



BCA Assessment Report

3 Holdsworth Avenue, St Leonards, NSW 2065



Project: 3 Holdsworth Avenue, St Leonards, NSW 2065

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EXECUTIVE SUMMARY

This document provides an assessment of the architectural design drawings for the proposed residential development at 3 Holdsworth Avenue, St Leonards, NSW 2065, against the Deemed-to-Satisfy provisions of the Building Code of Australia (BCA) 2019, Volume 1 Amendment 1.

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

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

Item	Description	BCA Provision
Performance Solutions Required		
1.	Rationalise the FRLs for basement level 1, lower ground floor and upper ground floor.	C2.8
2.	To permit Class 2 (residential) corridors exceeding 40m in length without smoke separation.	C2.14
3.	To permit the following travel distances: > up to 25m in lieu of the maximum 20m to a point of choice in the fire hydrant tank room located on upper ground floor of the building. > up to 12m to a point of choice in lieu of the maximum 6m for the residential levels. > up to 25m in lieu of the maximum 20m to a single exit on the roof top plant enclosure.	D1.4
4.	To permit a clear width pinch point down to 550mm in lieu of the minimum 1m in the hydrant tank room.	D1.6
5.	To permit fire-isolated stair FS1 & FS2 to discharge into an enclosed space on lower ground floor.	D1.7
6.	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.	No DtS Provisions – FP1.4 Performance Provisions Only
Building Code of Australia Compliance Matters to be Addressed		
7.	Non-combustible façade	C1.9 & C1.14
8.	Enclosure of shafts	Specification C1.1
9.	Fire hydrants	E1.3
10.	Sprinklers	E1.5
11.	Provision for natural light & ventilation	Part F4

1 ADOPTION OF BCA 2022

1.1. Proposed Introduction

It is proposed to introduce the National Construction Code (NCC), Volume One, Building Code of Australia (BCA) 2022 on 1 September 2022. BCA2022 is proposing some major changes to Condensation Management, Energy Efficiency and the introduction of Livable Housing Design.

The introduction of the BCA is in stages and therefore it is not clear what the extent of changes will be as each and every state is still considering whether or not to adopt the proposed changes.

At present there is a draft available however the changes to condensation management and energy efficiency have not been released. The proposed timeline is summarised below:



Figure 1- Source: www.abcb.gov.au

1.2. Major Changes known to date

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

Livable housing

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

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

Consistent volume structure

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

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

Early childhood centres

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

Fire safety of external walls

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

Waterproofing

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

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

Weatherproofing

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

Falls for floor wastes

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

Number of exits

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

1.3. Summary of Major Changes

Summary of Major Changes		
Clause Reference		Description of proposed changes
BCA 2019	BCA2022	
C1.9	C2D10	Non-combustible building elements Further exemptions to the non-combustible requirements of external walls added. Larger list of materials that can be used where non-combustible materials are required.
-	C2D15	Fixing of Bonded Laminated Cladding panels
C2.5	C3D6	Fire separation of early childhood centres and requirement for 2 fire compartments per storey.
D1.2	D2D3	Number of Exits - Ground floor can be provided with a single exit in lieu of 2 2 exits required from each storey and each fire compartment of an early childhood centre
D1.6	D2D7 – D2D11	Dimensions of Exits Clause split into multiple clauses
D1.11	D2D16	Horizontal Exits – New provisions relating to early childhood centres
D2.16	D3D17 – D3D21	Barrier clause split into multiple clauses
E1.5	E1D4 – E1D13	Sprinkler requirements split into separate clauses for each building class.
E2.2	E2D3 – E2D21	General Requirements – Smoke Hazard Management Tables removed and replaced with clauses for each building class
F1.7	Part F2	Wet Area and Overflow Prevention
F1.11	F2D4	Floor wastes – floor must be graded with a minimum fall of 1:80
FP1.4	Part F3	Roof and Wall Cladding Introduces DTS provisions for walls and roofs in lieu of the previous BCA requiring performance solutions for all weatherproofing
-	G7	Livable housing design
H1.1	Part I1	Class 9b Building
H2.1	Part I2	Public Transport Buildings
H3.1	Part I3	Farm Buildings and Farm Sheds

1.4. August Changes

The August draft of BCA2022 is proposed to include significant changes to condensation management in external walls and changes to all parts of Section J Energy Efficiency.

At the present time, we do not have any information on these proposed changes and therefore cannot give any advice on the likely impact on the design proposal the subject of this report.

It is suggested that when the next draft is released in August 2022, the design be re-assessed against these new provisions, if it is likely that a construction certificate (including a staged CC) will be issued after 1 September 2022.

2 BASIS OF ASSESSMENT

2.1. Location and Description

The building development, the subject of this report, is located at 3 Holdsworth Avenue, St Leonards, NSW 2065.

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 One, 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, 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.

2.4. 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) BCA Part D3 and Clauses E3.6, F2.4 & F2.9;
- (b) the National Construction Code – Plumbing Code of Australia Volume 3
- (c) the Disability Discrimination Act 1992 including the Disability ((Access to Premises – Buildings) Standards 2010);
- (d) Demolition Standards not referred to by the BCA;
- (e) Work Health and Safety Act 2011;
- (f) Requirements of Australian Standards unless specifically referred to;
- (g) 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
- (h) 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 BUILDING DESCRIPTION

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

3.1. Rise in Storeys (Clause C1.2)

The building has a rise in storeys of fourteen (14).

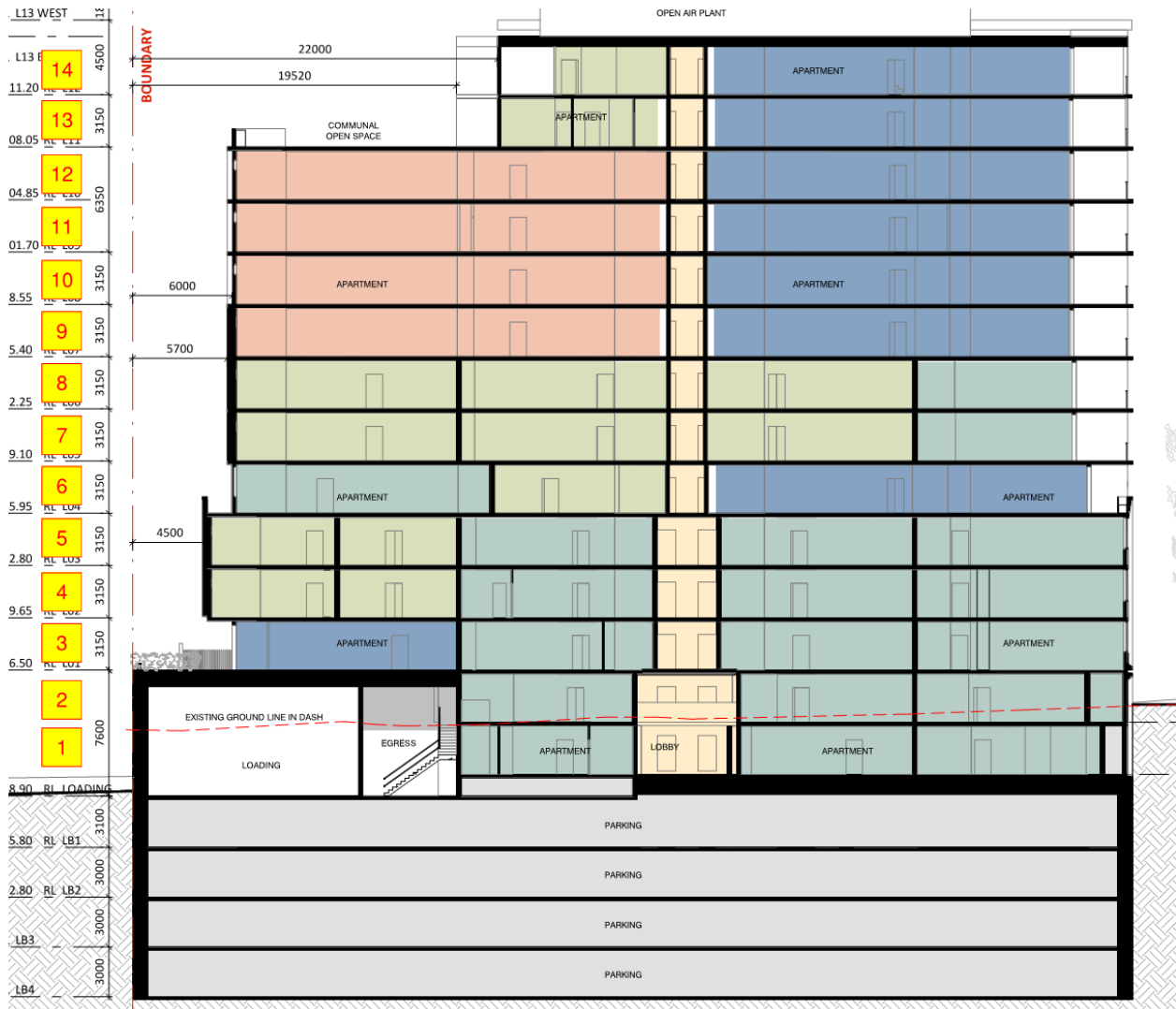


Figure 2 - Rise in Storeys

3.2. Classification (Clause A6.0)

The building has been classified as follows.

Table 1. Building Classification

Class	Level	Description
7a	Basement 1 to 4	Carparking Ancillary plantrooms
7a 7b 2	Lower Ground Level	Carparking Bin rooms / Bulk Goods Room Residential SOUs
2	Upper Ground Level	Residential SOUs Ancillary plantrooms
2	Levels – 1 to 12	Residential SOUs

For the purposes of this report, the substation located on lower ground floor (adjacent Holdsworth Ave) has not been considered an 'electricity network substation' as defined under Schedule 3.

3.3. Effective Height (Clause A1.0)

The building has an *effective height* of more than 25 metres.

A Loading dock RL 68.90 and Level 12 RL 111.20 means that the building has an effective height of 42.3m.

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

The building is required to be of Type A Construction.

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

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

Class 7b	Maximum Floor Area	5,000 m ²
	Maximum Volume	30,000 m ³
Class 7a	The carpark is to be provided with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5) and as such there are no maximum floor area or volume limitations for this area.	
Class 2	The Class 2 portions of the building are not subject to floor area and volume limitations of C2.2 as Table 3 of Specifications C1.1 and Clause C3.11 of the BCA regulates the compartmentation and separation provisions applicable to buildings, or building portions, of Class 2 classifications.	

3.6. Fire Compartments

The following *fire compartments* have been determined:

- The basement levels, part of lower ground level and part upper ground level form one fire compartment connected by the vehicle ramps.
- The residential part of the ground level forms a fire compartment.
- The residential part of the upper ground floor level forms a fire compartment.

- (d) Each of the residential levels form their own fire compartment. It is however noted that some of the residential levels have voids connecting two levels and where this occurs it is considered that the two (2) levels form one fire compartment.

3.7. Exits

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

- (a) The doorways into the fire-isolated stairways.
- (b) The doorways into the fire-isolated passageways.
- (c) The lower ground and level 1 doorways which open direct into open space.

3.8. Climate Zone (Clause A1.0)

The building is located within Climate Zone 5.

3.9. Location of Fire-source features

The fire source features for the subject development are:

North: The far side of Marshall Ave (>6m).

South: The side allotment boundary (4.2m).

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

West: The side allotment boundary (12m)

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

- (a) has an FRL of not less than 30/–/–; and
- (b) is neither transparent nor translucent.

4 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 F 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 C1 & Specification C1.1

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

Element	Method of Construction
External Walls	Masonry, concrete, CFC panel, aluminium framed glazing, perforated mesh screen and aluminium mechanical louvres.
Floors / roofs	Concrete
Internal Walls (between SOU's)	Unspecified
Basement walls	
Lift shafts	
Stair shafts	

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

The selection of all external wall materials shall comply with the requirements of BCA Clause C1.9 and C1.14 to be *non-combustible*. Test reports for each material are required at the lodgement of Construction Certificate applications.

4.4. Compartmentation and Separation – Part C2

Under the provisions of clause C2.2 of the BCA, the residential portion of the building is not the subject to any floor area and volume limitations. Due to the height of the building, the carpark is required to have a sprinkler system in accordance with clause E1.5 of the BCA and Specification E1.5, therefore the carpark is not the subject of floor area and volume limitations under the provision of clause C2.2 of the BCA.

It is noted that basement level 1, lower ground floor and upper ground floor have a mix of several classifications on each storey. Hence, each classification must be constructed accordingly. For example, the 7b classification will need 4hours fire separation from the remainder of the building on basement level 1 and lower ground floor. Therefore, the client may wish to pursue a Performance Solution with the project Fire Engineer to rationalise/ reduce the FRL to these levels.

The building is fourteen (14) storeys and therefore is required to have a sprinkler system. As such, spandrel panels are not required under the provisions of clause C2.6 of the BCA to protect opening on different storeys of the building as the building is provided with a AS 2118 sprinkler system.

The main switch board is located on basement level 1 adjacent FS3. If the switchboard is required to 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.

Public corridors in Class 2 parts that exceed 40 m in length must be divided at intervals of not more than 40m with smoke-proof walls complying with Clause 2 of Specification C2.5. It is proposed to have Class 2 corridors exceeding 40m in length which will not be divided at intervals as required which is to be assessed by the project fire engineer as a Performance Solution.

As a result of the above discussion, compliance with Part C2 of the BCA can be readily achieved by the proposal.

4.5. Protection of Openings – Part C3

4.5.1. Openings in external walls

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

4.5.2. Bounding Construction

The walls between the SOU's and between the SOU's and corridor are internal walls that require an FRL. Also, the walls to the lift and stairs require an FRL. As such, the doors to the sole occupancy units and fire stairs are required to be self-closing FRL -/60/30 fire doors in accordance with clause C3.11 of the BCA. The doors to the lift are required to have an FRL of -/60/-.

4.5.3. Openings in Floors for Services and Service Installations

Where electrical, plumbing, mechanical or other services pass through an element of construction that is required to achieve a fire resistance level (FRL), the service installation shall not compromise the fire resistance level of the element. As 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.

4.5.4. Enclosure of shafts - Spec C1.1, Cl 2.7

Fire-isolated shafts are required to be enclosed at the top and bottom of the shaft with fire rated construction having an FRL required for the walls of a non-load-bearing shaft in the same building, as per specification C1.1. This fire rating is required in two directions.

The above does not apply to shafts extending beyond the roof covering, other than fire isolated stair and lift shafts and the bottom of non-combustible shafts laid directly on the ground.

It is noted that the garbage room at the bottom of the garbage chute shaft is considered as part of the shaft and will be required to be fire-rated for 2 hour fire-rating if the walls to the room are non-loadbearing. In addition, a Performance Solution may be required as the garbage room may not be interpreted to be part of the shaft. This will need to be discussed with the Certifying Authority at the Construction Certificate stage regarding their interpretation of the requirements.

4.6. Occupant Access and Egress – Section D

4.6.1. Egress from the building

Egress from the carpark is required in sufficient numbers and location to ensure that no point on the floor is more than 20m from an exit, or a point of choice of two exits, in which case the distance to one of those exits is not more than 40m, as required by clause D1.4 of the BCA.

The distance between alternative exits in the carpark, as required by clause D1.5 of the BCA, is to be no closer than 9m and no further apart than 60m when measured through the point of choice. The travel distances and distances between exits comply with the above requirements.

In the residential portion of the building, the distance to an exit 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. It was noted that there are instances where sole-occupancy units are more than 6m from an exit.

As a result, it is proposed by the applicant to undertake the following performance solutions to assess extended travel distance in the building:

- > up to 25m in lieu of the maximum 20m to a point of choice in the fire hydrant tank room located on upper ground floor of the building.
- > up to 12m to a point of choice in lieu of the maximum 6m for the residential levels.
- > up to 25m in lieu of the maximum 20m to a single exit on the roof top plant enclosure.

Note that extended travel distance is a common performance solution for such a building and can be readily justified.

Similarly, in accordance with BCA clause D1.6, a minimum of 1m clear width is to be provided throughout the development (subject to the concessions under BCA clause D1.1). There are pinch points down to 550mm located in the hydrant tank room located on upper ground floor. As a result, these pinch points are required to be assessed by the project Fire Engineer in the Fire Engineering Report.

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 D1.10 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 D2.7. The doors are to be lined internally with fire grade plasterboard or metal backing sheets and smoke seals provided to all four sides, including drop down seals on the bottom. All penetrations from the enclosure are to be suitably sealed against smoke spread by sealing with fire mastic.

4.6.2. Travel via fire-isolated exits – BCA D1.7

The building has a rise in storeys of fourteen (14) with all levels connected by stairs. As such, the stairs are required to be fire isolated. The stairs have been assessed and they are indicated as fire isolated with separate discharge directly to open space. As such compliance with the provisions of the Clause D1.3 of the BCA are satisfied.

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

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

Accordingly, the pedestrian pathways from the discharge points on the lower ground level from each descending fire-isolated stairway (FS1 & FS2) requires occupants to pass through an area which is not open for at least 1/3 of its perimeter, therefore requiring a Performance-based Alternative Solution which shall be pursued for feasibility.



Furthermore, where a path of travel from the point of discharge of a fire-isolated exit necessitates passing within 6m of any part of an external wall of the same building, that part of the wall must have an FRL of 60/60/60 and any openings be protected in accordance with BCA clause C3.4.

4.7. Access for people with disabilities

Refer to separate access report for more information regarding access for people with a disability.

4.8. 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.

4.8.1. Fire Hydrants – BCA E1.3

Consideration should be given to the proximity of Electrical Substations to Fire Hydrant Boosters within the property and on an adjoining property being within 10.0m.

It is noted that the substation is in proximity to the fire hydrant booster and would need to maintain the 10m clearance. Currently, the openings are greater than 10m apart, however the enclosures are within 10m, hence the electrical and hydraulic designers are required to comment on the suitability of the proposed arrangement.

4.8.2. Sprinklers – BCA E1.5

The building must be provided with a sprinkler system complying with Table E1.5 and Specification E1.5 installed throughout.

The sprinkler valve room location should be indicated on the plans at construction stage. The room must have direct egress to road or open space.

4.9. 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 require a stretcher facility as the building is over 12m in effective height and the dimensions of the shaft are sufficient to allow compliance.

The building has a height exceeding 25m and therefore 2 emergency lifts are required within their own separate shaft. The plans do indicate the lifts within a shaft and therefore compliance can readily be achieved.

4.10. Facilities in Residential Buildings – Part F2

Clause F2.1 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 F2.1 of the BCA.

4.11. Room Heights – Part F3

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.

4.12. Provision of natural light – BCA F4.1

Natural light and ventilation are required to all habitable rooms within a class 2 building. The plans have been assessed which reveals the majority of habitable spaces are serviced by windows or glazed doors. However, several study areas / nooks and bedrooms in the residential SOUs are noted to not be provided with any direct natural light, or small serviced by small openings and would rely on borrowed light from an adjoining room in accordance with BCA F4.3. Accordingly, the design architect will need to verify at the construction stage that natural lighting and ventilation complies to each habitable room.

For class 7, 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 F4.11 of the BCA.

4 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 provided the item in Part 4 of this report have been addressed.

ANNEXURE A DESIGN DOCUMENTATION

Annexure A – Design Documentation

This report has been based on the following design documentation.

Table 2. Architectural Plans

Architectural Plans Prepared by PTW			
Drawing Number	Revision	Date	Title
DA-09-0010	B	06.06.2022	Level B4 plan
DA-09-0030	B	06.06.2022	Level B3-B2 plan
DA-09-0040	B	06.06.2022	Level B1 plan
DA-10-0001	D	08.06.2022	Lower ground plan
DA-10-0003	D	08.06.2022	Upper ground plan
DA-10-0004	D	08.06.2022	Level 01 plan
DA-10-0005	D	08.06.2022	Level 02-03 plan
DA-10-0006	D	08.06.2022	Level 04 plan
DA-10-0007	D	08.06.2022	Level 05-06 plan
DA-10-0009	D	08.06.2022	Level 07-10 plan
DA-10-0012	D	08.06.2022	Level 11 plan
DA-10-0013	D	08.06.2022	Level 12 plan
DA-10-0014	A	08.06.2022	Plant
DA-10-0015	C	08.06.2022	Roof plan
DA-20-0001	D	08.06.2022	North elevation
DA-20-0002	D	08.06.2022	South elevation
DA-20-0003	D	08.06.2022	East elevation
DA-20-0004	D	08.06.2022	West elevation
DA-30-0001	D	08.06.2022	Section 1
DA-30-0002	D	08.06.2022	Section 2
DA-30-0003	D	08.06.2022	Section 3

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 3. Essential Fire Safety Measures

Item	Essential Fire and Other Safety Measures	Standard of Performance
Fire Resistance (Floors – Walls – Doors – Shafts)		
1.	Access Panels & doors/hoppers (fire rated)	BCA2019 C3.13 (Openings in Shafts)
2.	Fire doors	BCA2019 C2.12 (Separation of Equipment) BCA2019 C2.13 (Electricity Supply Systems) BCA2019 C3.5 (Doors in Fire Walls) 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) BCA2019 C3.13 (Opening in Shafts) 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 BCA2019 C2.7 (Fire Walls) BCA2019 C2.8 (Separation – same storey) BCA2019 C3.11 (Bounding Construction) BCA2019 C2.12 (Separation of Equipment) BCA2019 D2.11 (Fire Isolated Passageways) AS1530.4:2014

General		
5.	Fire control centres & rooms > >25m > Fire Control Centre ○ 300mm of street	BCA2019 E1.8, Spec E1.8 (Fire Control Centres)
6.	Portable fire extinguishers	BCA2019 E1.6 AS 2444–2001
General Egress		
7.	Automatic fail safe devices > Auto open Sliding Exit doors > Break Glass release	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 Centres)
Lifts		
9.	Access to Lift Pits > Located at lowest level or if >3m provided through an access door	BCA2019 D1.17 (Access to Lift Pits) 'DANGER LIFT WELL – ENTRY OF UNAUTHORISED PERSONS PROHIBITED – KEEP CLEAR AT ALL TIMES'
10.	Emergency lifts	BCA2019 E3.4 AS 1735.1:2003 (Appendix A) or AS 1735.2:2001
11.	Stretcher Lifts including > Fire Service Controls > Recall Operation > Drive control switch	BCA2019 E3.2 BCA2019 E3.7 (Fire Service Controls) BCA2019 E3.9 (Fire Service Recall Operation Switch) BCA2019 E3.10 (Lift Car Fire Service drive control switch) BCA2019 Spec E3.1 AS 1735.11:1986 (Fire rated landing doors)
Electrical Services		
12.	Automatic fail safe devices	BCA2019 D2.21 (Operation of Latches)

	> Auto open Sliding Exit doors > Break Glass release	BCA2019 D2.22 (Re-entry from fire-isolated stairs) AS1670.1:2018 (Fire)
13.	Automatic fire detection & alarm: > Clause 3 – AS 3786:2014 Smoke Alarm systems powered from consumer mains to all residential SOU's, and spaced, interlinked to AS 1670.1:2018 to all common areas connected to a BOWS @ 85dB(A). > Clause 4 – AS 1670.1:2018 system throughout the building/part connected to a BOWS @ 100dB(A) > Incorporating a thermal detection system in the basement carpark Note: if there is a SSISEP or EWIS applies different dB(A) i.e. At bedheads not SOU doors.	BCA2019 E2.2 , NSW Table E2.2a BCA2019 Specification E2.2a BCA2019 C3.5 (Doors in Fire Walls) BCA2019 C3.8 (Openings in Fire-Isolated Exits) BCA2019 C3.11 (Bounding Construction) AS 1670.1:2018
14.	Emergency lighting	BCA2019 E4.2, E4.4 AS/NZS 2293.1:2018
15.	Exit signs	BCA2019 E4.5 (Exit Signs) BCA2019 E4.6 (Direction Signs) BCA2019 E4.8 (Design and Operation - Exits) AS/NZS 2293.1:2018
16.	Smoke detectors & heat detectors 1. Air Pressurisation System. 2. Auto-shutdown of Air-handling System.	BCA2019 E2.2, Spec E2.2a AS 1668.1:2015
17.	Emergency warning and intercom systems for Emergency Purposes (EWIS) > >25m Residential areas: 75 dB(A) at all bedheads.	BCA2019 E4.9 AS 1670.4:2018
18.	System Monitoring	BCA2019 E2.2 , Table E2.2a,Spec E2.2a AS 1670.3:2018 Monitoring Required for any: > Any Sprinkler System
Hydraulic Services		
19.	Automatic fire suppression systems	BCA2019 E1.5 BCA2019 E1.5a AS 2118.1:2017 (Sprinklers)

		AS 2118.6:2012 (Combined Sprinklers/Hydrant)
20.	Fire hydrant systems > NSW Storz Couplings > Ring Main required (LIB, >25m) > On-site water storage (>25m)	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'
21.	Hose reel systems	BCA2019 E1.4 AS 2441:2005
Mechanical Services		
22.	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
23.	1. Mechanical air handling systems 2. Mechanical ventilation to carpark. 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 <i>fire compartment</i> to another <i>fire compartment</i> or operates in a manner that may unduly contribute to the spread of smoke from one <i>fire compartment</i> to another <i>fire compartment</i> must— (i) ((be designed and installed to operate as a smoke control system in accordance with AS 1668.1:2015; or (ii) (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.

Additional fire safety requirements shall also be installed and maintained in the building where/if required by the project Fire Engineering Report (FER).

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 4. Type A Construction

Item	Class 2	Class 7a	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	240/240/240
- 1.5 – less than 3m from a fire-source feature	90/60/60	120/90/90	240/240/180
- 3m or more from a fire source feature	90/60/30	120/60/30	240/180/90
Non-Loadbearing External Walls			
- Less than 1.5m to a fire-source feature	-/90/90	-/120/120	-/240/240
- 1.5 – less than 3m from a fire-source feature	-/60/60	-/90/90	-/240/180
- 3m or more from a fire-source feature	-/-/-	-/-/-	-/-/-
External Columns			
- Loadbearing	90/-/-	120/-/-	240/-/-
- Non-loadbearing	-/-/-	-/-/-	-/-/-
Common Walls & Fire Walls	90/90/90	120/120/120	240/240/240
Stair and Lift Shafts required to be fire-resisting			
- Loadbearing	90/90/90	120/120/120	240/120/120
- Non-loadbearing	-/90/90	-/120/120	-/120/120
Internal walls bounding sole occupancy units			
- Loadbearing	90/90/90	120/-/-	240/-/-
- Non-loadbearing	-/60/60	-/-/-	-/-/-
Internal walls bounding public corridors, public lobbies and the like:			
- Loadbearing	90/90/90	120/-/-	240/-/-
- Non-loadbearing	-/60/60	-/-/-	-/-/-

Item	Class 2	Class 7a	Class 7b
Ventilating, pipe, garbage and like shafts:			
- Loadbearing	90/90/90	120/90/90	240/120/120
- Non-loadbearing	-/90/90	-/90/90	-/120/120
Other loadbearing internal walls, beams trusses and columns	90/-/-	120/-/-	240/-/-
Floors	90/90/90	120/120/120	240/240/240
Roofs ¹	90/60/30	120/60/30	240/90/60

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.

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

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).

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

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.

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 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 shall be updated at the Construction Certificate stage of the project, and should then 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 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 concrete external walls that could collapse as complete panels (e.g. tilt-up and pre-cast concrete), in a building having a rise in storeys of not more than 2, will comply with Specification C1.11.
6. 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.
7. The external walls and openings of separate fire compartments will be protected in accordance with Clause C3.3.
8. 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.
9. Floors separating storeys of different classifications will comply with BCA Clause C2.9 of BCA2019.
10. Equipment will be separated in accordance with Clause C2.12 of BCA2019.
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 C2.13 of BCA2019.
12. Where no Performance Solution is provided, the public corridors will be divided into intervals of not more than 40m in length with smoke proof walls in accordance with Clause C2.14, and Clause 2 of Specification C2.5 of BCA2019.
13. Openings in the external walls that are required to have an FRL will be in located in accordance with Clause C3.2 and C3.3 of BCA2019 or protected in accordance with Clause C3.4 of BCA2019.
14. The external walls and openings of separate fire compartments will be protected in accordance with Clause C3.3.
15. Doorways in any fire walls separating fire compartments will be protected in accordance with Clause C3.5 of BCA2019.
16. Sliding fire doors in a fire wall which is open when the building is use will be installed in accordance with Clause C3.6 of BCA2019.
17. 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.

18. Fire-isolated stairways will not be penetrated by services other than those permitted by Clause C3.9 of BCA2019.
19. 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.
20. 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.
21. The lift doors will be --/60/- fire doors complying with AS 1735.11:1986 in accordance Clause C3.10 of BCA2019.
22. Doorways and other opening in internal walls required to have an FRL will be protected in accordance with Clause C3.11 of BCA2019.
23. 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.
24. 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.
25. 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 Clause 2.4 of Specification C1.1 of BCA2019.
26. 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.
27. Smoke-proof walls and doorways required by BCA Clause C2.14 will be in accordance with Specification C2.5 of BCA2019.
28. Fire doors will comply with AS 1905.1:2015 and Specification C3.4 of BCA2019.
29. Smoke doors will be constructed so smoke will not pass from one side of the doorway to the other in accordance with Specification C3.4 of BCA2019.
30. The number of exits provided to the building will be in accordance with Clause D1.2 of BCA2019.
31. The required exits will be fire-isolated in accordance with Clause D1.3 of BCA2019.
32. Travel distances to exits will be in accordance with Clause D1.4 of BCA2019.
33. The alternative exits will be distributed uniformly around the storey and will not be less than 9m apart, and not more than 45m apart in the residential portion or 60m in all other cases, in accordance with Clause D1.5 of BCA2019.
34. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D1.6 of BCA2019.
35. The fire-isolated exits will be in accordance with Clause D1.7 of BCA2019.
36. Discharge from exits will be in accordance with Clause D1.10 of BCA2019.
37. 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.
38. Access to the lift pit will be in accordance with Clause D1.17 of BCA2019.

39. 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.
40. The construction separating rising and descending stairs in the fire-isolated exit stairway will be non-combustible and smoke proof, in accordance with Clause D2.4 of BCA2019.
41. 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.
42. 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 D2.8 of BCA2019.
43. New pedestrian ramps will comply with AS 1428.1:2009, Clause D2.10 and Part D3 of BCA2019. The floor surface of a ramp must have a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013.
44. The fire-isolated passageway will be in accordance with Clause D2.11 of BCA2019.
45. 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 D2.12 of BCA2019.
46. 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.
47. 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.
48. The handrails and balustrades to all stairs and throughout the building will be in accordance with Clause D2.16, and D2.17 of BCA2019.
49. 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.
50. The doorways and doors will be in accordance with Clause D2.19 and D2.20 of BCA2019.
51. Door latching mechanisms will be in accordance with Clause D2.21 of BCA2019
52. Re-entry doors from the fire-isolated exits will be in accordance with Clause D2.22 of BCA2019.
53. Signage will be provided on fire and smoke doors in accordance with Clause D2.23 of BCA2019.
54. The openable portion of a window in 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.
55. The fire control centre will be in accordance with Specification E1.8 or BCA2019.
56. Fire precautions whilst the building is under construction fire precautions will be in accordance with Clause E1.9 of BCA2019.

57. Non-illuminated exit signage will be installed in accordance with Clause E4.7, and of BCA2019.
58. External above ground waterproofing membranes will comply with Clause F1.4 of BCA2019 and AS 4654 Parts 1 & 2:2012.
59. The new roof covering will be in accordance with Clause F1.5 of BCA2019.
60. Any sarking proposed will be installed in accordance with Clause F1.6 of BCA2019.
61. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F1.7 of BCA2019 and AS 3740:2010.
62. Damp proofing of the proposed structure will be carried out in accordance with Clause F1.9 and F1.10 of BCA2019.
63. Floor wastes will be installed to bathrooms and laundries above sole occupancy units or public space in accordance with Clause F1.11 of BCA2019.
64. Sub-floor ventilation will be provided in accordance with Clause F1.12 of BCA2019.
65. 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.
66. 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.
67. Accessible sanitary facilities will be provided in the building in accordance with Clause F2.4, Table F2.4 (a) of BCA2019 and AS1428.1:2009.
68. The construction of the sanitary facilities will be in accordance with Clause F2.5 of BCA2019.
69. Ceiling heights to the new areas will be in accordance with Clause F3.1 of BCA2019.
70. Natural light will be provided in accordance with Clause F4.1, F4.2, and F4.3 of BCA2019.
71. Natural ventilation will be provided in accordance with Clause F4.5, F4.6 and F4.7 of BCA2019.
72. Water closets and urinals will be located in accordance with Clause F4.8 of BCA2019.
73. The sanitary compartments will be either be provided with mechanical exhaust ventilation or an airlock in accordance with Clause F4.9 of BCA2019.
74. 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.
75. 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.
76. 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.
77. If the building is within a bushfire prone area therefore will be in accordance with Part G5 of BCA2019. (Note: See NSW G5.2 Variation below)
78. 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.
79. Building Fabric and Thermal Construction will be in accordance with Part J1 of BCA2019.
80. Glazing will be in accordance with Part J1 of BCA2019.
81. Building sealing will be in accordance with Part J3 of BCA2019.
82. Facilities for Energy Monitoring will be provided in accordance with Clause J8.3 of BCA2019.

Electrical Services Design Certification:

83. A smoke detection and alarm system will be installed throughout the building in accordance with Table E2.2a, and Specification E2.2a of BCA2019.
84. Emergency lighting will be installed throughout the development in accordance with Clause E4.2, E4.4 of BCA2019 and AS/NZS 2293.1:2018.
85. Exit signage will be installed in accordance with Clause E4.5, E4.7, and E4.8 of BCA2019 and AS/NZS 2293.1:2018.
86. An emergency warning and intercom system (EWIS) will be provided to the building in accordance with Clause E4.9 of BCA2019.
87. Artificial lighting will be installed throughout the development in accordance Clause F4.4 of BCA2019 and AS/NZS 1680.0:2009.
88. Lighting power and controls will be installed in accordance with Part J6 of BCA2019.
89. 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:

90. Storm water drainage will be provided in accordance with Clause F1.1 of BCA2019 and AS/NZS 3500.3:2018
91. Fire hydrant system will be installed in accordance with Clause E1.3 of BCA2019 and AS 2419.1:2005 as required.
92. Fire hose reels will be installed in accordance with Clause E1.4 of BCA2019 and AS 2441:2005.
93. A sprinkler system will be installed in accordance with Clause E1.5 of BCA2019, Specification E1.5 and appropriate part(s) of AS 2118.
94. Portable fire extinguishers will be installed in accordance with Clause E1.6 of BCA2019 and AS 2444:2001.
95. 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:

96. 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.
97. Stair pressurisation will be installed in the building in accordance with Table E2.2a of BCA2019 and AS 1668.1:2015.
98. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F4.5 of BCA2019 and AS 1668.2:2012.
99. 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.
100. Exhaust systems installed in a kitchen, bathroom, sanitary compartment or laundry of a Class 2 will have a minimum flow rate and discharge location in accordance with Clause F6.3 of BCA2019.
101. Where exhaust discharges directly or via shaft into a roof space of a Class 2 *sole-occupancy unit*, ventilation of the roof space will comply with Clause F6.4 of BCA2019.
102. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J5 of BCA2019

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

Structural Engineers Design Certification:

104. 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.
105. 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.
106. The lift shaft will have an FRL in accordance with Clause C2.10 and Specification C1.1 of BCA2019.
107. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2019.
108. The construction joints to the structure will be in accordance with Clause C3.16 of BCA2019 to reinstate the FRL of the element concerned.
109. The concrete panel external walls will be in accordance with Specification C1.11 of BCA2019.
110. 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:

111. 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.
112. 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.
113. An emergency lift will be provided in the building in accordance with Clause E3.4 of BCA2019.
114. 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.
115. A lift car fire service drive control switch is to be installed within the lift car in accordance with Clause E3.10.
116. 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.
117. The lifts will comply with AS 1735.12:1999 in accordance with Clause E3.6 of BCA2019.
118. All electric passenger lifts and electrohydraulic passenger lifts shall comply with Specification E3.1 of BCA2019.

Acoustic Services Design Certification:

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