstanding the above, the required number of sanitary facilities is to be in accordance with Table F2.3 of the BCA.

F2.5 The door to a full enclosed sanitary compartment is required to:

- (i) Open outwards;
- (ii) Slide; or
- (iii) Be readily removable from the outside of the sanitary compartment (i.e. lift-off hinges),

unless there is a clear space of at least 1.2m between the closest pan within the sanitary compartment and the hinge side edge of the doorway.

In an early childhood centre, facilities for use by children must have each sanitary compartment screened by a partition which, except for the doorway, is opaque for a height of at least 900 mm but not more than 1200 mm above the floor level.

F3.1 The required unobstructed ceiling heights throughout the building are as follows-

Class 2 Parts

- (i) A corridor, passageway or the like – 2.1m;
- (ii) A bathroom, sanitary compartment, store room, car parking area or the like – 2.1m;
- (iii) A residential kitchen, laundry or the like – 2.1m;
- (iv) A habitable room in a residential SOU excluding a kitchen – 2.4m;
- (v) Above a stairway, ramp, landing or the like – 2m;

Class 7a Parts

- (i) Carparking areas, store room or the like – 2.1m;
- (ii) Above a stairway, ramp, landing or the like – 2m.

F4.1 Natural light must be provided to all habitable rooms.

Methods of providing natural light is to be in accordance with Clause F4.2.

F4.2	<p>All habitable rooms are required to have natural lighting provided by either –</p> <ul style="list-style-type: none"> (i) Window(s) having a light transmitting area of not less than 10% of the floor area of the room, which 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 light(s) having a light transmitting area of not less than 3% of the floor area of the room and open to the sky; (iii) Natural light might be provided by borrowing light from an adjoining room, in accordance with the requirements of Clause F4.3.
F4.4	<p>Artificial lighting in accordance with AS/NZS1680.0 must be provided —</p> <ul style="list-style-type: none"> (i) In required stairways, passageways and ramps; and (ii) If natural lighting equivalent to the requirements of F4.2 is not available, to all rooms frequently occupied, all spaces required to be accessible; corridors, lobbies and similar circulation spaces and paths of egress.
F4.5	<p>Any habitable room, sanitary compartment, bathroom, laundry and any other room occupied by a person for any purpose must have either:</p> <ul style="list-style-type: none"> (i) Natural ventilation (i.e. opening(s) having an openable area of 5% of the room being served) complying with F4.6; or (ii) Mechanical ventilation complying with AS1668.2-2012 (amendment 2).
F4.6	<p>Natural ventilation must consist of openings, windows, doors or other devices which can be opened with a ventilating area not less than 5% of the floor area of the room required to be ventilated.</p> <p>Natural ventilation may be provided by borrowing ventilation from an adjoining room in accordance with the requirements of Clause F4.7.</p>
F4.8	<p>Sanitary compartments must not open directly into -</p> <ul style="list-style-type: none"> (i) a kitchen or pantry; or (ii) a public dining room or restaurant; or (iii) a workplace normally occupied by more than one person.
F4.9	<p>If a sanitary compartment is prohibited under F4.8 from opening directly to another room -</p> <ul style="list-style-type: none"> (i) in a sole-occupancy unit in a Class 2 building— <ul style="list-style-type: none"> a. access must be by an airlock, hallway or other room; or b. the sanitary compartment must be provided with mechanical exhaust ventilation; and (ii) in the Class 6 parts – <ul style="list-style-type: none"> a. access must be by an airlock, hallway or other room with a floor area of not less than 1.1 m² and fitted with self-closing doors at all access doorways; or b. the sanitary compartment must be provided with mechanical exhaust ventilation and the doorway to the room adequately screened from view.

F4.11	<p>The carpark levels must have –</p> <ul style="list-style-type: none"> (i) A system of mechanical ventilation complying with AS1668.2; or (ii) A system of natural ventilation complying with Section 4 of AS1668.4.
F4.12	<p>Where provided, a commercial kitchen must be provided with a kitchen exhaust hood complying with AS1668.1 and AS1668.2 where –</p> <ul style="list-style-type: none"> (a) any cooking apparatus has— <ul style="list-style-type: none"> (i) a total maximum electrical power input exceeding 8 kW; or (ii) a total gas power input exceeding 29 MJ/h; or (b) the total maximum power input to more than one apparatus exceeds— <ul style="list-style-type: none"> (i) 0.5 kW electrical power; or (ii) 1.8 MJ/hour gas, per m² of floor area of the room or enclosure.
F5.4	<p>A floor must have an $R_w + C_{tr}$ (airborne) of not less than 50 and an $L_{n,w+C1}$ (impact) not more than 62 where it separates:</p> <ul style="list-style-type: none"> (i) sole-occupancy units; or (ii) a sole-occupancy unit from a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification.
F5.5	<p>Internal walls are required to be constructed as follows -</p> <ul style="list-style-type: none"> (i) The walls that separate sole-occupancy units must have an $R_w + C_{tr}$ (airborne) of not less than 50; (ii) The walls that separate sole-occupancy units from public corridors, internal exit stairways, lifts, other rooms or the like and different classifications require an R_w (airborne) of not less than 50; (iii) Be of discontinuous construction if the wall separates a bathroom, sanitary compartment, laundry or kitchen in a sole-occupancy unit from a habitable room (other than a kitchen in an adjoining unit) or lift shaft; (iv) Doorways providing access to sole-occupancy units from public corridors must have an R_w of not less than 30; and (v) A wall required to have a sound insulation must be constructed such that the wall continues to the underside of: <ul style="list-style-type: none"> ▪ The floor above; ▪ A ceiling having the same sound insulation required for the wall; and ▪ The underside of the roof above. (vi) Services must not be chased into concrete or masonry elements.
F5.6	<p>Any duct, soil, stormwater, 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 (1) sole-occupancy unit, the duct or pipe must be separated from the rooms of any sole-occupancy unit by construction with an $R_w + C_{tr}$ (airborne) not less than -</p> <ul style="list-style-type: none"> (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.

F5.7 A flexible coupling must be used at the point of connection between the service pipes in a building and any circulating or other pump.

F6.2 Where a pliable building membrane is installed in an external wall, it must comply with the requirements of this clause.

Where a pliable membrane is not installed in an external wall, the primary water control layer must be separated from water sensitive materials by a drained cavity

F6.3 An exhaust system installed in a kitchen, bathroom, sanitary compartment or laundry must be installed to comply with the requirements of this clause.

F6.4 Where an exhaust system is installed in a kitchen, bathroom, sanitary compartment or laundry and discharges directly or via a shaft or duct into a roof space, the roof space must be ventilated to outdoor air through evenly distributed openings in accordance with the requirements of this clause.

4.7 Section G – Ancillary Provisions

G1.101 The windows located three (3) or more storeys above the street level shall be able to be cleaned from wholly within the building or by a method complying with Work Health and Safety Act 2011 and Regulations made under the Act.

G5.2 If the class 2 building is located within a designated bushfire prone area, the building must comply with the following -

- (i) AS 3959 except—
 - c. as amended by Planning for Bush Fire Protection; and
 - d. for Section 9 Construction for Bushfire Attack Level FZ (BAL-FZ). Buildings subject to BAL-FZ must comply with specific conditions of development consent for construction at this level; or
- (iii) the requirements of (i) above as modified by the development consent following consultation with the NSW Rural Fire Service under section 4.14 of the Environmental Planning and Assessment Act 1979 if required; or
- (iv) the requirements of (i) above as modified by development consent with a bushfire safety authority issued under section 100B of the Rural Fires Act 1997 for the purposes of integrated development.

5.0 CONCLUSION

5.1 General

Based upon our detailed review of the proposed architectural drawings, it is the opinion of this office that the subject development is capable of complying with the performance provisions of the BCA.

Compliance would be achieved via a mixture of adopting a performance-based approach as well as complying with the relevant deemed-to-satisfy requirements as outlined within the BCA, compliance via the performance-based approach could occur without significant changes to the proposed design.

The details of the proposed performance solutions are subject to the outcome of the fire engineering brief and analysis which will be carried out in accordance with the International Fire Engineering Guidelines.

The performance solutions for the building will be developed as part of the ongoing design and consultation with the design team.

Report By

A handwritten signature in black ink, appearing to read 'NH', with a horizontal line extending to the right.

Nicolas Hurtado

Senior Associate

For Design Confidence (Sydney) Pty Ltd

APPENDIX 1 – DOCUMENTATION PROVIDED FOR ASSESSMENT

This accessibility assessment was based upon the architectural documentation prepared by Stanistic Architects, namely—

DRAWING	TITLE	REVISION	DATE
CD 0005	SITE PLAN	A	30.09.2021
CD 1001	CONCEPT ENVELOPE PLAN	A	30.09.2021
CD 1002	CONCEPT ENVELOPE NORTH + WEST ELEVATIONS	4	03.09.2021
CD 1003	CONCEPT ENVELOPE SECTION AA + BB	A	30.09.2021
CD 2001	BASEMENT 2 PLAN	A	30.09.2021
CD 2002	BASEMENT 1 PLAN	A	30.09.2021
CD 2003	LEVEL 1 (G) PLAN	A	30.09.2021
CD 2004	LEVELS 2-4 PLAN	A	30.09.2021
CD 2005	LEVEL 5 PLAN	A	30.09.2021
CD 2006	LEVEL 6 PLAN	A	30.09.2021
CD 2007	LEVEL 7 PLAN	A	30.09.2021
CD 2008	LEVEL 8 PLAN	A	30.09.2021
CD 2009	ROOF PLAN	A	30.09.2021

APPENDIX 2 – FIRE RESISTANCE LEVELS

The Table below represents the Fire Resistance Levels (FRLs) required in accordance with BCA 2019 Amendment 1:

Table A2.1 – Type A construction: FRL of building elements

BUILDING ELEMENT	CLASS OF BUILDING — FRL: (IN MINUTES)			
	/INTEGRITY/INSULATION			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any <i>fire-source feature</i> to which it is exposed is—				
<i>For loadbearing parts—</i>				
less than 1.5 m	90/ 90/ 90	120/120/120	180/180/180	240/240/240
1.5 to less than 3 m	90/ 60/ 60	120/ 90/ 90	180/180/120	240/240/180
3 m or more	90/ 60/ 30	120/ 60/ 30	180/120/ 90	240/180/ 90
<i>For non-loadbearing parts—</i>				
less than 1.5 m	–/ 90/ 90	–/120/120	–/180/180	–/240/240
1.5 to less than 3 m	–/ 60/ 60	–/ 90/ 90	–/180/120	–/240/180
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN not incorporated in an <i>external wall</i> , where the distance from any <i>fire-source feature</i> to which it is exposed is—				
less than 3 m	90/–/–	120/–/–	180/–/–	240/–/–
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS—	90/ 90/ 90	120/120/120	180/180/180	240/240/240
INTERNAL WALLS—				
<i>Fire-resisting lift and stair shafts—</i>				
<i>Loadbearing</i>	90/ 90/ 90	120/120/120	180/120/120	240/120/120
<i>Non-loadbearing</i>	–/ 90/ 90	–/120/120	–/120/120	–/120/120
<i>Bounding public corridors, public lobbies and the like—</i>				
<i>Loadbearing</i>	90/ 90/ 90	120/–/–	180/–/–	240/–/–
<i>Non-loadbearing</i>	–/ 60/ 60	–/–/–	–/–/–	–/–/–
<i>Between or bounding sole-occupancy units—</i>				
<i>Loadbearing</i>	90/ 90/ 90	120/–/–	180/–/–	240/–/–
<i>Non-loadbearing</i>	–/ 60/ 60	–/–/–	–/–/–	–/–/–
<i>Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion—</i>				
<i>Loadbearing</i>	90/ 90/ 90	120/ 90/ 90	180/120/120	240/120/120
<i>Non-loadbearing</i>	–/ 90/ 90	–/ 90/ 90	–/120/120	–/120/120
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

Table A2.2 REQUIREMENTS FOR CARPARKS

BUILDING ELEMENT		FRL (NOT LESS THAN) / ESA/M (NOT GREATER THAN)
Wall		
(a)	<i>external wall</i>	
	(i) less than 3 m from a <i>fire-source feature</i> to which it is exposed:	
	Loadbearing	60/60/60
	Non-loadbearing	-/60/60
	(ii) 3 m or more from a <i>fire-source feature</i> to which it is exposed	-/-/-
(b)	<i>internal wall</i>	
	(i) <i>loadbearing</i> , other than one supporting only the roof (not used for carparking)	60/-/-
	(ii) supporting only the roof (not used for carparking)	-/-/-
	(iii) <i>non-loadbearing</i>	-/-/-
(c)	<i>fire wall</i>	
	(i) from the direction used as a <i>carpark</i>	60/60/60
	(ii) from the direction not used as a <i>carpark</i>	as required by Table 3
Column		
(a)	supporting only the roof (not used for carparking) and 3 m or more from a <i>fire-source feature</i> to which it is exposed	-/-/-
(b)	steel column, other than one covered by (a) and one that does not support a part of a building that is not used as a <i>carpark</i>	60/-/- or 26 m ² /tonne
(c)	any other column not covered by (a) or (b)	60/-/-
Beam		
(a)	steel floor beam in continuous contact with a concrete floor slab	60/-/- or 30 m ² /tonne
(b)	any other beam	60/-/-
Fire-resisting lift and stair shaft (within the <i>carpark</i> only)		60/60/60
Floor slab and vehicle ramp		60/60/60
Roof (not used for carparking)		-/-/-
Notes:	1.	ESA/M means the ratio of exposed surface area to mass per unit length.
	2.	Refer to Specification E1.5 for special requirements for a sprinkler system in a <i>carpark</i> complying with Table 3.9 and located within a multi-classified building.

APPENDIX 3 – FIRE HAZARD PROPERTIES

The table below represents the required fire hazard properties for building materials applicable to this development in accordance with BCA 2019 Amendment 1.

Table A3.1 – Fire hazard properties

FLOOR LININGS AND FLOOR COVERINGS CRITICAL RADIANT FLUX (CRF IN KW/M2)	
Sprinkler Protected Areas (other than FPAA101D or FPAA101H systems)	1.2
Fire-Isolated Exits & Fire Control Rooms	2.2
Lift Cars	2.2
WALL LININGS AND CEILING LININGS TESTED TO AS5637.1	
GENERAL	
Fire-Isolated Exits & Fire Control Rooms	Group 1
Lift Cars	Group 1 or 2
CLASS 2 PARTS	
Public Corridors – Walls	Group 1, 2 or 3
Public Corridors – Ceilings	Group 1, 2 or 3
Specific Areas – Walls	Group 1, 2 or 3
Specific Areas – Ceilings	Group 1, 2 or 3
Other Areas – Walls	Group 1, 2 or 3
Other Areas – Ceilings	Group 1, 2 or 3
CLASS 6, 7A & 9B PARTS	
Public Corridors – Walls	Group 1, 2 or 3
Public Corridors – Ceilings	Group 1, 2 or 3
Specific Areas – Walls	Group 1, 2 or 3
Specific Areas – Ceilings	Group 1, 2 or 3
Other Areas – Walls	Group 1, 2 or 3
Other Areas – Ceilings	Group 1, 2 or 3
OTHER MATERIALS OR ASSEMBLIES	
Fire-Isolated Exits & Fire Control Rooms	Spread-of Flame Index 0 Smoke-Developed Index 2
Non-fire-isolated stairs & escalators and auditorium fixed seating	Spread-of Flame Index 0 Smoke-Developed Index 5
Sarking-type material	Flammability Index 0 (fire control rooms) Flammability Index 5 (other areas)
Other materials	Spread-of Flame Index 9 Smoke-Developed Index 8 (if the Spread-of Flame Index is more than 5)

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