

GARTNER TROVATO ARCHITECTS

# BCA ASSESSMENT REPORT

*Long Reef - 1010-1014 Pittwater Road*

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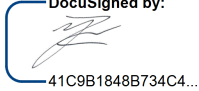


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## Document Control

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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 Retail/Residential development at Long Reef, 1010-1014 Pittwater Road Collaroy, against the Deemed-to-Satisfy provisions of the Building Code of Australia (BCA) 2022, Volume 1.

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

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

Item	Description	BCA Provision
<b>Performance Solutions Required</b>		
1.	Rationalise FRL in basement to 120mins with no required separation between class 7a & 7b. And on the ground floor between Class 6 & 7a.	C2D2 Specification 5
2.	It is noted that Stair 1 & 2 are not continuous, which would need to be addressed under a Performance Solution	D2D4
3.	Stair 2 connects 4 storeys and therefore is required to be Fire Isolated. A Performance Solution is required to address this as a non-fire-isolated stair.	D2D4
4.	Travel distance from Level 3 Communal Open Space to exit 35m in lieu of 20m.	D2D5
5.	Distance between alternative exits in the Basement extends to 69m in lieu of the 60m allowed.	D5D6
6.	Overall travel distance from Communal Open Space to Exit to open space exceeds 60m @ 83m in total.	D2D14
7.	Extended travel distance from the point of discharge at Ground Floor for Stairs 1, 2 & 3 of >15m to an exit doorway. Up to 38m to Stair 3.	D2D14
8.	Fire Hydrant & Fire Sprinkler Booster assemblies are not located within the façade of the primary frontage as required by AS2419.1-2021 CI 7.3.1.	E1D2
9.	Sprinkler Pump Room does not have direct access to a Fire-isolated Stair as per AS2118.1-2017	E1D4
10.	Solar panels installed on Roof to be non-combustible as a special hazard.	E1D17
<b>Non-Fire Related Performance Solutions</b>		
11.	Study Unit 05 Level 1 is not provided with natural light and ventilation.	F6D2
<b>Building Code of Australia Compliance Matters to be Addressed</b>		
12.	Stair 1 Level 2 - Infill the western end barrier to the top of stair. Likely drawing error.	D3D17

13.	Skylights located within 3m of walls and openings to upper levels located Level 1 & 3. Protection to be detailed	S5C16
<b>Further Information Required</b>		
14.	Provide details of proposed method of protection of windows within 3m of boundary in unit 17 to Living. Fire rated glass blocks or the like to be provided.	C4D5
15.	Hydrant and Hose Reel coverage to be shown to the basement.	E1D2, E1D3
16.	The construction of external walls 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.	F1D4, F1D5, F1D6, F1D7

## 1.0 Adoption of BCA 2022

### 1.1 PROPOSED INTRODUCTION

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

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

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

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

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

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

### 1.2 MAJOR CHANGES KNOWN TO DATE

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

#### *Livable housing*

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

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

#### *Consistent volume structure*

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

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

#### *Early childhood centres*

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

### Fire safety of external walls

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

### Waterproofing

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

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

### Weatherproofing

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

### Falls for floor wastes

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

### Number of exits

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

## 1.3 SUMMARY OF MAJOR CHANGES

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



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

## 2.0 Basis of Assessment

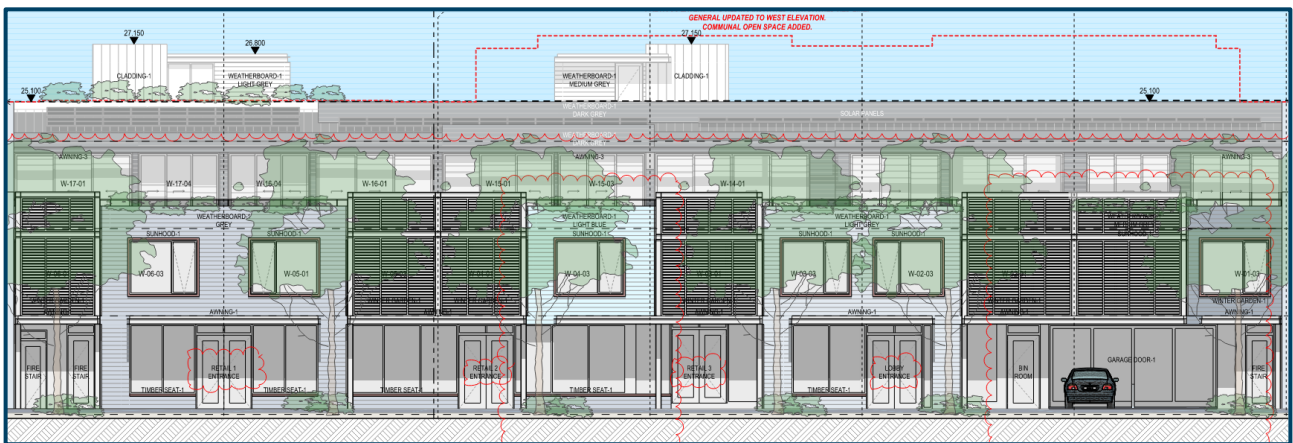
### 2.1 LOCATION AND DESCRIPTION

The building development, the subject of this report, is located at Long Reef, 1010-1014 Pittwater Road Collaroy NSW 2097.

The development comprises a five (5) storey mixed use residential development containing three (3) residential tenancies at ground floor level and residential apartment buildings located above.

The residential portion of the building is served by three (3) separate non-fire isolated stairs and within the building there are lightwells serving habitable rooms

The building has basement level carparking and a small number of carparks located at the rear of the ground floor level retail tenancies.



### 2.2 PURPOSE

The purpose of this report is to assess the current design proposal against the Deemed-to-Satisfy Provisions of BCA 2019, Amendment 1, and to clearly outline those areas (if any) where compliance is not achieved, where areas may warrant redesign to achieve strict BCA compliance or where areas may be able to be assessed against the relevant performance criteria of BCA 2019. Such assessment against relevant performance criteria will need to be addressed by means of a separate Performance Based Fire Safety Engineered Assessment Report to be prepared under separate cover.

### 2.3 BUILDING CODE OF AUSTRALIA

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

### 2.4 LIMITATIONS

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

1. the structural adequacy or design of the building;

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

This report does not include, or imply compliance with:

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

## 2.5 DESIGN DOCUMENTATION

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

### 3.0 Building Description

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

The building is mixed use comprising Class 2 Residential units on levels 1 to 3 with ancillary Class 7a carparking on Basement Level. The Ground Level is a combination of Class 6 retail with ancillary Class 7a carpark with Class 2 access.

#### 3.1 RISE IN STOREYS (CLAUSE C2D3)

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

#### 3.2 CLASSIFICATION (CLAUSE A6G1)

The building has been classified as follows.

Table 1: Building Classification

Class	Level	Description
Class 7a	Basement & Ground (partial)	Carpark
Class 7b	Basement	Storage
Class 6	Ground (partial)	Retail
Class 2	Level 1 to 3	Sole Occupancy Units & Communal Space

#### 3.3 EFFECTIVE HEIGHT (CLAUSE A1G4)

The building has an *effective height* of 10.5m being less than 12 metres.

#### 3.4 TYPE OF CONSTRUCTION REQUIRED (TABLE C2D2)

The building is required to be of Type A Construction.

#### 3.5 FLOOR AREA AND VOLUME LIMITATIONS (TABLE C3D3)

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

Class 6	Maximum Floor Area	5,000m <sup>2</sup>
	Maximum Volume	30,000m <sup>3</sup>
Class 7b	Maximum Floor Area	5,000m <sup>2</sup>
	Maximum Volume	30,000m <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 E1D9)	

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and as such there are no maximum floor area or volume limitations for this area.

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#### Class 2

The Class 2 portions of the building are not subject to floor area and volume limitations of C3D3 as Table 3 of Specifications 5 and Clause C4D12 of the BCA regulates the compartmentation and separation provisions applicable to buildings, or building portions, of Class 2 classifications.

### 3.6 FIRE COMPARTMENTS

The following *fire compartments* have been assumed:

1. Carpark
2. Retail tenancies x 3 Ground Floor
3. Residential Egress Ground Floor
4. 3 Levels of Residential units

### 3.7 EXITS

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

1. Basement x 2. 1 x FIS & 1 Stair
2. Retail tenancies each have a single exit direct to street.
3. Ground floor carpark has exit via Residential Lobby & beside Retail 01.
4. Residential Stair 1, 2 & 3 via fire separated corridors to street.

### 3.8 CLIMATE ZONE (CLAUSE A1G4)

The building is located within Climate Zone 5.

### 3.9 LOCATION OF FIRE-SOURCE FEATURES

The fire source features for the subject development are:

North: Built to side boundary.

South: Built to side boundary.

East: 6m rear boundary setback.

West: Built to roadside boundary. Fire source feature opposite side of road.

In accordance with 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.

## 4.0 BCA Assessment

### 4.1 INTRODUCTION

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

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

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

### 4.2 RELATIONSHIP TO THE DESIGN AND BUILDING PRACTITIONERS ACT

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

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

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

### 4.3 FIRE RESISTANCE AND STABILITY – PART C2 & SPECIFICATION 5

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

Element	Method of Construction
External Walls	Undefined.
Floors	Assumed concrete
Roof	Combination sheet metal and concrete slab.
Internal Walls (between SOU's)	Undefined
Basement walls	Undefined
Lift shafts	Undefined
Stair shafts	Undefined

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. The plans do not indicate the materials of the external wall and further details will be required to be submitted at CC stage for assessment, however compliance is readily achievable by a number of common wall types.

A Performance Solution is required to rationalise the fire separation between Class 7a & 7b on the Basement Level and between Class 7a & 6 on the Ground floor to FRL 120mins throughout.

Skylights are located within 3m of openings and walls to upper levels. The walls will need to be provided with the required FRL of 90mins extending 6m above the skylights. Openings will need to be protected in accordance with C4D5

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

#### 4.4 COMPARTMENTATION AND SEPARATION – PART C3

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

The class 6 portion of the building have been assessed and the floor area and volume of these compartments is less than that permitted by Clause C3D3 of the BCA. As such compliance with the provisions of the BCA for compartmentation is readily achieved.

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 Clause C3D3 of the BCA. As such compliance with the provisions of the BCA for compartmentation is readily achieved.

The carpark is required to have a sprinkler system, therefore the carpark is not the subject of floor area and volume limitations under the provision of clause C3D3 of the BCA.

Clause C3D7 of the BCA requires suitable vertical and/or horizontal spandrel separation between the openings in the external walls on different storeys. The plans indicate suitable spandrels are provided by a combination of horizontal balcony slabs and vertical walls beneath windows to majority of openings. The walls beneath the windows are required to be a minimum of 900mm high with 600mm above the slab, and an FRL of 60/60/60. The exception is the windows facing Pittwater Road on Level 01, as the awnings below do not extend past the opening by the required 450mm. This can be addressed where a sprinkler system is installed in accordance with AS2118.1-2017.

Clause C3D9 requires separation between difference classifications within the same storey. With the addition/expansion of the storage areas in the Basement Level carpark, with the addition of Class 7b separation is triggered. Performance Solution is sought to remove the requirement of the fire in the basement between Class 7a & 7b.

The main switchboard location has not been indicated on the plans assessed. If the switchboard is located within the building and is required service emergency equipment required to operate 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.

Compliance with Part C3 of the BCA can be readily achieved by the proposal.

## 4.5 PROTECTION OF OPENINGS – PART C4

### 5.5.1 Openings in external walls

The openings on the Northern elevation to Unit 17 Living area are within 3m of the boundary and will require protection. Protection can be provided by self-closing fire windows, fire shutters or fixed glazing with sprinklers. Details are to be provided with the Construction Certificate to outline how compliance will be achieved.

The glass block glazing is assumed to have the appropriate FRL of -/60/60 and therefore be considered part of the wall and not an opening.

Skylights are located within 3m of openings and walls to upper levels. The walls will need to be provided with the required FRL of 90mins extending 6m above the skylights. Openings will need to be protected in accordance with C4D5.

Note: the access hatches to the OSD tank have not been considered as external openings that requiring protection in accordance with BCA Clause C4D3.

### 5.5.2 Bounding Construction

The walls between the SOU's and between the SOU's and corridor are internal walls that require and FRL. Also, the walls to the lift and stairs require an FRL. As such, the doors to the sole occupancy units and fire stairs and the Bulky Goods Store on the ground floor are required to be self-closing FRL --/60/30 fire doors in accordance with clause C4D12 of the BCA. The doors to the lift are required to have an FRL of -/60/-.

### 5.5.3 Openings in Floors for Services and Service Installations

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

## 4.6 OCCUPANT ACCESS AND EGRESS – SECTION D

### 5.6.1 Egress from the building

Egress from the carpark & retail is required in sufficient numbers and location to ensure that no point on the floor is more than 20m from an exit, or a point of choice of two exits, in which case the distance to one of those exits is not more than 40m, as required by clause D2D5 of the BCA. On the ground floor, the distance to a single exit is permitted to be 30m.

The distance between alternative exits is required by clause D2D6 of the BCA to be no closer than 9m and no further apart than 60m when measured through the point of choice. The distances between alternative exits does not comply at 69m. This will need to be addressed under a Performance Solution.

In the residential portion of the building, the distance to an exit on the ground floor is permitted to be 20m. The distance to an exit on other floors is to be no more than 12m for a sprinkler protected building from any point on the floor to an exit, or a point of choice of 2 exits in which case the distance between those 2 exits is to exceed 60m.

Due to extended exit travel distance in some parts of the building it will be necessary for a Fire Engineered Performance Solution to address the following travel distance matters:



1. Level 3 Communal Open Space has a travel distance of 35m to the exit in lieu of 20m.- BCA Clause D2D5
2. Level 3 Communal Open Space has a total travel distance via a non-fire-isolated stair of 79.5m in lieu of 60m – BCA Clause D2D14
3. Non-fire-isolated Stairs 1, 2 & 3 all discharge greater than 15m from the exit- BCA Clause D2D14.

The building has no more than three (3) Class 2 storeys connected by a stairway, Stair 1 & 3) in a sprinkler protected building, and therefore under the provisions of clause D2D4 of the BCA, the building is permitted to have non fire isolated stairways. It is noted that Stair 1 & 2 are not continuous, which would need to be addressed under a Performance Solution. Additionally Stair 2 connects 4 storeys and therefore is required to be fire-isolated.

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 Clause D2D15 of the BCA 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 CC stage.

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

### **5.6.2 Egress from OSD Tank Roof**

The landscaped area above the OSD tank is not considered a “storey” for the purpose of exit travel distance. Therefore, no consideration of the path of travel via the stair serving this location has been provided. The access stair is considered a maintenance stair only which will be accessed annually or the like.

### **5.6.3 Access for people with disabilities**

Access to be assessed with separate report by Jensen Hughes.

## **4.7 SERVICES AND EQUIPMENT- PARTS E1, E2 AND E4**

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

### **1. Fire Hydrant**

The building has a floor area exceeding 500m<sup>2</sup>, therefore a Fire Hydrant System is required in accordance with AS2419.1-2021. The plans have been assessed and it was noted that no fire hydrants were shown to service the Basement and Ground levels and have been omitted from the Residential Stair 3. Hydrant coverage for the Class 2 portion accessed by Stairs 2 & 3 was compliant. To be firmed up with design development.

Performance Solution is required:

- Booster Assembly location not being in the building façade, a non-compliance with AS2419.1-2021 Clause 7.3.1.

### **2. Fire Hose Reels**

The Basement and Ground Floors are required to be covered by a Fire Hose Reel system in accordance with AS2441-2005. The plans do not have any fire hose reels shown, therefore coverage cannot be assessed. To be firmed up with design development.

### 3. Sprinkler

As the building has a rise in storeys of 4, a sprinkler system is required in accordance with Specification 17. Due to requirement for spandrel separation it will be necessary for the sprinkler system to comply with AS2118.1-2017. To be firmed up with design development.

Note: In accordance with requirements of AS2118.1-2017 which calls up access to pumprooms being via fire isolated stairs and airlocks. The design to be updated accordingly.

### 4. Smoke Hazard Management

An automatic smoke detection system complying with Specification 20 Clause 4 (S20C4) is required throughout. This will likely include stand alone AS3786 smoke alarms within units and reliance upon sprinkler protection to common residential corridors with connection to Building Occupant Warning System. To be firmed up with design development.

#### 4.8 LIFT INSTALLATIONS – PART E3

Lifts are provided to the building and are located in their own shaft and are serviced by a common lobby. The lifts do not require a stretcher facility as the lift does not travel over 12m in effective height, however, as the lift travels over 12m it will require car dimensions not less than 1400mm x 1600mm. The dimensions of the shaft are sufficient to allow compliance.

#### 4.9 FACILITIES IN RESIDENTIAL BUILDINGS – PART F4

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

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

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

#### 4.10 FACILITIES IN CLASS 3 TO 9 BUILDINGS – PART F4

The number of facilities required have been calculated in accordance with Clause F4D3 and D2D18. The number of toilet facilities shown on the plans are sufficient to satisfy the requirements of Clause F4D4 for the provision of unisex amenities to staff only within the retail tenancies. Note: As a base building assessment no allowance is made for future fitout whereby a café or the like is provided.

Access to a Unisex Accessible Sanitary Bathroom is via the carpark.

#### 4.11 ROOM HEIGHTS – PART F5

The ceiling heights have been assessed in accordance with Part F5 of the BCA which has indicated that compliance is readily achievable within all habitable spaces, corridors and the like. Residential floors are noted as 2.7m high with Class 6 areas 2.9m high and Carpark areas a minimum of 3m. All heights are to allow for services to be installed without breaching the required clear ceiling heights.

#### 4.12 LIGHT AND VENTILATION – PART F6

Natural light and ventilation are required to all habitable rooms within a class 2 building. The plans have been assessed which reveals that the majority of habitable spaces are serviced by windows or glazed doors. The exception is the small study alcove in Unit 05, which can be concessioned under a Performance Based Solution. The area of the doors and windows appear to be of sufficient size to provide the required minimum natural light and ventilation to the remaining habitable rooms.

Mechanical Ventilation supplied to non-habitable rooms of Class 2 Sole-occupancy Units are to be installed as per Clause F8D4 for condensation management.

For the class 6 portion of building artificial lighting and mechanical ventilation are required and these systems can be readily installed in the building.

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

#### 4.13 SOUND TRANSMISSION AND INSULATION – PART F7

Sound insulation of walls and floors are to comply with clauses F7D4 – F7D8. Sound insulation also be extended to the windows opening to the courtyard.

### *6.0 Statement of Compliance*

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

# *Annexures*

## Annexure A - Design Documentation

This report has been based on the following design documentation.

Table 3: Architectural Plans

Architectural Plans Prepared by Gartner Trovato Architects			
Drawing Number	Revision	Date	Title
DA-00	C-WIP	25/03/2024	COVER SHEET
DA-02	B	25/03/2024	SITE PLAN
DA-03	C-WIP	25/03/2024	BASEMENT PLAN
DA-04	B	25/03/2024	GROUND FLOOR PLAN
DA-05	C-WIP	25/03/2024	LEVEL 1 PLAN
DA-06	C-WIP	25/03/2024	LEVEL 2 PLAN
DA-07	B	25/03/2024	LEVEL 3 PLAN
DA-08	B	25/03/2024	ROOF PLAN
DA-09	B	25/03/2024	SECTION A
DA-10	B	25/03/2024	SECTION B
DA-11	B	25/03/2024	SECTION C
DA-12	B	25/03/2024	SECTION D
DA-13	B	25/03/2024	SECTION E
DA-14	B	25/03/2024	SECTION 2
DA-15	P2	17/07/2023	SECTION 2
DA-16	P2	17/07/2023	SECTION 3
DA-17	P2	17/07/2023	NORTH & EAST ELEVATIONS
DA-18	P2	17/07/2023	SOUTH & WEST ELEVATIONS

## Annexure B - Essential Services

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

Table 4: Essential Fire Safety Measures

Item	Essential Fire and Other Safety Measures	Standard of Performance
<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 Doorsets)
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 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) <b>BCA2022 D2.8</b> (Enclosure of Space under Stairs) 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 C4D16</b> (Construction joints) <b>BCA2022 Specification 13</b> AS1530.4:2014 & AS4072.1-2005
5.	Fire windows + Fixed Internal wall-wetting sprinklers + -/60/- Fire Windows fixed closed + FRL required for windows (where proposed)	<b>BCA2022 C4D3</b> (Protection of Openings) <b>BCA2022 C4D5</b> (Acceptable Methods of Protection) <b>BCA2022 C4D12</b> (Bounding Walls) <b>BCA2022 Specification 12</b> identical to tested prototype
6.	Lightweight construction + Internal bounding construction	<b>BCA2022 C2D2, Specification 5</b> <b>BCA2022 C2D9, Specification 6</b> <b>BCA2022 C3D8</b> (Fire Walls)

Item	Essential Fire and Other Safety Measures	Standard of Performance
		<b>BCA2022 C3D9</b> (Separation – same storey) <b>BCA2022 C4D12</b> (Bounding Construction) <b>BCA2022 D3D12</b> (Fire Isolated Passageways) AS1530.4:2014
<b>General</b>		
7.	Portable fire extinguishers	<b>BCA2022 E1D14</b> AS 2444–2001
8.	Fire blankets	AS 2444–2001
<b>General Egress</b>		
9.	Required Automatic Doors	<b>D3D24</b> (Doorways and Doors)
10.	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>Lifts</b>		
11.	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'
<b>Electrical Services</b>		
12.	Automatic fail safe devices + Auto open Sliding Exit doors + Break Glass release	<b>BCA2022 D3D26</b> (Operation of Latches) AS1670.1:2018 (Fire)
13.	Automatic fire detection & alarm:	<b>Spec 20 - Clause S20C5</b> (Combined Smoke detection system) <b>Spec 20 - Clause S20C7</b> (BOWS) AS 3786:2014 (Amdt 1-4) AS 1670.1:2018 (Fire) – Section 4 and 5 (Detectors)
14.	Emergency lighting	<b>BCA2022 E4D2, E4D4</b> AS/NZS 2293.1:2018
15.	Exit signs	<b>BCA2022 E4D55</b> (Exit Signs) <b>BCA2022 E4D6</b> (Direction Signs)



Item	Essential Fire and Other Safety Measures	Standard of Performance
		<b>BCA2022 E4D8</b> (Design and Operation - Exits) AS/NZS 2293.1:2018
<b>Hydraulic Services</b>		
16.	Automatic fire suppression systems + General Sprinklers	<b>BCA2022 E1D6,</b> <b>BCA2022 Specification 18</b> AS 2118.1:2017 (Sprinklers)
17.	Fire hydrant systems + NSW Storz Couplings	<b>BCA2022 E1D2</b> AS 2419.1:2021 FRNSW Technical Sheet D15/45534.V9 issued 10.01.19, 'Compatible Hose Connections'
18.	Hose reel systems	<b>BCA2022 E1D3</b> AS 2441:2005
19.	Wall-wetting sprinkler / drenchers (where proposed)	<b>BCA2022 C4D5,</b> AS 2118.2: Wall-wetting sprinkler / drenchers
<b>Mechanical Services</b>		
20.	Fire dampers	<b>BCA2022 E2, Spec 20, Spec 21</b> <b>BCA2022 C4D16</b> AS 1668.1:2015 (Amdt 1) AS 1682.1:2015 & AS 1682.2:2015
21.	1. Mechanical air handling systems 2. Mechanical ventilation to carpark.	<b>BCA2022 E2,</b> <b>Spec 20, Spec 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.
<b>E2D3 General Requirements</b>		
1. An air-handling system which does not form part of a smoke hazard management system in accordance with E2D4 to E2D20 and which recycles air from one fire compartment to another fire compartment or operates in a manner that may unduly contribute to the spread of smoke from one fire compartment to another fire compartment must, subject to (2), be designed and installed— a. to operate as a smoke control system in accordance with AS 1668.1; or		

Item	Essential Fire and Other Safety Measures	Standard of Performance
	b. such that it—	i. incorporates smoke dampers where the air-handling ducts penetrate any elements separating the fire compartments served; and ii. is arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke detectors complying with clause 7.5 of AS 1670.1.
2.	For the purposes of (1), each sole-occupancy unit in a Class 2 or 3 building is treated as a separate fire compartment.	
3.	Miscellaneous air-handling systems covered by Sections 5 and 6 of AS 1668.1 serving more than one fire compartment (other than a carpark ventilation system) and not forming part of a smoke hazard management system must comply with these Sections of the Standard.	
4.	A smoke detection system must be installed in accordance with S20C6 to operate AS 1668.1 systems that are provided for zone pressurisation and automatic air pressurisation for fire-isolated exits	

## Annexure C - Fire Resistance Levels

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

### Type A Construction

Table 5: Type A Construction

Item	Class 2	Class 7a	Class 6
Loadbearing External Walls (including columns and other building elements incorporated therein)			
+ Less than 1.5m to a fire-source feature	90/90/90	120/120/120	180/180/180
+ 1.5 – less than 3m from a fire-source feature	90/60/60	120/90/90	180/180/120
+ 3m or more from a fire source feature	90/60/30	120/60/30	180/120/90
Non-Loadbearing External Walls			
+ Less than 1.5m to a fire-source feature	-/90/90	-/120/120	-/180/180
+ 1.5 – less than 3m from a fire-source feature	-/60/60	-/90/90	-/180/120
+ 3m or more from a fire-source feature	-/-/-	-/-/-	-/-/-
External Columns			
+ Loadbearing	90/-/-	120/-/-	180/-/-
+ Non-loadbearing	-/-/-	-/-/-	-/-/-
Common Walls & Fire Walls	90/90/90	120/120/120	180/180/180
Stair and Lift Shafts required to be fire-resisting			
+ Loadbearing	90/90/90	120/120/120	180/120/120
+ Non-loadbearing	-/90/90	-/120/120	-/120/120
Internal walls bounding sole occupancy units			
+ Loadbearing	90/90/90	120/-/-	180/-/-
+ Non-loadbearing	-/60/60	-/-/-	-/-/-

Item	Class 2	Class 7a	Class 6
Internal walls bounding public corridors, public lobbies and the like:			
+ Loadbearing	90/90/90	120/-/-	180/-/-
+ Non-loadbearing	-/60/60	-/-/-	-/-/-
Ventilating, pipe, garbage and like shafts:			
+ Loadbearing	90/90/90	120/90/90	180/120/120
+ Non-loadbearing	-/90/90	-/90/90	-/120/120
Other loadbearing internal walls, beams trusses and columns	90/-/-	120/-/-	180/-/-
Floors	90/90/90	120/120/120	180/180/180
Roofs <sup>1</sup>	90/60/30	120/60/30	180/60/30

N.B. There are FRL concessions applicable for fully sprinkler protected car park portions under Clause 3.9 of BCA Specification C1.1, reducing the carpark FRL's down from 120/120/120 to 60/60/60.

<sup>1</sup> The roof need not comply with any FRL's due to the sprinkler protection of the entire building.



## Annexure D - Definitions

### 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.

### *Sole-occupancy unit*

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

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



## Annexure E - BCA Compliance Specification

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

### Architectural Design Certification

1. The FRL's of building elements for the proposed works have been designed in accordance with Tables S5C11 a to g 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 C2D9 of the BCA.
3. Building elements must be non-combustible in accordance with C2D10 of the BCA.
4. Materials, floor and wall linings/coverings, surface finishes and air-handling ductwork used in the works will comply with the fire hazard properties of Clause C2D11 and Specification 7 of the BCA.
5. Any ancillary elements fixed, installed or attached to the internal parts or external face of an external wall that is required to be non-combustible will comply with Clause C2D14 of the BCA.
6. Vertical separation will be provided to the new openings in the external walls in accordance with Clause C3D7 of the BCA. It is noted that no spandrel separation is required in the stairway or to a void.
7. The fire walls proposed to separate buildings and/or fire compartments will comply with Clause C3D8 of the BCA.
8. 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 the BCA.
9. Floors separating storeys of different classifications will comply with BCA Clause C3D10 of the BCA.
10. Equipment will be separated in accordance with Clause C3D13 of the BCA.
11. The electricity substation, any main switch room sustaining emergency equipment required to operate in emergency mode, will be separated from the remaining building with construction having an FRL 120/120/120 and provided with self-closing -/120/130 fire doors in accordance with Clause C3D14 of the BCA.
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 the BCA or protected in accordance with Clause C4D5 of the BCA.
13. The external walls and openings of separate fire compartments will be protected in accordance with Clause C4D4.
14. Doorways in any fire walls separating fire compartments will be protected in accordance with Clause C4D6 of the BCA.
15. 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 the BCA.
16. Fire-isolated stairways will not be penetrated by services other than those permitted by Clause C4D10 of the BCA.
17. Services penetrating elements required to possess an FRL including the floor slabs, walls, shafts, etc. will be protected in accordance with Clause C4D13, C4D14. and C4D15 and Specification 13 of the BCA.

18. 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.
19. The lift doors will be -/60/- fire doors complying with AS 1735.11:1986 in accordance Clause C4D11 of the BCA.
20. Doorways and other openings in internal walls required to have an FRL will be protected in accordance with Clause C4D12 of the BCA.
21. Columns protected by light weight construction will achieve an FRL not less than the FRL for the element it is penetrating, in accordance with Clause C4D17 of the BCA.
22. A lintel will have the FRL required for the part of the building in which it is situated, unless it does not contribute to the support of a fire door, fire window or fire shutter, and it spans an opening in masonry which is not more than 150 mm thick and is not more than 3m wide if the masonry is non- loadbearing; or not more than 1.8m wide if the masonry is loadbearing and part of a solid wall or one of the leaves of a cavity wall, or it spans an opening in a non-loadbearing wall of the Class 2 or 3 building, in accordance with S5C4 of the BCA.
23. All attachments to the external façade of the building will be fixed in a way that does not affect the fire resistance of that element in accordance with S5C6 of the BCA.
24. The top and bottom of the riser shafts will achieve an FRL not less than the FRL required for the walls of the shaft in accordance with S5C8 of the BCA.
25. Fire doors will comply with AS 1905.1:2015 and Specification 12 of the BCA.
26. Fire shutters and fire windows will be in accordance with Specification 12 of the BCA.
27. The number of exits provided to the building will be in accordance with Clause D2D3 of the BCA.
28. The required exits will be fire-isolated in accordance with Clause D2D4 of the BCA.
29. The dimensions of exits and paths of travel to exits, including the height, width, and width of doorways will be provided in accordance with D2D7 to D2D10 of the BCA.
30. The fire-isolated exits will be in accordance with Clause D2D12 of the BCA.
31. Discharge from exits will be in accordance with Clause D2D15 of the BCA.
32. Access to the lift pit will be in accordance with Clause D2D22 of the BCA.
33. The stairway or ramp within the fire-isolated shaft is to be non-combustible, and if there is a local failure will not cause structural damage or impair the fire resistance of the shaft, in accordance with Clause D3D3 of the BCA.
34. The non-fire isolated stairs will be constructed in accordance with Clause D3D5 of the BCA.
35. The ramp or balcony provided for smoke hazard management requirements will be in accordance with Clause D3D6 of the BCA.
36. The construction of EDB's and telecommunications distribution boards will be in accordance with Clause D3D8 of the BCA with the enclosure bounded by non-combustible construction or fire protective covering and smoke seals provided around the perimeter of the non-combustible doors and any openings sealed with non-combustible mastic to prevent smoke spreading from the enclosure.
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 the BCA.

38. New pedestrian ramps will comply with AS 1428.1:2009, Clause D3D11 and Part D4 of the BCA. The floor surface of a ramp must have a slip-resistance classification complying with Table D3D15 when tested in accordance with AS 4586:2013.
39. The fire-isolated passageway will be in accordance with Clause D3D12 of the BCA.
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 the BCA.
41. Stair geometry will be in accordance with Clause D3D14 of the BCA. Stair treads are to have a surface with a slip-resistance classification complying with Table D3D15 when tested in accordance with AS 4586:2013.
42. Landings and door thresholds throughout the development will be provided in accordance with Clause D3D15 and D3D16 of the BCA. Landings will have either a surface with a slip-resistance classification complying with Table D3D15 when tested in accordance with AS 4586:2013 or a strip at the edge of the landing with a slip-resistance classification complying with Table D3D15 when tested in accordance with AS 4586:2013.
43. The handrails and balustrades to all stairs and throughout the building will be in accordance with D3D17 to D3D22 of the BCA.
44. The doorways and doors will be in accordance with Clause D3D24 and D3D25 of the BCA.
45. Door latching mechanisms will be in accordance with Clause D3D26 of the BCA.
46. Signage will be provided on fire and smoke doors in accordance with Clause D3D28 of the BCA.
47. 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 the BCA. In addition to window protection, and for other openable windows 4 meters or more above the ground below, a barrier with a height not less than 865mm above the floor will be installed to the openable window.
48. Fire precautions whilst the building is under construction will be in accordance with Clause E1D16 of the BCA.
49. Additional provisions will be made in accordance with Clause E1D17 of the BCA, due to the special hazards associated with the building works or the location of the building works.
50. External above ground waterproofing membranes will comply with Clause F1D5 of the BCA and AS 4654 Parts 1 & 2:2012.
51. The new roof covering will be in accordance with Clause F3D1 of the BCA.
52. Any sarking proposed will be installed in accordance with Clause F3D2 of the BCA.
53. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F2D2 of the BCA and AS 3740:2010.
54. Damp proofing of the proposed structure will be carried out in accordance with Clause F1D6 and F1D7 of the BCA.
55. Floor wastes will be installed to bathrooms and laundries above sole-occupancy units or public space in accordance with Clause F2D4 of the BCA.
56. All new glazing will be in accordance with Clause F3D4 of the BCA and AS 1288:2021 / AS 2047:2014 (incorporating amendments 1 and 2).

57. Sanitary facilities will be provided in the building in accordance with Clause F4D1, and F4D2 to F4D8 of the BCA.
58. Accessible sanitary facilities will be provided in the building in accordance with Clause F4D5 and F4D6 of the BCA and AS1428.1:2009.
59. The construction of the sanitary facilities will be in accordance with Clause F4D8 of the BCA.
60. Ceiling heights will be in accordance with Clause F5D2 of the BCA.
61. Natural light will be provided in accordance with Clause F6D2, F6D3, and F6D4 of the BCA.
62. Natural ventilation will be provided in accordance with Clause F6D6, F6D7, and F6D8 of the BCA.
63. Water closets and urinals will be located in accordance with Clause F6D9 of the BCA.
64. The sanitary compartments will either be provided with mechanical exhaust ventilation or an airlock in accordance with Clause F6D10 of the BCA.
65. Pliable building membranes installed in external walls will comply with Clause F6.2 of the BCA and where a pliable building membrane is not installed in an external wall, the primary water control layer will be separated from water sensitive materials by a drained cavity.
66. Every storey of the carpark will be provided with an adequate system of permanent natural or mechanical ventilation in accordance with Clause F6D11 of the BCA.
67. A safe manner for cleaning of windows located 3 or more storeys above ground level will be provided in accordance with the Work Health & Safety Act 2011 and regulations made under that Act in accordance with NSW G1D5 of the BCA.
68. 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.
69. Essential fire or other safety measures will be maintained and certified on an ongoing basis, in accordance with the provisions of the Environmental Planning and Assessment Regulation, 2000.
70. Building Fabric and Thermal Construction will be in accordance with Part J1 of the BCA.
71. Glazing will be in accordance with Part J1 of the BCA.
72. Building sealing will be in accordance with Part J3 of the BCA.
73. Facilities for Energy Monitoring will be provided in accordance with Clause J8.3 of the BCA.

**Electrical Services Design Certification:**

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

**Hydraulic Services Design Certification:**

80. Storm water drainage will be provided in accordance with Clause F1D3 of the BCA and AS/NZS 3500.3:2018
81. Fire hydrant system will be installed in accordance with Clause E1D2 of the BCA and AS 2419.1:2021 as required.
82. Fire hose reels will be installed in accordance with Clause E1D3 of the BCA and AS 2441:2005.
83. A sprinkler system will be installed in accordance with Clause E1D6 of the BCA, Specification 18 and appropriate part(s) of AS2118, FPAA101D and FPAA101H.
84. Portable fire extinguishers will be installed in accordance with Clause E1D14 of the BCA and AS 2444:2001.
85. The heated water supply systems will be designed and installed to NCC Volume Three – Plumbing Code and Clause J7.2 of the BCA.

**Mechanical Services Design Certification:**

86. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F6D6 of the BCA and AS 1668.2:2012.
87. Every storey of the car park will be ventilated in accordance with Clause F6D11 of the BCA and where not naturally ventilated it will be mechanically ventilated in accordance with AS 1668.2:2012 as applicable.
88. The commercial kitchen will be provided with a kitchen exhaust system in accordance with Clause F6D12 of the BCA, and AS 1668.1:2015 and AS 1668.2:2012.
89. Exhaust systems installed in a kitchen, bathroom, sanitary compartment or laundry of a Class 2 or 4 *sole-occupancy unit* will have a minimum flow rate and discharge location in accordance with Clause F8D4 of the BCA.
90. Where exhaust discharges directly or via shaft into a roof space of a Class 2 or 4 *sole-occupancy unit*, ventilation of the roof space will comply with Clause F8D5 of the BCA.
91. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J5 of the BCA
92. Rigid and flexible ductwork will comply with the fire hazard properties set out in AS 4254 Parts 1 and 2.

**Structural Engineers Design Certification:**

93. The material and forms of construction for the proposed works will be in accordance with Clause B1D2, B1D3 and B1D4 of the BCA as follows:
  - a. Dead and Live Loads – AS/NZS 1170.1:2002 (incorporating amendments 1 and 2)
  - b. Wind Loads – AS/NZS 1170.2:2021
  - c. Earthquake actions – AS 1170.4:2007
  - d. Masonry – AS 3700:2018
  - e. Concrete Construction – AS 3600:2018
  - f. Steel Construction AS 4100:1998
  - g. Aluminium Construction – AS/NZS 1664.1 or 2:1997

- h. Timber Construction – AS 1720.1:2010
  - i. ABCB Standard for Construction of Buildings in Flood Hazard Areas.
94. The FRL's of building elements for the proposed works have been designed in accordance with Tables S5C11 a to g of Specification 5 of BCA2022 for a building of Type A Construction.
95. The lift shaft will have an FRL in accordance with S5C8 of the BCA.
96. Lightweight construction used to achieve required fire resistance levels will comply with Specification 6 of the BCA.
97. The construction joints to the structure will be in accordance with Clause C4D16 of the BCA to reinstate the FRL of the element concerned.
98. The concrete panel external walls will be in accordance with Specification C2D12 of the BCA.
99. Upon completion of the works, a structural engineer will be able to certify that local failure will be in accordance with Clause D3D3 of the BCA for the fire isolated stairs.

**Lift Services Design Certification:**

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

**Acoustic Services Design Certification:**

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

**NSW Specification Design Certificate:**

106. Materials, floor and wall linings/coverings, surface finished and air-handling ductwork used in the works will comply with the fire hazard properties in accordance with Clause C2D11, NSW Clause C2D11, Specification 7 and NSW Specification 7 of the BCA.
107. The building will be separated in accordance with Clause C3D6, and NSW Clause C3D6 of the BCA.
108. Doorways and other openings in internal walls required to have an FRL will be protected in accordance with Clause C4D12, and NSW Clause C4D12 (4) and (5) of the BCA.
109. The number of exits provided to the building will be in accordance with Clause D2D3 and NSW Clause D2D3(4) of the BCA.
110. The discharge points of exits will be in accordance with Clause D2D15, and NSW Clause D2D15(6) of the BCA.
111. The width of doorways in exits and paths of travel to exits will be provided in accordance with Clause D2D96, and NSW Clause D2D9(a) to (g) of the BCA.

112. 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.
113. Landings and door thresholds throughout the development will be provided in accordance with Clause D3D15 and D3D162.15, and NSW Clause D3D16(a) to (e) of the BCA. Landings to have either a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013 or a strip at the edge of the landing with a slip-resistance classification complying with Table D3D15 when tested in accordance with AS 4586:2013 where the edge leads to a flight below.
114. The height of barriers is to be in accordance with D3D18 and NSW D3D18(1) of the BCA.
115. The doorways and doors will be in accordance with Clause D3D24, NSW Clause D23D24(2) of the BCA.
116. The door latching mechanisms to the proposed required exit doors will be in accordance with Clause D3D26 and NSW Clause D3D26(5) and (6) of the BCA.
117. Insulation will be in accordance with AS/NZS 4859.1:2018 and will be installed as required by NSW Part J1 of the BCA.