

NEW GOLDEN ST LEONARDS PTY LTD

# DA STAGE BCA ASSESSMENT REPORT

*3 Holdsworth Avenue, St Leonards, NSW 2065*

Project Number: 120609

Report Type: BCA

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## Document Control

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## Jensen Hughes Australia

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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.

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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 apartment development at 3 Holdsworth Avenue, St Leonards, against the Deemed-to-Satisfy Provisions of the Building Code of Australia (BCA) 2022 Volume One.

Part 3 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
<b>Performance Solutions required</b>		
1.	To address where the garbage shafts are not laid directly on the ground and are not fire rated at the base of the shaft including where the garbage rooms will form part of the same fire compartment as the shaft. These will need to be addressed through a fire engineered performance solution. Applicable to all garbage shafts.	Specification 5 Clause 8
2.	As the storage cages form more than 10% of the floor area of the B1 Level storey, they will need to be classified as Class 7b. A fire-engineered Performance Solution required to reduce FRLs from 240/240/240 to 120/120/120.	Specification 5
3.	A fire engineered performance solution is required to address where the summation of corridors within the residential parts of the building exceed 40m in length on Levels 1, 2 and 3.	Specification 11
4.	A fire engineered solution will be required to address where the fire control room is not accessible from the front entrance of the building.	Specification 19
5.	To address the provision of a single exit in lieu of two at the following locations: <ul style="list-style-type: none"> <li>Level 17 of the building provides only one (1) exit through a fire-isolated stairway</li> <li>Fire pump room on Lower Ground Floor</li> </ul>	Clause D2D3
6.	A Fire Engineered Performance Solution to permit the extended travel distances to the following locations: <ul style="list-style-type: none"> <li>up to 12m to a point of choice in lieu of the maximum 6m for the residential levels 2 and 3;</li> <li>up to 28.5m to a point of choice in lieu of the maximum 20m from the maintenance portion of the storey on Level 1.</li> <li>up to 27m in lieu of 20m to an exit on Level 17;</li> </ul>	Clause D2D5
7.	A fire engineered performance solution will be required to address where discharge point of Fire Stair 1 requires occupants to pass through an area which is not open for at least 1/3 of its perimeter.	Clause D2D12
8.	A fire engineered Performance Solution shall be sought to permit the direct connection of rising and descending flights within FS1.	Clause D3D5

9.	Doorways within the fire control room are required to swing in the direction of egress.	Clause D3D25
10.	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.  <i>Note: departures (if any) are to be confirmed by the facade engineer</i>	Clauses F3D4 and F3D5
<b>Building Code of Australia compliance matters to be addressed</b>		
1.	Where a path of travel from a fire-isolated exit necessitates passing within 6m of any part of an external wall of the same building, that part of the wall must have an FRL of 60/60/60 and any openings to be protected. This is applicable to the windows of Unit LG01 that are adjacent to the egress pathway leading from FS1 on the lower ground. Details to be provided in subsequent design stages with the Construction Certificate application.	Clause C4D5, D2D12
2.	All internal Fire Hydrants and Fire Hose Reels to be located within 4m of exits, except where additional are provided for coverage. Details to be provided in subsequent design stages with the Construction Certificate application.	Clause E1D2 and E1D3
3.	Consideration should be given to the proximity of Electrical Substations to Fire Hydrant Boosters within the property being within 10 m. It is noted that the substation is in proximity to the fire hydrant booster and would need to maintain the 10m clearance. Currently, the openings are greater than 10m apart, however the enclosures are within 10m.	Clause E1D2
4.	Fire services engineer to ensure building is provided with a dual water supply or alternatively that a secondary water supply storage capacity of 25,000 litres may be used if in accordance with Specification 17 Clause 7. Details to be confirmed in subsequent design stages with the Construction Certificate application.	Specification 17 Clause 7
5.	Sanitary compartments within the residential units open directly into kitchen area. Mechanical exhaust ventilation to be provided within the bathroom in accordance with Clause F6D10. Details to be provided in subsequent design stages with the Construction Certificate application.	Clauses F6D9 and F6D10
6.	Study areas / nooks in the residential SOUs are not be provided with any direct natural light, and would rely on borrowed light from an adjoining room. Architect to verify that natural lighting and ventilation complies to each habitable room.	Clauses F6D2, F6D3, F6D4, F6D6, F6D7 and F6D8

<b>Further information required</b>		
1.	Best practice recommendation: Air-conditioning units outside Unit 105 and Unit 104 to be obstructed or designed as such that they are not climbable elements to the adjacent balustrade.	Clause D3D20
2.	Additional hydrants would be required to be provided on Lower Ground Floor within 4m of the exits. Further information will be required at the Construction Certificate Stage from the Hydraulic Consultant to demonstrate compliance.	Clause E1D2

## 1.0 Basis of Assessment

### 1.1 LOCATION AND DESCRIPTION

The building development, the subject of this report, is located at 3 Holdsworth Avenue, St Leonards NSW 2065. The proposed development consists of a multi-storey residential building including basement carpark levels and eighteen storeys of residential sole occupancy units. Vehicular access to the building is provided from Holdsworth Avenue.

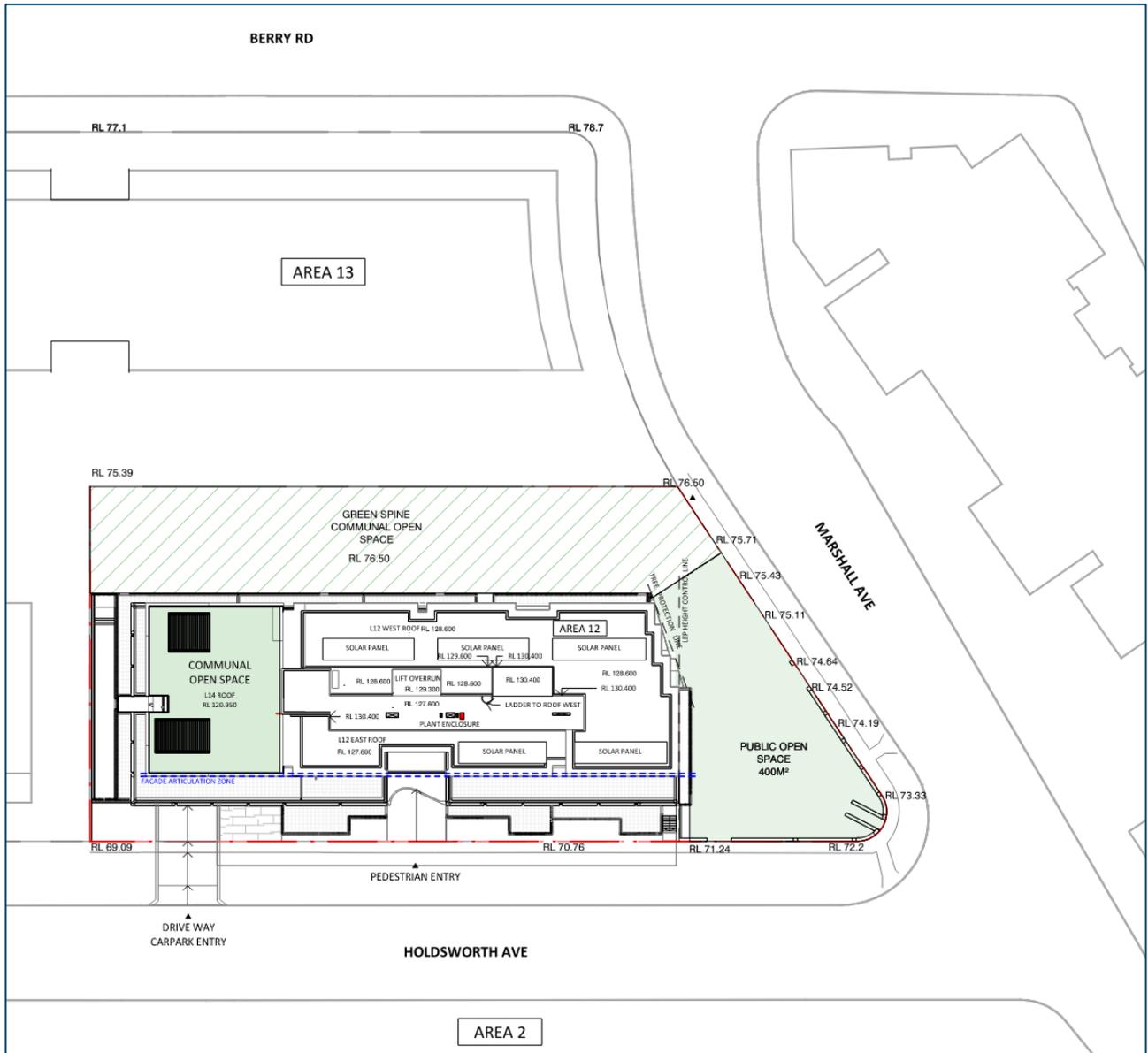


Figure 1 - Site Location Plan (courtesy of PTW Architects)

## 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 eighteen (18).

### 2.2 CLASSIFICATION (CLAUSE A6G1)

The building has been classified as follows.

Table 1: Building Classification

Class	Level	Description
Class 7a	Basement 4 to Basement 2	Carpark
Class 7a and 7b	Basement 1	Carpark and Storage
Class 7a, 7b and 2	Lower Ground Level	Carpark, Storage and Residential
Class 2	Upper Ground Level to Level 16	Residential

### 2.3 EFFECTIVE HEIGHT (CLAUSE A1G4)

The building has an *effective height* of 53.9m (RL 124.1 to RL 70.2), which is more than twenty-five (25) metres and more 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 7b	Maximum Floor Area	5,000 m <sup>2</sup>
	Maximum Volume	30,000 m <sup>3</sup>
Class 7a	The carpark is to be provided with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification 17) 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 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 basement levels and part of lower ground level form one fire compartment separate from the rest of the building.
2. The residential parts of the lower ground level form a separate fire compartment from the remainder of the building.
3. The residential parts of the upper ground level form a separate fire compartment from the remainder of the building.
4. Each storey of the residential part forms its own fire compartment.

## 2.7 EXITS

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

1. Points on lower ground level and level 1 which open directly into open space.
2. Fire doors opening to fire isolated stairs

## 2.8 CLIMATE ZONE

The building is located within Climate Zone 5

## 2.9 ENTERTAINMENT VENUE

The NSW variation of the BCA, Part NSW14 contains additional requirements for entertainment venues. An entertainment venue is defined by the Environmental Planning and Assessment Act 2021 as:

*‘Entertainment venue means a building used as a cinema, theatre or concert hall or an indoor sports stadium’.*

The subject building has not been considered an entertainment venue for the purposes of this report.

## 2.10 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.

## 2.11 LOCATION OF FIRE-SOURCE FEATURES

The fire source features for the subject development are:

North: The far boundary of Marshall Avenue (>6m)

South: The rear allotment boundary (<3m)

East: The far side of Holdsworth Avenue (>6m)

West: The side allotment boundary (>6m)

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

Element	Method of Construction
External Walls	Masonry, Concrete/CFC Panel, Sandstone Cladding, Aluminium Framed Glazing, Perforated Mesh Screen and Aluminium Mechanical Louvres.
Floors / Roofs	Concrete
Internal Walls (between SOU's)	Unspecified
Basement walls	
Lift shafts	
Stair shafts	

**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 construction, are required to be non-combustible. Full details have not been provided with respect to the materials of the external wall and further details will be required to be submitted at Construction Certificate Stage for assessment.

#### Fire Hazard Properties

Internal linings and materials are required to meet the specified fire hazard properties of BCA Clause C2D11 and Specification 7.

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.

### 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.

However, as the storage cages form more than 10% of the floor area of the Basement Level B1 storey, they will need to be classified as Class 7b. It is recommended that a fire engineered performance solution is sought to reduce FRLs from 240/240/240 to 120/120/120. Alternatively the storey would be required to be built to the higher 240/240/240 FRL.

The Class 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, however this assessment is to be reaffirmed at Construction Certificate stage once holistic fire compartment drawings are available for assessment.

The building is eighteen (18) storeys and therefore is required to have a sprinkler system.

The carpark is required to have an AS2118.1 sprinkler system, as it accommodates more than forty (40) vehicles and/or is part of a building *required* to have sprinklers. Therefore, the carpark is not subject to the floor area and volume limitations under BCA Clause C3D3.

The development is Type A Construction and is required to have spandrel separation between openings in an external wall. However, if the building is protected with an AS2118.1 system, fire rated spandrel panels are not required under the provisions of BCA Clause C3D7. Should an alternative sprinkler system be provided to the building, spandrel separation will be required.

The main switchboard is located in the Basement Level 1 near Fire Stair 3. If the switchboard is required to sustain emergency equipment in an emergency, the switch room is to have an FRL of 120/120/120. The design of the switch room is such that compliance can be readily achieved. Details to be provided in subsequent design stages.

A fire engineered performance solution is required to address where the Class 2 summation of corridors exceed 40m in length on levels 1, 2 and 3, which will not be divided at intervals as required.

### 3.5 PROTECTION OF OPENINGS – PART C4

#### 3.5.1 Openings in external walls

The external walls are located more than three (3) metres from any boundary. As such there is no requirement to protect any openings within the external walls. However it is noted that protection of the

window opening to Unit LG01 is required, this discussion is noted in Part D assessment of this report, protection may be in the form of fire windows, fire shutters or wall wetting sprinklers.

### 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.

### 3.5.3 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 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.

### 3.5.4 Enclosure of shafts – Specification 5

Fire-isolated shafts are required to be enclosed at the top and bottom of the shaft with fire rated construction having an FRL required for the walls of a non-load-bearing shaft in the same building, as per Specification 5, where this fire rating is required in two directions.

To address where the garbage shafts are not laid directly on the ground and are not fire rated at the base of the shaft including where the garbage rooms will form part of the same fire compartment as the shaft. These will need to be addressed through a fire engineered performance solution. Applicable to all garbage shafts.

## 3.6 OCCUPANT ACCESS AND EGRESS – SECTION D

### 3.6.1 Egress from the building

#### **General Requirements**

As the development is over twenty-five (25) metres effective height, each storey is required to have no less than two (2) exits. Where two (2) exits are available, they are to be no less than nine (9) metres apart. Currently, a fire-engineered performance solution is required to address the provision of a single exit in lieu of two at the following locations:

- Level 17 of the building provides only one (1) exit through a fire-isolated stairway
- Fire pump room on Lower Ground Floor only one (1) exit through a fire-isolated stairway

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 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.

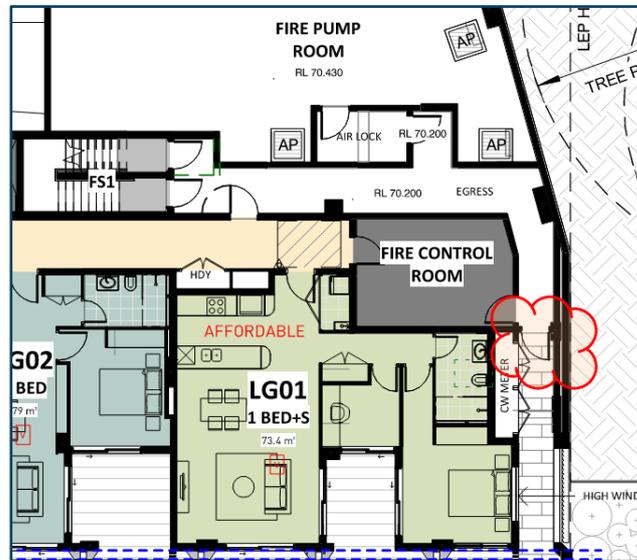
Electrical distribution cupboards are to be provided with smoke separation to satisfy the requirements of BCA Clause D3D8. The doors are to be lined internally with fire grade plasterboard or metal backing sheets and smoke seals provided to all four sides, including drop down seals on the bottom. All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

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.

Egress from fire-isolated passage may discharge into a covered area that is:

- (a) open for at least 1/3 of its perimeter; and,
- (b) has an unobstructed clear height throughout, including the perimeter openings, of not less than 3m; and
- (c) provides an unimpeded path of travel from the point of discharge to the road or open space of not more than 6m

Accordingly, the pedestrian pathways from the discharge points on the lower ground level of Fire Stair 1 descending fire-isolated stairway requires occupants to pass through an area which is not open for at least 1/3 of its perimeter, therefore requiring a fire-engineered Performance Solution.



Additionally, a fire-engineered performance solution is to be sought to allow the connection of rising and descending flights within Fire Stair 1.

Furthermore, where a path of travel from a fire-isolated exit necessitates passing within 6m of any part of an external wall of the same building, that part of the wall must have an FRL of 60/60/60 and any openings to be protected. This is applicable to the window of Unit LG01 that are adjacent to the egress pathway leading from Fire Stair 1 on the lower ground level.



As a best practice recommendation, the air-conditioning units outside Unit 105 and Unit 104 to be obstructed or designed as such that they do not facilitate climbing of the balustrade on balconies. Details to be confirmed in subsequent design stages post-DA.

### **Basement Car Park**

Egress from the carpark 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.

### **Residential Floors**

On the Ground Floor, the distance to a single exit is permitted up to twenty (20) metres. The drawings indicate that the travel distance is no further than that permitted under Clause D2D5, and therefore, compliance is achieved.

As the building is under twenty-five (25) metres effective height and is protected with a sprinkler system complying with Specification 18, the Ground Floor travel distance can increase up to thirty (30) metres.

To the upper floors, the travel distance to an exit is no more than six (6) metres, or, where a point of choice exists, the distance between alternative exits is no greater than forty-five (45) metres. In a sprinkler protected building, the travel distances are permitted to increase up to twelve (12) metres. However, this concession is only granted to a Class 2/3 building under twenty-five (25) metres effective height. The drawings indicate that they can comply with the requirements of BCA Clause D2D5.

It will be necessary to undertake a Fire Engineered Performance Solution to permit the extended travel distances within the following locations:

A Fire Engineered Performance Solution to permit the extended travel distances to the following locations:

- + up to 12m to a point of choice in lieu of the maximum 6m for the residential levels 2 and 3;
- + up to 28.5m to a point of choice in lieu of the maximum 20m from the maintenance portion of the storey on Level 1
- + up to 27m in lieu of 20m to an exit on Level 17;

### 3.7 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.

### 3.8 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.

#### 3.8.1 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<sup>2</sup>, fire hydrant protection is required. 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.

Additional hydrants to be provided on Lower Ground Floor. Further information will be required at the Construction Certificate Stage from the Hydraulic Consultant to demonstrate compliance.

Furthermore, consideration should be given to the proximity of Electrical Substations to Fire Hydrant Boosters within the property being within 10 m. It is noted that the substation is in proximity to the fire hydrant booster and would need to maintain the 10m clearance. Currently, the openings are greater than 10m apart, however the enclosures are within 10m.

##### Fire Hose Reel

The Class 7a portion of the building is required to be fitted with fire hose reels (FHR's). The plans indicate that the FHRs are located within four (4) metres of an *exit*, and that coverage to all points on a floor are within thirty-six (36) metres, plus four (4) metres of spray as per AS2441-2005. Further design development is required from the Hydraulic Consultant to achieve compliance.

All internal Fire Hydrants and Fire Hose Reels to be located within 4m of exits, except where additional are provided for coverage.

##### Sprinklers

The building is required to have a sprinkler system installed as per BCA Clause E1D6 & Specification 17. Details are to be provided at the Construction Certificate Stage by the Hydraulic Consultant to demonstrate compliance. As the building is over twenty-five (25) metres, an AS 2118.1-2017 sprinkler system is required.

Fire services engineer to ensure building is provided with a dual water supply or alternatively that a secondary water supply storage capacity of 25,000 litres may be used if in accordance with Specification 17 Clause 7.

##### Portable Fire Extinguishers

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

### Fire Control Room

As the development is over fifty metres effective height, it is required to have a fire control room in accordance with Clause E1D15 and Specification 19.

The fire control centre must be accessible via two paths of travel—

- (a) one from the front entrance of the building; and
- (b) one direct from a public place or fire-isolated passageway which leads to a public place and has a door with an FRL of not less than –/120/30.

Hence, a fire-engineered performance solution to be provided to rationalise the location of the fire control centre.

Additionally, doorways within the fire control room are required to swing in the direction of egress.

### **3.8.2 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 Specification S20C2. 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.

#### Stair Pressurization

As the development comprises stairs which serve a level above twenty-five (25) metres effective height, it will be necessary to have a stair pressurisation system to those stairs. With design development all shafts and lobby relief will need to be further developed with further design input from the Mechanical Consultant at the Construction Certificate Stage.

*Note: Stairs serving a height less than twenty-five (25) metres would not require stair pressurisation except where mandated within the Fire Engineering Report.*

### **3.8.3 Part E3 – Lift Installations**

#### Lifts Serving More than 12 Metres Effective Height

Lifts are provided to the building and are located within their own shaft, serviced by a common lobby. The lifts require stretcher facilities as they serve a height above twelve (12) metres in *effective height* and the dimensions of the shaft are sufficient to allow compliance for a 1400 mm width x 2000 mm length lift car.

Where buildings exceed twenty-five (25) metres effective height, the building is required to have one (1) emergency lift installed.

No details have been provided to undertake an assessment. Therefore, further information is required during the Construction Certificate Stage.

### 3.8.4 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.
- + Emergency warning and intercommunication system is required to be installed within buildings with an effective height greater than twenty five (25) metres.

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.

### 3.9 FACILITIES IN 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

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

The plans have been assessed which indicated that the above facilities have been provided and in sufficient numbers to satisfy the minimum requirements of the BCA for the number of residents proposed.

### 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.

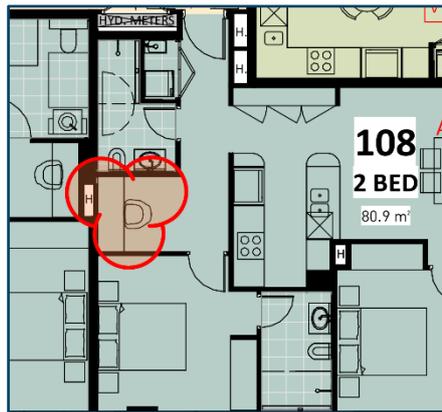
The ceiling heights have been assessed in accordance with BCA Part F5 which has indicated that compliance is readily achievable within all habitable spaces, corridors, and the like.

### 3.11 LIGHT AND VENTILATION – PART F6

#### 3.11.1 Residential Accommodation & Class 9b Buildings

##### 3.11.1.1 Method and extent of natural light

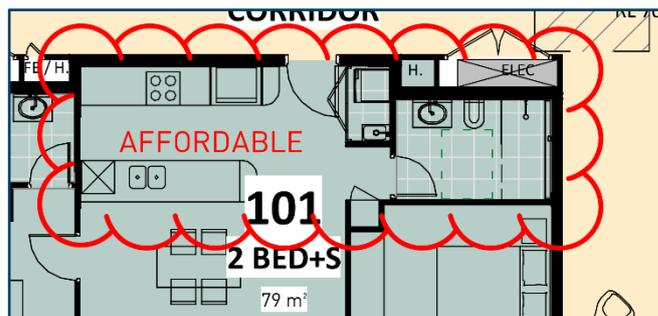
Natural light is required to all habitable rooms within a Class 2 building. The plans have been assessed which reveals all habitable spaces are served by windows or glazed doors. The area of the doors and windows (exclusive of any framing members, glazing bars or other obstructions) are likely to be sufficient in size to provide the required 10% natural light to all habitable rooms. However, study areas / nooks in the residential SOUs are noted to not be provided with any direct natural light, and would rely on borrowed light from an adjoining room. Architect to verify at the construction stage that natural lighting and ventilation complies to each habitable room. Window specification will be needed with design development to verify compliance.



##### 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. It should be also noted that some sanitary compartments within the residential units open directly into kitchen area. Mechanical exhaust ventilation to be provided within the bathroom in accordance with Clause F6D10.



For a Class 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.

The carpark (other than an *open-deck* carpark) is required to have a mechanical ventilation system complying with AS1668.2. No information has been provided at this stage, however the mechanical system can be readily designed in subsequent design stages.

### 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. Two (2) options are available for cleaning the windows:

1. The windows can be cleaned wholly from within the building; or
2. Provisions are made for cleaning windows by a method complying with the *Work Health and Safety Act 2011* and regulations made under the Act.

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 PTW Architects			
Drawing Number	Revision	Date	Title
DA-00-0003	E	30.10.2024	SITE PLAN
DA-09-0010	H	22.10.2024	LEVEL B4 PLAN
DA-09-0030	H	22.10.2024	LEVEL B3-B2 PLAN
DA-09-0040	K	30.10.2024	LEVEL B1 PLAN
DA-10-0001	M	30.10.2024	LOWER GROUND PLAN
DA-10-0003	I	30.10.2024	UPPER GROUND PLAN
DA-10-0004	H	30.10.2024	LEVEL 01 PLAN
DA-10-0005	I	30.10.2024	LEVEL 02-03 PLAN
DA-10-0006	G	30.10.2024	LEVEL 04 PLAN
DA-10-0007	G	30.10.2024	LEVEL 05-06 PLAN
DA-10-0009	E	30.10.2024	LEVEL 07-10 PLAN
DA-10-0012	G	30.10.2024	LEVEL 11-14 PLAN
DA-10-0013	G	30.10.2024	LEVEL 15 PLAN
DA-10-0014	F	30.10.2024	LEVEL 16 PLAN
DA-10-0015	F	30.10.2024	PLANT PLAN
DA-10-0016	A	30.10.2024	ROOF PLAN
DA-20-0001	F	30.10.2024	NORTH ELEVATION
DA-20-0002	G	30.10.2024	SOUTH ELEVATION
DA-20-0003	H	30.10.2024	EAST ELEVATION
DA-20-0004	G	30.10.2024	WEST ELEVATION
DA-30-0001	H	30.10.2024	SECTION 1
DA-30-0002	I	30.10.2024	SECTION 2
DA-30-0003	I	30.10.2024	SECTION 3
DA-78-0001	D	30.10.2024	EXTERNAL FINISHES

## 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.

Table 3: Essential Fire Safety Measures

Item	Essential Fire and Other Safety Measures	Standard of Performance
<b>Fire Resistance (Floors – Walls – Doors – Shafts)</b>		
1.	Access Panels & doors/hoppers (fire rated)	<b>BCA2022 C4D14</b> (Openings in Shafts) <b>BCA2022 Specification 12</b> AS 1905.1:2015 (Fire Resistant Door sets)
2.	Construction Joints	<b>BCA2022 C2D2, Specification 5</b> <b>BCA2022 C4D16</b> AS 1530.4:2014 & AS 4072.1:2005
3.	Fire doors	<b>BCA2022 C3D13</b> (Separation of Equipment) <b>BCA2022 C3D14</b> (Electricity Supply Systems) <b>BCA2022 C4D5</b> (Acceptable methods of Protection) <b>BCA2022 C4D6</b> (Doors in Fire Walls) <b>BCA2022 C4D9</b> (Openings in Fire Isolated Exits) <b>BCA2022 C4D11</b> (Opening in Fire Isolated Lift Shafts) AS1735.11- 1986 <b>BCA2022 C4D12</b> (Bounding Construction) <b>BCA2022 C4D14</b> (Opening in Shafts) Specification 19 (Fire Control Centres) Specification 12 AS1905.1: 2015
4.	Fire seals protecting openings in fire resisting components of the building	<b>BCA2022 C4D15</b> (Openings for service installations) <b>BCA2022 Specification 13</b> AS1530.4:2014 & AS4072.1-2005
5.	Lightweight construction	<b>BCA2022 C2D2, Specification 5</b> <b>BCA2022 C2D9, Specification 6</b> <b>BCA2022 C4D12</b> (Bounding Construction) AS1530.4:2014
6.	Smoke Walls	<b>BCA2022 C3D15</b> (Public Corridors Class 2)

Item	Essential Fire and Other Safety Measures	Standard of Performance
		<b>BCA2022 D3D5</b> (Separation of Rising and Descending Stair Flights)
7.	Smoke Lobby 6m <sup>2</sup>	<b>BCA2022 D2D12</b> (Fire Isolated Stairs) <b>BCA2022 D3D7</b> (Smoke Lobby) Clause 3 Spec C4D5
8.	Smoke Doors	<b>BCA2022 C3D15</b> (Public Corridors Class 2) Clause S11C2 <b>BCA2022 D3D5</b> (Separation of Rising and Descending Stair Flights) <b>BCA2022 D3D7</b> (Smoke Lobby) <b>BCA2022 Specification 12</b> AS1670.1:2018
<b>General</b>		
9.	Fire Control Room	<b>BCA2022 E1D15, Specification 19</b> (Fire Control Centres)
10.	Portable fire extinguishers	<b>BCA2022 E1D14</b> AS 2444–2001
<b>General Egress</b>		
11.	Operation of Door latches Failsafe Manual Push Button Control	<b>D3D26</b> (Operation of Latch) AS 1670.1 (Amdt 1)
12.	Required Automatic Doors	<b>D3D24</b> (Doorways and Doors)
13.	Swing of Exit Doors	<b>D3D24</b> (Swinging Doors)
14.	Warning & operational signs	<b>BCA2022 D3D28</b> (Signs on Fire Doors) <b>BCA2022 D4D7</b> (Braille Exit Signs) (Note: E4D5 (Exit Signs)) <b>BCA2022 E3D4</b> (Lift Signs) <b>BCA2022 Specification 19</b> (Fire Control Room)
<b>Lifts</b>		
15.	Access to Lift Pits Located at lowest level or if >3m provided through an access door	<b>BCA2022 D2D22</b> (Access to Lift Pits) 'DANGER LIFT WELL – ENTRY OF UNAUTHORISED PERSONS PROHIBITED – KEEP CLEAR AT ALL TIMES'
16.	Emergency lifts	<b>BCA2022 E3D5</b> AS 1735.1:2003 (Appendix A) or

Item	Essential Fire and Other Safety Measures	Standard of Performance
		AS 1735.2:2001
17.	Stretcher Lifts including Fire Service Controls Recall Operation Drive control switch	<b>BCA2022 E3D3</b> <b>BCA2022 E3D9</b> (Fire Service Controls) <b>BCA2022 E3D11</b> (Fire Service Recall Operation Switch) <b>BCA2022 E3D12</b> (Lift Car Fire Service drive control switch) <b>BCA2022 Specification 24</b> AS 1735.11:1986 (Fire rated landing doors)
<b>Electrical Services</b>		
18.	Automatic fail-safe devices Auto open Sliding Exit doors Break Glass release	<b>BCA2022 D3D26</b> (Operation of Latches) <b>BCA2022 D3D27</b> (Re-entry from fire-isolated stairs) AS1670.1:2018 (Fire)
19.	Automatic fire detection & alarm:	<b>BCA2022 E2D3, E2D4, E2D5, E2D6, E2D12, E2D13.</b> <b>Spec 20</b> <b>BCA2022 C4D6</b> (Doors in Fire Walls) <b>BCA2022 C4D9</b> (Openings in Fire-Isolated Exits) <b>BCA2022 C4D12</b> (Bounding Construction) <b>BCA2022 D3D26</b> (Operation of Latch) <b>Specification 12</b> <b>BCA2022 S20C3</b> (Smoke alarm system) <b>BCA2022 S20C4</b> (Smoke detection system) <b>BCA2022 S20C5</b> (Combined smoke alarm and smoke detection system) <b>BCA2022 S20C6</b> (Smoke detection for smoke control systems) <b>BCA2022 S20C7</b> (BOWS) AS 3786:2014 (Amdt 1-4) AS 1670.1 (Amdt 1) AS 1670.4 (Amdt 1)
20.	Emergency lighting	<b>BCA2022 E4D2, E4D4</b> AS/NZS 2293.1:2018
21.	Exit signs	<b>BCA2022 E4D55</b> (Exit Signs) <b>BCA2022 E4D6</b> (Direction Signs) <b>BCA2022 E4D7</b> (Residential Concession) <b>BCA2022 E4D8</b> (Design and Operation - Exits)

Item	Essential Fire and Other Safety Measures	Standard of Performance
		AS/NZS 2293.1:2018
22.	Emergency warning and intercom systems for Emergency Purposes (EWIS) >25m	<b>BCA2022 E4D9</b> AS 1670.4 (Amdt 1) (EWIS)
<b>Hydraulic Services</b>		
23.	Automatic fire suppression systems	<b>BCA2022 E1D4, E1D5, E1D6, E1D9, BCA2022 Specification 17</b> AS 2118.1:2017 (Sprinklers) AS 2118.6:2012 (Combined Sprinklers/Hydrant)
24.	Fire hydrant systems NSW Storz Couplings Ring Main required (LIB, >25m) Fire Brigade Relay Pump (>50m) On-site water storage (>25m)	<b>BCA2022 E1D2</b> AS 2419.1:2021 FRNSW Technical Sheet D15/45534.V9 issued 10.01.19, 'Compatible Hose Connections'
25.	Hose reel systems	<b>BCA2022 E1D3</b> AS 2441:2005
<b>Mechanical Services</b>		
26.	Fire dampers	<b>BCA2022 E2, Specification 20, Specification 21</b> <b>BCA2022 C4D16</b> AS 1668.1:2015 (Amdt 1) AS 1682.1:2015 & AS 1682.2:2015
27.	<ol style="list-style-type: none"> <li>1. Mechanical air handling systems</li> <li>2. Smoke Control System/Smoke Exhaust System</li> <li>3. Mechanical ventilation to carpark.</li> <li>4. Fire Isolated Exit Pressurisation System</li> </ol>	<b>BCA2022 E2, Specification 20, Specification 21</b> AS 1668.1:2015 (Amdt 1) <b>Note: 5.5.3 Override control</b> 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. <b>Note:</b> 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 7a	Class 7b
Less than 1.5 m	90/90/90	120/120/120	240/240/240
1.5 to less than 3 m	90/60/60	120/90/90	240/240/180
3m, or more	90/60/30	120/60/30	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 7a	Class 7b
Less than 1.5 m	-/90/90	-/120/120	-/240/240
1.5 to less than 3 m	-/60/60	-/90/90	-/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 7a	Class 7b
Loadbearing	90/-/-	120/-/-	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 7a	Class 7b
Loadbearing or non-bearing	90/90/90	120/120/120	240/240/240

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

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

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 7a	Class 7b
Other loadbearing internal walls, internal beams, trusses and columns	90/-/-	120/-/-	240/-/-
Floors	90/90/90	120/120/120	240/240/240
Roofs	90/60/30	120/60/30	240/90/60

## Annexure D - 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 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 and B 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 external walls and openings of separate fire compartments will be protected in accordance with Clause C4D4.
7. 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.
8. Floors separating storeys of different classifications will comply with BCA Clause C3D10 of BCA2022.
9. Equipment will be separated in accordance with Clause C3D13 of BCA2022.
10. 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.
11. 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 Specification 11 of BCA2022. The smoke doors shall swing in both directions, or otherwise be installed to swing in the direction of egress.
12. 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.
13. Doorways in any fire walls separating fire compartments will be protected in accordance with Clause C4D6 of BCA2022.
14. 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.
15. Fire-isolated stairways will not be penetrated by services other than those permitted by Clause C4D10 of BCA2022.
16. 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.

17. 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.
18. The lift doors will be -/60/- fire doors complying with AS 1735.11:1986 in accordance Clause C4D11 of BCA2022.
19. Doorways and other opening in internal walls required to have an FRL will be protected in accordance with Clause C4D12 of BCA2022.
20. 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.
21. 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.
22. 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.
23. Fire doors will comply with AS 1905.1:2015 and Specification C4D5 of BCA2022.
24. Smoke doors will be installed in accordance with Specification 12 of BCA2022.
25. The number of exits provided to the building will be in accordance with Clause D2D3 of BCA2022.
26. The required exits will be fire-isolated in accordance with Clause D2D4 of BCA2022.
27. Travel distances to exits will be in accordance with Clause D2D5 of BCA2022.
28. 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.
29. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D2D7 to D2D11 of BCA2022.
30. The fire-isolated exits will be in accordance with Clause D2D12 of BCA2022.
31. Smoke separation will be provided between the exit stairs at the level of discharge in accordance with Clause D2D14 of BCA2022.
32. Discharge from exits will be in accordance with Clause D2D15 of BCA2022.
33. Access to the lift pit will be in accordance with Clause D2D22 of BCA2022.
34. 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.
35. 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 BCA2022.
36. 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.

37. 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 BCA2022.
38. New pedestrian ramps will comply with AS 1428.1:2009, Clause D3D11 and Part D4 of BCA2022. The floor surface of a ramp must have a slip-resistance classification complying with Table D3D15 when tested in accordance with AS 4586:2013.
39. The fire-isolated passageway will be in accordance with Clause D3D12 of BCA2022.
40. The roof of the building where the exit discharges will have an FRL of 120/120/120 and will not have roof lights or openings within 3m of the path of travel in accordance with Clause D3D13 of BCA2022.
41. 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.
42. 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.
43. The handrails and balustrades to all stairs and throughout the building will be in accordance with Clause D3D17 to D3D21, and D3D22 of BCA2022.
44. 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.
45. The doorways and doors will be in accordance with Clause D3D24 and D3D25 of BCA2022.
46. Door latching mechanisms will be in accordance with Clause D3D26 of BCA2022.
47. Re-entry doors from the fire-isolated exits will be in accordance with Clause D3D27 of BCA2022.
48. Signage will be provided on fire and smoke doors in accordance with Clause D3D28 of BCA2022.
49. The openable portion of a window in a 9b early childhood centre or a bedroom of a Class 2, 3, 4 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 BCA2022. 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.
50. The fire control room will be in accordance with Clause E1D15 and Specification 19 of BCA2022.
51. Fire precautions whilst the building is under construction will be in accordance with Clause E1D16 of BCA2022.
52. Additional provisions will be made in accordance with Clause E1D17 and E2D21 of BCA2022, due to the special hazards associated with the building works or the location of the building works.
53. Non-illuminated exit signage will be installed in accordance with Clause E4D7, and of BCA2022.
54. The new roof covering will be in accordance with Clause F3D2 of BCA2022.
55. Any sarking proposed will be installed in accordance with Clause F3D3 of BCA2022.

56. 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.
57. Damp proofing of the proposed structure will be carried out in accordance with Clause F1D6 and F1D7 of BCA2022.
58. Floor wastes, including falls to floor wastes (including any voluntarily proposed floor wastes), will be installed in accordance with Clause F2D4 of BCA2022.
59. Sub-floor ventilation will be provided in accordance with Clause F1D8 of BCA2022.
60. 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.
61. Sanitary facilities will be provided in the building in accordance with Clause F4D2, Table F4D2, Clause F4D4 and Table F4D4 of BCA2022.
62. Accessible sanitary facilities will be provided in the building in accordance with Clause F4D5, F4D6, Table F4D6 of BCA2022 and AS1428.1:2009.
63. The construction of the sanitary facilities will be in accordance with Clause F4D8 of BCA2022.
64. Ceiling heights will be in accordance with Clause F5D2 of BCA2022.
65. Natural light will be provided in accordance with Clause F6D2, F6D3, and F6D4 of BCA2022.
66. Natural or mechanical ventilation will be provided in accordance with Clause F6D6, F6D7 and F6D8 of BCA2022.
67. Water closets and urinals will be located in accordance with Clause F6D9 of BCA2022.
68. The sanitary compartments will be either be provided with mechanical exhaust ventilation or an airlock in accordance with Clause F6D10 of BCA2022.
69. 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.
70. 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.
71. 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.
72. 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.
73. 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.
74. Building Fabric and Thermal Construction will be in accordance with Part J4 of BCA2022.
75. Glazing will be in accordance with Part J4 of BCA2022.
76. Building sealing will be in accordance with Part J5 of BCA2022.
77. Facilities for Energy Monitoring will be provided in accordance with Clause J9D3 of BCA2022.

**Electrical Services Design Certification:**

78. A smoke detection and alarm system will be installed throughout the building in accordance with E2D4 to E2D13, and Specification 20 of BCA2022.
79. Emergency lighting will be installed throughout the development in accordance with Clause E4D2, E4D4 of BCA2022 and AS/NZS 2293.1:2018.
80. Exit signage will be installed in accordance with Clause E4D5, E4D7, and E4D8 of BCA2022 and AS/NZS 2293.1:2018.
81. An emergency warning and intercom system (EWIS) will be provided to the building in accordance with Clause E4D9 of BCA2022.
82. Artificial lighting will be installed throughout the development in accordance Clause F6D5 of BCA2022 and AS/NZS 1680.0:2009.
83. Lighting power and controls will be installed in accordance with Part J7 of BCA2022.
84. 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:**

85. Storm water drainage will be provided in accordance with Clause F1D3 of BCA2022 and AS/NZS 3500.3:2018
86. Fire hydrant system will be installed in accordance with Clause E1D2 of BCA2022 and AS 2419.1:2005 as required.
87. Fire hose reels will be installed in accordance with Clause E1D3 of BCA2022 and AS 2441:2005.
88. A sprinkler system will be installed in accordance with Clause E1D4 of BCA2022 Specification 17 and appropriate part(s) of AS 2118.
89. Portable fire extinguishers will be installed in accordance with Clause E1D14 of BCA2022 and AS 2444:2001.
90. The heated water supply systems will be designed and installed to NCC Volume 3 – Plumbing code and Clause J8D2 of BCA2022.

**Mechanical Services Design Certification:**

91. 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.
92. Stair pressurisation will be installed in the building in accordance with E2D4 to E2D13 of BCA2022 and AS 1668.1:2015.
93. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F6D6 of BCA2022 and AS 1668.2:2012.
94. 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.
95. 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.

96. Where exhaust discharges directly or via shaft into a roof space of a Class 2 sole-occupancy unit, ventilation of the roof space will comply with Clause F8D5 of BCA2022.
97. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J6 of BCA2022
98. Rigid and flexible ductwork will comply with the fire hazard properties set out in AS 4254 Parts 1 and 2.

**Structural Engineers Design Certification:**

99. 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. Timber Construction – AS 1720.1:2010
  - i. ABCB Standard for Construction of Buildings in Flood Hazard Areas.
100. The FRL's of the structural elements for the proposed works have been designed in accordance with Specification 5 of BCA2022, including S5C11 for a building of Type A Construction.
101. The lift shaft will have an FRL in accordance with Clause C3D11 and Specification 5 of BCA2022.
102. Lightweight construction used to achieve required fire resistance levels will comply with Specification 6 of BCA2022.
103. The construction joints to the structure will be in accordance with Clause C4D16 of BCA2022 to reinstate the FRL of the element concerned.
104. Upon completion of the works, a structural engineer will be able to certify that local failure will be in accordance with Clause D3D3 of BCA2022 for the fire isolated stairs.

**Lift Services Design Certification:**

105. The lifts throughout the development will be provided with stretcher facilities in accordance with Clause E3D3 of BCA2022 and will be capable of accommodating a stretcher with a patient lying horizontally by providing a clear space not less than 600mm wide x 2000mm long x 1400mm high above the floor level.
106. 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.
107. An emergency lift will be provided in the building in accordance with Clause E3D5 of BCA2022.
108. A fire service recall control switch is to be installed on a landing at a location nominated by the appropriate authority in accordance with Clause E3D11.
109. A lift car fire service drive control switch is to be installed within the lift car in accordance with Clause E3D12.

110. Access and egress to the lift well landings will comply with the Deemed-to-Satisfy Provisions of D4 of the BCA2022 and will be suitable to accommodate disabled persons.
111. The type of lifts will also be suitable to accommodate persons with a disability in accordance with Clause E3D7 and E3D8 and will also have accessible features in accordance with E3D7 and E3D8 of BCA2022.
112. The lifts will comply with AS 1735.12:1999 in accordance with Clause E3D7 and E3D8 of BCA2022.
113. All electric passenger lifts and electrohydraulic passenger lifts shall comply with Specification 24 of BCA2022.

**Acoustic Services Design Certification:**

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

**NSW Specification Design Certificate:**

115. 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 5 and NSW Specification 5 of BCA2022.
116. The building will be separated in accordance with Clause C3D6, and NSW Clause C3D6 of BCA2022.
117. 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) of BCA2022.
118. The number of exits provided to the building will be in accordance with Clause D2D3 and NSW Clause D2D3(4) of BCA2022.
119. The discharge points of exits will be in accordance with Clause D2D15, and NSW Clause D2D15(6) of BCA2022.
120. The width of doorways in exits and paths of travel to exits will be provided in accordance with Clause D2D9, and NSW Clause D2D9(a) to (f) of the BCA2022.
121. 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.
122. Landings and door thresholds throughout the development will be provided in accordance with Clause D3D15 and D3D16.15, 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.
123. The height of barriers is to be in accordance with D3D18 and NSW D3D18(1) of the BCA2022.
124. The doorways and doors will be in accordance with Clause D3D24, NSW Clause D3D24(2) of the BCA2022.
125. 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 BCA2022.
126. The development consists of a drive-in theatre therefore it is to comply with NSW Part I6

127. Insulation will be in accordance with AS/NZS 4859.1:2018 and will be installed as required by NSW Part J4 of the BCA.
128. A smoke detection and alarm systems will be installed throughout the building in accordance with E2D10, NSW E2D10 and NSW Specification 20 of BCA2022.
129. Exit signage will be installed in accordance with Clause E4D5, NSW Clause E4D6, E4D7, and E4D8 of BCA2022 and AS/NZS 2293.1:2018.
130. A smoke exhaust system will be installed in the building in accordance with E2D14 to E2D20, NSW E2D16 to E2D20 and Specification 21 of BCA2022.
131. The building will be mechanically ventilated in accordance with Clause F6D6 of BCA2022 and AS 1668.2:2012.