GARTNER TROVATO ARCHITECTS

BCA ASSESSMENT REPORT

25-27 Kevin Avenue, Avalon

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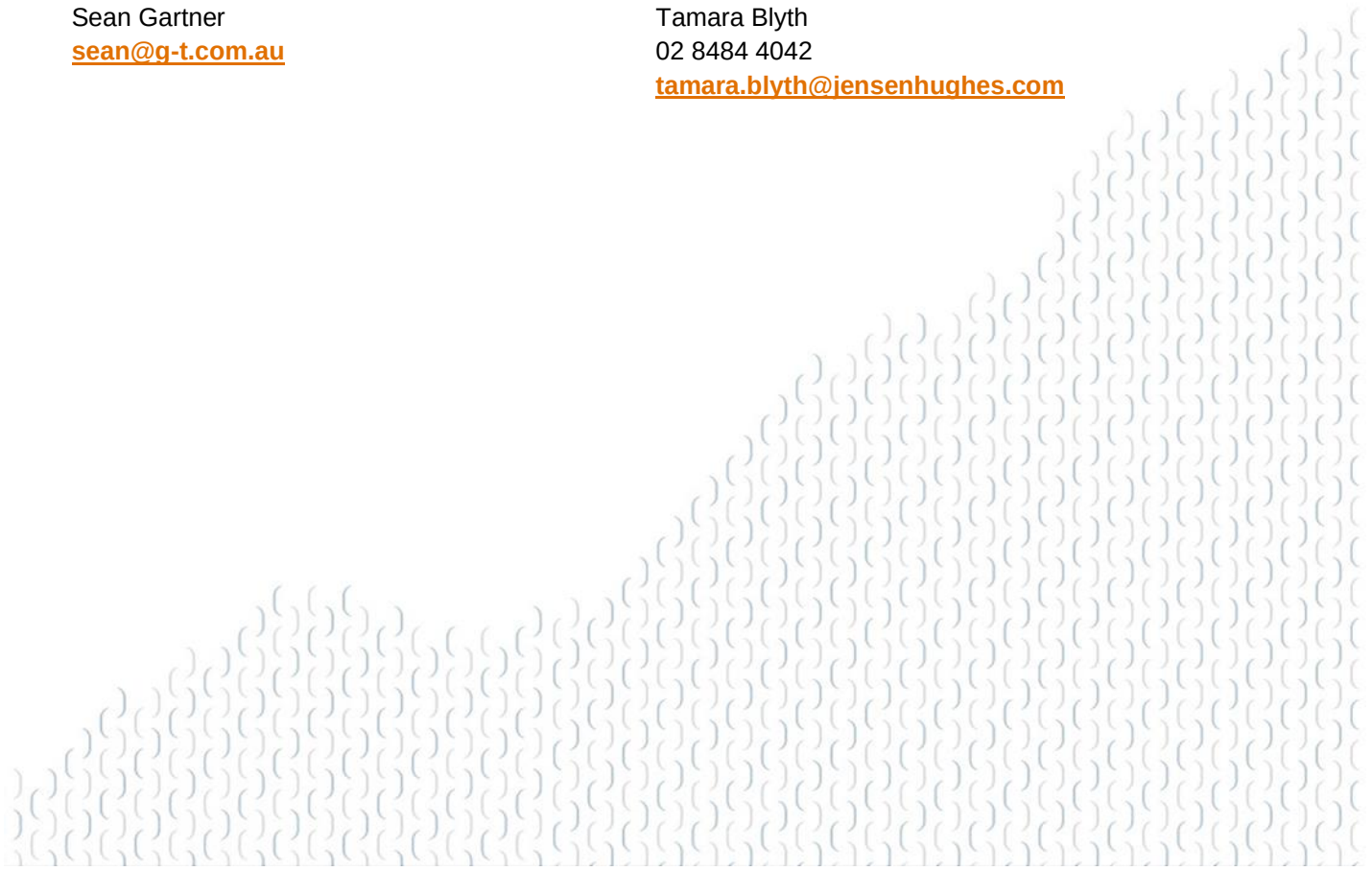

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Our story begins in 1997 with the founding of BCA Logic to fulfill the demand of a consultancy company whose expertise expanded across the entire life cycle of a building, from consulting on the initial planning through to construction and occupation.

BCA Logic, SGA Fire and BCA Energy joined Jensen Hughes in 2021, a leading global, multi-disciplinary engineering, consulting and technology firm focused on safety, security and resiliency. We continue to be at the forefront of our industry and work thoroughly to preserve our position by ensuring the successful delivery of projects.

Jensen Hughes was launched in 2014 through the historic merger of Hughes Associates and Rolf Jensen & Associates (RJA), two of the most experienced and respected fire protection engineering companies at the time. Since then, we have gained market leadership in nuclear risk consulting and established commanding positions in areas like forensic engineering, security risk consulting and emergency management. Over the past 22 years, our integration of more than 30 privately held engineering and consulting firms has dramatically expanded our global footprint, giving us a powerful market presence ten times larger than our nearest competitor in some of our markets and extending our historical lineage back to 1939.

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Executive summary

This document provides an assessment of the architectural design drawings for the proposed Residential development at 25-27 Kevin Avenue, Avalon Beach against the Deemed-to-Satisfy provisions of the Building Code of Australia (BCA) 2022, Volume 1.

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

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

Item	Description	BCA Provision
Performance Solutions Required		
1.	The distance to an exit or point of choice exceeds the prescriptive requirements of BCA Clause D2D5; > Level 1 – The distance to an exit measures 7.1m in lieu of 6m.	D2D5
2.	Alternative exits on Basement Level are located less than 9m apart.	D2D6
3.	Discharge points for alternative exits on Basement Level are not located as far apart as practical.	D2D15
4.	***Consideration Required*** Electric Vehicle (EV) car parking is noted to be provided to the car parking spaces on Basement Level. The provision of EV charging stations presents a special hazard within the building and is required to be assessed by the project fire engineer.	E1D17
Building Code of Australia Compliance Matters to be Addressed		
1.	Class 2 foyer on Basement Level is to be separated from Class 7a carparking area. Drawings to be developed to detail 120min fire rated separation.	C3D9
Further Information Required		
1.	Provision of spandrel panels to be detailed in accordance with the requirements of clause C3D7 of the BCA to protect opening on different storeys of the building.	C3D7
2.	A 1m wide delineated pathway is to be marked and identified on the architectural drawings for occupants egressing from the basement to the street via the vehicular ramp.	D2D15
3.	Locations of essential fire services including Fire Hydrants, Fire Hose Reels and Portable Fire Extinguishers to be nominated on drawings to allow assessment to be undertaken.	E1D2, E1D3, E1D14

1.0 Adoption of BCA 2022

1.1 PROPOSED INTRODUCTION

As of 26 August 2022, the ABCB have advised to introduce the National Construction Code (NCC), Volume One, Building Code of Australia (BCA) 2022 on 1 May 2023. BCA2022 is proposing some major changes to Condensation Management, Energy Efficiency, and the introduction of Livable Housing Design.

Building Ministers agreed to publish NCC 2022 on 1 October 2022. The full and final version of NCC 2022, in its entirety, is live on **NCC online**. The pdf files will be released close to the new NCC adoption date.

The States and Territories will bring the majority of NCC 2022 into full effect from 1 May 2023, to allow industry time to learn and adapt to the new requirements.

There will also be transition periods for specific requirements. These include:

- New livable housing requirements, new energy efficiency and condensation mitigation requirements – 1 October 2023
- New low lead in plumbing product requirements – 1 September 2025.

These provisions of NCC 2019.1 will be considered mandatory until 1 May 2023.

1.2 MAJOR CHANGES KNOWN TO DATE

Below is a summary of the proposed changes which were released in the May draft preview. We have also provided a table below for quick reference. Your project has been assessed against the proposed changes where applicable.

Livable housing

Note: NSW have advised that the livable housing provisions will not be adopted at this time as a result of the impact of the pandemic, rising interest rates and stability of the current housing market. This could change at any time in the future.

Volumes One and Two contain new livable housing requirements for Class 1a buildings (houses and townhouses) and Class 2 sole-occupancy units (individual apartments). This puts in place features based on the Livable Housing Design Guidelines silver standard, with a voluntary gold standard also available for features over and above silver.

Consistent volume structure

BCA2022 uses a new structure and clause referencing system to create better consistency across all volumes. While the new Section-Part-Type-Clause system makes the NCC look different at first, it's intended to improve user experience and make it more web accessible.

The new structure results in a reorganisation of specifications and parts, some of which are contained in the table below.

Early childhood centres

There are new deemed-to-satisfy (DTS) Provisions for early childhood centres in Volume One. Most of these are extra requirements to address the difficulties associated with evacuating young occupants from the upper levels of multi-storey buildings; but some requirements apply for all early childhood centres.

Fire safety of external walls

Volume One contains a number of amendments to the fire safety of external walls. This clarifies interpretation of concessions from non-combustibility requirements. Also included is a new provision that prevents fixing of certain bonded laminated cladding panels by adhesive only.

Waterproofing

There are new DTS Provisions in Volume Two for waterproofing of wet areas, not previously covered by an acceptable construction practice or manual.

Waterproofing in Volume One is restructured into three parts to enhance readability and accommodate future changes.

Weatherproofing

Volume One contains additional DTS Provisions, providing new solutions for weatherproofing of external walls. These include references to weatherproofing provisions in Australian Standards for masonry, autoclaved aerated concrete and metal wall sheeting.

Falls for floor wastes

Volumes One and Two are amended to require bathrooms and laundries where a floor waste is installed, to have a fall of the floor in order to help drain the surface. This also applies to floor wastes included voluntarily.

Number of exits

Some minor amendments to the required number of exits are in Volume One. This includes a new concession allowing a single exit for a part of a storey in some circumstances, where previously at least two exits were required.

1.3 SUMMARY OF MAJOR CHANGES

Summary of Major Changes		
Clause Reference		**Description of proposed changes**
BCA 2019	**BCA2022**	
C1.9	C2D10	**Non-combustible building elements** Further exemptions to the non-combustible requirements of external walls added. Larger list of materials that can be used where non-combustible materials are required.
-	C2D15	**Fixing of Bonded Laminated Cladding panels**
C2.5	C3D6	Fire separation of **early childhood centres** and requirement for 2 fire compartments per storey.
D1.2	D2D3	**Number of Exits** + Ground floor can be provided with a single exit in lieu of 2 + 2 exits required from each storey and each fire compartment of an **early childhood centre**

D1.6	D2D7 – D2D11	**Dimensions of Exits** Clause split into multiple clauses
D1.11	D2D16	**Horizontal Exits** – New provisions relating to early childhood centres
D2.16	D3D17 - D3D21	**Barrier** clause split into multiple clauses
E1.5	E1D4 - E1D13	**Sprinkler** requirements split into separate clauses for each building class.
E2.2	E2D3 – E2D21	General Requirements – **Smoke Hazard Management** Tables removed and replaced with clauses for each building class
F1.7	Part F2	**Wet Area and Overflow Prevention**
F1.11	F2D4	**Floor wastes –** floor must be graded with a minimum fall of 1:80
FP1.4	Part F3	**Roof and Wall Cladding** Introduces DTS provisions for walls and roofs in lieu of the previous BCA requiring performance solutions for all weatherproofing
-	G7	**Livable housing design**
H1.1	Part I1	**Class 9b Building**
H2.1	Part I2	**Public Transport Buildings**
H3.1	Part I3	**Farm Buildings and Farm Sheds**

2.0 Basis of Assessment

2.1 LOCATION AND DESCRIPTION

The building development, the subject of this report, is located at 25-27 Kevin Avenue, Avalon Beach NSW 2107. The building comprises of one (1) storeys of basement carparking and associated waste and services rooms, beneath two (2) storeys of residential sole-occupancy units. Vehicular and pedestrian access is provided from Kevin Avenue.

FRONT VIEW AERIAL 01

2.2 PURPOSE

The purpose of this report is to assess the current design proposal against the Deemed-to-Satisfy Provisions of BCA 2022, and to clearly outline those areas (if any) where compliance is not achieved, where areas may warrant redesign to achieve strict BCA compliance or where areas may be able to be assessed against the relevant performance criteria of BCA 2022. Such assessment against relevant performance criteria will need to be addressed by means of a separate Performance Based Fire Safety Engineered Assessment Report to be prepared under separate cover.

2.3 BUILDING CODE OF AUSTRALIA

This report is based on the Deemed-to-Satisfy Provisions of the National Construction Code Series Volume 1 – Building Code of Australia, 2022 (BCA) incorporating the State variations where applicable. Please note that the version of the BCA applicable to new building works is the version applicable at the time of the lodgement of the Construction Certificate application to the Accredited Certifying Authority. The BCA is updated generally on a three-yearly cycle, starting from the 1st of May 2016.

2.4 LIMITATIONS

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

1. the structural adequacy or design of the building;

2. the inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and
3. the design basis and/or

This report does not include, or imply compliance with:

1. the National Construction Code – Plumbing Code of Australia Volume 3
2. the Disability Discrimination Act 1992 including the Disability ((Access to Premises – Buildings) Standards 2010 – unless specifically referred to), (Note: The provision of disabled access to the subject development has been assessed against the deemed to satisfy provision of Part D3 and F2.4 of BCA2022 only);
3. Demolition Standards not referred to by the BCA;
4. Work Health and Safety Act 2011;
5. Requirements of Australian Standards unless specifically referred to;
6. Requirements of other Regulatory Authorities including, but not limited to, Telstra, Telecommunications Supply Authority, Water Supply Authority, Electricity Supply Authority, Work Cover, Roads and Maritime Services (RMS), Local Council, ARTC, Department of Planning and the like; and
7. Conditions of Development Consent issued by the Local Consent Authority.

2.5 DESIGN DOCUMENTATION

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

3.0 Building Description

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

3.1 RISE IN STOREYS (CLAUSE C2D3)

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

3.2 CLASSIFICATION (CLAUSE A6G1)

The building has been classified as follows.

Table 1: Building Classification

Class	Level	Description
Class 7a	Basement Level	Carparking and services rooms
Class 2	Ground Level – Level 02	Residential sole-occupancy units

3.3 EFFECTIVE HEIGHT (CLAUSE A1G4)

The building has an *effective height* of 10.815m (RL 31.00 – RL 20.185) less than 12 metres.

3.4 TYPE OF CONSTRUCTION REQUIRED (TABLE C2D2)

The building is required to be of Type A Construction.

3.5 FLOOR AREA AND VOLUME LIMITATIONS (TABLE C3D3)

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

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

3.6 FIRE COMPARTMENTS

The following *fire compartments* have been assumed:

1. The basement carpark associated void and Class 2 Foyer form a single fire compartment. Refer C3D9 for further commentary.
2. Groups of SOUs on each floor form a single fire compartment.

3.7 EXITS

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

1. Basement Level exits via the vehicular ramp and Fire Isolated passageway with direct connection to road or open space.
2. Ground level exits via a stair and pathway providing connection to road or open space.
3. Level 1 exits via a stair and pathway providing connection to road or open space.
4. Level 2 exits via a required non fire isolated stair travelling to Level 1 exits via a stair and pathway providing connection to road or open space.

3.8 CLIMATE ZONE (SCHEDULE 1)

The building is located within Climate Zone 5

3.9 LOCATION OF FIRE-SOURCE FEATURES

The fire source features for the subject development are:

North: The side property boundary (>3m)

South: The side property boundary (>3m)

East: The rear property boundary (>3m)

West: The far boundary of Kevin Avenue (>6m)

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

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

b. is neither transparent nor translucent.

4.0 BCA Assessment

4.1 INTRODUCTION

The assessment undertaken is in relation to the plans prepared for the development consent application. The technical details required for a development consent are far less than that required for a construction certificate and as such, this assessment is designed to address a higher level assessment of the building against the provisions of the BCA.

The main purpose of this report is to address any major design changes required to the building, services required to be installed, and the fundamentals of design required by sections C, D, E, F, G and H (where applicable) of the BCA. This report does not address the design requirements for the structure of the building (Section B), or for the detailed design of services (Section E).

The summary below is to be read in conjunction with the BCA specification contained in Annexure E of the report.

4.2 RELATIONSHIP TO THE DESIGN AND BUILDING PRACTITIONERS ACT

The Design and Building practitioners Act requires certain specified design to be certified by a Registered Practitioner and the issuing of a Design Compliance Declaration (DCD). The declared designs include:

+ Structure
+ Building Enclosure (eg Façade);
+ Fire Safety Systems (eg services, egress and FRL's)
+ Waterproofing
+ Fire Safety performance solutions

This report contains an assessment of the plans and specifications available, which are not sufficient in detail to allow any DCD to be issued by others. This report is not to be construed as, or used to support to a DCD at CC stage as it is based on development application drawings only.

4.3 FIRE RESISTANCE AND STABILITY – PART C2 & SPECIFICATION 5

The building is proposed to be constructed of the following elements:

Element	Method of Construction
External Walls	FC Weatherboard Cladding
Floors	Concrete
Roof	Sheet Metal
Internal Walls (between SOU's)	Unknown – assumed lightweight construction
Basement walls	Unknown – assumed concrete/masonry block
Lift shafts	Unknown – assumed concrete/masonry block
Stair shafts	Unknown – assumed concrete/masonry block

The required fire resistance levels for the building elements are outlined in Annexure C of this report.

The external walls and all components of the wall, in a building of Type A, are required to be non-combustible. The plans indicate that the external walls are to be constructed of FC Weatherboard Cladding which meets the requirements of clause C2D10 of the BCA (non-combustible). Further detail is to be reviewed to ensure the construction of the external wall is non-combustible in its entirety.

Should timber cladding be provided as an internal element within the building (within open lobbies etc.) all linings are required to comply with Specification 7 for Fire Hazard Properties. Where provided to the external portions of the building, all elements of the external wall inclusive of the soffit must be non-combustible and as such the use of timber is not permitted.

Subject to the required FRL's being provided, the proposed building is capable of complying with the requirements of the BCA with respect to fire resistance.

4.4 COMPARTMENTATION AND SEPARATION – PART C3

Under the provisions of clause C3D3 of the BCA, the residential portion of the building is not subject to any floor area and volume limitations.

As the carpark does not contain more than 40 carparking spaces, the provision of sprinkler within the carpark is not required. Therefore the carpark is subject of floor area and volume limitations under the provision of clause C3D3 of the BCA, compliance with compartmentation limitations is achieved.

Drawings currently do not detail any proposed fire rated separation between the Class 7a carpark and Class 2 foyer. Separation of classifications is required under C3D9, details to be developed to ensure 120min separation is provided.

As the building is determined to have a rise in storeys of 3 and an effective height of less than 25m the provision of a sprinkler system is **not** required. As such, the building is required to be provided with spandrel panels in accordance with the requirements of clause C3D7 of the BCA to protect opening on different storeys of the building.

Clause C3D7 of the BCA requires suitable vertical and/or horizontal spandrel separation between the openings in the external walls on different storeys. The plans do not indicate suitable spandrels to be provided due to the material of the external wall.

The external wall beneath the windows are required to be a minimum of 900mm high with 600mm above the slab, and achieve an FRL of 60/60/60. Drawings are to detail a spandrel in accordance with C3D7 between openings in the external walls on different storeys.

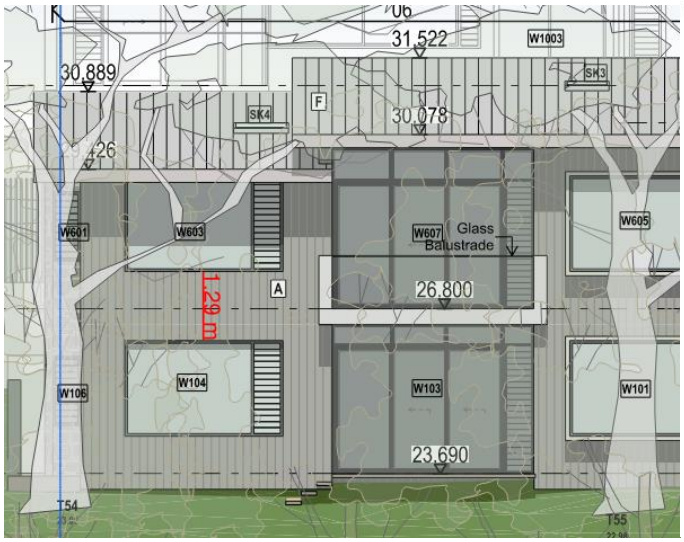
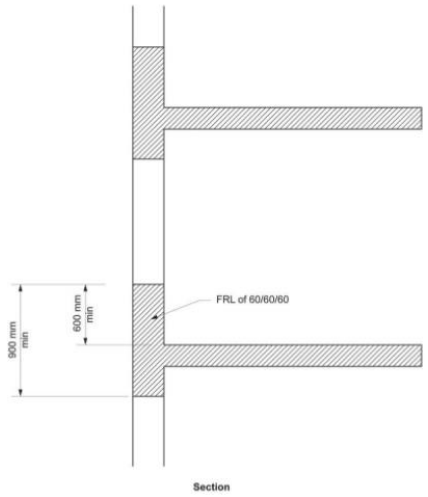


Figure C2.6(1) Section showing use of spandrel to separate external window openings



The main switchboard has not been nominated. If the switchboard is required service emergency equipment required to operate in an emergency, the switch room is to have an FRL of 120/120/120.

4.5 PROTECTION OF OPENINGS – PART C4

4.5.1 Openings in external walls

The external walls are proposed to be non-loadbearing and are located more than 3m from any boundary. As such there is no requirement to protect any openings within the external walls.

4.5.2 Bounding Construction

The walls between the SOU's and between the SOU's and corridor are internal walls that require an FRL. Enclosing walls to the lift shaft additionally require an FRL. As such, the doors to the sole occupancy units are required to be self-closing FRL -/60/30 fire doors in accordance with clause C4D12 of the BCA. The doors to the lift are required to have an FRL of -/60/- in accordance with clause C4D11 of the BCA.

4.5.3 Openings in Floors for Services and Service Installations

Where electrical, plumbing, mechanical or other services pass through an element of construction that is required to achieve a fire resistance level (FRL), the service installation shall not compromise the fire resistance level of the element. A such, the service installation must be fire sealed with a compliant system such as fire collar on PVC pipes or fire rated mastic on electrical cables.

4.6 OCCUPANT ACCESS AND EGRESS – SECTION D

4.6.1 Egress from the building

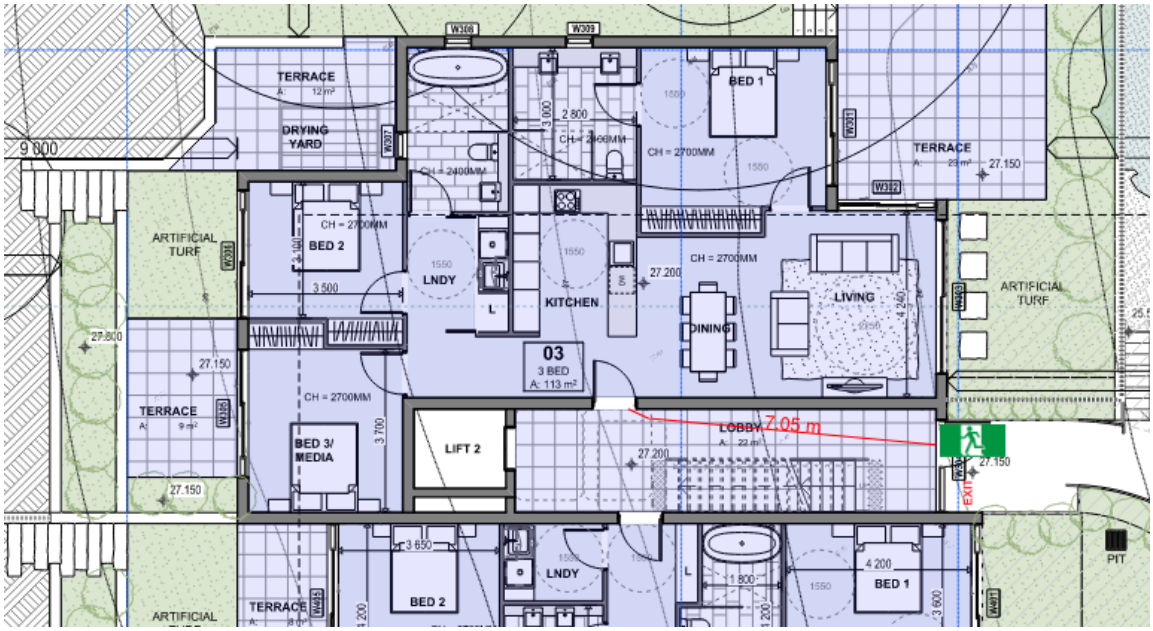
Egress from the carpark is required in sufficient numbers and location to ensure that no point on the floor is more than 20m from an exit, or a point of choice of two exits, in which case the distance to one of those exits is not more than 40m, as required by clause D2D5 of the BCA.

The distance between alternative exits is required by clause D2D6 of the BCA to be no closer than 9m and no further apart than 60m when measured through the point of choice. The travel distances and distances between exits comply with the above requirements.

In the residential portion of the building, the distance to an exit is to be no more 6m from any point on the floor to an exit, or a point of choice of 2 exits in which case the distance between those 2 exits is to exceed 45m.

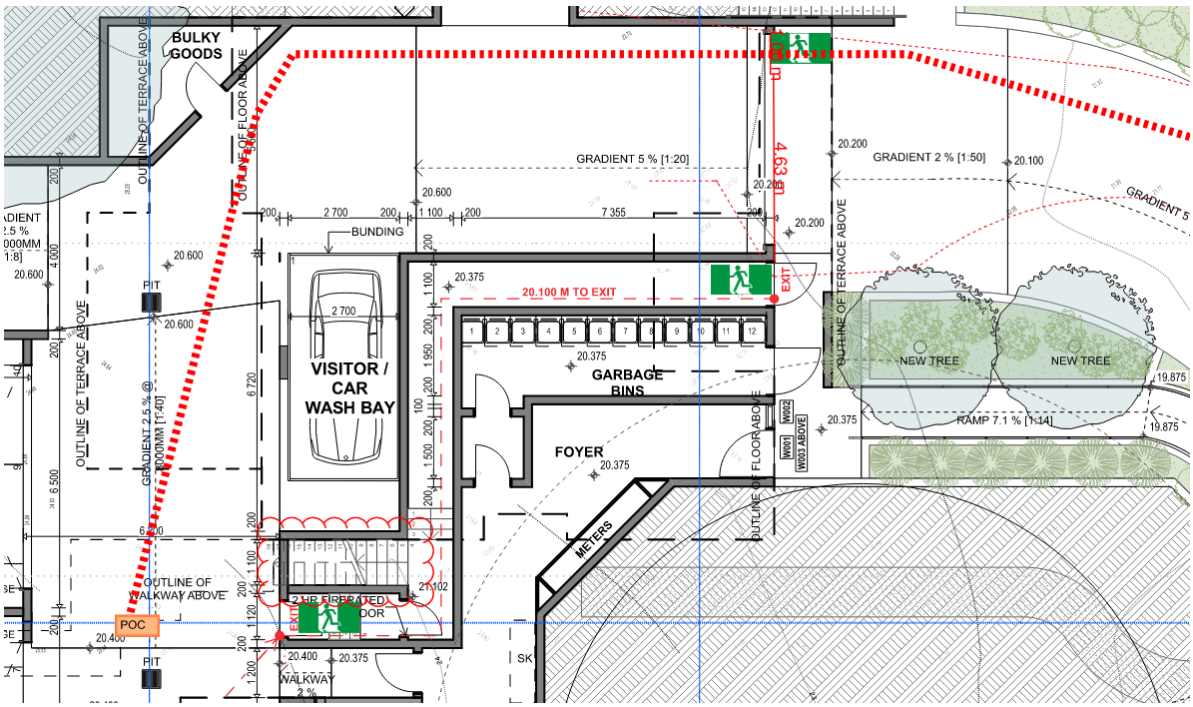
The following non-compliance is demonstrated against BCA Clause D2D5 which are required to be addressed by a suitably qualified fire engineer as a performance solution:

- Ground Level - The distance to an exit measures 7.1 metres in lieu of 6 metres.



The following non-compliance is demonstrated against BCA Clause D2D6 & D2D15 which are required to be addressed by a suitably qualified fire engineer as a performance solution:

- Basement Level – Alternative exits on Basement Level are located less than 9m apart. Discharge points for alternative exits on Basement Level are not located as far apart as practical.



In accordance with BCA Clause D2D14 Travel by non fire isolated stairways, in a Class 2 building, the distance between the doorway of a room or sole-occupancy unit and the point of egress to road or open space by way of stairway that is not fire-isolated and is required to serve that room or sole-occupancy unit must not exceed 60m. The total distance from the most disadvantaged unit by way of non fire isolated stairway to road or open space demonstrates compliance with D2D14.

Where the egress discharges to open space on the property, a continuous pathway from the point of discharge to the street is required. A 1m wide delineated pathway is to be marked and identified on the architectural drawings for occupants egressing from the basement to the street via the vehicular ramp in accordance with BCA D2D15.

Details of treads and risers, landings, thresholds, balustrades and handrails have not been provided however compliance is readily achievable. The design of these elements can be assessed at the CC stage.

Electrical distribution cupboards are to be provided with smoke separation to satisfy the requirements of BCA D3D8. The doors are to be lined internally with fire grade plasterboard or metal backing sheets and smoke seals provided to all four sides, including drop down seals on the bottom. All penetrations from the enclosure are to be suitable sealed against smoke spread by sealing with fire mastic.

The openable portion of a window in a bedroom of a Class 2 building will be protected with a restricting device or secure screen that does not allow a 125mm sphere to pass through the opening or screen and resist an outward horizontal action of 250N in accordance with Clause D3D29 of the BCA. In addition to window protection, and for other openable windows 4 meters or more above the ground below, a barrier with a height not less than 865mm above the floor will be installed to the openable window. Details to be provided on the window schedule as the design progresses.

4.6.2 Access for people with disabilities

Clause D4D2 of the BCA requires access to the building as follows:

Class 2 Common Areas	From a pedestrian entrance required to be accessible to at least 1 floor containing sole-occupancy units and to the entrance doorway of each sole-occupancy unit located on that level. To and within not less than 1 of each type of room or space for use in common by the residents, including a cooking facility, sauna, gymnasium, swimming pool, common laundry, games room, individual shop, eating area, or the like. Where a ramp complying with AS 1428.1 or a passenger lift is installed— a. to the entrance doorway of each sole-occupancy unit; and b. to and within rooms or spaces for use in common by the residents, located on the levels served by the lift or ramp.
Class 7a	To and within any level containing accessible carparking spaces.

4.7 SERVICES AND EQUIPMENT- PARTS E1, E2 AND E4

The building is required to be provided with the services and equipment set out in Annexure B of this report. The annexure also outlines the standard of performance to be achieved by the services and equipment.

The building is required to have a smoke detection & alarm system in accordance with Specification 20 and Fire Hydrant System throughout. The plans do not show indicative locations for the hydrants, so coverage could not be assessed. Ensure the Hydrant system is designed as per AS2419.1-2021.

Specification 20 states a required automatic smoke detection and alarm system for a Class 2 part of building must be provided in accordance with the following:

- A smoke alarm system complying with S20C3; or
- A smoke detection system complying with S20C4; or
- A combination of a smoke alarm system and a smoke detection system complying with S20C5.

Fire Hose Reels are required throughout the Carpark, drawings do not show indicative locations of fire hose reels therefore coverage is unable to be assessed. Hydraulic Engineer to ensure the system is designed in accordance with AS2441.

Portable fire extinguishers are required be installed in accordance with Clause E1D14 of the BCA and AS 2444:2001. Portable fire extinguishers provided in a Class 2 part of a building must be—

(a) an ABE type fire extinguisher; and

(b) a minimum size of 2.5 kg; and

(c) distributed outside a sole-occupancy unit—

i. to serve only the storey at which they are located; and

ii. 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.

Drawings do not currently include provision of portable fire extinguishers.

Electric Vehicle (EV) charging is noted to be provided to all car parking spaces on Basement Level. The provision of EV charging stations presents a special hazard within the building and is required to be assessed by the project fire engineer.

4.8 LIFT INSTALLATIONS – PART E3

The building is provided with three (3) separate lift shafts, which service residential levels. As the building is not over 12m in effective height the lifts are not required to be provided with a stretcher facility or be fitted with fire services controls as required by E3D9, E3D11 or E3D12.

4.9 FACILITIES IN RESIDENTIAL BUILDINGS – PART F4

Clause F4D2 of the BCA requires the following facilities within a Class 2 building:

- Kitchen sink;
- Bath or shower;
- Closet pan;
- Washbasin

+ Laundry facilities

Drawings provided illustrate allowance for the required facilities under F4D2 therefore the building is capable of compliance with Clause F4D2 of the BCA.

4.10 ROOM HEIGHTS – PART F5

The ceiling heights have been assessed throughout the building in accordance with Part F5 of the BCA which has indicated that compliance is readily achievable within all habitable spaces, corridors and the like as there is >2.4m between floor levels.

4.11 LIGHT AND VENTILATION – PART F6

Natural light and ventilation are required to all habitable rooms within a Class 2 building. The plans have been assessed which reveals all habitable spaces are serviced by windows or glazed doors. The area of the doors and windows have not been assessed as a glazing schedule has not been provided. Compliance is readily achievable.

The carpark is required to be provided with a system of mechanical ventilation where required by clause F6D11 of the BCA.

5.0 Statement of Compliance

The plans assessed were developed to a standard suitable for submission as a development application and do not contain all the details necessary to allow a CC to be issued. As such, this assessment was limited to the major items of the BCA with the view of identifying any items that may result in a modified development consent being required, or additional key items that need to be included in the design.

Annexures

Annexure A - Design Documentation

This report has been based on the following design documentation.

Table 3: Architectural Plans

Architectural Plans Prepared by Vic Lake Architects			
Drawing Number	**Revision**	**Date**	**Title**
A 01	P06	26/09/2023	COVER PAGE
A 02	P06	26/09/2023	SITE ANALYSIS PLAN
A 03	P06	26/09/2023	SITE PLAN
A 04	P06	26/09/2023	BASEMENT
A 05	P06	26/09/2023	GROUND FLOOR PLAN
A 06	P06	26/09/2023	LEVEL 01 PLAN
A 07	P06	26/09/2023	LEVEL 02 PLAN
A 08	P06	26/09/2023	SECTIONS
A 09	P06	26/09/2023	ELEVATIONS 01
A 10	P06	26/09/2023	ELEVATIONS 02
A 11	P06	26/09/2023	ELEVATIONS 03
A 12	P06	26/09/2023	SHADOW DIAGRAMS
A 13	P06	26/09/2023	SOLAR ACCESS PLANS
A 14	P06	26/09/2023	AREA CALCULATIONS
A 15	P06	26/09/2023	3D VIEWS

Annexure B - Essential Services

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

Table 4: Essential Fire Safety Measures

Item	Essential Fire and Other Safety Measures	Standard of Performance
Fire Resistance (Floors – Walls – Doors – Shafts)		
1.	Construction Joints	**BCA2022 C2D2, Specification 5** **BCA2022 C4D16** AS 1530.4:2014 & AS 4072.1:2005
2.	Fire doors	**BCA2022 C3D13** (Separation of Equipment) **BCA2022 C4D5** (Acceptable methods of Protection) **BCA2022 C4D11** (Opening in Fire Isolated Lift Shafts) AS1735.11- 1986 **BCA2022 C4D12** (Bounding Construction) **BCA2022 C4D14** (Opening in Shafts) Specification 12 AS1905.1: 2015
3.	Fire seals protecting openings in fire resisting components of the building	**BCA2022 C4D15** (Openings for service installations) **BCA2022 C4D16** (Construction joints) **BCA2022 Specification 13** AS1530.4:2014 & AS4072.1-2005
4.	Fire shutters	**BCA2022 C4D5** (Acceptable methods of protection) **BCA2022 Specification 12** AS1905.2-2005
5.	Fire windows + Fixed Internal wall-wetting sprinklers + Fixed External wall-wetting sprinklers + -/60/- Fire Windows automatic closing + -/60/- Fire Windows fixed closed + -/60/- automatic closing Fire Shutters + FRL required for windows	**BCA2022 C4D5** (Acceptable Methods of Protection) **BCA2022 C4D12** (Bounding Walls) **BCA2022 Specification 12** identical to tested prototype

Item	Essential Fire and Other Safety Measures	Standard of Performance
6.	Lightweight construction + Fire Rating of Electrical Switchboards	**BCA2022 C2D2, Specification 5** **BCA2022 C2D9, Specification 6** **BCA2022 C4D12** (Bounding Construction) **BCA2022 C3D13** (Separation of Equipment) AS1530.4:2014
7.	Portable fire extinguishers	**BCA2022 E1D14** AS 2444–2001
General Egress		
8.	Automatic fail safe devices	**BCA2022 D3D26** (Operation of Latches) AS 1670.1:2018 (Fire)
9.	Evacuation Training	AS 3745:2010
10.	Operation of Door latches	**D3D26** (Operation of Latch) AS 1670.1:2018
11.	Required Automatic Doors	**D3D24** (Doorways and Doors)
12.	Swing of Exit Doors	**D3D24** (Swinging Doors)
13.	Warning & operational signs	**BCA2022 D3D28** (Signs on Fire Doors) **BCA2022 D4D7** (Braille Exit Signs) (Note: E4D5 (Exit Signs)) **BCA2022 E3D4** (Lift Signs)
Lifts		
14.	Access to Lift Pits	**BCA2022 D2D22** (Access to Lift Pits) 'DANGER LIFT WELL – ENTRY OF UNAUTHORISED PERSONS PROHIBITED – KEEP CLEAR AT ALL TIMES'
Electrical Services		
15.	Automatic fail safe devices + Auto open Sliding Exit doors + Break Glass release	**BCA2022 D3D26** (Operation of Latches) AS1670.1:2018 (Fire)
16.	Automatic fire detection & alarm:	**BCA2022 E2D3,** NSW Table E2D10, Table E2D16, **Spec 20** **BCA2022 C4D12** (Bounding Construction)

Item	Essential Fire and Other Safety Measures	Standard of Performance
		Spec 20 - Clause S20C5 (Combined smoke alarm and smoke detection system) AS 3786:2014 (Amdt 1-4) AS 1670.1:2018 (Fire) – Section 4 and 5 (Detectors) AS 1670.1:2018 (Fire) – Section 7 (Smoke Control)
17.	Emergency lighting	**BCA2022 E4D2, E4D4** AS/NZS 2293.1:2018
18.	Exit signs	**BCA2022 E4D55** (Exit Signs) **BCA2022 E4D6** (Direction Signs) **BCA2022 E4D7** (Residential Concession) **BCA2022 E4D8** (Design and Operation - Exits) AS/NZS 2293.1:2018
Hydraulic Services		
19.	Fire hydrant systems	**BCA2022 E1D2** AS 2419.1:2021 FRNSW Technical Sheet D15/45534.V9 issued 10.01.19, 'Compatible Hose Connections'
20.	Hose reel systems	**BCA2022 E1D3** AS 2441:2005
Mechanical Services		
21.	Fire dampers	**BCA2022 E2, Spec 20, Spec 21** **BCA2022 C4D16** AS 1668.1:2015 (Amdt 1) AS 1682.1:2015 & AS 1682.2:2015
22.	1. Mechanical air handling systems 2. Mechanical ventilation to carpark.	**BCA2022 E2,** **Spec 20** AS 1668.1:2015 (Amdt 1) **Note: 5.5.3 Override control** To enable manual control by attending emergency services personnel, fans that are not required to shut down on initiation of fire mode in the car park shall be provided with a control switch at the designated building entry point.

Item	Essential Fire and Other Safety Measures	Standard of Performance
		Note: Signage should be located at the car park entry indicating the location of the control switches.

E2D3 General Requirements

3. An air-handling system which does not form part of a smoke hazard management system in accordance with E2D4 to E2D20 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, subject to (2), be designed and installed—
    a. to operate as a smoke control system in accordance with AS 1668.1; or
    b. such that it—
        i. incorporates smoke dampers where the air-handling ducts penetrate any elements separating the fire compartments served; and
        ii. is 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.
4. For the purposes of (1), each sole-occupancy unit in a Class 2 or 3 building is treated as a separate fire compartment.
5. Miscellaneous air-handling systems covered by Sections 5 and 6 of AS 1668.1 serving more than one fire compartment (other than a carpark ventilation system) and not forming part of a smoke hazard management system must comply with these Sections of the Standard.

Annexure C - Fire Resistance Levels

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

Type A Construction

Table 5: Type A Construction

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

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

Annexure D - Definitions

Average specific extinction area

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

Critical radiant flux

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

Designated bushfire prone area

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

Effective height

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

Envelope

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

1. the exterior of the building; or
2. a non-conditioned space including—
    a. the floor of a rooftop plant room, lift-machine room or the like; and
    b. the floor above a carpark or warehouse; and
    c. the common wall with a carpark, warehouse or the like.

Exit

Exit means –

1. Any, or any combination of the following if they provide egress to a road or open space—
    a. An internal or external stairway.
    b. A ramp.
    c. A fire-isolated passageway.
    d. A doorway opening to a road or open space.
    e. A horizontal exit or a fire-isolated passageway leading to a horizontal exit.

Fire compartment

Fire compartment means –

1. the total space of a building; or
2. when referred to in—
    a. the Performance Requirements — any part of a building separated from the remainder by barriers to fire such as walls and/or floors having an appropriate resistance to the spread of fire with any openings adequately protected; or
    b. the Deemed-to-Satisfy Provisions — any part of a building separated from the remainder by walls and/or floors each having an FRL not less than that required for a fire wall for that type of construction and where all openings in the separating construction are protected in accordance with the Deemed-to-Satisfy Provisions of the relevant Part.

Fire-resistance level (FRL)

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

1. structural adequacy; and
2. integrity; and
3. insulation,

and expressed in that order.

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

Fire-source feature

1. the far boundary of a road, river, lake or the like adjoining the allotment; or
2. a side or rear boundary of the allotment; or
3. an external wall of another building on the allotment which is not a Class 10 building

Fire wall

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

Flammability index

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

Group number

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

Horizontal exit

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

Loadbearing

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

Non-combustible

Non-combustible means—

1. applied to a material — not deemed combustible as determined by AS 1530.1:1994 — Combustibility Tests for Materials; and
2. applied to construction or part of a building — constructed wholly of materials that are not deemed combustible

Occupiable outdoor area

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

1. that is open to the sky; and
2. to which access is provided, other than access only for maintenance; and
3. that is not open space or directly connected with open space.

Open space

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

Performance Requirement

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

Performance Solution

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

Sarking-type material

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

Smoke developed index

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

Smoke development rate

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

Smoke growth rate index

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

Sole-occupancy unit

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

1. a dwelling; or
2. a room or suite of rooms in a Class 3 building which includes sleeping facilities; or
3. a room or suite of associated rooms in a Class 5, 6, 7, 8 or 9 building; or
4. a room or suite of associated rooms in a Class 9c building, which includes sleeping facilities and any area for the exclusive use of a resident.

Annexure E - BCA Compliance Specification

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

Architectural Design Certification

1. The FRL's of building elements for the proposed works have been designed in accordance with Tables S5C11a to S5C11g of the BCA for a building of Type A Construction.
2. Lightweight construction used to achieve required fire resistance levels will comply with Specification C2D9 of the BCA.
3. Building elements must be non-combustible in accordance with C2D10 of the BCA.
4. Materials, floor and wall linings/coverings, surface finishes and air-handling ductwork used in the works will comply with the fire hazard properties of Clause C2D11 and Specification 7 of the BCA.
5. Any ancillary elements fixed, installed or attached to the internal parts or external face of an external wall that is required to be non-combustible will comply with Clause C2D14 of the BCA.
6. Vertical separation will be provided to the new openings in the external walls in accordance with Clause C3D7 of the BCA. It is noted that no spandrel separation is required in the stairway or to a void.
7. Floors separating storeys of different classifications will comply with BCA Clause C3D10 of the BCA.
8. Equipment will be separated in accordance with Clause C3D13 of the BCA.
9. The electricity substation, any main switch room sustaining emergency equipment required to operate in emergency mode, will be separated from the remaining building with construction having an FRL 120/120/120 and provided with self-closing -/120/130 fire doors in accordance with Clause C3D14 of the BCA.
10. The public corridors will be divided into intervals of not more than 40m in length with smoke proof walls in accordance with Clause C3D15, and S11C2 of the BCA.
11. Openings in the external walls that are required to have an FRL will be in located in accordance with Clause C4D3 and C4D4 of the BCA or protected in accordance with Clause C4D5 of the BCA.
12. The external walls and openings of separate fire compartments will be protected in accordance with Clause C4D4.
13. Services penetrating elements required to possess an FRL including the floor slabs, walls, shafts, etc. will be protected in accordance with Clause C4D13, C4D14. and C4D15 and Specification 13 of the BCA.
14. Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation will be protected in accordance with BCA Clause C4D16.
15. The lift doors will be -/60/- fire doors complying with AS 1735.11:1986 in accordance Clause C4D11 of the BCA.
16. Doorways and other openings in internal walls required to have an FRL will be protected in accordance with Clause C4D12 of the BCA.
17. Columns protected by light weight construction will achieve an FRL not less than the FRL for the element it is penetrating, in accordance with Clause C4D17 of the BCA.

18. A lintel will have the FRL required for the part of the building in which it is situated, unless it does not contribute to the support of a fire door, fire window or fire shutter, and it spans an opening in masonry which is not more than 150 mm thick and is not more than 3m wide if the masonry is non- loadbearing; or not more than 1.8m wide if the masonry is loadbearing and part of a solid wall or one of the leaves of a cavity wall, or it spans an opening in a non-loadbearing wall of the Class 2 or 3 building, in accordance with S5C4 of the BCA.
19. All attachments to the external façade of the building will be fixed in a way that does not affect the fire resistance of that element in accordance with S5C6 of the BCA.
20. The top and bottom of the riser shafts will achieve an FRL not less than the FRL required for the walls of the shaft in accordance with S5C8 of the BCA.
21. Fire doors will comply with AS 1905.1:2015 and Specification 12 of the BCA.
22. The number of exits provided to the building will be in accordance with Clause D2D3 of the BCA.
23. Travel distances to exits will be in accordance with Clause D2D5 of the BCA.
24. The alternative exits will be distributed uniformly around the storey and will not be less than 9m apart, and not more that 45m apart in the residential portion in accordance with Clause D2D6 of the BCA.
25. The dimensions of exits and paths of travel to exits, including the height, width, and width of doorways will be provided in accordance with D2D7 to D2D10 of the BCA.
26. Discharge from exits will be in accordance with Clause D2D15 of the BCA.
27. Access to the lift pit will be in accordance with Clause D2D22 of the BCA.
28. The non-fire isolated stairs will be constructed in accordance with Clause D3D5 of the BCA.
29. The construction separating rising and descending stairs in the fire-isolated exit stairway will be non-combustible and smoke proof, in accordance with Clause D3D5 of the BCA.
30. The construction of EDB's and telecommunications distribution boards will be in accordance with Clause D3D8 of the BCA with the enclosure bounded by non-combustible construction or fire protective covering and smoke seals provided around the perimeter of the non-combustible doors and any openings sealed with non-combustible mastic to prevent smoke spreading from the enclosure.
31. The enclosing walls and ceiling under the non-fire-isolated stairway will achieve an FRL of 60/60/60 and have a self-closing -/60/30 fire door, in accordance with Clause D3D9 of the BCA.
32. New pedestrian ramps will comply with AS 1428.1:2009, Clause D3D11 and Part D4 of the BCA. The floor surface of a ramp must have a slip-resistance classification complying with Table D3D15 when tested in accordance with AS 4586:2013.
33. Stair geometry will be in accordance with Clause D3D14 of the BCA. Stair treads are to have a surface with a slip-resistance classification complying with Table D3D15 when tested in accordance with AS 4586:2013.
34. Landings and door thresholds throughout the development will be provided in accordance with Clause D3D15 and D3D16 of the BCA. Landings will have either a surface with a slip-resistance classification complying with Table D3D15 when tested in accordance with AS 4586:2013 or a strip at the edge of the landing with a slip-resistance classification complying with Table D3D15 when tested in accordance with AS 4586:2013.
35. The handrails and balustrades to all stairs and throughout the building will be in accordance with D3D17 to D3D22 of the BCA.

36. The fixed platform, walkway, stairway and ladder and any associated going and riser, landing handrail, balustrade, located within the machinery room, boiler house, lift-machine room, plant-room, or non-habitable attic/storeroom within the sole occupancy unit will comply with AS 1657:2018 or Part D3 of the BCA.
37. The doorways and doors will be in accordance with Clause D3D24 and D3D25 of the BCA.
38. Door latching mechanisms will be in accordance with Clause D3D26 of the BCA
39. Signage will be provided on fire doors in accordance with Clause D3D28 of the BCA.
40. The openable portion of a window in a bedroom of a Class 2 building will be protected with a restricting device or secure screen that does not allow a 125mm sphere to pass through the opening or screen and resist an outward horizontal action of 250N in accordance with Clause D3D29 of the BCA. In addition to window protection, and for other openable windows 4 meters or more above the ground below, a barrier with a height not less than 865mm above the floor will be installed to the openable window.
41. The new works will be accessible in accordance with Clause D4D1 to D4D4 of the BCA, and with AS 1428.1:2009, with particular note to door circulation spaces, accessway widths, turning spaces and floor coverings, in accordance with Part D4 of the BCA.
42. Accessible carparking will be in accordance with Clause D4D6 of the BCA.
43. Braille and tactile signage will in accordance with Clause D4D7, and Specification 15 of the BCA.
44. Tactile ground surface indicators will be provided in accordance with Clause D4D9 of the BCA and AS/NZS 1428.4.1:2009.
45. On an accessway, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, will be clearly marked in accordance with AS 1428.1:2009 and Clause D4D13 of the BCA.
46. Additional provisions will be made in accordance with Clause E1D17 of the BCA, due to the special hazards associated with the building works or the location of the building works.
47. Non-illuminated exit signage will be installed in accordance with Clause E4D7, and of the BCA.
48. External above ground waterproofing membranes will comply with Clause F1D5 of the BCA and AS 4654 Parts 1 & 2:2012.
49. The new roof covering will be in accordance with Clause F3D1 of the BCA.
50. Any sarking proposed will be installed in accordance with Clause F3D2 of the BCA.
51. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F2D2 of the BCA and AS 3740:2010.
52. Damp proofing of the proposed structure will be carried out in accordance with Clause F1D6 and F1D7 of the BCA.
53. Floor wastes will be installed to bathrooms and laundries above sole-occupancy units or public space in accordance with Clause F2D4 of the BCA.
54. Sub-floor ventilation will be provided in accordance with Clause F1D8 of the BCA.
55. All new glazing will be in accordance with Clause F3D4 of the BCA and AS 1288:2021 / AS 2047:2014 (incorporating amendments 1 and 2).
56. Sanitary facilities will be provided in the building in accordance with Clause F4D1, and F4D2 to F4D8 of the BCA.

57. The construction of the sanitary facilities will be in accordance with Clause F4D8 of the BCA.
58. Ceiling heights will be in accordance with Clause F5D2 of the BCA.
59. Natural light will be provided in accordance with Clause F4.1, F4.2, and F4.3 of the BCA.
60. Natural ventilation will be provided in accordance with Clause F6D6, F6D7, and F6D8 of the BCA.
61. Water closets and urinals will be located in accordance with Clause F6D9 of the BCA.
62. The sanitary compartments will either be provided with mechanical exhaust ventilation or an airlock in accordance with Clause F6D10 of the BCA.
63. Pliable building membranes installed in external walls will comply with Clause F6.2 of the BCA and where a pliable building membrane is not installed in an external wall, the primary water control layer will be separated from water sensitive materials by a drained cavity.
64. Every storey of the carpark will be provided with an adequate system of permanent natural or mechanical ventilation in accordance with Clause F6D11 of the BCA.
65. A safe manner for cleaning of windows located 3 or more storeys above ground level will be provided in accordance with the Work Health & Safety Act 2011 and regulations made under that Act in accordance with NSW G1D5 of the BCA.
66. The construction of the residential portions of the development will be undertaken in accordance with the relevant BASIX commitments that form part of the Development Consent approval.
67. Essential fire or other safety measures will be maintained and certified on an ongoing basis, in accordance with the provisions of the Environmental Planning and Assessment Regulation, 2000.
68. Building Fabric and Thermal Construction will be in accordance with Part J1 of the BCA.
69. Glazing will be in accordance with Part J1 of the BCA.
70. Building sealing will be in accordance with Part J3 of the BCA.
71. Facilities for Energy Monitoring will be provided in accordance with Clause J8.3 of the BCA.

Electrical Services Design Certification:

72. A smoke detection and alarm system will be installed throughout the building in accordance with Part E2 of the BCA.
73. Emergency lighting will be installed throughout the development in accordance with Clause E4D2 and E4D4 of the BCA and AS/NZS 2293.1:2018.
74. Exit signage will be installed in accordance with Clause E4D5, E4D7 and E4D8 of the BCA and AS/NZS 2293.1:2018.
75. Artificial lighting will be installed throughout the development in accordance Clause F6D5 of the BCA and AS/NZS 1680.0:2009.
76. Lighting power and controls will be installed in accordance with Part J6 of the BCA.
77. Electrical conductors located within the building that supply a main switchboard that sustains emergency equipment will comply with Clause C3D14 of the BCA.

Hydraulic Services Design Certification:

78. Storm water drainage will be provided in accordance with Clause F1D3 of the BCA and AS/NZS 3500.3:2018

79. Fire hydrant system will be installed in accordance with Clause E1D2 of the BCA and AS 2419.1:2021 as required.
80. Fire hose reels will be installed in accordance with Clause E1D3 of the BCA and AS 2441:2005.
81. Portable fire extinguishers will be installed in accordance with Clause E1D14 of the BCA and AS 2444:2001.
82. The heated water supply systems will be designed and installed to NCC Volume Three – Plumbing Code and Clause J7.2 of the BCA.

Mechanical Services Design Certification:

83. An air-handling system which does not form part of a smoke hazard management system will be installed in accordance with Clause E2D3 of the BCA, and AS 1668.1:2015.
84. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F6D6 of the BCA and AS 1668.2:2012.
85. Every storey of the car park will be ventilated in accordance with Clause F6D11 of the BCA and where not naturally ventilated it will be mechanically ventilated in accordance with AS 1668.2:2012 as applicable.
86. Exhaust systems installed in a kitchen, bathroom, sanitary compartment or laundry of a Class 2 or 4 *sole-occupancy unit* will have a minimum flow rate and discharge location in accordance with Clause F8D4 of the BCA.
87. Where exhaust discharges directly or via shaft into a roof space of a Class 2 or 4 *sole-occupancy unit*, ventilation of the roof space will comply with Clause F8D5 of the BCA.
88. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J5 of the BCA
89. Rigid and flexible ductwork will comply with the fire hazard properties set out in AS 4254 Parts 1 and 2.

Structural Engineers Design Certification:

90. The material and forms of construction for the proposed works will be in accordance with Clause B1D2, B1D3 and B1D4 of the BCA as follows:
    a. Dead and Live Loads – AS/NZS 1170.1:2002 (incorporating amendments 1 and 2)
    b. Wind Loads – AS/NZS 1170.2:2021
    c. Earthquake actions – AS 1170.4:2007
    d. Masonry – AS 3700:2018
    e. Concrete Construction – AS 3600:2018
    f. Steel Construction AS 4100:1998
    g. Aluminium Construction – AS/NZS 1664.1 or 2:1997
    h. Timber Construction – AS 1720.1:2010
    i. ABCB Standard for Construction of Buildings in Flood Hazard Areas.
91. The FRL's of building elements for the proposed works have been designed in accordance with Tables S5C11a to S5C11g of the BCA for a building of Type A Construction.
92. The lift shaft will have an FRL in accordance with S5C8 of the BCA.

93. Lightweight construction used to achieve required fire resistance levels will comply with Specification 6 of the BCA.
94. The construction joints to the structure will be in accordance with Clause C4D16 of the BCA to reinstate the FRL of the element concerned.
95. Upon completion of the works, a structural engineer will be able to certify that local failure will be in accordance with Clause D3D3 of the BCA for the fire isolated stairs.

Lift Services Design Certification:

96. Warning signage in accordance with Clause E3D4 of the BCA will be provided to advise not to use the lifts in a fire.
97. Access and egress to the lift landings will comply with the Deemed-to-Satisfy Provisions of D4 of the BCA and will be suitable to accommodate disabled persons.
98. The type of lifts will be suitable to accommodate persons with a disability in accordance with Clause E3D8 and will have accessible features in accordance with that clause.
99. The lifts will comply with AS 1735.12:1999 in accordance with Clause E3D8 of the BCA.
100. All electric passenger lifts and electrohydraulic passenger lifts shall comply with Specification 24 of the BCA.

Acoustic Services Design Certification:

101. The sound transmission and insulation of the residential portions of the development will comply with Part F75 of the BCA.

NSW Specification Design Certificate:

102. Materials, floor and wall linings/coverings, surface finished and air-handling ductwork used in the works will comply with the fire hazard properties in accordance with Clause C2D11, NSW Clause C2D11, Specification 7 and NSW Specification 7 of the BCA.
103. The building will be separated in accordance with Clause C3D6, and NSW Clause C3D6 of the BCA.
104. Doorways and other openings in internal walls required to have an FRL will be protected in accordance with Clause C4D12, and NSW Clause C4D12 (4) and (5) of the BCA.
105. The number of exits provided to the building will be in accordance with Clause D2D3 and NSW Clause D2D3(4) of the BCA.
106. The discharge points of exits will be in accordance with Clause D2D15, and NSW Clause D2D15(6) of the BCA.
107. The width of doorways in exits and paths of travel to exits will be provided in accordance with Clause D2D96, and NSW Clause D2D9(a) to (g) of the BCA.
108. Stair geometry to the new stairways will be in accordance with Clause D3D14, and NSW Clause D3D14(1) of the BCA. Stair treads are to have a surface with a slip-resistance classification complying with Table D3D154 when tested in accordance with AS 4586:2013 or a nosing strip with a slip-resistance classification complying with Table D3D15 when tested in accordance with AS 4586:2013.
109. Landings and door thresholds throughout the development will be provided in accordance with Clause D3D15 and D3D162.15, and NSW Clause D3D16(a) to (e) of the BCA. Landings to have either a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with

AS 4586:2013 or a strip at the edge of the landing with a slip-resistance classification complying with Table D3D15 when tested in accordance with AS 4586:2013 where the edge leads to a flight below.

110. The height of barriers is to be in accordance with D3D18 and NSW D3D18(1) of the BCA.

111. The doorways and doors will be in accordance with Clause D3D24, NSW Clause D23D24(2) of the BCA.

112. The door latching mechanisms to the proposed required exit doors will be in accordance with Clause D3D26 and NSW Clause D3D26(5) and (6) of the BCA.

113. Insulation will be in accordance with AS/NZS 4859.1:2018 and will be installed as required by NSW Part J1 of the BCA.