ALDA PROPERTIES PTY LTD

DA STAGE BCA ASSESSMENT REPORT

1-5 Rickard Road, North Narrabeen 2101

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Jensen Hughes Australia

Providing building regulations, fire engineering, accessibility, and energy consulting services to NSW for over 25 years

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.

With more than 90 offices and 1500 employees worldwide supporting clients globally across all markets, we utilise our geographic reach to help better serve the needs of our local, regional, and multinational clients. In every market, our teams are deeply entrenched in local communities, which is important to establishing trust and delivering on our promises.

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Executive summary

This document provides an assessment of the architectural design drawings for the proposed Shop-top Housing development at 1-5 Rickard Road, North Narrabeen 2101, against the Deemed-to-Satisfy Provisions of the Building Code of Australia (BCA) 2022 Volume One.

Part 4 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.	Fire engineered Performance Solutions will be required to address the extended exit travel distances in the following areas: - Commercial/Retail Level (Level 1): 32m in lieu of 20m from the Commercial Space 01 to the nearest Point of Choice. - Residential Level 01 (Level 2): 34m in lieu of 20m from the outdoor communal space to the exit at Fire Stair 02. - Residential Level 01 (Level 2): 14m in lieu of 6m from Unit 06 to the exit at Fire Stair 02. - Residential Level 02 (Level 3): 14m in lieu of 6m from Unit 06 to the exit at Fire Stair 02.	Clause D2D5
2.	The Class 7b Storage on the Ground Parking Level is required to be four hours fire rated. A fire engineered Performance Solution may be sought to rationalise the lower 120/120/120 FRL throughout the storey.	Clause C3D9, Specification 5
3.	A Performance Solution will be required to demonstrate that the construction of the new external walls (other than glazing, masonry, autoclaved aerated concrete, and metal wall cladding for which Deemed-to-Satisfy Provisions are provided) is such that they will prevent the penetration of water that could cause unhealthy or dangerous conditions or loss of amenity to occupants and undue dampness or deterioration of building elements.	Clauses F3D4 & F3D5
Building Code of Australia compliance matters to be addressed		
1.	The roof is required to be non-combustible, and therefore the roof lights must be not less than 3m from any roof light in an adjoining SOU as the walls bounding the unit are required to have an FRL. Roof lights are to be located in accordance with Clause C2D2 and S5C16 of Specification 5.	Clause C2D2, Specification 5

2.	The development is Type A Construction and is required to have spandrel separation between openings in an external wall. If the building is protected with a sprinkler system (other than a FPAA 101D or FPAA101H system) complying with Specification 17, vertical separation is not required under the provisions of BCA Clause C3D7. Should an alternative sprinkler system be provided to the building, appropriate vertical separation will be required in accordance with BCA Clause C3D7.	Clause C3D7, Specification 5
3.	The window openings on the external walls of Residential Level 01 are within a path of travel to an exit and will require protection. Protection can be provided by having the windows and other openings projected internally under Clause C4D5 of the BCA, or alternatively provide window still heights of 1500mm as per Clause C4D12 (9)(ii) of the BCA. Details are to be provided at Construction Certificate Stage to outline how compliance will be achieved.	Clause C4D5, C4D12
4.	Natural light is required to all habitable rooms within a Class 2 building. However, the area of the doors and windows (exclusive of any framing members, glazing bars or other obstructions) were not sufficient in size to provide the required 10% natural light to the study areas in SOU 01, SOU 04 and SOU 12 within the residential floors. The current arrangement of these areas does not provide the appropriate requirements for natural light. Therefore, the study areas are to be converted to non-habitable rooms or alternatively be provided with compliant natural lighting. Architect to confirm.	Clause F6D2, Clause F6D3, Clause F6D4
Further information required		
1.	Details of treads and risers, landings, thresholds, balustrades, and handrails have not been provided. The design of these elements can be assessed at the Construction Certificate Stage.	Clause D3D14, D3D15, D3D16, D3D17, D3D18, D3D19, D3D20
2.	The location of the main switchboard has not been specified within the plans. If the switchboard is required to sustain emergency equipment in an emergency, the switch room is to have an FRL of 120/120/120. This is a design element that will require detailed assessment and specification at Construction Certificate stage.	Clause C3D14
3.	Although the location of the hydrant booster is shown, the plans do not show the location of fire hydrants within the fire isolated stairs and therefore, further information will be required at the Construction Certificate Stage from the Hydraulic Consultant to demonstrate compliance with AS 4219.1:2021 and to ensure that the required coverage is provided for all rooms.	Clause E1D2

4.	The Class 7b portions of the building greater than 500m^2 and is required to have fire hose reels (FHR's). The plans do not show the location of the FHRs and whether they are located within four (4) metres of an exit, with coverage to all points on a floor being within thirty-six (36) metres, plus four (4) metres of spray as per AS2441-2005. Therefore, further details are to be provided at the Construction Certificate Stage by the Hydraulic Consultant to demonstrate compliance with AS 2441.	Clause E1D3
5.	The preliminary Development Application plans do not provide any details regarding the layout of smoke detection and alarm system. Further information is needed from the Electrical Consultant during the Construction Certificate Stage to demonstrate compliance.	Clause E2D8, Specification 20
6.	The plans indicate the residential lift shaft dimensions to be 1900mm width x 2450mm depth, however further details will have to be provided during the Construction Certificate Stage to undertake a holistic assessment of the lifts.	Clause E3D8
7.	The DA plans do not provide any details for the emergency lighting and exit signs. As such further information will be required at the Construction Certificate Stage, however compliance is readily achievable.	Clause E4D2, Clause E4D5
8.	For the Class 5 and 7b parts of the building, artificial lighting and mechanical ventilation are required, and these systems can be readily installed in the building. Further design development and input will be required from the Electrical and Mechanical Consultants at the Construction Certificate Stage.	Clause F6D5, Clause F6D6
9.	A building must be provided with a safe manner of cleaning any windows located three (3) or more storeys above ground level as per NSW Clause G1D1. No information has been provided to determine if the development can comply with this requirement, and further information will be required during the design development stage.	Clause G1D5

1.0 Basis of Assessment

1.1 LOCATION AND DESCRIPTION

The building development, the subject of this report, is located at 1-5 Rickard Road, North Narrabeen NSW 2101. The proposed development consists of the demolition of the existing structures and the construction of a new four (4) storey building including carpark, offices and residential units. Pedestrian access is derived from Rickard Road and Minarto Lane, whereas the vehicular access is derived from Minarto Lane.

Figure 1 - Site Location (Image courtesy of Nearmap.com)

1.2 PURPOSE

The purpose of this report is to assess the current design proposal against the Deemed-to-Satisfy Provisions of the BCA, 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 the BCA. Such assessment against relevant performance criteria will need to be addressed by means of a separate Fire Engineering Report (FER) for fire safety matters, and Performance Solution Report for non-fire-safety matters; such reports are to be prepared under separate cover.

1.3 BUILDING CODE OF AUSTRALIA

The National Construction Code (**NCC**) is Australia's primary set of technical design and construction provisions for buildings.

As a performance-based code, it sets the minimum required level for the safety, health, amenity, accessibility, and sustainability of certain buildings. The Australian Building Codes Board, on behalf of the Australian Government and each State and Territory government, produces and maintains the National Construction Code.

The NCC has three (3) volumes being:

- Volume One - containing technical design and construction requirements for all Class 2 to 9 buildings.
- Volume Two - containing technical design and construction requirements for certain residential (Class 1) and non-habitable buildings and structures (Class 10).
- Volume Three - Containing technical requirements for the design and construction for plumbing and drainage systems in new and existing buildings.

This report is based on the Deemed-to-Satisfy Provisions of the National Construction Code (**NCC**) Series Volume One – Building Code of Australia, 2022 Edition (**BCA**), incorporating the State variations where applicable.

Please note that the version of the BCA applicable to new building works is the version applicable at the time of the lodgement of the Construction Certificate application to the Accredited Certifying Authority, or for Crown projects the date of the invitation for tenders to carry out the Crown building work, or in the absence of tenders the date on which the Crown building work commences.

A reference to the BCA in this report is a reference to **BCA2022**, being volume 1 of the NCC.

1.4 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 operating capabilities of any proposed electrical, mechanical or hydraulic services.

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 access for people with a disability for the subject development has not been assessed against the Deemed-to-Satisfy Provisions of Part D4 and Clauses E3D7, E3D8, F4D5, F4D6, F4D7 and F4D12 of BCA2022 unless otherwise discussed in this report);
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.

1.5 DESIGN DOCUMENTATION

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

2.0 Building Description

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

2.1 RISE IN STOREYS (CLAUSE C2D3)

The building has a rise in storeys of four (4).

2.2 CLASSIFICATION (CLAUSE A6G1)

The building has been classified as follows.

Table 1: Building Classification

Level	Class	Description
Ground Parking Level (Ground Floor)	Class 7a and Class 7b	Carpark (Class 7a) Storage and Bin spaces (Class 7b)
Commercial/Retail Level (Level 1)	Class 5 and Class 7a	Commercial Office spaces (Class 5) Carpark (Class 7a)
Residential Level 01 (Level 2)	Class 2	Residential Units
Residential Level 02 (Level 3)	Class 2	Residential Units

Note: the client has confirmed that the commercial tenancies on Level 1 are used for Class 5 office spaces and not Class 6 retails spaces.

2.3 EFFECTIVE HEIGHT (CLAUSE A1G4)

The building has an *effective height* of 10.73m (RL 12.730 – 2.00), which is less than twenty-five (25) metres and less than twelve (12) metres.

2.4 TYPE OF CONSTRUCTION REQUIRED (TABLE C2D2)

The building is required to be of Type A Construction.

2.5 FLOOR AREA AND VOLUME LIMITATIONS (TABLE C3D3)

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

Class 5	Maximum Floor Area	8,000 m^2
	Maximum Volume	48,000 m^3
Class 7b	Maximum Floor Area	5,000 m^2
	Maximum Volume	30,000 m^3

Class 7a	If the carpark is provided with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification 17, that would result in no maximum floor area or volume limitations for this area. Otherwise, the carpark will be subject to the following maximum floor area and volume limits:	
	Maximum Floor Area	5,000 m^2
	Maximum Volume	30,000 m^3
Class 2	The Class 2 portions of the building are not subject to floor area and volume limitations of C3D3 as Specifications 5 and Clause C4D12 of the BCA regulate the compartmentation and separation provisions applicable to buildings, or building portions of Class 2 buildings.	

2.6 FIRE COMPARTMENTS

The following *fire compartments* have been assumed:

1. The Ground Parking Level and carparking on the Commercial/Retail Level form one fire compartment, separate from the remainder of the building.
2. The Class 5 office parts of the Commercial/Retail Level form a fire compartment separate from the rest of the building.
3. Each residential storey forms a separate fire compartment from the remainder of the building.

2.7 EXITS

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

1. The door of the fire isolated stairs of residential levels
2. The first riser of required non-fire isolated stair on the commercial/retail level leading to the road/ open space;
3. The points where open space is reached on the ground floor.

2.8 CLIMATE ZONE

The building is located within Climate Zone 5.

2.9 BUILDING IMPORTANCE LEVEL

Certain Australian Standards (particularly structural standards) require the Importance Level of the building to be determined. The importance level relates to the individual actions on a building listed in Clause B1D3 of the BCA. The building is importance Level 2.

Table B1D3a of the BCA provides the following:

Importance Level	Building Types	Jensen Hughes Interpretation and Examples
2	Buildings or structures not included in Importance Level 1, 3 and 4.	Residential apartment buildings and associated carparking. Office buildings

2.10 LOCATION OF FIRE-SOURCE FEATURES

The fire source features for the subject development are:

North: The far boundary of Rickard Road (> 6m)

South: The rear boundary of the allotment (0m)

East: The far boundary of Minarto Lane (> 6m)

West: The side boundary of the allotment (0m)

In accordance with Clause S5C2 of Specification 5, 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.

3.0 BCA Assessment

3.1 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 identify 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) and is subject to the limitations outlined under Section 1.4 of this report.

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

3.2 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 (e.g. Façade);

Fire Safety Systems (e.g. services, egress and FRLs)

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 Construction Certificate Stage as it is based on development application drawings only.

3.3 FIRE RESISTANCE AND STABILITY – PART C2 & SPECIFICATION 5

The required fire resistance levels for the building elements are outlined in Annexure C of this report. all building elements must be designed in accordance with the requirements of the BCA Specification 5 for a Type A building.

Combustibility of External Walls

The external walls and all components of the wall, in a building of Type A construction are required to be non-combustible. The plans indicate that the external walls are to be constructed of Fibre Cement weatherboard cladding, which can readily meet the requirements of BCA Clause C2D10 (non-combustible).

Further assessment is required prior to issuing the Construction Certificate to ensure that the external wall and all components are non-combustible.

Roof Lights

The roof is required to be non-combustible, and therefore the roof lights must be not less than 3m from any roof light in an adjoining SOU as the walls bounding the units are required to have an FRL. Currently the roof lights are closer than 3m to each other and they must be located in accordance with Clause C2D2 and S5C16 of Specification 5.

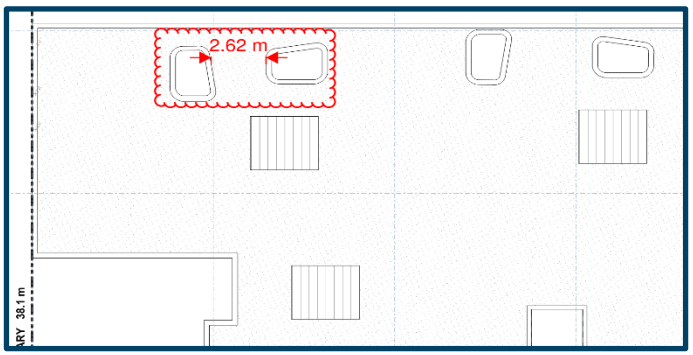

Figure 2 - Roof Light

Fire Hazard Properties

Internal linings and materials are required to meet the specified fire hazard properties of BCA Clause C2D11 and Specification 7. No details have been provided for assessment; therefore, further details will be required to be submitted at Construction Certificate Stage for assessment.

3.4 COMPARTMENTATION AND SEPARATION – PART C3

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

The Class 5 and 7b portion of the building have been assessed and the floor area and volume of these compartments is less than that permitted by BCA Clause C3D3. As such compliance with the provisions of the BCA for compartmentation is readily achieved.

Carpark

The carpark is required to have a sprinkler system as it accommodates more than forty (40) vehicles, and it is part of a building *required* to have sprinklers. If the carpark is provided with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification 17, that would result in no maximum floor area or volume limitations for this area for the compartmentation. Otherwise, the carpark will be subject to the maximum floor area and volume limits as per Part 2.5 of this report.

Spandrel Separation

The development is Type A Construction and is required to have spandrel separation between openings in an external wall. If the building is protected with a sprinkler system (other than a FPAA 101D or FPAA101H system) complying with Specification 17, vertical separation is not required under the provisions of BCA Clause C3D7. Should an alternative sprinkler system be provided to the building, appropriate vertical separation will be required in accordance with BCA Clause C3D7.

The location of the main switchboard has not been specified within the plans. If the switchboard is required to sustain emergency equipment in an emergency, the switch room is to have an FRL of 120/120/120. This is a design element that will require detailed assessment and specification at Construction Certificate stage.

3.5 PROTECTION OF OPENINGS – PART C4

3.5.1 Openings in external walls

The door and window openings on the external walls of Residential Level 01 are within a path of travel to an exit and will require protection in accordance with Clause C4D12(8). Protection can be provided by having the windows and other openings protected internally in accordance with Clause C4D5 of the BCA, or alternatively provide window still heights of 1500mm as per Clause C4D12(9)(ii) of the BCA.

A fire engineered performance solution may be sought to rationalise the emissions from the openings in the external walls on Residential Level 01.

Details are to be provided at Construction Certificate Stage to outline how compliance will be achieved.

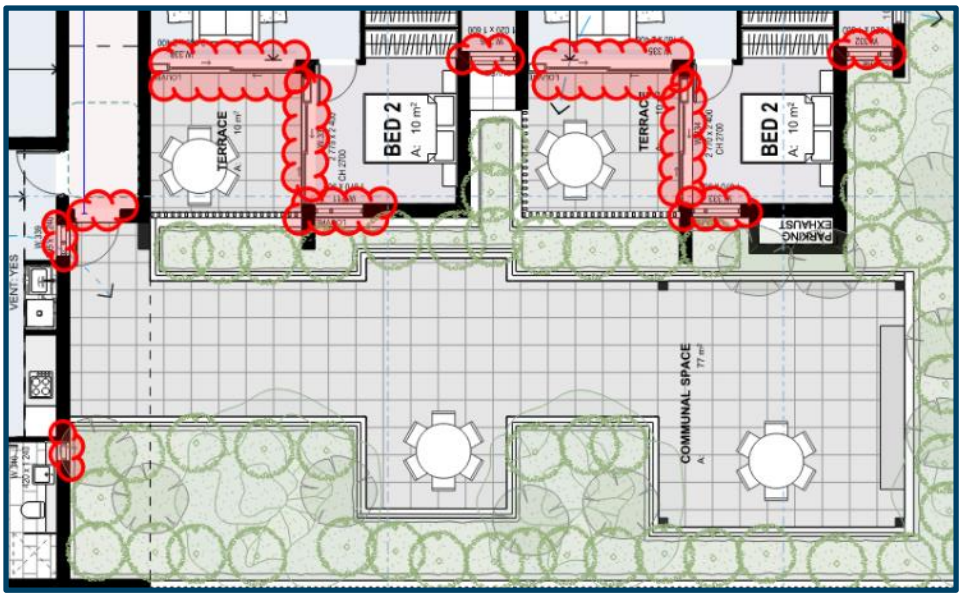

Figure 3 - Required opening protection

3.5.2 Bounding Construction

The walls between the Sole-Occupancy-Units (SOUs) and between the SOUs and corridor are internal walls that require an FRL. In addition, the walls to the lift and stairs require an FRL. As such, the doors to the sole occupancy units and fire stairs are required to be self-closing FRL --/60/30 fire doors in accordance with BCA Clause C4D12. The doors to the lift are required to have an FRL of -/60/- in accordance with BCA Clause C4D11.

The window openings on the external walls of Residential Level 01 are within a path of travel to an exit and will require protection. Protection can be provided by having the windows and other openings projected internally under Clause C4D5 of the BCA, or alternatively provide window still heights of 1500mm as per Clause C4D12 (9)(ii) of the BCA. Details are to be provided at Construction Certificate Stage to outline how compliance will be achieved.

3.5.3 Openings to Fire Walls

The building design includes fire wall separation and will require fire doors or fire shutters to be provided to protect openings.

As such, the openings to fire walls are required to be FRL --/60/30 in accordance with BCA Clause C4D6, where “60” is the structural integrity rating required for the fire wall separating the differing Classifications each side of the fire wall.

3.5.4 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 tested in accordance with AS1530.4-2014.

Fire sealing of services is a design element that will require detailed assessment and specification at Construction Certificate stage.

3.6 OCCUPANT ACCESS AND EGRESS – SECTION D

3.6.1 Egress from the building

General Requirements

As the development is under twenty-five (25) metres effective height, each *storey* is permitted to have a single exit.

Where the egress discharges to open space on the property, a continuous pathway from the point of discharge to the street is required. The plans do indicate such a pathway on the Ground Parking Level (ground floor) and as such the provisions of BCA Clause D2D15 are readily satisfied.

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 Construction Certificate Stage.

Electrical distribution cupboards are to be provided with smoke separation to satisfy the requirements of BCA Clause 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 suitably sealed against smoke spread by sealing with non-combustible mastic.

3.6.2 Exit Travel Distance and distance between alternative exits

Carpark and Commercial parts

Egress from the carparks located at the Ground Parking Level (Ground Floor) and Commercial/Retail Level (Level 1), as well as the commercial tenancies located on Commercial/Retail Level (Level 1), shall ensure that no point on the floor is more than twenty (20) metres from an exit, or where a point of choice of two (2) exits is available, the distance to the nearest of those exits can increase up to forty (40) metres, as permitted by BCA Clause D2D5.

Fire engineered Performance Solutions will be required to address the extended exit travel distances in the following areas:

+ Commercial/Retail Level (Level 1): 32m in lieu of 20m from the Commercial Space 01 to the nearest Point of Choice.

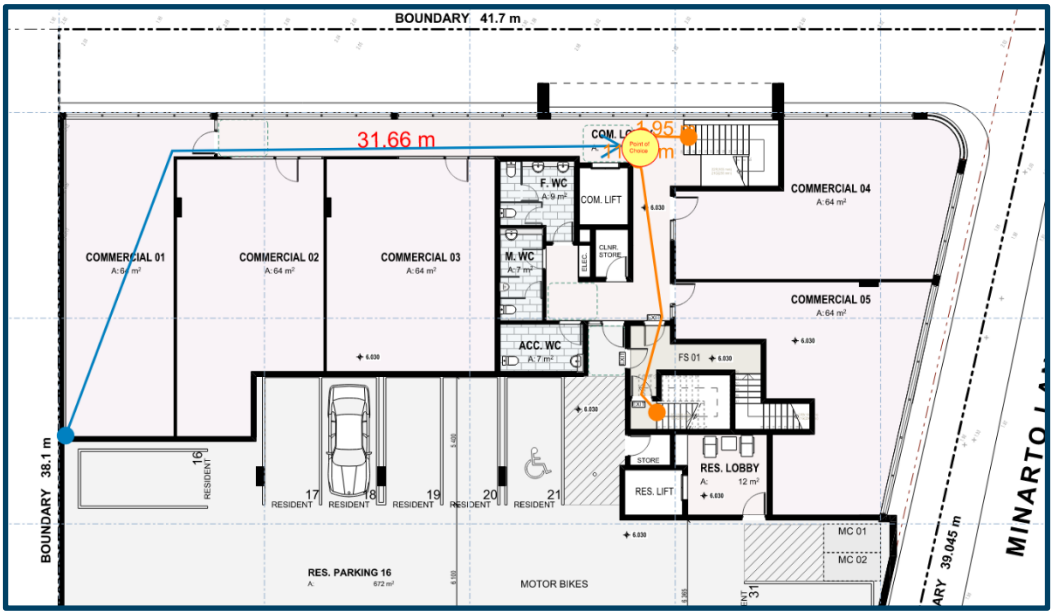

Figure 4 – Extended travel distance to a Point of Choice on the Commercial/Retail Level (Level 1)

The distance between alternative exits is required by BCA Clauses D2D7-D2D11 to be no closer than nine (9) metres and no further apart than sixty (60) metres when measured through the point of choice. The distances between exits comply with the above requirements.

Residential Floors

The building has a rise in storeys of more than three (3) with all levels connected by a common stairway. Therefore, BCA Clause D2D4 requires the residential building to have a fire-isolated stair. The drawings do indicate the stairs connecting the residential and commercial/retail levels being fire-isolated stairs, and therefore, compliance is achieved.

As the building is under twenty-five (25) metres effective height and it can be provided with a sprinkler system complying with Specification 18. If this is the case, the travel distances to an exit on the upper floors are permitted to increase up to twelve (12) metres.

Fire engineered Performance Solutions will be required to address the extended exit travel distances in the following areas:

+ Residential Level 01 (Level 2): 34m in lieu of 20m from the outdoor communal space to the exit at Fire Stair 02.

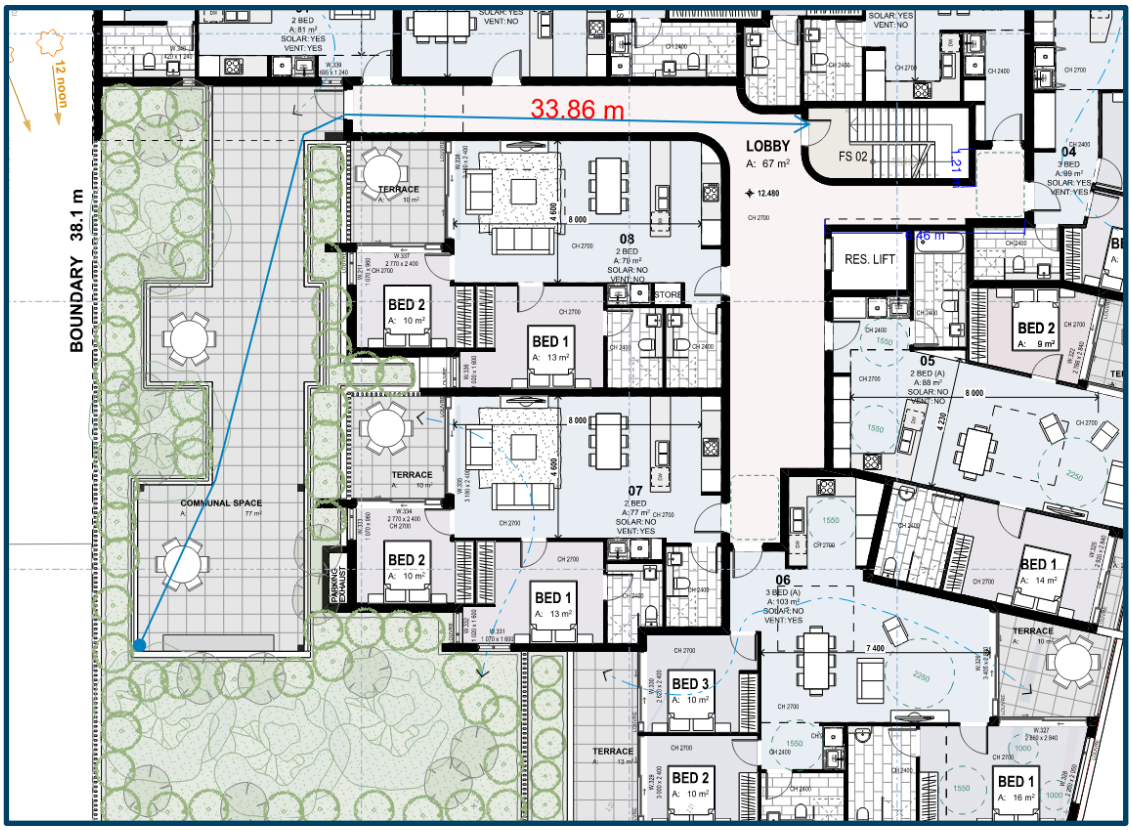

Figure 5 – Extended travel distance to a Point of Choice on the Residential Level 01 (Level 2)

+ Residential Level 01 (Level 2): 14m in lieu of 6m from Unit 06 to the exit at Fire Stair 02.

Figure 6 – Extended travel distance to a Point of Choice on the Residential Level 01 (Level 2)

+ Residential Level 02 (Level 3): 14m in lieu of 6m from Unit 06 to the exit at Fire Stair 02.

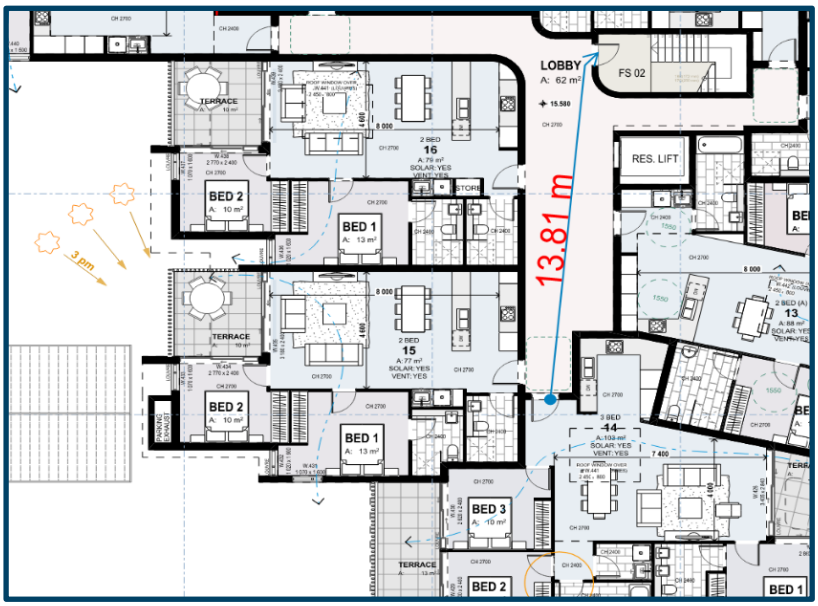

Figure 7 – Extended travel distance to a Point of Choice on the Residential Level 01 (Level 2)

3.6.3 Access for people with a disability

BCA Part D4 has not been assessed within this report. It is assumed a separate Access Consultant has been engaged.

3.7 SERVICES AND EQUIPMENT- PARTS E1, E2, E3 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.

3.7.1 Part E1 – Fire Fighting Equipment

Specific comments pertaining to fire fighting services and equipment required for the building as set out in Annexure B of this report are provided as follows:

Fire hydrant

As the building has a floor area greater than 500m^2, fire hydrant protection is required. The following options are available:

Option A – If there is a street hydrant located within proximity to the building, undertake a pressure and flow test to confirm that the street hydrant meets the required pressure and flow outline within AS 2419.1-2021. If the pressure and flow comply and system coverage can be achieved from the street hydrant (all parts located within two hose lengths + spray = 70 metres of the street hydrant), compliance will be achieved with details provided at Construction Certificate stage.

Option B – Install onsite fire hydrants with hydrants located within four (4) metres of exits, or within fire isolated stairs as relevant to the requirements contained within AS2419.1-2021. The hydrant booster is required to be no more than twenty (20) metres from the building and within sight of the principal pedestrian entrance as well as located not less than ten (10) metres from any substation.

Although the location of the hydrant booster is shown, the plans do not show the location of fire hydrants within the fire isolated stairs and therefore, further information will be required at the Construction Certificate Stage from the Hydraulic Consultant to demonstrate compliance.

Fire Hose Reel

The Class 7b portions of the building greater than 500m^2 and is required to have fire hose reels (FHR's). The plans do not show the location of the FHRs and whether they are located within four (4) metres of an exit, with coverage to all points on a floor being within thirty-six (36) metres, plus four (4) metres of spray as per AS2441-2005.

Therefore, further details are to be provided at the Construction Certificate Stage by the Hydraulic Consultant to demonstrate compliance.

Sprinklers

The building is required to have a sprinkler system installed as per BCA Clause E1D6, as well as either Specification 17 or 18. Details are to be provided at the Construction Certificate Stage by the Hydraulic Consultant to demonstrate compliance.

Portable Fire Extinguishers

The development is required to have portable fire extinguishers installed throughout in accordance with AS2444-2001. Compliance is readily achievable.

3.7.2 Part E2 – Smoke Hazard Management

Specific comments pertaining to smoke hazard management system services and equipment required for the building as set out in Annexure B of this report are provided as follows:

Smoke Alarms

Smoke alarms will be required within residential sole occupancy units in accordance with Part E2 & AS3786-2014.

Smoke Detection & Alarm System

The development must be provided with a smoke detection and alarm system complying with Clause E2D8 and S20C5 of Specification 20.

The preliminary Development Application plans do not provide any details regarding the layout of smoke detection and alarm system. Further information is needed from the Electrical Consultant during the Construction Certificate Stage to demonstrate compliance.

3.7.3 Part E3 – Lift Installations

Lifts are provided to the building and is located within their own shaft, serviced by a common lobby. The lift does not serve an *effective height* of more than twelve (12) metres. Therefore, the minimum shaft dimensions must allow for a 1100m width x 1400mm depth lift car.

The plans indicate the residential lift shaft dimensions to be 1900mm width x 2450mm depth, however further details will have to be provided during the Construction Certificate Stage to undertake a holistic assessment of the lifts.

3.7.4 Part E4 – Visibility in emergency, exit signs and warning systems.

Specific comments pertaining to emergency lighting, exit signs and warning systems required for the building as set out in Annexure B of this report are provided as follows:

- Emergency lighting is required as per BCA Clause E4D2 for all non-fire-isolated stairs, corridors, passageways, hallways, or the like that is part of a path of travel to an exit.
- Exit signs are required to be installed throughout the building, including directional exit signs to guide occupants to the designated exits in the building. However, an exemption for Clause E4D5 can be applied to the Class 2 parts of the building under Clause E4D7 of the BCA.

The DA plans do not provide any details for the emergency lighting and exit signs. As such further information will be required at the Construction Certificate Stage, however compliance is readily achievable.

3.8 FACILITIES IN BUILDINGS – PART F4

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

+ Kitchen sink;
+ Bath or shower;
+ Closet pan;
+ Washbasin
+ Laundry facilities

The plans indicate that each of these facilities are provided within each sole occupancy unit and therefore compliance is achieved with BCA Clause F4D2.

3.9 FACILITIES IN CLASS 3 TO 9 BUILDINGS – PART F4

The number of facilities *required* in the Class 5 and 7 parts of the building have been calculated in accordance with Clause F4D3 and D2D4:

Staff	Closet Pans	Urinals	Washbasins
Male	2 WC = 40	1 Urinal = 25	1 Basin = 30
Female	3 WC = 40	N/A	1 Basin = 30

Note: The accessible bathroom has been counted at least once towards every sex.

Based on the numbers above and with consideration of equal numbers of males and females, the facilities can accommodate up to 80 staff – 40 males & 40 females. This more than the 32 people calculated in accordance with BCA Clause D2D18 and therefore, compliance is achieved.

3.10 ROOM HEIGHTS – PART F5

The section drawings indicate that the ceiling heights for all habitable spaces, corridors, and the like can achieve the minimum height of 2400 mm. In non-habitable rooms such as toilets, garages and storage rooms, the ceiling height is no less than 2100 mm.

The ceiling heights have been assessed in accordance with BCA Part F5 which has indicated that compliance is readily achievable within all habitable spaces, corridors, and the like.

3.11 LIGHT AND VENTILATION – PART F6

3.11.1 Residential parts of the building

3.11.1.1 Method and extent of natural light

Class 2

Natural light is required to all habitable rooms within a Class 2 building. The plans have been assessed which reveal all habitable spaces are served by windows, glazed doors and roof lights.

However, the area of the doors and windows (exclusive of any framing members, glazing bars or other obstructions) were not sufficient in size to provide the required 10% natural light to the study areas in SOU 01, SOU 04 and SOU 12 within the residential floors. The current arrangement of these areas does not provide the appropriate requirements for natural light.

Figure 8 – Study areas in SOU 01, SOU 4 and SOU 12 within the residential floors

Therefore, the study areas are to be converted to non-habitable rooms or alternatively be provided with compliant natural lighting. Architect to confirm.

3.11.1.2 Ventilation of rooms

Ventilation is required to all habitable rooms within a Class 2 building. Clause F6D6 allows for either natural ventilation as per Clause F6D7 or mechanical ventilation or air-conditioning system complying with AS1668.2 and AS/NZS3666.1.

The plans have been assessed which reveals all habitable spaces are served by windows or glazed doors. The area of the doors and windows (exclusive of any framing members, glazing bars or other obstructions) are likely to be sufficient in size to provide the required 5% ventilation to all habitable rooms. However, a window specification will be needed with design development to verify compliance if natural ventilation is relied upon.

3.11.2 Commercial parts of the building

Class 5 and 7b

For the Class 5 and 7b parts of the building, artificial lighting and mechanical ventilation are required, and these systems can be readily installed in the building. Further design development and input will be required from the Electrical and Mechanical Consultants at the Construction Certificate Stage.

Class 7a

The carpark is required to have a mechanical ventilation system complying with AS1668.2. No information has been provided; However, the mechanical system can be readily designed. Further design input will be required from the Mechanical Consultant to demonstrate compliance.

3.12 CLEANING WINDOWS – NSW G1D5

A building must provide for a safe manner of cleaning any *windows* located three (3) or more storeys above ground level as per NSW Clause G1D5.

No information has been provided to determine if the development can comply with this requirement, and further information will be required during the design development stage.

3.13 ENERGY EFFICIENCY - SECTION J

To be separately assessed by Energy Consultant.

Annexures

Annexure A - Design Documentation

This report has been based on the following design documentation.

Table 2: Architectural Plans

Architectural Plans Prepared by Gartner Trovato Architects			
Drawing Number	**Revision**	**Date**	**Title**
DA 00	A	15/07/2024	COVER
DA 03	A	15/07/2024	SITE PLAN
DA 04	A	15/07/2024	SUB FLOOR FLOOD ZONE
DA 05	A	15/07/2024	GROUND PARKING LEVEL
DA 06	A	15/07/2024	COMMERCIAL/RETAIL LEVEL
DA 07	A	15/07/2024	RESIDENTIAL LEVEL 01
DA 08	A	15/07/2024	RESIDENTIAL LEVEL 02
DA 09	A	15/07/2024	ROOF LEVEL
DA 10	A	15/07/2024	ELEVATIONS NORTH + EAST
DA 11	A	15/07/2024	ELEVATIONS SOUTH + WEST
DA 12	A	15/07/2024	SECTIONS

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, including any omissions or additions as a result of the fire engineering processes.

This section provides information for the design team, including service designers, and may need to be updated upon receipt of final designs and performance solutions at the construction approval stage.

Table 3: Essential Fire Safety Measures

Item	Essential Fire and Other Safety Measures	Standard of Performance
Fire Resistance (Floors – Walls – Doors – Shafts)		
1.	Access Panels & doors/hoppers (fire rated)	**BCA2022 C4D14** (Openings in Shafts) **BCA2022 Specification 12** AS 1905.1:2015 (Fire Resistant Door sets)
2.	Construction Joints	**BCA2022 C2D2, Specification 5** **BCA2022 C4D16** AS 1530.4:2014 & AS 4072.1:2005
3.	Fire doors	**BCA2022 C3D13** (Separation of Equipment) **BCA2022 C4D5** (Acceptable methods of Protection) **BCA2022 C4D6** (Doors in Fire Walls) **BCA2022 C4D9 (**Openings in Fire Isolated Exits) **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
4.	Fire seals protecting openings in fire resisting components of the building	**BCA2022 C4D15** (Openings for service installations) **BCA2022 Specification 13** AS1530.4:2014 & AS4072.1-2005
5.	Fire windows	**BCA2022 C4D3** (Protection of Openings) **BCA2022 C4D5** (Acceptable Methods of Protection) **BCA2022 C4D12** (Bounding Walls) **BCA2022 Specification 12** identical to tested porotype.

Item	Essential Fire and Other Safety Measures	Standard of Performance
6.	Lightweight construction	**BCA2022 C2D2, Specification 5** **BCA2022 C2D9, Specification 6** **BCA2022 C4D12** (Bounding Construction) AS1530.4:2014
General		
7.	Portable fire extinguishers	**BCA2022 E1D14** AS 2444–2001
8.	Fire blankets	AS 2444–2001
General Egress		
9.	Operation of Door latches Failsafe	**D3D26** (Operation of Latch) AS 1670.1 (Amdt 1)
10.	Swing of Exit Doors	**D3D24** (Swinging Doors)
11.	Warning & operational signs	**BCA2022 D3D28** (Signs on Fire Doors) **BCA2022 D4D7** (Braille Exit Signs) (Note: E4D5 (Exit Signs)) **BCA2022 E3D4** (Lift Signs)
Lifts		
12.	Access to Lift Pits Located at lowest level or if >3m provided through an access door	**BCA2022 D2D22** (Access to Lift Pits) 'DANGER LIFT WELL – ENTRY OF UNAUTHORISED PERSONS PROHIBITED – KEEP CLEAR AT ALL TIMES'
Electrical Services		
13.	Automatic fail-safe devices	**BCA2022 D3D26** (Operation of Latches) AS1670.1:2018 (Fire)
14.	Automatic fire detection & alarm:	**BCA2022 E2D3, E2D4, E2D8, E2D9 Spec 20** **BCA2022 C4D6** (Doors in Fire Walls) **BCA2022 C4D9** (Openings in Fire-Isolated Exits) **BCA2022 C4D12** (Bounding Construction) **BCA2022 D3D26** (Operation of Latch) **BCA2022 S20C4** (Smoke detection system) AS 3786:2014 (Amdt 1-4)

Item	Essential Fire and Other Safety Measures	Standard of Performance
		AS 1670.1 (Amdt 1) (Fire) – Section 4 and 5 (Detectors) AS 1670.1 (Amdt 1) (Fire) – Section 7 (Smoke Control) AS 1670.3 (Amdt 1) (Fire Alarm Monitoring)
15.	Emergency lighting	**BCA2022 E4D2, E4D4** AS/NZS 2293.1:2018
16.	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
17.	Auto-shutdown of Air-handling System. (Clause E2.2(b)) - Any system that recycles air from one fire compartment to another, or operates in a manner that may spread smoke and does not operate as a smoke control system as per AS 1668.1;	**BCA2022 E2D3, Specification 20** AS 1668.1:2015
Hydraulic Services		
18.	Automatic fire suppression systems General Sprinklers	**BCA2022 E1D4, E1D6, E1D9, BCA2022 Specification 18** AS 2118.1:2017 (Sprinklers)
19.	Fire hydrant systems NSW Storz Couplings Ring Main required (LIB, >25m) Fire Brigade Relay Pump (>50m) On-site water storage (>25m)	**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
21.	Wall-wetting sprinkler / drenchers	**BCA2022 C4D5,** AS 2118.2: Wall-wetting sprinkler / drenchers
Mechanical Services		
22.	1. Mechanical air handling systems 2. Mechanical ventilation to carpark. 3. Auto-shutdown of Air-handling System.	**BCA2022 E2,** **Specification 20, Specification 21** AS 1668.1:2015 (Amdt 1) **Note: 5.5.3 Override control**

Item	Essential Fire and Other Safety Measures	Standard of Performance
	Any system that recycles air from one fire compartment to another, or operates in a manner that may spread smoke and does not operate as a smoke control system as per AS 1668.1:2015;	To enable manual control by attending emergency services personnel, fans that are not required to shut down on initiation of fire mode in the car park shall be provided with a control switch at the designated building entry point. **Note:** Signage should be located at the car park entry indicating the location of the control switches.

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 4: Type A Construction

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

Distance from a fire-source feature	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	Class 2	Class 5, 7a	Class 6	Class 7b
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	180/180/180	240/240/180
3m, or more	90/60/30	120/60/30	180/120/90	240/180/90

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

Distance from a fire-source feature	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	Class 2	Class 5, 7a	Class 6	Class 7b
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
3m, or more	-/-/-	-/-/-	-/-/-	-/-/-

Table S5C11c: Type A construction: FRL of external columns not incorporated in an external wall.

Column Type	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	Class 2	Class 5, 7a	Class 6	Class 7b
Loadbearing	90/-/-	120/-/-	180/-/-	240/-/-
Non-loadbearing	-/-/-	-/-/-	-/-/-	-/-/-

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

Wall Type	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	Class 2	Class 5, 7a	Class 6	Class 7b
Loadbearing or non-bearing	90/90/90	120/120/120	180/180/180	240/240/240

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

Location	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	Class 2	Class 5, 7a	Class 6	Class 7b
Fire-resisting lift and stair shafts	90/90/90	120/120/120	180/120/120	240/120/120
Bounding public corridors, public lobbies and the like	90/90/90	120/-/-	180/-/-	240/-/-
Between or bounding sole-occupancy unit	90/90/90	120/-/-	180/-/-	240/-/-
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion	90/90/90	120/90/90	180/120/120	240/120/120

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

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

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

Building Element	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	Class 2	Class 5, 7a	Class 6	Class 7b
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

N.B. There are FRL concessions applicable for fully sprinkler protected car park portions (if protected with a sprinkler system other than a FPAA101D or FPAA101H system) under Clause S5C19 of BCA Specification 5, reducing the carpark FRL's down from 120/120/120 to 60/60/60.

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/m^2) 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 S5C11 to S5C20 of Specification 5 of BCA2022 for a building of Type A Construction.
2. Lightweight construction used to achieve required fire resistance levels will comply with Specification 6 of BCA2022.
3. Building elements, including external walls and their components in buildings of Type A Construction, must be non-combustible in accordance with C2D10 of BCA2022.
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 BCA2022.
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 BCA2022.
6. The parts of different classifications located alongside one another in the same storey will be separated in accordance with Clause C3D9 and Specification 5 of BCA2022.
7. Floors separating storeys of different classifications will comply with BCA Clause C3D10 of BCA2022.
8. Equipment will be separated in accordance with Clause C3D13 of BCA2022.
9. Any 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 BCA2022.
10. Openings in the external walls that are required to have an FRL will be in located in accordance with Clause C4D3 and C4D4 of BCA2022 or protected in accordance with Clause C4D5 of BCA2022.
11. Doorways in any fire walls separating fire compartments will be protected in accordance with Clause C4D6 of BCA2022.
12. Doors in a fire-isolated exit will be self-closing or automatic closing fire doors with an FRL of not less than -/60/30 in accordance with Clause C4D9 of BCA2022.
13. Fire-isolated stairways will not be penetrated by services other than those permitted by Clause C4D10 of BCA2022.
14. 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 BCA2022.
15. 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.
16. The lift doors will be -/60/- fire doors complying with AS 1735.11:1986 in accordance Clause C4D11 of BCA2022.

17. Doorways and other opening in internal walls required to have an FRL will be protected in accordance with Clause C4D12 of BCA2022.
18. 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 BCA2022.
19. A lintel will have the FRL required for the part of the building in which it is situated, unless it does not contribute to the support of a fire door, fire window or fire shutter, and it spans an opening in masonry which is not more than 150 mm thick and is not more than 3m wide if the masonry is non-loadbearing; or not more than 1.8m wide if the masonry is loadbearing and part of a solid wall or one of the leaves of a cavity wall, or it spans an opening in a non-loadbearing wall of the Class 2 or 3 building, in accordance with Specification 5 Clause S5C4 BCA2022.
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 Clause S5C8 of Specification 5 of BCA2022.
21. Fire doors will comply with AS 1905.1:2015 and Specification C4D5 of BCA2022.
22. The number of exits provided to the building will be in accordance with Clause D2D3 of BCA2022.
23. The required exits will be fire-isolated in accordance with Clause D2D4 of BCA2022.
24. Travel distances to exits will be in accordance with Clause D2D5 of BCA2022.
25. The alternative exits will be distributed uniformly around the storey and will be not be less than 9m apart, and not more that 45m apart in any residential portions or patient care areas in the health-care building, or otherwise not more than 60m apart, in accordance with Clause D2D6 of BCA2022.
26. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D2D7 to D2D11 of BCA2022.
27. The fire-isolated exits will be in accordance with Clause D2D12 of BCA2022.
28. Discharge from exits will be in accordance with Clause D2D15 of BCA2022.
29. The non-required stairways and ramps will be in accordance with Clause D2D17 of BCA2022.
30. Access to the lift pit will be in accordance with Clause D2D22 of BCA2022.
31. The stairway or ramp within the fire-isolated shaft is to be non-combustible, and if there is a local failure not cause structural damage or impair the fire resistance of the shaft, in accordance with Clause D3D3 of BCA2022.
32. The construction of EDB's and telecommunications distribution boards will be in accordance with Clause D3D8 of BCA2022 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.
33. Stair geometry to the new stairways will be in accordance with Clause D3D14 of BCA2022. 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 BCA2022. Landings to 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 where the edge ledge to a flight below.

35. The handrails and balustrades to all stairs and throughout the building will be in accordance with Clause D3D17 to D3D21, and D3D22 of BCA2022.
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, plantroom, or non-habitable attic/storeroom within the sole occupancy unit will comply with AS 1657:2018 or Part D3 of BCA2022.
37. The doorways and doors will be in accordance with Clause D3D24 and D3D25 of BCA2022.
38. Door latching mechanisms will be in accordance with Clause D3D26 of BCA2022.
39. Non-illuminated exit signage will be installed in accordance with Clause E4D7, and of BCA2022.
40. External above ground waterproofing membranes will comply with Clause F1D5 of BCA2022 and AS 4654 Parts 1 & 2:2012.
41. The new roof covering will be in accordance with Clause F3D2 of BCA2022.
42. Any sarking proposed will be installed in accordance with Clause F3D3 of BCA2022.
43. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F2D2 and F2D3 of BCA2022 and AS 3740:2010.
44. Damp proofing of the proposed structure will be carried out in accordance with Clause F1D6 and F1D7 of BCA2022.
45. Floor wastes, including falls to floor wastes (including any voluntarily proposed floor wastes), will be installed in accordance with Clause F2D4 of BCA2022.
46. Sub-floor ventilation will be provided in accordance with Clause F1D8 of BCA2022.
47. All new glazing to be installed throughout the development will be in accordance with Clause F3D4 of BCA2022 and AS 1288:2006 / AS 2047:2014.
48. Sanitary facilities will be provided in the building in accordance with Clause F4D2, Table F4D2, Clause F4D4 and Table F4D4 of BCA2022.
49. The construction of the sanitary facilities will be in accordance with Clause F4D8 of BCA2022.
50. Ceiling heights will be in accordance with Clause F5D2 of BCA2022.
51. Natural light will be provided in accordance with Clause F6D2, F6D3, and F6D4 of BCA2022.
52. Natural or mechanical ventilation will be provided in accordance with Clause F6D6, F6D7 and F6D8 of BCA2022.
53. Water closets and urinals will be located in accordance with Clause F6D9 of BCA2022.
54. The sanitary compartments will be either be provided with mechanical exhaust ventilation or an airlock in accordance with Clause F6D10 of BCA2022.
55. Pliable building membranes installed in external walls will comply with Clause F8D3 of BCA2022 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.
56. Every storey of the carpark will be provided with an adequate system of permanent natural or mechanical ventilation in accordance with Clause F6D11 of BCA2022.
57. 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 BCA2022.

58. Essential fire or other safety measures must be maintained and certified on an ongoing basis, in accordance with the provisions of the Environmental Planning and Assessment Regulation, 2021.

Electrical Services Design Certification:

59. A smoke detection and alarm system will be installed throughout the building in accordance with E2D4 to E2D13, and Specification 20 of BCA2022.
60. Emergency lighting will be installed throughout the development in accordance with Clause E4D2, E4D4 of BCA2022 and AS/NZS 2293.1:2018.
61. Exit signage will be installed in accordance with Clause E4D5, E4D7, and E4D8 of BCA2022 and AS/NZS 2293.1:2018.
62. An emergency warning and intercom system (EWIS) will be provided to the building in accordance with Clause E4D9 of BCA2022.
63. Artificial lighting will be installed throughout the development in accordance Clause F6D5 of BCA2022 and AS/NZS 1680.0:2009.
64. Lighting power and controls will be installed in accordance with Part J7 of BCA2022.
65. Electrical conductors located within the building that supply a main switchboard that sustains emergency equipment will comply with Clause C3D14 of BCA2022.

Hydraulic Services Design Certification:

66. Storm water drainage will be provided in accordance with Clause F1D3 of BCA2022 and AS/NZS 3500.3:2018
67. Fire hydrant system will be installed in accordance with Clause E1D2 of BCA2022 and AS 2419.1:2005 as required.
68. Fire hose reels will be installed in accordance with Clause E1D3 of BCA2022 and AS 2441:2005.
69. A sprinkler system will be installed in accordance with Clause E1D4 of BCA2022 Specification 17 or 18 and appropriate part(s) of AS 2118.
70. Portable fire extinguishers will be installed in accordance with Clause E1D14 of BCA2022 and AS 2444:2001.

Mechanical Services Design Certification:

71. An air-handling system which does not form part of a smoke hazard management system will be installed in accordance with Clause E2D3 of BCA2022, and AS 1668.1:2015.
72. A smoke exhaust system will be installed in the building in accordance with E2D14 to E2D20, and Specification 22 of BCA2022.
73. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F6D6 of BCA2022 and AS 1668.2:2012.
74. Every storey of the car park will be ventilated in accordance with Clause F6D11 of BCA2022 and where not naturally ventilated it will be mechanically ventilated in accordance with AS 1668.2:2012 as applicable.
75. Exhaust systems installed in a kitchen, bathroom, sanitary compartment, or laundry of a Class 2 sole-occupancy unit will have a minimum flow rate and discharge location in accordance with Clause F8D4 of BCA2022.

76. 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 BCA2022.
77. Rigid and flexible ductwork will comply with the fire hazard properties set out in AS 4254 Parts 1 and 2.

Structural Engineers Design Certification:

78. The material and forms of construction for the proposed works will be in accordance with Clause B1D3, B1D4 and B1D6 of BCA2022 as follows:
    a. Dead and Live Loads – AS/NZS 1170.1:2002
    b. Wind Loads – AS/NZS 1170.2:2011
    c. Earthquake actions – AS 1170.4:2007
    d. Masonry – AS 3700:2018
    e. Concrete Construction – AS 3600:2018
    f. Steel Construction AS 4100:1998
    g. Aluminium Construction – AS/NZS 1664.1 or 2:1997
    h. ABCB Standard for Construction of Buildings in Flood Hazard Areas.
79. The FRL's of the structural elements for the proposed works have been designed in accordance with Specification 5 of BCA2022, including S5C11 to S5C20 for a building of Type A Construction.
80. The lift shaft will have an FRL in accordance with Clause C3D11 and Specification 5 of BCA2022.
81. Lightweight construction used to achieve required fire resistance levels will comply with Specification 6 of BCA2022.
82. The construction joints to the structure will be in accordance with Clause C4D16 of BCA2022 to reinstate the FRL of the element concerned.

Lift Services Design Certification:

83. Warning signage in accordance with Clause E3D4 of BCA2022 will be provided to the lifts to advise not to use the lifts in a fire.
84. The lifts will comply with AS 1735.12:1999 in accordance with Clause E3D7 and E3D8 of BCA2022.
85. All electric passenger lifts and electrohydraulic passenger lifts shall comply with Specification 24 of BCA2022.

Acoustic Services Design Certification:

86. The sound transmission and insulation of the residential portions of the development will comply with Part F7 of BCA2022.