BCA Assessment Report

711 Hunter Street Newcastle West

Project:	711 Hunter Street Newcastle West
Reference No:	114499-BCA-Stage1-r1
Date:	14 October 2022
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Document Control

Revision	Date	Description	
114499-BCA-Stage1-r1	14 Oct 2022	BCA Assessment Report – Development Application	
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BASIS OF ASSESSMENT

1.1. Location and Description

This Building Code of Australia assessment report has been prepared by BCA Logic Pty Ltd (A Jensen Hughes company) on behalf of Hunter Street JV CoP/L (**the applicant**). It accompanies a Statement of Environmental Effects (**SEE**) in support of a Development Application (**DA**) at 711 Hunter Street, Newcastle West (**the site**).

This Building Code of Australia assessment report assesses the development's ability to achieve compliance with the Building Code of Australia.

The development has undergone an Architectural Design Competition where three competitors put forward their designs in accordance with the brief. The Plus Architecture scheme was recommended by the Jury as the winning scheme in the competitive design process.

The overall outcome of the proposal aims to develop a mixed-use precinct with high quality tower forms providing a positive relationship to the immediate surrounds and acknowledging the surrounding heritage context. The proposal intends to act as a landmark for Newcastle West with a curated mix of eclectic and creative retail, F&B and commercial opportunities activating the ground levels.

The key features are summarised below:

- Demolition of the existing commercial premises and ancillary structures on-site;
- Construction of a mixed-use precinct forming active ground and podium levels reaching 5 storeys of retail and commercial tenancies, with two tower forms for residential apartments reaching 26 storeys comprising of 258 apartments;
- Podium level car park for 300 cars incorporated within the podium levels;
- Communal open space for residents located on level 5 and 17;
- Vehicle access to the site via Little King Street;
- Associated landscaping with the public domain improvements;
- An urban plaza fronting National Park Street providing opportunities for activation and public art; and
- Construction of ancillary infrastructure and utilities as required.

It is noted that the overall development will form two separate concurrent DAs. Stage 1 will form the northern tower and podium elements and Stage 2 will form the southern tower and podium elements. These separate DA components are explored further below.

Stage 1:

The northern tower will include commercial and retail tenancies at ground level which will be accessible via National Park Street, Little King Street and Hunter Street. The podium levels will be situated above ground and contain car parking for both visitors and residents, accessed via Little King Street. Level 5 to Level 25 will contain a mixture of residential apartments ranging from 1 bedroom to 3 bedrooms. A numerical breakdown of Stage 1 is shown below:

- 136 apartments including: 35 one bedroom, 74 two bedroom, 26 three bedroom, 1 four bedroom.
- Total GFA: 13, 581 sqm
- Floor space ratio: 5.41:1
- Total car parking spaces: 165 spaces over 4 podium levels

Source: Urbis

1.2. 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.

1.3. 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, 2019, Amendment 1 (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.

1.4. Limitations

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

(a) the structural adequacy or design of the building;

(b) the inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and

(c) the design basis and/or operating capabilities of any proposed electrical, mechanical or hydraulic fire protection services.

This report does not include, or imply compliance with:

(a) the National Construction Code – Plumbing Code of Australia Volume 3

(b) 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 BCA2019 only);

(c) Demolition Standards not referred to by the BCA;

(d) Work Health and Safety Act 2011;

(e) Requirements of Australian Standards unless specifically referred to;

(f) 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

(g) Conditions of Development Consent issued by the Local Consent Authority.

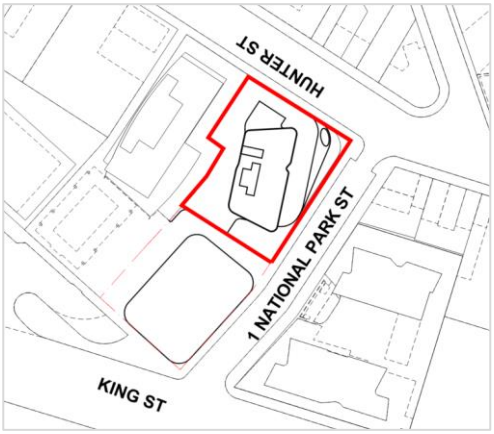
1.5. Design Documentation

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

2 BUILDING DESCRIPTION

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

The development is noted to be constructed in two stages, with an overall united building being formed upon completion of both stages. This report relates to the building constructed as stage 1.



2.1. Rise in Storeys (Clause C1.2)

The building has a rise in storeys of twenty six (26).

2.2. Classification (Clause A6.0)

The building has been classified as follows.

Table 1. Building Classification

Class	Level	Description
2	Ground, Levels 5 to 25	Residential sole occupancy units and associated areas.
5	Ground Floors & Level 01	Commercial sole occupancy units and associated areas.
6	Ground Floor & Level 02	Retail sole occupancy units and associated areas. Roof Bar.
7a	Ground Floor – Level 04	Car parking and associated areas.
7b	Ground Floor	Storage areas.

2.3. Effective Height (Clause A1.0)

The building has an *effective height* of 82.8 metres.

2.4. Type of Construction Required (Table C1.1)

The building is required to be of Type A Fire Resisting Construction.

2.5. Floor Area and Volume Limitations (Table C2.2)

The building's fire compartments are subject to maximum floor area and volume limits of:-

Class 2	The Class 2 portions of the building are not subject to floor area and volume limitations of C2.2 as Table 3 of Specifications C1.1 and Clause

	C3.11 of the BCA regulates the compartmentation and separation provisions applicable to Class 2 buildings or building portions.	
Class 5	Maximum Floor Area	8 000m^2
	Maximum Volume	48 000m^3
Class 6 & 7b	Maximum Floor Area	5 000m^2
	Maximum Volume	30 000m^3
Class 7a	The building is to be provided with a sprinkler system complying with Specification E1.5 and AS 2118.1 and as such there are no maximum floor area or volume limitations for this area.	

Where multiple classifications occur within the compartment area, the percentage of each classification as a proportion of the actual floor area and volume can be used.

2.6. Fire Compartments

The following *fire compartments* have been assumed:

(a) To be confirmed. (Fire compartments containing Class 6 parts to be less than 2000m^2).

2.7. Exits

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

(a) Each fire isolated stairway.

(b) Doors on the ground floor provide direct access to the open space.

All storeys of the building must have at least two exits, ensuring that all parts of the storey have access to two exits without passing through another sole occupancy unit.

2.8. Climate Zone (Clause A1.0)

The building is located within Climate Zone 5.

2.9. Location of Fire-source features

The fire source features for the subject development are:

North: The far boundary of Hunter Street.

South: The far boundary of King Street.

East: The far boundary of National Park Street.

West: The allotment boundary.

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

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

(b) is neither transparent nor translucent.

3 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 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 F 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 (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.

3.3. Fire Resistance and Stability – Section C

The proposed building can comply with the requirements of the BCA with respect to fire resistance. There are areas of the building's fire resistance that will be subject to performance-based assessment, these are outlined within part 4 of this report.

The building is required to be constructed to meet the fire resistance levels outlined within Type A construction and 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. Suitable construction types and materials are proposed.

Fire compartments are subject to floor area and volume requirements of Clause C2.2 of the BCA. Walls have been suitably allowed for to ensure required fire compartment size limitations are not exceeded. Fire walls can be readily constructed where necessary. 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 C2.2 of the BCA. No limitations are imposed on the residential areas of the building due to the requirements of fire resisting bounding construction.

The building is required to be provided, throughout, with a sprinkler system complying with AS2118.1 and therefore is not subject to any spandrel separation requirements between the floors.

Both the main switchboard and substation rooms contain suitable provision for the required fire resisting separation requirements of C2.13 to be achieved. The length of the residential corridors is less than 40m and avoids the need for smoke separation.

The external walls are proposed to be located sufficient distances away from the fire source features, being the allotment boundary and far side boundaries of the adjoining roadways, to avoid the need for external wall fire protection.

Suitable wall allowance is provided to ensure that the required fire resisting bounding construction will be available within the residential parts of the building. All services penetrations are not to compromise the fire resistance levels of the elements, where necessary appropriate fire sealing and stopping can be provided.

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.

3.4. Occupant Access and Egress – Section D

There are areas of the building's egress that will be subject to performance-based assessment, these are outlined within part 4 of this report. The proposed building can comply with the requirements of the BCA with respect to Access and Egress.

The building has an effective height greater than 25m and therefore all storeys of the building must have at least two exits with access being available to two exits from all parts of the building. This is readily allowed for or will be subject to performance assessment as necessary.

Egress from the carpark and storage areas are required in sufficient numbers and location to ensure that no point on the floor is more than 20m from and 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 D1.4 of the BCA. The distance between alternative exits is required by clause D1.6 of the BCA to be no closer than 9m and no further apart than 60m when measured through the point of choice.

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 6m from any point on the floor to an exit, or a point of choice of 2 exits in which case the distance between those 2 exits is to exceed 45m.

Required travel distances have been reviewed, it is noted that compliance can be readily achieved or satisfied by performance assessment where necessary.

Exits and paths of travel to them have suitable dimensions to ensure that the required population can be accommodated. Stairway and handrail construction requirements are readily met. Suitable exit stairway design is proposed to ensure that fire isolation and discharge requirements are met. Occupant's discharging from the stairs will be suitably protected and subject to performance assessment.

Barriers to prevent falls, including required window protection, are expected to be readily provided as necessary.

The building is required to be accessible for persons with a disability which is outlined within a separate access report.

3.5. Services and equipment- Section E

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

The passenger lifts are required to accommodate a raised horizontal stretcher bed and emergency lifts serve the storeys of the building above an effective height of 25m. Suitable provision is available within the lift shaft allowances to ensure compliance is achieved.

3.6. Health and Amenity – Section F

The ceiling heights have been assessed in accordance with Part F3 of the BCA which has indicated that compliance is readily achievable within all habitable spaces, corridors and the like.

Natural light and ventilation are required to all habitable rooms within a class 2 building. The plans have been assessed which reveals all habitable spaces are services by windows or glazed doors. The area of the doors and windows are expected to provide sufficient size to provide the required minimum natural light and ventilation to all habitable rooms. Required artificial lighting is also expected to be readily installed in the building as necessary.

All parts of the building require artificial lighting and ventilation where 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 F4.11 of the BCA.

The construction of the relevant residential walls and floors are expected to readily meet the requirements for sound insulation and condensation management..

3.7. Occupiable Outdoor Area

The outdoor unit balconies and outdoor common areas are defined as Occupiable outdoor areas and subject to the requirements of this part. Suitable provision is made for compliance to be achieved.

3.8. Energy efficiency – Section J

The building is subject to the requirements of this Section, including the NSW BASIX commitments. It is expected that compliance will be achieved.

4 MATTERS FOR FURTHER CONSIDERATION

4.1. General

Assessment of the Architectural design documentation against the Deemed-to Satisfy Provisions of the Building Code of Australia, 2019 (BCA) has revealed the following areas where compliance with the BCA may require further consideration and/or may involve assessment as Performance Based (Fire Engineered) *Performance Solutions*. Any *Performance Solutions* will be required to clearly indicate methodologies for achieving compliance with the relevant *Performance Requirements*.

Annexure D to this report provides a detailed assessment of the proposal against ALL relevant Deemed-to-Satisfy Provisions of the BCA.

Note: It is important that Annexure D is read in conjunction with the items below, as some matters may not have had sufficient information provided to allow a detailed assessment to be undertaken.

4.2. Dimensions and Tolerances

The BCA contains the minimum standards for building construction and safety, and therefore generally stipulates minimum dimensions which must be met. BCA Logic's assessment of the plans and specifications has been undertaken to ensure the minimal dimensions have been met.

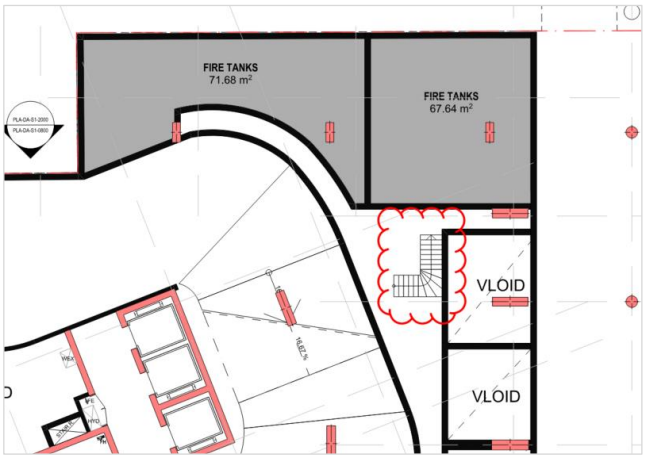
The designer and builder should ensure that the minimum dimensions are met onsite and consideration needs to be given to construction tolerances for wall set outs, applied finishes and skirtings to corridors and bathrooms for example, tiling bed thicknesses and the like which can adversely impact on critical maters such as access for people with disabilities, stair and corridor widths and balustrade heights.

4.3. Performance Based Design – Performance Solutions

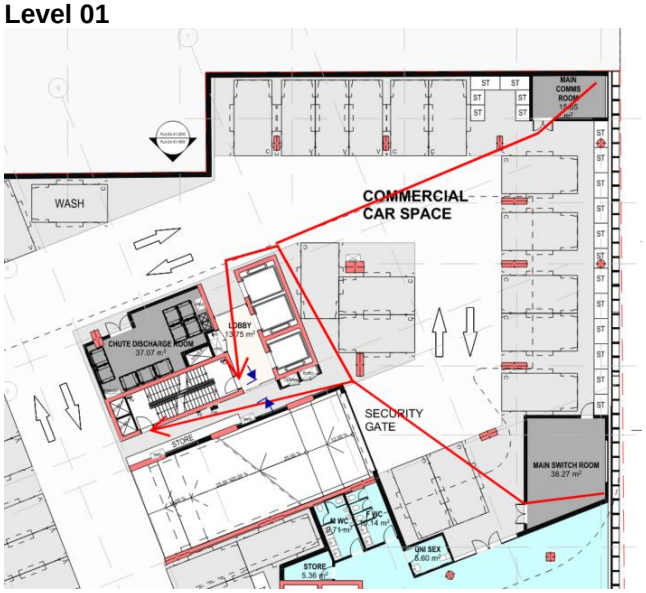
There are specific areas throughout the development where strict Deemed-to-Satisfy BCA Compliance will not be achieved by the proposed design and site constraints. These matters will need to be address in a detailed Fire Safety Engineering Report and other Performance Solution Report to be prepared for this development under separate cover:

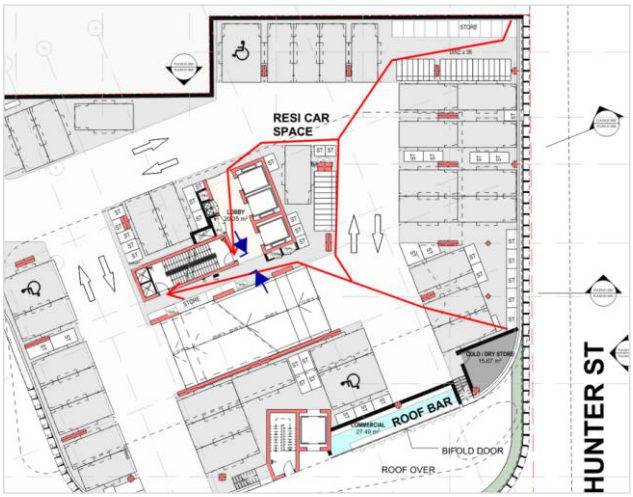
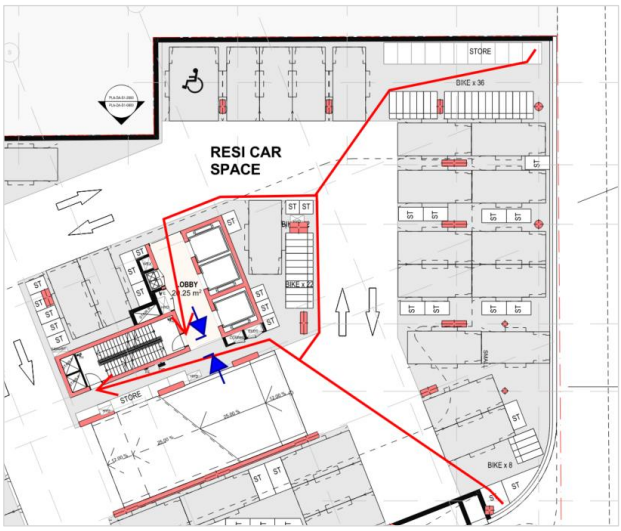
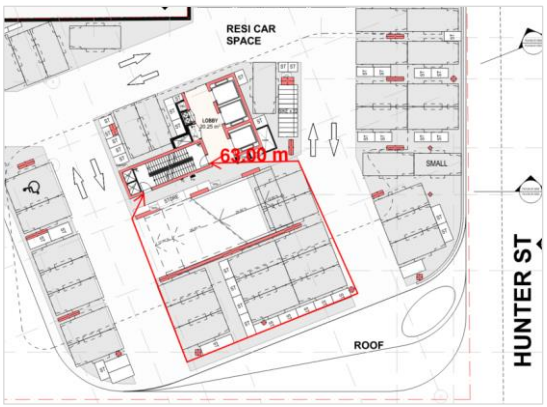
Table 2. Performance Solutions

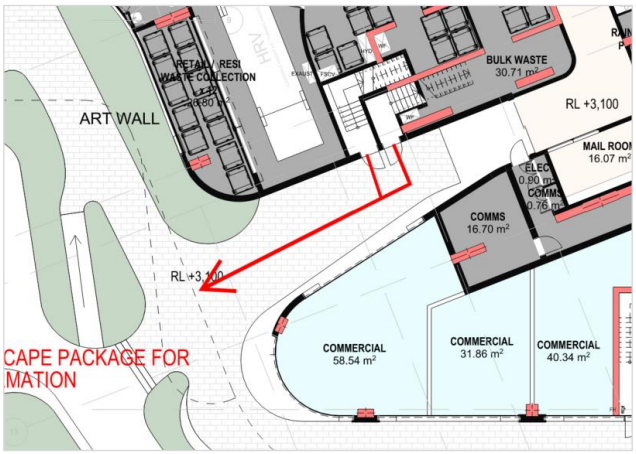
Item	Description of Performance Solution	DTS Provision
1.	Rationalisation of fire resistance levels where multiple classifications occur. • Ground Level – Class 5, 6, 7a, 7b • Level 02 – Class 6, 7a, 7b	C1.1 Spec C1.1
2.	There will be areas on the ground floor of the building that will have access to only a single exit in lieu of two required by the DTS. This will include the Commercial units and lobby, Amenities and Garbage collection areas. The storey of the building, containing the fire tanks, will contain only one exit in lieu of two. Whilst the area is noted as a Mezzanine, it is considered a storey by the definitions of the BCA.	D1.2

Item	Description of Performance Solution	DTS Provision
		
3.	Sole occupancy unit entry doors more than 6m to an exit or point of choice. Areas include; **Level 05**  **Level 07-16** 	D1.4

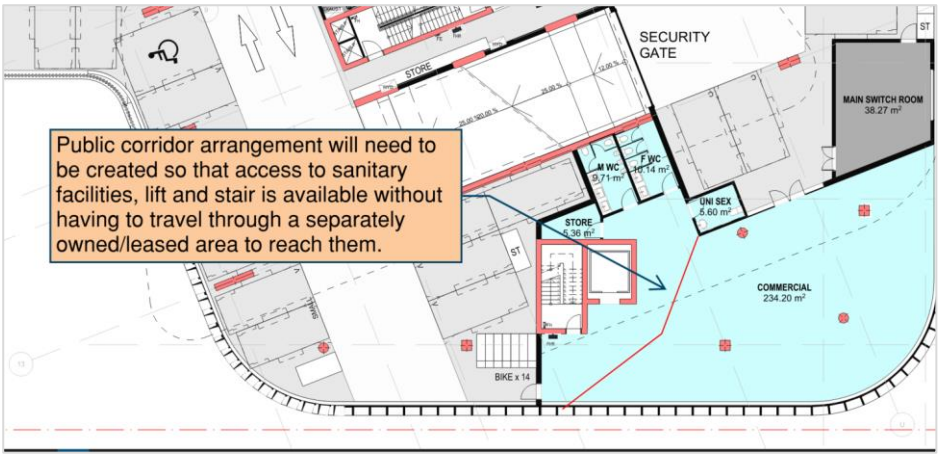
Item	Description of Performance Solution	DTS Provision
	Level 17  **Level 18-24** 	
4.	Travel distances, from Common Areas, more than 20m to an exit or point of choice. Areas include; **Level 05** 	D1.4

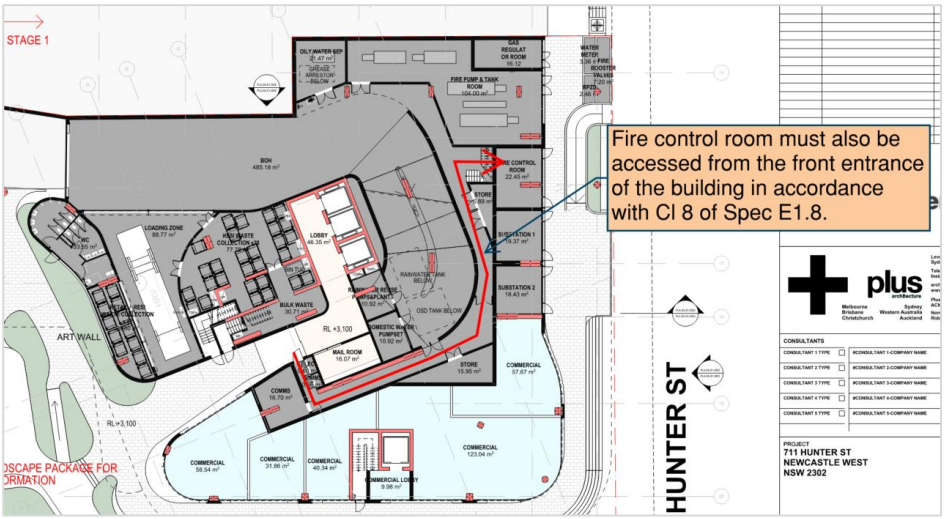
Item	Description of Performance Solution	DTS Provision
	Level 17 	
5.	The distance between alternative means of egress will be less than the minimum required. It is proposed that each tower be provided with a scissor arrangement where the entrance to each will be less than 9m apart and cause alternative paths of travel to converge less than 6m apart.	D1.5
6.	Paths of travel to alternative exits converge closer than 6m to one another. **Level 01** 	D1.5

Item	Description of Performance Solution	DTS Provision
	Level 02  **Level 03** 	
7.	The distance between alternative means of egress will exceed the maximum permitted of 45m in residential parts or 60m in other areas. Areas include; **Level 04** 	

Item	Description of Performance Solution	DTS Provision
		
8.	It is proposed to discharge fire isolated exits within a covered area of the building that does not meet the DTS requirements for maximum travel distance and smoke venting. 	D1.7(b)(iii)
9.	It is proposed that egress to the road or open space, from the fire control room, will involve a level change of more than 300mm.	E1.8 Spec E1.8 Cl 3
10.	Review and rationalise need for mechanical zone pressurisation systems to the vertically separated class 5 & 6 fire compartments.	E2.2
11.	The construction of the 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.	No DtS Provisions – FP1.4 Performance Provisions Only

4.4. General design issues to be attended to





5 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.

The architectural design documentation as referred to in report has been assessed against the applicable provisions of the Building Code of Australia, (BCA) and it is considered that such documentation complies or is capable of complying with that Code.

ANNEXURE A DESIGN DOCUMENTATION

Annexure A – Design Documentation

This report has been based on the following design documentation.

Table 3. Architectural Plans

Architectural Plans Prepared by Plus Architecture		
Drawing Number	**Revision**	**Title**
PLA-DA-S1-000		Cover
PLA-DA-S1-0100		Existing Plan
PLA-DA-S1-0300		Site Analysis
PLA-DA-S1-0400		Demolition Plan
PLA-DA-S1-0500		Proposed Site Plan
PLA-DA-S1-0600		Staging Plan
PLA-DA-S1-1000		Overall Floor Plan – Ground
PLA-DA-S1-1000.1		Overall Floor Plan – Mezzanine
PLA-DA-S1-1001		Overall Floor Plan – Level 01
PLA-DA-S1-1002		Overall Floor Plan – Level 02
PLA-DA-S1-1003		Overall Floor Plan – Level 03
PLA-DA-S1-1004		Overall Floor Plan – Level 04
PLA-DA-S1-1005		Overall Floor Plan – Level 05
PLA-DA-S1-1007		Overall Floor Plan – Level 07-16
PLA-DA-S1-1017		Overall Floor Plan – Level 17
PLA-DA-S1-1024		Overall Floor Plan – Level 18-24
PLA-DA-S1-1025		Overall Floor Plan – Level 25
PLA-DA-S1-1026		Overall Floor Plan – Level 26
PLA-DA-S1-1027		Overall Floor Plan - Roof
PLA-DA-S1-1100		General Floor Plan – Ground
PLA-DA-S1-1100.1		General Floor Plan – Mezzanine
PLA-DA-S1-1101		General Floor Plan – Level 01
PLA-DA-S1-1102		General Floor Plan – Level 02
PLA-DA-S1-1103		General Floor Plan – Level 03
PLA-DA-S1-1104		General Floor Plan – Level 04
PLA-DA-S1-1105		General Floor Plan – Level 05
PLA-DA-S1-1107		General Floor Plan – Level 07
PLA-DA-S1-1117		General Floor Plan – Level 17

Architectural Plans Prepared by Plus Architecture		
PLA-DA-S1-1125		General Floor Plan – Level 25
PLA-DA-S1-1126		General Floor Plan – Level 26
PLA-DA-S1-1027		General Floor Plan - Roof
PLA-DA-S1-2000		Elevation North
PLA-DA-S1-2001		Elevation South
PLA-DA-S1-2002		Elevation East
PLA-DA-S1-2003		Elevation West
PLA-DA-S1-3000		Section 01
PLA-DA-S1-3001		Section 02
PLA-DA-S1-3002		Section 03

ANNEXURE B ESSENTIAL SERVICES

Annexure B - Essential Services

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

Table 4. Essential Fire Safety Measures

Item	Essential Fire and Other Safety Measures	Standard of Performance
Fire Resistance (Floors – Walls – Doors – Shafts)		
1.	Access Panels & doors/hoppers (fire rated)	**BCA2019 C3.13** (Openings in Shafts) **BCA2019 Spec C3.4** AS 1905.1:2015 (Fire Resistant Doorsets)
2.	Fire doors	**BCA2019 C2.12** (Separation of Equipment) **BCA2019 C2.13** (Electricity Supply Systems) **BCA2019 C3.4** (Acceptable methods of Protection) **BCA2019 C3.5** (Doors in Fire Walls) **BCA2019 C3.**7 and D1.11 (Horizontal Exits) **BCA2019 C3.8** (Openings in Fire Isolated Exits) **BCA2019 C3.10** (Opening in Fire Isolated Lift Shafts) AS1735.11- 1986 **BCA2019 C3.11** (Bounding Construction) Spec C3.4 AS1905.1: 2015
3.	Fire seals protecting openings in fire resisting components of the building	**BCA2019 C3.15** (Openings for service installations) **BCA2019 C3.16** (Construction joints) **BCA2019 Spec C3.15** AS1530.4:2014 & AS4072.1-2005
4.	Lightweight construction	**BCA2019 C1.1, Spec. C1.1** **BCA2019 C1.8, Spec C1.8** AS1530.4:2014
General		
5.	Fire control centres & room	**BCA2019 E1.8, Spec E1.8** (Fire Control Centres)
6.	Portable fire extinguishers	**BCA2019 E1.6**

Item	Essential Fire and Other Safety Measures	Standard of Performance
		AS 2444–2001
7.	Automatic fail safe devices	**BCA2019 D2.21** (Operation of Latches) **BCA2019 D2.22** (Re-entry from fire-isolated stairs) AS 1670.1:2018 (Fire)
8.	Warning & operational signs	**BCA2019 D2.23 (**Signs on Fire Doors) **BCA2019 D3.6** (Braille Exit Signs) (Note: E4.5 (Exit Signs)) **BCA2019 E3.3** (Lift Signs) **BCA2019 Spec E1.8** (Fire Control Centre & Room)
Lifts		
9.	Emergency lifts	**BCA2019 E3.4** AS 1735.1:2003 (Appendix A) or AS 1735.2:2001
Electrical Services		
10.	Automatic fire detection & alarm	**BCA2019 E2.2**, NSW Table E2.2a, Table 2.2b, **Spec E2.2a** AS 3786:2014 (Amdt 1-4) AS 1670.1:2018 (Fire) AS 1670.3:2018 (Fire Alarm Monitoring)
11.	Emergency lighting	**BCA2019 E4.2, E4.4** AS/NZS 2293.1:2018
12.	Exit signs	**BCA2019 E4.5** (Exit Signs) **BCA2019 E4.6** (Direction Signs) **BCA2019 E4.8** (Design and Operation - Exits) AS/NZS 2293.1:2018
13.	Smoke detectors & heat detectors 1. Zone Smoke Control System 2. Air Pressurisation System.	**BCA2019 E2.2, Spec E2.2a** AS 1668.1:2015
14.	Emergency warning and intercom systems for Emergency Purposes (EWIS)	**BCA2019 E4.9** AS 1670.4:2018 (EWIS)
Hydraulic Services		

Item	Essential Fire and Other Safety Measures	Standard of Performance
15.	Automatic fire suppression systems	**BCA2019 E1.5** AS 2118.1:2017 (Sprinklers) AS 2118.6:2012 (Combined Sprinklers/Hydrant)
16.	Fire hydrant systems	**BCA2019 E1.3** **BCA2019 C2.12 (Separation of Equipment)** AS 2419.1:2005 FRNSW Technical Sheet D15/45534.V9 issued 10.01.19, 'Compatible Hose Connections'
17.	Fire hose reel systems (Not required for Class 2 parts of the building)	**BCA2019 E1.4** AS 2441:2005
Mechanical Services		
18.	Fire dampers	**BCA2019 E2.2, Spec E2.2a, Spec E2.2b** **BCA2019 C3.15** AS 1668.1:2015 (Amdt 1) AS 1682.1:2015 & AS 1682.2:2015
19.	Mechanical air handling systems 1. Mechanical ventilation to carpark. 2. Zone Pressurisation System. 3. Fire Isolated Exit Pressurisation System.	**BCA2019 E2.2, Table E2.2a, Table E2.2b** **Spec E2.2a, Spec E2.2b** AS 1668.1:2015 (Amdt 1) **Note: 5.5.3 Override control** To enable manual control by attending emergency services personnel, fans that are not required to shut down on initiation of fire mode in the car park shall be provided with a control switch at the designated building entry point. **Note:** Signage should be located at the car park entry indicating the location of the control switches.
Notes: (An air-handling system which does not form part of a smoke hazard management system in accordance with Table E2.2a or Table E2.2b and which recycles air from one *fire compartment* to another *fire compartment* or operates in a manner that may unduly contribute to the spread of smoke from one *fire compartment* to another *fire compartment* must— (i) ((be designed and installed to operate as a smoke control system in accordance with AS 1668.1:2015; or (ii)		

Item	Essential Fire and Other Safety Measures	Standard of Performance
	(A) incorporate smoke dampers where the air-handling ducts penetrate any elements separating the fire compartments served; and (B) be arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke detectors complying with clause 7.5 of AS 1670.1:2018; and for the purposes of this provision, each *sole-occupancy unit* in a Class 2 or 3 building is treated as a separate *fire compartment*. Miscellaneous air-handling systems covered by Sections 5 and 6 of AS 1668.1:2015 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 that Section of the Standard. A smoke detection system must be installed in accordance with Clause 5 of Specification E2.2a to operate AS 1668.1:2015 systems that are provided for zone smoke control and automatic air pressurisation for fire-isolated exits.	
20.	**Performance Solution** *Fire Engineering Report (FER) prepared by XXXX, report no. XXX, issue XXXX, dated XXX. Allowing for: XXXXXX FER Requirements 1. XXXXXXXXXXXX	

ANNEXURE C FIRE RESISTANCE LEVELS

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 5, 7a	Class 6	Class 7b
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	240/240/240
- 1.5 – less than 3m from a *fire-source feature*	90/60/60	120/90/90	180/180/120	240/240/180
- 3m or more from a *fire source feature*	90/60/30	120/60/30	180/120/90	240/180/90
Non-Loadbearing External Walls				
- Less than 1.5m to a *fire-source feature*	-/90/90	-/120/120	-/180/180	-/240/240
- 1.5 – less than 3m from a *fire-source feature*	-/60/60	-/90/90	-/180/120	-/240/180
- 3m or more from a *fire-source feature*	-/-/-	-/-/-	-/-/-	-/-/-
External Columns				
- Loadbearing	90/-/-	120/-/-	180/-/-	240/-/-
- Non-loadbearing	-/-/-	-/-/-	-/-/-	-/-/-
Common Walls & Fire Walls	90/90/90	120/120/120	180/180/180	240/240/240
Stair and Lift Shafts required to be fire-resisting				
- Loadbearing	90/90/90	120/120/120	180/120/120	240/120/120
- Non-loadbearing	-/90/90	-/120/120	-/120/120	-/120/120
Internal walls bounding sole occupancy units				
- Loadbearing	90/90/90	120/-/-	180/-/-	240/-/-
- Non-loadbearing	-/60/60	-/-/-	-/-/-	-/-/-
Internal walls bounding public corridors, public lobbies and the like:				
- Loadbearing	90/90/90	120/-/-	180/-/-	240/-/-
- Non-loadbearing	-/60/60	-/-/-	-/-/-	-/-/-

Item	Class 2	Class 5, 7a	Class 6	Class 7b
Ventilating, pipe, garbage and like shafts: - Loadbearing - Non-loadbearing	90/90/90 -/90/90	120/90/90 -/90/90	180/120/120 -/120/120	240/120/120 -/120/120
Other loadbearing internal walls, beams trusses and columns	90/-/-	120/-/-	180/-/-	240/-/-
Floors	90/90/90	120/120/120	180/180/180	240/240/240
Roofs	-	-	-	-

a) The roof need not comply with any FRL's due to the sprinkler protection of the entire building.

b) Structures on the roof need not have an FRL provided that they are non-combustible in their construction and only contain lift motor equipment or other services units.

ANNEXURE D DEFINITIONS

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—

(a) the exterior of the building; or

(b) a non-conditioned space including—

  (i) the floor of a rooftop plant room, lift-machine room or the like; and

  (ii) the floor above a carpark or warehouse; and

  (iii) the common wall with a carpark, warehouse or the like.

Exit

Exit means –

(a) Any, or any combination of the following if they provide egress to a road or open space—

  (i) An internal or external stairway.

  (ii) A ramp.

  (iii) A fire-isolated passageway.

  (iv) A doorway opening to a road or open space.

  (v) A horizontal exit or a fire-isolated passageway leading to a horizontal exit.

Fire compartment

Fire compartment means –

(a) the total space of a building; or

(b) when referred to in—

  (i) 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

  (ii) 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—

(a) structural adequacy; and

(b) integrity; and

(c) 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

(a) the far boundary of a road, river, lake or the like adjoining the allotment; or

(b) a side or rear boundary of the allotment; or

(c) 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.

Non-combustible

Non-combustible means—

(a) applied to a material — not deemed combustible as determined by AS 1530.1:1994 — Combustibility Tests for Materials; and

(b) 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–

(a) that is open to the sky; and

(b) to which access is provided, other than access only for maintenance; and

(c) that is not open space or directly connected with open space.

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—

(a) a dwelling; or

(b) a room or suite of rooms in a Class 3 building which includes sleeping facilities; or

(c) a room or suite of associated rooms in a Class 5, 6, 7, 8 or 9 building; or

(d) 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

Annexure F – 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 Table 3 of Specification C1.1 of BCA2019 for a building of Type A Construction.
2. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2019.
3. Building elements, including external walls and their components, must be non-combustible in accordance with C1.9 of BCA2019.
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 C1.10 and Specification C1.10 of BCA2019.
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 C1.14 of BCA2019.
6. The external walls and openings of separate fire compartments will be protected in accordance with Clause C3.3.
7. The parts of different classifications located alongside one another in the same storey will be separated in accordance with Clause C2.8 and Specification C1.1 of BCA2019.
8. Floors separating storeys of different classifications will comply with BCA Clause C2.9 of BCA2019.
9. Equipment will be separated in accordance with Clause C2.12 of BCA2019.
10. 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 C2.13 of BCA2019.
11. Doorways in any fire walls separating fire compartments will be protected in accordance with Clause C3.5 of BCA2019.
12. Doorways in horizontal exits will be protected in accordance with Clause C3.7 of BCA2019.
13. 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 C3.8 of BCA2019.
14. Fire-isolated stairways will not be penetrated by services other than those permitted by Clause C3.9 of BCA2019.
15. Services penetrating elements required to possess an FRL including the floor slabs, walls, shafts, etc. will be protected in accordance with Clause C3.12, C3.13 and C3.15 and Specification C3.15 of BCA2019.
16. 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 C3.16.
17. The lift doors will be --/60/- fire doors complying with AS 1735.11:1986 in accordance Clause C3.10 of BCA2019.

18. Doorways and other opening in internal walls required to have an FRL will be protected in accordance with Clause C3.11 of BCA2019.
19. 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 C3.17 of BCA2019.
20. 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 C1.1 Clause 2.3 BCA2019.
21. 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 2.7 of Specification C1.1 of BCA2019.
22. Fire doors will comply with AS 1905.1:2015 and Specification C3.4 of BCA2019.
23. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D1.6 of BCA2019.
24. The fire-isolated exits will be in accordance with Clause D1.7 of BCA2019.
25. Discharge from exits will be in accordance with Clause D1.10 of BCA2019.
26. The non-required stairways, ramps and escalators will be in accordance with Clause D1.12 of BCA2019.
27. The ladder from the plant, lift machine rooms, and electricity network substation in lieu of a stairway will be in accordance with Clause D1.16 of BCA2019.
28. Access to the lift pit will be in accordance with Clause D1.17 of BCA2019.
29. 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 D2.2 of BCA2019.
30. The non-fire isolated stairs will be constructed in accordance with Clause D2.3 of BCA2019.
31. The construction of EDB's and telecommunications distribution boards will be in accordance with Clause D2.7 of BCA2019 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.
32. The fire-isolated passageway will be in accordance with Clause D2.11 of BCA2019.
33. Stair geometry to the new stairways will be in accordance with Clause D2.13 of BCA2019. Stair treads are to have a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013.
34. Landings and door thresholds throughout the development will be provided in accordance with Clause D2.14 and D2.15 of BCA2019. 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 D2.14 when tested in accordance with AS 4586:2013 where the edge ledge to a flight below.
35. The handrails and balustrades to all stairs and throughout the building will be in accordance with Clause D2.16, and D2.17 of BCA2019.
36. The fixed platform, walkway, stairway and ladder and any associated going and riser, landing handrail, balustrade, located within the machinery room, boiler house, lift-machine room, plant-

room, or non-habitable attic/storeroom within the sole occupancy unit will comply with AS 1657:2013 or Part D2 of BCA2019.

37. The doorways and doors will be in accordance with Clause D2.19 and D2.20 of BCA2019.
38. Door latching mechanisms will be in accordance with Clause D2.21 of BCA2019
39. Re-entry doors from the fire-isolated exits will be in accordance with Clause D2.22 of BCA2019.
40. Signage will be provided on fire and smoke doors in accordance with Clause D2.23 of BCA2019.
41. The openable portion of a window in a bedroom of a Class 2 building will be protected with a restricting device or secure screen that does not allow a 125mm sphere to pass through the opening or screen and resist an outward horizontal action of 250N in accordance with Clause D2.24 of BCA2019. 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.
42. On an accessway, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, will be clearly marked in accordance with AS 1428.1:2009 and Clause D3.12 of BCA2019.
43. The fire control centre will be in accordance with Specification E1.8 or BCA2019.
44. Fire precautions whilst the building is under construction fire precautions will be in accordance with Clause E1.9 of BCA2019.
45. Non-illuminated exit signage will be installed in accordance with Clause E4.7, and of BCA2019.
46. External above ground waterproofing membranes will comply with Clause F1.4 of BCA2019 and AS 4654 Parts 1 & 2:2012.
47. The new roof covering will be in accordance with Clause F1.5 of BCA2019.
48. Any sarking proposed will be installed in accordance with Clause F1.6 of BCA2019.
49. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F1.7 of BCA2019 and AS 3740:2010.
50. Damp proofing of the proposed structure will be carried out in accordance with Clause F1.9 and F1.10 of BCA2019.
51. Floor wastes will be installed to bathrooms and laundries above sole occupancy units or public space in accordance with Clause F1.11 of BCA2019.
52. All new glazing to be installed throughout the development will be in accordance with Clause F1.13 of BCA2019 and AS 1288:2006 / AS 2047:2014.
53. Sanitary facilities will be provided in the building in accordance with Clause F2.1, Table F2.1, Clause F2.3 and Table F2.3 of BCA2019.
54. The construction of the sanitary facilities will be in accordance with Clause F2.5 of BCA2019.
55. Ceiling heights to the new areas will be in accordance with Clause F3.1 of BCA2019.
56. Natural light will be provided in accordance with Clause F4.1, F4.2, and F4.3 of BCA2019.
57. Natural ventilation will be provided in accordance with Clause F4.5, F4.6 and F4.7 of BCA2019.
58. Water closets and urinals will be located in accordance with Clause F4.8 of BCA2019.
59. The sanitary compartments will be either be provided with mechanical exhaust ventilation or an airlock in accordance with Clause F4.9 of BCA2019.

60. Pliable building membranes installed in external walls will comply with Clause F6.2 of BCA2019 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.
61. Every storey of the carpark will be provided with an adequate system of permanent natural or mechanical ventilation in accordance with Clause F4.11 of BCA2019.
62. 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 G1.101 of BCA2019.
63. 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.
64. 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, 2000.
65. Building Fabric and Thermal Construction will be in accordance with Part J1 of BCA2019.
66. Glazing will be in accordance with Part J1 of BCA2019.
67. Building sealing will be in accordance with Part J3 of BCA2019.
68. Facilities for Energy Monitoring will be provided in accordance with Clause J8.3 of BCA2019.

Electrical Services Design Certification:

69. A smoke detection and alarm system will be installed throughout the building in accordance with Table E2.2a, and Specification E2.2a of BCA2019.
70. Emergency lighting will be installed throughout the development in accordance with Clause E4.2, E4.4 of BCA2019 and AS/NZS 2293.1:2018.
71. Exit signage will be installed in accordance with Clause E4.5, E4.7, and E4.8 of BCA2019 and AS/NZS 2293.1:2018.
72. An emergency warning and intercom system (EWIS) will be provided to the building in accordance with Clause E4.9 of BCA2019.
73. Artificial lighting will be installed throughout the development in accordance Clause F4.4 of BCA2019 and AS/NZS 1680.0:2009.
74. Lighting power and controls will be installed in accordance with Part J6 of BCA2019.
75. Electrical conductors located within the building that supply a main switchboard that sustains emergency equipment will comply with Clause C2.13 of BCA2019.

Hydraulic Services Design Certification:

76. Storm water drainage will be provided in accordance with Clause F1.1 of BCA2019 and AS/NZS 3500.3:2018
77. Fire hydrant system will be installed in accordance with Clause E1.3 of BCA2019 and AS 2419.1:2005 as required.
78. Fire hose reels will be installed in accordance with Clause E1.4 of BCA2019 and AS 2441:2005.
79. A sprinkler system will be installed in accordance with Clause E1.5 of BCA2019, Specification E1.5 and appropriate part(s) of AS 2118.
80. Portable fire extinguishers will be installed in accordance with Clause E1.6 of BCA2019 and AS 2444:2001.
81. The heated water supply systems will be designed and installed to NCC Volume 3 – Plumbing code and Clause J7.2 of BCA2019.

Mechanical Services Design Certification:

82. An air-handling system which does not form part of a smoke hazard management system will be installed in accordance with Clause E2.2 of BCA2019, and AS 1668.1:2015.
83. Stair pressurisation will be installed in the building in accordance with Table E2.2a of BCA2019 and AS 1668.1:2015.
84. A smoke exhaust system will be installed in the building in accordance with Table E2.2b, and Specification E2.2c of BCA2019.
85. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F4.5 of BCA2019 and AS 1668.2:2012.
86. Every storey of the car park will be ventilated in accordance with Clause F4.11 of BCA2019 and where not naturally ventilated it will be mechanically ventilated in accordance with AS 1668.2:2012 as applicable.
87. The commercial kitchen will be provided with a kitchen exhaust hood in accordance with Clause F4.12 of BCA2019, and AS 1668.1:2015 and AS 1668.2:2012.
88. 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 F6.3 of BCA2019.
89. 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 F6.4 of BCA2019.
90. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J5 of BCA2019
91. Rigid and flexible ductwork will comply with the fire hazard properties set out in AS 4254 Parts 1 and 2.

Structural Engineers Design Certification:

92. The material and forms of construction for the proposed works will be in accordance with Clause B1.2, B1.4 and B1.6 of BCA2019 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.
93. The FRL's of the structural elements for the proposed works have been designed in accordance with Specification C1.1 of BCA2019, including Table 3 for a building of Type A Construction.
94. The lift shaft will have an FRL in accordance with Clause C2.10 and Specification C1.1 of BCA2019.
95. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2019.

96. The construction joints to the structure will be in accordance with Clause C3.16 of BCA2019 to reinstate the FRL of the element concerned.

97. Upon completion of the works, a structural engineer will be able to certify that local failure will be in accordance with Clause D2.2 of BCA2019 for the fire isolated stairs.

Lift Services Design Certification:

98. The lifts throughout the development will be provided with stretcher facilities in accordance with Clause E3.2 of BCA2019 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.

99. Warning signage in accordance with Clause E3.3 of BCA2019 will be provided to the lifts to advise not to use the lifts in a fire.

100. An emergency lift will be provided in the building in accordance with Clause E3.4 of BCA2019.

101. 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 E3.9.

102. A lift car fire service drive control switch is to be installed within the lift car in accordance with Clause E3.10.

103. Access and egress to the lift well landings will comply with the Deemed-to-Satisfy Provisions of D3 of the BCA2019 and will be suitable to accommodate disabled persons.

104. The type of lifts will also be suitable to accommodate persons with a disability in accordance with Clause E3.6, Table E3.6a, and will have accessible features in accordance with Table E3.6b of BCA2019.

105. The lifts will comply with AS 1735.12:1999 in accordance with Clause E3.6 of BCA2019.

106. All electric passenger lifts and electrohydraulic passenger lifts shall comply with Specification E3.1 of BCA2019.

Acoustic Services Design Certification:

107. The sound transmission and insulation of the residential portions of the development will comply with Part F5 of BCA2019.