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BUILDING CODE OF AUSTRALIA REPORT

Revision: B March 2020

SummitCare Casula
18 Randwick Close, Casula

Prepared for: Besol Pty Ltd

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Date	Rev No	No. of Pages	Issue or Description of Amendment	Assessed By	Approved By	Date Approved
24/09/19	A	39	Draft Issue for DA Submission	Zoe Brown	Vijay Perumal	03/10/19
04/03/2020	B	39	Final for DA Submission	Vanessa Batty	Zoe Brown	04/03/2020

Executive Summary

Development Overview

The project is the development of a new aged care facility in Casula NSW. The development consists of three towers built over a common basement. The development is summarised as the following:

Basement Car Park:
- 140 Car Parking Spaces
- Commercial Laundry
- Commercial Kitchen
- Staff Facilities
- Theatre room
- Plant rooms
- Waste areas

Building A (6 storeys):
- 142 Residential Aged Care rooms
- 24 Assisted Care Units
- Common areas including, living, dining, activity areas
- Rooftop terrace and gardens with shade structures

Building B (5 Storeys):
- 39 Assisted Care Units
- 4 Retail tenancies on ground floor
- Rooftop terrace and gardens with shade structures

Building C (3 Storeys):
- 30 Assisted Care Units

Compliance Summary

As Accredited Certifiers, we have reviewed architectural design documents prepared by Jackson Teece (refer appendix A) for compliance with the Building Code of Australia 2019.

In this regard the following areas in particular require further review as the project develops:

No.	Items for review	Responsibility
1	The subject building is required to comply with BCA 2019. As required by E1.5 all Class 9c fire compartments are required to be provided with a sprinkler system. As the building also contains Class 2 portions and has a rise in storeys of 4 or more the whole building is required to be provided with a sprinkler system. A required automatic fire sprinkler system installed in a Class 2 or 3 building with an effective height of not more than 25 m and a rise in storeys of 4 or more must comply with—	Client / Fire services engineer

	(i)AS 2118.1; or (ii)AS 2118.4, as applicable	
2.	Please advise if there are any proposed alternative building solutions with regard to design of the building services for the project.	Services Consultants
3.	Fire and smoke compartments details to be provided to confirm compliance with C2.5, C3.3 and C3.4	Architect
4.	Horizontal exits to any fire compartments details to be provided to comply with D1.11.	Architect
5.	Final exit doors to ground floor do not open in the direction of egress and should be altered to comply.	Architect
6.	Details of waste management (slop-hopper and appliance for disinfection of pans) to be provided in accordance with F2.8	Architect
7.	Sanitary provisions are required for employees of the building. Please provide detailed sanitary facility plans to enable further assessment	Architect
8.	Confirmation to be provided by the architect that compliance with the natural light required under F4.2 can be provided to all bedrooms	Architect
9.	Confirmation required whether jet fans will be installed within the basement carpark area	Mechanical Engineer
10.	Fire service coverage drawings required to be submitted confirming locations of all proposed fire services infrastructure relevant e (sprinklers, portable fire extinguishers, fire hydrants/ booster assemblies and hose reels etc.)	Fire Services Engineer
11.	Services engineer required to mark-up floor plans confirming intended use of all services & plant rooms within the building. Where these areas are proposed not to be separated in accordance with C2.12 & C2.13 of the BCA, a fire engineered solution will be required to be obtained	All relevant service engineers
12.	Slab edge and wall / glass façade details required to be provided to confirm adequate fire/smoke separation within the building	Architect
13.	Internal wall to external wall junction details required to be provided to confirm adequate fire/smoke separation within the building	Architect
14.	Final stair details required to be provided for review	Architect
15.	Balustrade and barrier details required to be provided for review	Architect
16.	Test reports of the proposed external wall systems for Building required to be submitted confirming non-combustibility requirements as per the BCA	Architect
17.	Confirmation required from structural engineer whether Dincel wall construction will be utilized within fire stairs and/or external walls (where proposed will need to be captured as a fire engineered performance solution)	Architect / Structural Engineer
18.	Egress pathways from podium to roadway to be clearly nominated on the architectural plans	Architect
19.	Egress pathways to exits to be confirmed on the rooftop areas of all buildings.	Architect
20.	Separation of rising and descending stair flights to be clearly nominated on architectural plans in accordance with D2.4 of the BCA	Architect

The assessment of the design documentation has revealed that the following areas are required to be assessed against the relevant performance requirements of the BCA. The submission for Construction certificate will need to include verification from a suitably accredited fire engineer: -

No.	Alternative Solution Description	DTS Clause	Performance Requirement
Fire Safety Items			
1.	**Smoke Compartmentation** A Class 9c building must be divided into areas not more than 500m2 by smoke proof walls complying with Specification C2.5. The following ancillary areas are required to be fire separated as follows:- • Kitchen and food preparation areas exceeding 30 m2. • Records storage rooms exceeding 10m2 in area. • Laundry with gas dryer or other high potential fire hazard equipment These ancillary areas are to be considered under an alternative fire engineered solution to not have the required fire separation. Where it is proposed to replace the smoke walls with fire walls to assist with the fire engineered assessment of alternative solutions. The internal doors out the fire compartments provided for egress will be assessed as horizontal exits and doors will be required to swing both ways for egress.	C2.5	CP1, CP3, EP2.2
2.	**Separation of classifications** As the building is required to be constructed of Type A construction, fire separation of different Building Classifications are required with the required FRL's as specified in accordance with Table 3 of Spec C1.1. Confirmation to be provided whether these will be achieved. Any rationalisation to the FRL's will be required to be addressed as part of the fire engineered solution for the proposal	C2.8 C2.9, Spec C1.1	CP1, CP2
3.	**Public Corridors** Public corridors within Building C currently measure at 70m (over 40m) and not proposed to be smoke separated in accordance with C2.14	C2.14	DP4, EP2.2
4.	**Travel Distances (to exits)** The following areas exceed the maximum allowable travel distance and are to be addressed by the Fire engineer as part of the performance solution:	D1.4	DP4 EP2.2

	Basement: • Up to 58m to an exit in lieu of 40m • Up to 52m to a point of choice in lieu of 20m (needs to be reduced) **Building A** • Up to 13m to an exit in lieu of 6m from SOU • Up to 21m to a point of choice in lieu of 20m • Up to 45m to an exit in lieu of 40m from outdoor terrace • Up to 47m to a point of choice and 64m to the exit from Hot Water plant on roof **Building B** • Up to 13m to an exit in lieu of 6m from SOU • Up to 33m to a single exit in lieu of 20m from rooftop plant **Building C** • Up to 9m to an exit in lieu of 6m from SOU		
5.	**Travel Distances (between exits)** The following areas exceed the maximum distances between alternative exits and are to be addressed by the Fire engineer as part of the performance solution: **Building A** • Up to 65m between exits in lieu of 60m **Building C** • Up to 9m to an exit in lieu of 6m from SOU	D1.5	DP4 EP2.2
6.	**Converging paths of exits** **Building B** • Converging path of alternative exits are currently less than 6m, located at ground floor lobby area (approx. 2.5m)	D1.5	DP4, EP2.2
7.	**Travel via fire-isolated exits:** Path of travel from point of discharge of a fire isolated exits to the road (From Buildings A, B & C), requires occupants to travel past openings within 6m that are not proposed to be protected in accordance with C3.4 of the BCA.	D1.7	CP2, DP4, DP5
8.	**Rooms opening directly into fire isolated stairs** Multiple doors opening directly into the fire isolated stairs	D1.7	DP4, DP5, EP2.2

	serving Building A not being accessed via smoke lobby's not in accordance with D1.7 (d) of the BCA		
9.	**Swing of doors** Exit doors in Building A on the ground floor do not swing in the direction of egress	D2.20	DP2
10.	**Hydrant Pump Room** The hydrant pump room location is not directly accessed from a fire isolated passage or stair as per 6.4.2 of AS 2419.1 – 2005	E1.3	EP1.3
11.	**Fire Hydrants** Due to the nature of the building having multiple entrances a fire engineered performance solution will be required, as the booster assembly will not be located in sight of the main entrance to the building. This will be required to be addressed through a performance solution	E1.3	EP1.3

The fire engineered solution relating to the EP1.3 and EP2.2 Performance Requirements will be subject to consultation with the NSW Fire Brigade as part of the Construction Certificate process under Clause 144 of the Environmental Planning & Assessment Regulation 2000.

The application for Construction Certificate shall be assessed under the relevant provisions of the Environmental Planning & Assessment Act 1979 (As Amended) and the Environmental Planning & Assessment Regulation 2000.

1.0 Introduction

The proposed aged care development comprises of three buildings over a common basement. The development contains both Residential Aged Care rooms, Assisted Care Units and services for residents.

The site is located to the south of Kurrajong Road, on the corner that bridges the south western motorway. The site is currently vacant and adjoins existing residential properties to the south and west, and to the east is Daruk Park.

Satellite Image: Source six maps

This report is based upon the review of the design documentation listed in Appendix A of this Report

The report is intended as an overview of the relevant provisions of the Building Code of Australia for assistance only. Detailed drawings and associated review will still be required as the final design is developed.

1.1 Current Legislation

The applicable legislation governing the design of buildings is the Environmental Planning and Assessment Act 1979. This Act requires that all new building works must be designed to comply with the BCA.

The version of the BCA applicable to the development, is version that in place at the time of the application to the Certifying authority for the Construction Certificate. For the purposes of this Report, BCA 2019 has been utilised as the version of the BCA applicable at the time of preparation this Report.

2.0 PRELIMINARIES

2.1 Building Assessment Data

Summary of Construction Determination: -

The three buildings are over a common basement and therefore has been assessed as a **United Building**.

Part of Project	Development (United Building)
Classification	**2, 6, 7a, 7b, 9c**
Number of Storeys	7
Rise In Storeys	7
Type of Construction	Type A
Effective Height (m)	21.4m (RL 56,800 – RL 35,400)

For reference, the individual building data is below:

Part of Project	Building A	Building B	Building C
Classification	**2, 6, 7a, 7b, 9c**	**2, 6, 7a, 7b**	**2, 7a, 7b**
Number of Storeys	7	6	4
Rise In Storeys	7	6	4
Type of Construction	Type A	Type A	Type A
Effective Height (m)	21.4m (RL 56,800 – RL 35,400)	17.8m (RL 53,200 – RL 35,400)	10.2m (RL 45,600 – RL 35,400)

Summary of the floor areas and relevant populations where applicable: -

BASEMENT				
Part of Project	**BCA Classification**	**Approx. Floor Area (m^2)**	**Approximate Volume (m^3)**	**Assumed Population**
Basement	**2, 7a, 9c**	**6,916**	**22,822**	**86**
Car Park	7a	5,645	-	-
Kitchen / Laundry / staff	9c	235		8 staff (30m^2 pp)
Theatre	2, 9c	74	-	52 seats
Plant / Waste	2, 9c	603	-	21 (30m^2 pp)
Storage	7b	137	-	5 (30m^2 pp)
Total	**2, 7a, 9c**	**6,916**	**22,822**	**86**

BUILDING A				
Part of Project	**BCA Classification**	**Approx. Floor Area (m^2)**	**Approximate Volume (m^3)**	**Assumed Population**
Ground Floor	**6, 9c**	**2,757**	**8,310**	**60**
Consultant Services (physio, hair cafe) (less than 10% of floor area)	6	182	-	19 (10m^2 pp)
Patient rooms & Common areas	9c	-	-	41 beds
Level 1	**2, 9c**	**2,495**	**7,984**	**51**
Patient rooms	9c	-	-	41 beds
Assisted Care Units	2	-	-	10
Level 2	**2, 9c**	**2,238**	**7,162**	**50**
Patient rooms	9c	-	-	36 beds
Assisted Care Units	2	-	-	14
Level 3	**2, 9c**	**2,238**	**7,162**	**50**
Patient rooms	9c	-	-	36 beds
Assisted Care Units	2	-	-	14
Level 4	**2**	**1,184**	**3,552**	**36**
Assisted Care Units	2	-	-	36
Level 5	**2, 9c**	**280**	**840**	**119**
Function	2, 9c	-	-	119
Total	**2, 6, 9c**	**11,032**	**35,010**	**366**

BUILDING B				
Part of Project	**BCA Classification**	**Approx. Floor Area (m^2)**	**Approximate Volume (m^3)**	**Assumed Population**
Ground Floor	**2, 6**	**918**	**3,489**	**72**
Retail	6	289	-	58
Assisted Care Units	2	-	-	14
Level 1	**2**	**1,073**	**3,219**	**32**
Assisted Care Units	2	-	-	32
Level 2	**2**	**1,073**	**3,219**	**32**
Assisted Care Units	2	-	-	32
Level 3	**2**	**1,073**	**3,219**	**32**
Assisted Care Units	2	-	-	32
Level 4	**2**	**598**	**1,794**	**30**
Assisted Care Units	2	-	-	20

Roof		**2**	**-**	**-**	**-**
	Total	**2, 6**	**4,735**	**14,940**	**198**

BUILDING C				
Part of Project	**BCA Classification**	**Approx. Floor Area (m^2)**	**Approximate Volume (m^3)**	**Assumed Population**
Ground Floor	**2**	**1,134**	**3,402**	**17**
Assisted Care Units	2	-	-	17
Level 1	**2**	**1,048**	**3,144**	**17**
Assisted Care Units	2	-	-	17
Level 2	**2**	**1,048**	**3,144**	**17**
Assisted Care Units	2	-	-	17
Roof	**2**	-	-	-
Total	**2**	**3,230**	**9,690**	**51**

Total of 48 Staff throughout the development.

Notes:
1. The above populations have been based on the floor areas and calculations in accordance with Table D1.13 of the BCA.
2. The carpark areas have been considered ancillary to the use for the purposes of population numbers
3. Common areas have been considered ancillary to the use for the purposes of population numbers
4. Floor and volume areas to be confirmed by the Architect
5. Staff numbers have been provided by the client.

2.2 Structural Provisions (BCA B1)

Any new structural works are to comply with the applicable requirements of AS/NZS 1170.1.

Glazing is to comply with AS1288, and AS2047.

Prior to the issue of the Construction Certificate structural certification is required to be provided, including determination of the importance level of the development.

This is to include assessment against the provisions of BCA Clause B1.6 – Construction of Buildings in Flood Areas

2.3 Development Approval

A Development Approval will be required from the Local Authority for the development. A copy of the Development Permit conditions and approved drawings will be required prior to the issuing of the Building Approval for that component of works.

The proposed development must not be inconsistent with the endorsed drawings and all relevant conditions will need to be satisfied and accurately reflect the construction issue drawings.

A review of the Council Development Approval will be undertaken once the approval is provided

2.4 Copy of Certificate of Title:

A copy of the current Certificate of Title and Registered Plan / Plan of Subdivision is required. Where it is proposed to construct any part of the building work within an easement, the consent of the relevant authority and /or Council is required prior to the issue of the Construction Certificate.

3.0 FIRE PROTECTION

3.1 Fire Compartmentation (BCA C1.1)

The BCA stipulates three levels of fire resistant construction, which is based upon the rise in storeys and classification of the building. Each of these types of construction has maximum floor area and volume limitations as per BCA Table C2.2.

Based upon the rise in storeys and use of the Building, the building is required to be Type A Construction in accordance with Table 3 & 3.9 of Specification C1.1 of the Building Code of Australia 2019.

The building has been assessed on the basis of the following fire separation/ compartmentation within the development;

- Bounding construction to the Class 2 units of 90 minutes,
- Separation between the class 9c portions and the remainder of the building of 120 minutes
- Separation between the Class 6 portions and the remainder of the building of 180 minutes
- Separation between the carpark levels and the remainder of the building 120 minutes,
- Fire compartmentation of the building at each floor level,

The maximum floor area and volume limitations of a fire compartment as nominated in the deemed to satisfy provisions are as follows:

Classification		Type of Construction
		A
5, 9c aged care building	max floor area—	8 000 m^2
	max volume—	48 000 m^3
6, 7	max floor area—	5 000 m^2
	max volume—	30 000 m^3

- The building does not exceed the maximum compartment limitations

3.2 Class 9c Fire and Smoke Compartmentation Provisions (BCA C2.5)

In addition to the above general fire compartmentation requirements, the BCA also contains additional prescriptive fire and smoke compartmentation provisions for Class 9c aged care areas. The deemed to satisfy requirements are as follows:

- Bounding construction to the sole occupancy units of 120 minutes where the dividing walls are loadbearing,
- Separation between the non-residential portions and the residential portions of 120 minutes,
- Residential portions separated into areas not more than 500 m^2 by smoke proof walls complying with Specification C2.5

Ancillary use areas containing equipment or materials that are a high potential fire hazard, must be separated **from the** sole-occupancy units by smoke proof walls. Ancillary use areas include, but are not limited to, the following:

- A kitchen and related food preparation areas having a combined floor area of more than 30 m^2.
- A laundry, where items of equipment are of the type that is potential fire sources (e.g. gas fire dryers).
- Storage areas greater than 10m^2 used predominantly for the storage of administrative records.

The current design does not indicate the required compartmentation, therefore where design amendments are not afforded will need to be addressed through a fire engineered performance solution.

3.5 Fire Resistance (BCA C1.1)

The building should be constructed generally in accordance with the relevant provisions of Specification C1.1 of the BCA applicable to Type A Construction, Please refer to Appendix C which outlines the required fire rating to be achieved by the development.

As the building is required to be constructed of Type A construction, fire separation of different Building Classifications are required with the required FRL's as specified in accordance with Table 3 of Spec C1.1.

Confirmation to be provided whether these will be achieved. Any rationalisation to the FRL's will be required to be addressed as part of the fire engineered solution for the proposal

Other passive fire protection issues that will need to be addressed in detailed documentation phase include:

- Lift Motor Rooms,
- Emergency Power Supply,
- Emergency Generators,
- Electricity Supply,
- Boilers or Batteries,
- Hydrant Pump Rooms,
- Sprinkler Pump Rooms,
- Fire Control Room

The above areas are to be separated from the remainder of the building by construction achieving a minimum fire resistance level of 120 minutes.

3.6 Fire Hazard Properties (BCA C1.10 and BCA C1.12)

The fire hazard properties of fixed surface linings and mechanical ductwork will also need to be addressed within the detailed documentation phase pursuant to specification C1.10 Building Code of Australia. The following requirements apply:

<u>Sprinkler Protected Areas</u>

a) Floor Coverings – Critical radiant Flux not less than 1.2 kW/m2
b) Wall and Ceiling Linings – Material Group No. 1, 2 & 3 (dependent on locations)
c) Other Materials – Spread of Flame Index not exceeding 9 and Smoke Developed Index not exceeding 8 if the Spread of Flame index is more than 5

<u>External Wall Cladding</u>

As the building is of Type A construction the external walls, including any external and internal claddings & linings must be non-combustible as determined by AS1530.1. 1994.

The following materials may be used wherever a non-combustible material is required:

a) Plasterboard.
b) Perforated gypsum lath with a normal paper finish.
c) Fibrous-plaster sheet.
d) Fibre-reinforced cement sheeting.

e) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0.
f) Bonded laminated materials where—
   i. each lamina, including any core, is non-combustible; and
   ii. each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2mm; and
   iii. the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole does not exceed 0 and 3 respectively.

The BCA does nominate that ancillary elements may be fixed to an external wall that is required to be non-combustible unless they comprise of the following:

a) An ancillary element that is non-combustible.
b) A gutter, downpipe or other plumbing fixture or fitting.
c) A flashing.
d) A grate or grille not more than 2 m² in area associated with a building service.
e) An electrical switch, socket-outlet, cover plate or the like.
f) A light fitting.
g) A required sign.
h) A sign other than one provided under (a) or (g) that—
   i) achieves a group number of 1 or 2; and
   ii) does not extend beyond one storey; and
   iii) does not extend beyond one fire compartment; and
   iv) is separated vertically from other signs permitted under (h) by at least 2 storeys.

It is recommended that once material selections are made, copies of the fire test certificates/reports be provided for review and approval.

3.8 Public Corridors: Class 2 Buildings (BCA C2.14)

Public corridors exceeding 40m in length to be divided into intervals of not more than 40m by smoke proof walls complying with Clause 2 of BCA Specification C2.5. Public corridors within Building C currently measure at 70m and not proposed to be smoke separated in accordance with C2.14 therefore required to be addressed through a fire engineered solution.

3.9 Protection of Openings in External Walls (BCA C3.2)

The prescriptive provisions of the BCA stipulate that any external opening within 3m of the fire source feature requires protection by -/60/- fire rated construction, or externally located wall wetting sprinklers.

Where a building is separated into fire compartments, the distance between parts of external walls and openings within them must be not less than the table below unless those parts of each external wall has an FRL not less than 60/60/60 and openings are protected.

Angle Between Walls	Minimum Distance
0º (walls opposite)	6m
More than 0º to 45º	5m
More than 45º to 90º	4m
More than 90º to 135º	3m
More than 135º to 180º	2m

More than 180º	Nil

Fire compartment drawings required to be provided to assess the requirements detailed above.

Fire source feature is defined as;

a) The far boundary of a road, river, lake or the like adjoining an allotment,
b) The side or rear boundary of the allotment,
c) The external wall of another building on the allotment which is not a class 10 building.

3.10 Protection of Openings in fire rated building elements (BCA C3.5 and BCA C3.10)

The prescriptive provisions of the BCA stipulate that openings within building elements required to have an FRL shall be protected as follows:

a) Penetrations through fire rated floors to be protected either by a tested prototype (e.g. fire collar, fire damper, etc) or be installed within a fire rated shaft achieving the required FRL

b) Any penetration through a wall or room required to have an FRL (e.g. substation, boiler room, apartment separating wall etc) is to be protected either by a tested prototype (e.g. fire collar, fire damper, etc) or be installed within a shaft achieving the required FRL (or 120/120/120 where it is a room such as a substation);

c) Self-closing -/60/30 fire doors to the doors opening to the fire isolated stairs (note that this also includes the access doors to the condenser units on the plant platforms).

Note that where fire dampers, fire collars, etc are utilised, allowance needs to be made for access hatches to be provided within the walls / ceilings to ensure that maintenance access is provided.

As the design develops, details will need to be included in relation to sealing of penetrations / construction of fire rated shafts.

4.0 EGRESS PROVISIONS

4.1 Provisions for Escape (BCA D1)

The egress provisions from the proposed building are provided by:

- Fire isolated stairways
- External perimeter doorways

Other detailing issues that will need to be addressed include:

- Door Hardware
- Exit door operation
- Stair construction
- Handrail and balustrade construction
- Details of Separation of rising & descending stairs
- Discharge from the Fire Isolated Exits
- Details of the egress provisions to the Road.

Exit doors in Building A on the ground floor do not swing in the direction of egress. Where design amendments are not afforded this will be required to be addressed through a fire engineered solution

4.2 Travel via Fire Isolated Exits (BCA D1.7)

The proposed exits are required to be fire isolated.

The BCA requires each fire isolated stairway to provide independent egress from each storey served and discharge directly, or by way of its own fire isolated passageway to:

- A road or open space; or
- To a point in a storey within the confines of the building, that is used only for pedestrian movement, car parking or the like and is open for at least 2/3 of its perimeter, and an unimpeded path of travel not more than 20m to a road or open space; or
- A covered area that adjoins a road or open space, is open for at least 1/3 of its perimeter, has an unobstructed clear height throughout of not less than 3m, and provides an unimpeded path of travel to a road or open space of not less than 6m.

Additionally, where the path of travel from the point of discharge requires occupants to pass within 6m of any part of the external wall of the same building (measured horizontally), that external wall must have a 60/60/60 FRL and have any openings protected internally for a distance of 3m above or below the path of travel.

The current design indicates the following:

- Path of travel from point of discharge of a fire isolated exits to the road (From Buildings A, B & C), requires occupants to travel past openings within 6m that are not proposed to be protected in accordance with C3.4 of the BCA
- Multiple doors opening directly into the fire isolated stairs serving Building A not being accessed via smoke lobby's not in accordance with D1.7 (d) of the BCA

Where design amendments are not afforded, this will be required to be addressed through fire engineered performance solutions.

4.3 Exit Travel Distances (BCA D1.4)

The locations of the proposed exits would appear to indicate that the deemed to satisfy requirements in terms of travel distances, distances between alternative exits and egress widths would be satisfied.

The travel distances to exits should not exceed:

Class 5-9
- 20m to a single exit or point of choice and where two exits are provided, a maximum of 40m to one of those exits; and
- exits shall be located to not be more than 60m apart and not closer than 9m

Class 2
- 6m from an exit or from a point of choice
- 20m from a single exit at the level of egress to a road or open space
- Alternate exits not more than 45m apart

The locations of the proposed exits indicate that the deemed to satisfy requirements in terms of travel distances would be satisfied, with the exception of the following:

Basement:
- Up to 58m to an exit in lieu of 40m
- Up to 52m to a point of choice in lieu of 20m (needs to be reduced)

Building A
- Up to 13m to an exit in lieu of 6m from SOU
- Up to 21m to a point of choice in lieu of 20m
- Up to 45m to an exit in lieu of 40m from outdoor terrace
- Up to 47m to a point of choice and 64m to the exit from Hot Water plant on roof

Building B
- Up to 13m to an exit in lieu of 6m from SOU
- Up to 33m to a single exit in lieu of 20m from rooftop plant

Building C
- Up to 9m to an exit in lieu of 6m from SOU

Separation of exits does not fully comply in the following areas:

Building A
- Up to 65m between exits in lieu of 60m

Building B
- Converging path of alternative exits are currently less than 6m, located at ground floor lobby area (approx. 2.5m)

Building C
- Up to 9m to an exit in lieu of 6m from SOU

Where design amendments are not afforded the above distances will be required to be addressed through fire engineered performance solutions.

4.4 Dimensions of Exits (BCA D1.6)

Minimum dimensions of 1000mm and 2000mm height to be provided within exits, with the paths of travel should provide a minimum width of 1000mm (note that all maintenance access, cat walks, etc may comply with AS1657 in which case a 600mm clear width is required).

Doorways are permitted to contain a clear opening width of the required width of the exit minus 250mm, with a height of 1980mm as part of egress requirements. Access for persons with disabilities however requires a clear doorway opening width of 850mm (i.e minimum 920 mm doors).

4.5 Balustrading and Handrails (BCA D2.16 and BCA D2.17)

Generally

Balustrading to a height of 1000mm with a maximum opening of 125mm in any direction should be provided adjacent to balconies, landings, corridors etc where located adjacent to a change in level exceeding 1000mm.

Where it is possible to fall more than 4m to the surface below, the balustrade shall not contain any horizontal or near horizontal members that facilitate climbing between 150 – 760mm above the floor.

Handrails should generally be provided at a minimum height of 865mm alongside of all ramps and stairs.

The public stairs and ramps located along an accessible path of travel should be designed in accordance with the requirements of AS1428.1 for persons with disabilities. This requires a handrail on each side of the stair and ramp and for the handrail to extend approximately 550mm – 600mm past the last tread / end of ramp.

Intermediate rails located between 665mm and 7500mm should be provided within Class 9b Primary Schools.

Please also note handrails are required on both sides of all corridors used by residents and they are to be fixed not less than 50mm from the wall. The above dimensions are to be measured clear of the handrails.

Fire Isolated Stairways

Balustrades in the fire isolated stairways are permitted to contain a 3 rail system, with a bottom rail situated at not more than 150mm above the nosings. The distance between the rails shall not exceed 460mm.

Handrails are required on both sides of all stairways except for fire isolated stairways used only for emergency egress purposes.

In a required exit serving an area required to be accessible, handrails must be designed and constructed to comply with Clause 12 of AS1428.1-2009

Openable Windows in Residential Buildings

In bedrooms of Class 2 buildings, where the distance from the floor level to the level below exceeds 2m, window openings shall be provided with protection in accordance with BCA Clause D2.24.

Where the lowest part of the window opening is less than 1.7m above a floor, the window opening must be:

a) Fitted with a device to restrict the opening; or
b) Fitted with a screen with secure fittings

The device or screen required must –

a) Not permit a 125mm sphere to pass through it; and
b) Resist an outward horizontal action of 250N; and

c) Have a child resistant release mechanism if the screen or device is able to be removed, unlocked or overridden

Further review will be undertaken to ensure compliance as the design develops.

4.6 Slip Resistance

The adoption of BCA 2014 introduced a requirement for slip resistance of stairway treads and ramp surfaces. The requirements are as follows:

Table D2.14 SLIP-RESISTANCE CLASSIFICATION

Application	***Surface conditions***	
	Dry	***Wet***
Ramp steeper than 1:14	*P4 or R11*	*P5 or R12*
Ramp not steeper than 1:14	*P3 or R10*	*P4 or R11*
Tread or landing surface	*P3 or R10*	*P4 or R11*
Nosing or landing edge strip	*P3*	*P4*

5.0 ACCESS FOR PEOPLE WITH DISABILITIES

5.1 General Building Access Requirements (BCA D3.1)

Access for people with disabilities shall be provided to and within the building in accordance with the requirements of Clause D3.2, D3.3 and D3.4 of the BCA 2019. Parts of the building required to be accessible shall comply with the requirements of:-

- AS1428.1-2009 General Requirements for Access – New Building Work;
- AS1428.4-2009 Tactile Ground Surface Indicators
- AS2890.6-2009 Car Parking for People with Disabilities

Access for persons with a disability is to be provided as follows:-

Apartment (Class 2 Buildings)

- From the pedestrian entrance to at least 1 floor containing Single Occupancy Units and to the entrance door of all Single Occupancy Units on that floor, and to at least one type of each common facility, such as gyms, shops, laundries (shared), gaming rooms etc.
- Where a 1428.1 compliant lift or ramp is provided in addition to the above and access is required to and within all spaces, and to the entrance of doors to single occupancy units on the levels, served by the lift or ramp.

Office/shops (Class 6 buildings)

To and within all areas normally used by the occupants

Car parks (Class 7a buildings)

To and within any level containing accessible car parking spaces.

Aged Care Facilities

From a pedestrian entrance required to be accessible, to at least 1 floor containing single occupancy units, and to the entrance doorway of single occupancy units located on that level, and to and within each type of common facility i.e hairdressers, shops, laundries, TV rooms and public dining.

Where a ramp or a lift complying within 1428.1 is provided, to and within all areas of the level served by the lift or ramp.

Where a group of sole occupant units or individual units are provided, the following ratio is required.

1 to 10 single occupancy units	To and within 1 accessible single occupancy units
11 to 40	To and within 2 accessible single occupancy units
41 to 60	To and within 3 accessible single occupancy units
61 to 80	To and within 4 single occupancy units
81 to 100	To and within 5 single occupancy units
101 to 200	To and within 5 single occupancy units and 1 for every 25 single occupancy units over 100

201 to 500 single occupancy units	To and with an accessible single occupancy units, plus 1 for every 30 units in excess of 200 units
More than 500	1 for every 50 units in excess of 500 units

Where more than 2 single occupancy units are required to be accessible they must be indicative of the range of units/rooms available.

5.2 Provision for Access to Buildings

The BCA prescribes access to be provided to and within the building as follows:

- Via the principle public entry and at least 50% of all other entrances
- From designated car parking spaces for the use of occupants with a disability.
- From another accessible building connected by a pedestrian link.
- All areas used by the public.

In buildings over 500m² in floor area, a non-accessible entrance must not be located more than 50m from an accessible entrance.

And where a pedestrian entry contains multiple doors, the following is required;

- Entrance containing not more than 3 doors, at least one of the door leaves must be accessible.
- Where an entrance contains more than 3 doors, not less than 50% of the door leaves must be accessible.

A door is considered to be accessible if it is automatic (open and closing) or is more than 850mm in clear opening width and contains the required door circulation space.

5.3 Provisions for Access within Buildings (BCA D3.3)

A building required to be accessible is required to be equipped with either a 1428.1 compliant lift or 1428.1 compliant ramp, (but the maximum vertical rise of a ramp must not exceed 3.6m).

An exemption to not provide either a lift or ramp exists for class 5, 6, 7b, or 8 buildings, where a building contains;

a) Less than 3 storeys; and
b) Floor area of each storey (excluding the entrance level) is not more than 200m2.

Within the building the following are required;

- Door circulation space as per AS1428.1 Clause 13.3 and as attached in appendix 1;
- Doorways must have a clear opening of 850mm;
- Passing spaces (1.8m wide passages) must be provided at maximum of 20m intervals
- Within 2.0m of end access ways/corridors, turning areas spaces are required to be provided.
- Carpet pile height of not more than 11mm to an adjacent surface
- Any glazed capable of being mistaken for a doorway or opening must be clearly marked (or contain chair rail, hand rail or transom as per AS 1288 requirements)

The design would generally comply with the prescriptive provisions of the BCA with additional ongoing review being undertaken as to door widths, circulation, etc. Further details are to be provided or access to these areas is to be assessed by an access consultant.

5.4 Car parking (BCA D3.5)

Accessible car parking spaces are required to comply with AS 2890.6-2009

A 'shared zone' of minimum 5400mm x 2400mm is required adjacent to accessible car parking spaces, protected with a bollard.

5.5 Tactile Indicators (BCA D3.8)

Tactile indicators are required to be provided to warn occupants of all stairs (except Fire Isolated stairs) and ramps regardless of public nature or private environment and where an overhead obstruction occurs less than 2.0m above the finished floor level.

Exemptions apply in aged care facilities to include a down button to handrails in lieu of tactile indicators.

5.6 Stairs (BCA D3.3 inter Alia AS1428.1)

Stairs shall be constructed as follows:

a) Where the intersection is at the property boundary, the stair shall be set back by a minimum of 900mm so that the handrail TGSIs do not protrude into the transverse path of travel.
b) Where the intersection is at an internal corridor, the stair shall be set back in 300mm, so the handrails do not protrude into transverse path of travel.
c) Stairs shall have opaque risers.
d) Stair nosing shall not project beyond the face of the riser and the riser may be vertical or have a splay backwards up to a maximum 25mm.
e) Stair nosing profiles shall-
    - Have a sharp intersection;
    - Be rounded up to 5mm radius; or
    - Be chamfered up to 5mm x 5mm
f) All stairs, including fire isolated stairs shall, at the nosing of each tread have a strip not less than 50mm and not more than 75mm deep across the full width of the path of travel. The strip may be set back a maximum of 15mm from the front of the nosing. The strip shall have a minimum luminance contrast of 30% to the background. Where the luminous contrasting strip is affixed to the surface of the tread, any change in level shall not exceed a difference of 5mm.

5.7 Provisions for Accessible Sanitary Facilities (BCA F2.4)

Unisex Accessible Sanitary Facilities

An accessible unisex sanitary facility must be located so that it can be entered without crossing an area reserved for one sex only and provided in accordance with AS 1428.1-2009 and must contain a closet pan, washbasin, shelf or bench top and adequate means of disposal of sanitary towels and as per following.

Building Type	Minimum accessible unisex sanitary compartments to be provided
Residential apartments	Where sanitary compartments are provided in common areas, not less than 1.
Class 9c aged care building	a) In every accessible sole-occupancy unit provided with sanitary compartments within the accessible sole-occupancy unit, not less than 1; and b) At each bank of sanitary compartments containing male and female sanitary compartments provided in common areas, not less than 1

Ambulant Facilities

At each bank of toilets where there is one or more toilets in addition to an accessible unisex sanitary compartment, a sanitary compartment suitable for a person with an ambulant disability in accordance with AS 1428.1-2009 must be provided for use by males and females.

Where male sanitary facilities are provided at a separate location to female sanitary facilities, accessible unisex sanitary facilities are only required at one of those locations.

An accessible unisex sanitary compartment or an accessible unisex shower need not be provided on a storey or level that is not provided with a passenger lift or ramp complying with AS1428.1-2009

Accessible unisex showers

Accessible unisex showers must be provided in accordance with 1428.1 and at the following rates

Building	Minimum accessible unisex showers to be provided
Class 9c aged care building	a) In every accessible sole – occupancy unit provided with showers within the accessible sole-occupancy unit, not less than 1; and b) 1 for every 10 showers or part thereof provided in common areas

5.8 Signage (BCA D3.6)

As part of the detailed design package, specifications will need to be developed indicating:

- Sanitary Facility Identification Signs (note that they are to comply with BCA Specification D3.6 and include the use of Braille, Tactile, etc and be placed on the wall on the latch side of the facility);
- Directional / Way Finding signs to the Lifts, Sanitary Facilities, etc;
- Hearing Augmentation System;
- Identify each door required by BCA Clause E4.5 to be provided with an exit sign, stating ‘EXIT’ and ‘Level” number

5.9 Hearing Augmentation (BCA D3.7)

A hearing augmentation-listening system shall be installed throughout the building in accordance with the requirements of Clause D3.7 of the BCA, where ever in an auditorium conference room, meeting room etc containing a PA system not used for emergency purposes.

5.10 Lifts (BCA E3.6)

Lifts compliant to BCA E3.6 and BCA E3.7 must be provided, where required to be provided, with a minimum size of 1400 x 1600mm or 1100mm x 1400mm (whichever is appropriate) in size – with appropriate handrails and auditory commands.

6.0 FIRE SERVICES AND EQUIPMENT

The following section of this report describes the essential fire safety measures and the minimum performance requirements of those measures. A draft essential fire safety schedule can be found in Appendix B.

6.1 Fire Hydrants (BCA E1.3)

A system of Fire Hydrants is required to be provided in accordance with BCA Clause E1.3 and AS2419.1-2005, please provide pressure and flow calculations for review.

Pressure and flow information will be required to confirm the required pressures and flow to the system, depending on the type of hydrant to be utilized;

- Feed hydrants (within 20m of hard stand for pumping appliance), 150 kPa
- Attack hydrant (within 50m of hard stand) 250 kPa
- Hydrants on a pump station, 700 kPa

The building is required to be provided with a booster assembly as part of the fire hydrant requirements. The booster is required to be located attached to the building at the main entry. If remote from the building, the booster is to be located at the main vehicle entry and within sight of the main entry of the building within 20m of a hardstand area.

The current design indicates the following:

- The hydrant pump room location is not directly accessed from a fire isolated passage or stair as per 6.4.2 of AS 2419.1 – 2005
- Due to the nature of the building having multiple entrances the booster assembly will not be located in sight of the main entrance to the building.

Where design amendments are not afforded, the above departures will be required to be addressed through a fire engineered performance solution

Fire hydrant coverage drawings to be submitted for review.

6.2 Fire Hose Reels (BCA E1.4)

A Fire Hose Reel System is required to BCA Clause E1.4 and AS2441-2005

Fire hose reels are to be located within 4m of exits and provide coverage within the building based on a 36m hose length. Where required, additional fire hose reels shall be located internally as required to provide coverage.

Fire Hose reel are not to extend through Fire and Smoke Walls.

Fire hose reel coverage drawings to be submitted for review

6.3 Fire Extinguishers (BCA E1.6)

The provision of portable fire extinguishers is required to BCA Clause E1.6 and AS2444-2001

Table E.6 details when portable fire extinguishers are required:

Occupancy Class	Risk Class (as defined in AS 2444)
General provisions – Class 2 to 9 buildings (except within sole-	(a) To cover Class AE or E fire risks associated with emergency services switchboards. (Note 1)

Occupancy Class	Risk Class (as defined in AS 2444)
occupancy units of a Class 9c building)	(b) To cover Class F fire risks involving cooking oils and fats in kitchens. (c) To cover Class B fire risks in locations where flammable liquids in excess of 50 litres are stored or used (not excluding that held in fuel tanks of vehicles). (d) To cover Class A fire risks in normally occupied fire compartments less than 500m^2 not provided with fire hose reels (excluding open deck carparks). (e) To cover Class A fire risks in classrooms and associated schools not provided with fire hose reels. (f) To cover Class A fire risks associated with Class 2 or 3 building or class 4 part of building.

In addition, extinguishers are to be provided to the class 2 portions of the building in accordance with the below:

- an ABE type fire extinguisher is to be installed with a minimum size of 2.5 kg; and
- extinguishers are to be distributed outside a sole-occupancy unit
  (a) to serve only the storey at which they are located; and
  (b) so that the travel distance from the entrance doorway of any sole-occupancy unit to the nearest fire extinguisher is not more than 10 m.

Fire extinguishers are to be located in accordance with AS 2444, often collocated with fire hydrants and/or fire hose reels.

The fire extinguisher locations to be detailed on plans for review

6.4 Automatic Sprinkler Protection (BCA E1.5)

Automatic sprinkler protection is required to Specification E1.5 and AS2118.1-2017 to the following areas:

- Throughout the entire building where Class 9c aged care is proposed;
- Throughout the whole building as the building contains a Class 2 building and the Rise in Storeys of the building is more than 4 – This applies to the entire development as it has been assessed as a united building

Location of pumps, tanks, FIP, control valves and booster assemblies will be subject to review.

An occupant warning system should be provided in accordance with BCA Specification E1.5.

6.5 Exit Signs and Emergency Lighting (BCA E4.2 and BCA E4.5)

Emergency Lighting and Exit Signs indicating exit location paths of travel to exits to be provided in accordance with AS2293.1-2005

Details are required to be provided for review.

6.6 Fire Control Centre (BCA E1.8)

As the building contains a floor area of greater than 18,000m², a fire control centre is required in accordance with BCA Specification E1.8.

The proposed Fire Control Centre is required to be detailed on the plans for review

6.7 Smoke Hazard Management (BCA E2.2)

Smoke hazard management shall be provided throughout the building by means of the following systems:

- Automatic Shutdown of Mechanical Systems in accordance with the requirements of AS/NZS 1668.1-2015;
- Automatic Smoke Detection and Alarm System in accordance with the requirements of BCA Spec E2.2a and AS 1670.1-2004
- Automatic Pressurisation to Fire Isolated Exits in accordance with the requirements of AS/NZS 1668.1-2015

A fire indicator panel is required as part of the detection system. This panel is to be located within 4m of the main entry and should be incorporated within the fire control room. Any variation to the prescriptive provisions will require the consent of the fire brigade and should form part of the fire safety engineering report to verify the performance requirements of the BCA.

6.8 Lift Services (BCA E3.2 and BCA E3.6)

The passenger lifts to be installed are to be: -

- fitted with warning signs, fire service controls in accordance with Clauses E3.3, E3.7, E3.9 and E3.10 of the BCA.
- Stretcher facilities are to be provided within the lifts with minimum dimensions of 600m wide, 2000mm long and 1400mm high.
- Be provided with the following: -
    - A handrail in accordance with AS 1735.12;
    - Minimum internal floor dimensions as specified in Table E3.6b of the BCA i.e. 1,400mm x 1,600mm;
    - Minimum clear door opening complying with AS 1735.12;
    - Passenger protection system complying with AS 1735.12;
    - Have a set of buttons for operating the lift located at heights above level complying with AS 1735.12;
    - Lighting in accordance with AS 1735.12;
    - Automatic audible information within the lift car to identify the level each time the car stops; and
    - Audible and visual indication at each lift landing to indicate the arrival of the lift car.

6.9 Fire Precautions During Construction (BCA E1.9)

After the building has reached an effective height of 12m, the following fire services are required to be operational:

- Required fire hydrants and fire hose reels on every storey covered by the roof/floor structure (except the 2 uppermost storeys); and
- Booster connections installed.

Due to the height of the building this will need to be considered and implemented during construction.

7.0 HEALTH AND AMENITY

7.1 Sanitary Facilities (BCA F2.2 and BCA F2.3)

Retail

Sanitary facilities are required to be provided for employees. In relation to the public, sanitary facilities are required to be provided either where more than 600 persons can be accommodated (standard shops) or for café / restaurant where there are more than 20 seats.

Apartments

The building contains more than 10 apartments. Accordingly, a sanitary facility comprising a WC and wash basin is to be provided for employees at ground floor level, and be accessible to employees without having to enter an apartment.

The current design does not indicate that such a sanitary facility if to be provided through the provision of a sanitary facility at ground floor for the retail (note that confirmation will be required that these facilities will be available to apartment maintenance staff).

Each apartment is required to be provided with the following:

- A kitchen sink and facilities for the preparation and cooking of food; and
- A bath or shower; and
- A closet pan and wash basin; and
- Clothes washing facilities comprising at least one wash tub and space for a washing machine; and
- Clothes line of at least 7.5m, or space for one heat operated drying device within the same space as the clothes washing.

The design submitted indicates that each apartment should satisfy the above requirements.

Aged Care Buildings

For facilities in Class 9c buildings, the following applies:

- For residents in each building or group of buildings, provide—
  - a closet pan and wash basin for each 6 residents or part thereof where private facilities are not provided; and
  - a shower for each 7 residents or part thereof for where private facilities are not provided; and
  - a suitable bath, fixed or mobile.
- In addition to the facilities required by (e)(i), provide—
  - one kitchen or other adequate facility for the preparation and cooking or reheating of food including a kitchen sink and washbasin; and
  - laundry facilities for the cleansing and drying of linen and clothing or adequate facilities for holding and dispatch or treatment of soiled linen and clothing and the like and the receipt and storage of clean linen; and
  - one clinical hand washing basin for each 16 residents or part thereof.

Sanitary Facilities Required for Staff			
Total Staff : 48	**WC**	**Urinals**	**Basins**
Male : 24 Staff	2	2	1
Female : 24 Staff	2	-	1
Accessible	1	-	1

Proposed sanitary facility details are to be provided to enable further assessment.

Bathroom Construction

Where bathrooms or rooms containing water closets have the WC within 1200mm of the doorway, the door shall be either sliding, open outwards, or be provided with removable hinges.

7.2 Floor Wastes (BCA F1.11)

Floor wastes to be provided within bathrooms and laundries where located above another sole occupancy unit. The floor shall be sloped towards these wastes.

Floor wastes are required to be provided where wall hung urinals are provided and the floor shall be sloped towards these wastes.

7.3 Light and Ventilation (BCA Part F4)

Class 2, 3 & 4

Natural light and ventilation is to be provided to all habitable rooms at a rate of 10% and 5% of the floor area of the rooms respectively.

A required window that faces a boundary of an adjoining allotment or a wall of the same building or another building on the allotment must not be less than a horizontal distance from that boundary or wall that is the greater of:

i) generally — 1 m; and
ii) 50% of the square root of the exterior height of the wall in which the window is located, measured in metres from its sill.

Class 5, 6, 7, 8 & 9

Natural Ventilation is required to be provided to rooms at a rate of 5% of the floor area in openings. Alternatively, mechanical ventilation is required in accordance with AS1668.2-2012. The architect is to provide calculations to verify compliance is achieved.

Artificial lighting complying with AS/NZS1680.0-2009 is to be incorporated with the final detailed design to be developed to confirm this.

A required window must be transparent and located:

i) in an external wall with the window sill not more than 1 m above the floor level; and
ii) where the window faces an adjoining allotment, another building or another wall of the same building, it must not be less than a horizontal distance of 3 m from the adjoining allotment, other building or wall.

7.4 Sound Transmission and Insulation (BCA F5)

Building elements within Class 2 buildings should provide the following sound insulation levels.

Location	Notes	Sound Insulation Requirement
Walls separating habitable rooms		$R_w + C_{tr} \geq 50$
Walls separating habitable room and kitchen or bathroom	Wall must be of Discontinuous Construction	$R_w + C_{tr} \geq 50$

Floor separating habitable rooms	Impact isolation required	$R_w + C_{tr} \geq 50$ $L_{n,w} + C_I \leq 62$
Duct, soil, waste or water supply pipe, including pipes that is located in a floor or wall cavity, serves or passes through more than one room	Adjacent habitable room or Adjacent non-habitable room	$R_w + C_{tr} \geq 40$ or $R_w + C_{tr} \geq 25$
Door to habitable room		$R_w \geq 30$

Building elements within Class 9c buildings should provide the following sound insulation levels.

Location	Notes	Sound Insulation Requirement
Floors separating sole occupancy units		$R_w \geq 45$
Walls separating sole occupancy units	Wall must be of Discontinuous Construction	$R_w \geq 45$
Wall separating a sole-occupancy unit from a kitchen, bathroom, sanitary compartment (not being an associated ensuite), laundry, plant room or utilities room		$R_w \geq 45$

Please note for walls requiring impact resistance an air gap between leafs of the wall construction is required to be provided.

Please provide a report from the acoustic engineer verifying design compliance with the provisions of part F5 of the BCA.

7.5 Weatherproofing of External Walls (BCA FP1.4)

Performance Requirement FP1.4 which relates to the prevention of the penetration of water through external walls, must be complied with. It is noted that there are no Deemed-to-Satisfy Provisions for this Performance Requirement in respect of external walls.

As such, a performance solution is to be prepared by a suitably qualified professional that demonstrates that the external walls of the proposed building complies with Performance Requirement FP1.4 which reads as follows:

> *A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause—*
>
> *a) unhealthy or dangerous conditions, or loss of amenity for occupants; and*
> *b) undue dampness or deterioration of building elements.*

8.0 ENERGY EFFICIENCY

The deemed-to-satisfy provisions of the BCA only apply to thermal insulation in a class 2 building where development consent or a Complying Development certificate specifies that the insulation is to be provided as part of the development.

The residential (Class 2) portions of the building are subject to BASIX, and a BASIX Certificate will be required prior to the issuance of the Construction Certificate for the works.

The proposed development shall comply with Part J of the BCA. To achieve compliance, there are two options available:

1. The building can comply with the deemed-to-satisfy provisions of the BCA, relating to the following areas:

    - Building Fabric
    - Glazing
    - Building Sealing
    - Air Conditioning & Ventilation Systems
    - Artificial Lighting & Power
    - Hot Water Supply

2. The building can be verified against a reference building as per Verification Method JV3. This requires that the proposed building and its services be shown to have an annual energy consumption of equal or less than the reference building which has been modelled as per the requirements of Part J of the BCA.

Certification from an appropriately qualified engineer should be provided for either option with a report / computations outlining how compliance is achieved.

Access for maintenance is to be provided to the building in accordance with the requirements of BCA Part J8.

Due to special nature of the building some energy provisions may not be appropriate.

10.8 Access for Maintenance

Access if to be provided to all plant, equipment and components associated with the provision of the above energy requirements i.e.

- Adjustable or monitored shading devices
- Time switches and motion detectors
- Room temperature thermostats
- Plant thermostats such as boilers or refrigeration units
- Motorised air dampers and central valves
- Reflectors, Lenses and Diffusers of light fittings
- Heat transfer equipment

Appendix A - Design Documentation

The following documentation was used in the assessment and preparation of this report: -

Drawing No.	Title	Date	Drawn By	Rev
DA-030	Site Plan	06/02/2020	JC	A
DA-109	Floor Plan – Basement 1	06/02/2020	RP/PK	A
DA-110	Floor Plan – Ground Floor	06/02/2020	RP/PK	A
DA-111	Floor Plan – Level 1	06/02/2020	RP/PK	A
DA-112	Floor Plan – Level 2	06/02/2020	RP/PK	A
DA-113	Floor Plan – Level 3	06/02/2020	RP/PK	A
DA-114	Floor Plan – Level 4	06/02/2020	RP/PK	A
DA-115	Floor Plan – Level 5	06/02/2020	RP/PK	A
DA-116	Floor Plan – Roof Plan	06/02/2020	RP/PK	A
DA-200	Street Elevation	06/02/2020	JC	A
DA-201	Elevations – Block A - 01	06/02/2020	JC	A
DA-202	Elevations – Block A - 02	06/02/2020	JC	A
DA-203	Elevations – Block B - 01	06/02/2020	JC	A
DA-204	Elevations – Block B - 02	06/02/2020	JC	A
DA-205	Elevations – Block C	06/02/2020	JC	A
DA-210	Detailed Elevations	06/02/2020	AT	A
DA-300	Site Sections - 01	06/02/2020	BN	A
DA-301	Site Sections - 02	06/02/2020	BN	A
DA-302	Site Sections - 03	06/02/2020	RP	A

Appendix B - Draft Fire Safety Schedule

No.	Measure	Particulars of Measure *(including where the requirement for the measure is set out or described i.e. in building plans or in a performance solution report)*
1.	Access Panels, Doors and Hoppers	BCA 2019 Clause C3.13
2.	Automatic Fail Safe Devices	BCA 2019 Clause D2.19 & D2.21
3.	Automatic Fire Suppression System (sprinklers)	BCA 2019 Spec. E1.5 & AS 2118.1 – 2017 AS 2118.4 – 2012 (Residential) AS 2118.6 – 2017 (Combined sprinkler & hydrant)
4.	Emergency Lighting	BCA 2019 Clause E4.2, E4.4 & AS/NZS 2293.1 – 2018 Amdt 1 & 2
5.	Exit Signs	BCA 2019 Clauses E4.5, NSW E4.6 & E4.8 and AS/NZS 2293.1 – 2018 Amdt 1 & 2
6.	Fire Control Centres and Rooms	BCA 2019 Spec. E1.8
7.	Fire Dampers	BCA 2019 Clause C3.15, AS/NZS 1668.1 – 2015 & AS 1682.1&2 - 1990
8.	Fire Doors	BCA 2019 Clause C3.2, C3.4, C3.5, C3.6, C3.7 & C3.8, Spec C3.4 and AS 1905.1 – 2015
9.	Fire Hose Reel Systems	BCA 2019 Clause E1.4 & AS 2441 – 2005 Amdt 1
10.	Fire Hydrant Systems	BCA 2019 Clause E1.3 & AS 2419.1 – 2005 Amdt 1
11.	Fire Seals protecting fire resisting components of the building	BCA 2019 Clause C3.12, C3.15, C3.16 & AS 1530.4 – 2014
12.	Lightweight Construction	BCA 2019 Clause C1.8, C3.17 & AS 1530.3 – 1999
13.	Mechanical Air Handling System (zone smoke, smoke exhaust) Tower A (9c portions only) Stair pressurisation	BCA 2019 Clause E2.2, AS/NZS 1668.1 – 2015
14.	Portable Fire Extinguishers	BCA 2019 Clause E1.6 & AS 2444 – 2001
15.	Smoke Dampers	AS/NZS 1668.1 – 2015
16.	Automatic Smoke Detectors and Heat Detectors	BCA 2019 Spec E2.2a & AS 1670.1-2015, AS/NZS 1668.1-2015
17.	Smoke Doors	BCA 2019 Spec. C3.4
18.	Solid Core Doors	BCA 2019 Clause C3.11
19.	Wall-Wetting Sprinkler and Drencher Systems	BCA 2019 Clause C3.4 & AS 2118.2 – 2010
20.	Warning and Operational Signs	EP&A Reg 2000 Clause 183, BCA Clause C3.6, D2.23, E3.3 & H101.8
21.	Building Occupant Warning System	BCA 2019 Spec. E1.5, BCA Spec. E2.2a & AS 1670.1 – 2015 – Clause 3.22
22.	Emergency Evacuation Plan	Fire Engineering Report and AS 3745 – 2002
23.	Fire Collars protecting fire resisting components of the building	BCA 2019 Clause C3.12, C3.15, C3.16 & AS 1530.4 – 2014

24.	Paths of Travel	EP&A Reg 2000 Clause 183, 184, 184 & 186
25.	Required Exit Doors (power operated)	BCA 2019 Clause D2.19
26.	Self-Closing Fire Hoppers	BCA 2019 Clause C3.13 & AS 1530.4 – 2015

Appendix C- Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2019:

Table 3 TYPE A CONSTRUCTION: FRL OF BUILDING ELEMENTS

Building element	Class of building — FRL: (in minutes) *Structural adequacy/Integrity/Insulation*			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated within it) or other external building element, where the distance from any fire-source feature to which it is exposed is—				
For *loadbearing* parts—				
less than 1.5 m	90/ 90/ 90	120/120/120	180/180/180	240/240/240
1.5 to less than 3 m	90/ 60/ 60	120/ 90/ 90	180/180/120	240/240/180
3 m or more	90/ 60/ 30	120/ 60/ 30	180/120/ 90	240/180/ 90
For non-*loadbearing* parts—				
less than 1.5 m	–/ 90/ 90	–/120/120	–/180/180	–/240/240
1.5 to less than 3 m	–/ 60/ 60	–/ 90/ 90	–/180/120	–/240/180
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN not incorporated in an *external wall*, where the distance from any *fire-source feature* to which it is exposed is—				
less than 3 m	90/–/–	120/–/–	180/–/–	240/–/–
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS—	90/ 90/ 90	120/120/120	180/180/180	240/240/240
INTERNAL WALLS—				
Fire-resisting lift and stair *shafts*—				
Loadbearing	90/ 90/ 90	120/120/120	180/120/120	240/120/120
Non-*loadbearing*	–/ 90/ 90	–/120/120	–/120/120	–/120/120
Bounding *public corridors*, public lobbies and the like—				
Loadbearing	90/ 90/ 90	120/–/–	180/–/–	240/–/–
Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
Between or bounding *sole-occupancy units*—				
Loadbearing	90/ 90/ 90	120/–/–	180/–/–	240/–/–
Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
Ventilating, pipe, garbage, and like *shafts* not used for the discharge of hot products of combustion—				
Loadbearing	90/ 90/ 90	120/ 90/ 90	180/120/120	240/120/120
Non-*loadbearing*	–/ 90/ 90	–/ 90/ 90	–/120/120	–/120/120
OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES and COLUMNS—	90/–/–	120/–/–	180/–/–	240/–/–
FLOORS	90/ 90/ 90	120/120/120	180/180/180	240/240/240

ROOFS	90/ 60/ 30	120/ 60/ 30	180/ 60/ 30	240/ 90/ 60

Table 3.9 REQUIREMENTS FOR CARPARKS

Building element	FRL (not less than) Structural adequacy/Integrity/Insulation ESA/M (not greater than)
Wall	
(a) *external wall*	
(i) less than 3 m from a *fire-source feature* to which it is exposed:	
Loadbearing	60/60/60
Non-*loadbearing*	–/60/60
(ii) 3 m or more from a *fire-source feature* to which it is exposed	–/–/–
(b) *internal wall*	
(i) *loadbearing*, other than one supporting only the roof (not used for carparking)	60/–/–
(ii) supporting only the roof (not used for carparking)	–/–/–
(iii) non-*loadbearing*	–/–/–
(c) *fire wall*	
(i) from the direction used as a *carpark*	60/60/60
(ii) from the direction not used as a *carpark*	as *required* by Table 3
Column	
(a) supporting only the roof (not used for carparking) and 3 m or more from a *fire-source feature* to which it is exposed	–/–/–
(b) steel column, other than one covered by (a) and one that does not support a part of a building that is not used as a *carpark*	60/–/– or 26 m^2/tonne
(c) any other column not covered by (a) or (b)	60/–/–
Beam	
(a) steel floor beam in continuous contact with a concrete floor slab	60/–/– or 30 m^2/tonne
(b) any other beam	60/–/–
Fire-resisting lift and stair shaft (within the *carpark* only)	60/60/60
Floor slab and vehicle ramp	60/60/60
Roof (not used for carparking)	–/–/–
Notes: 1. ESA/M means the ratio of exposed surface area to mass per unit length.	

2. Refer to Specification E1.5 for special requirements for a sprinkler system in a *carpark* complying with Table 3.9 and located within a multi-classified building.