mckenzie group

A Bureau Veritas Group Company

Regulatory Compliance Report

Eastern Creek Quarter Stage 3
Rooty Hill Road South

Prepared for: **Frasers Property**
Date: **15/08/2022**
Revision: **C**

Table of Contents

Date	Rev No	No. of Pages	Issue or Description of Amendment	Assessed By	Approved By	Date Approved
16/03/22	A	41	Regulatory Compliance Report	Luis De Araujo	Paul Curjak	21/03/22
29/06/22	B	37	Regulatory Compliance Report	Luis De Araujo	Paul Curjak	05.06/22
15/08/22	C	38	Regulatory Compliance Report	Luis De Araujo	Paul Curjak	15/08/22

1. Executive Summary

Development Overview

The proposed development comprises an extension of the existing shopping centre by approximately 29,000 sqm including a partial basement carparking over two allotments.

Compliance Summary

As Registered Certifiers we have reviewed the concept architectural design documents prepared by i2C Architects (refer appendix A) for compliance with the current building assessment provisions, i.e. the Building Code of Australia 2019 Amendment 1 (BCA).

This report has been prepared to assess the project against the Building Code of Australia to enable issuance of construction approvals. Further assessment of the design will be undertaken as the design develops to ensure compliance is achieved prior to approval being issued

Deviations from the Deemed-to-Satisfy Provisions

The assessment of the schematic design documentation has revealed that the following areas deviate from the deemed-to-satisfy provisions of the BCA. These items are to be addressed to ensure compliance is achieved, either through design amendment to achieve compliance with the deemed-to-satisfy provisions, or through a performance solution demonstrating compliance with the Performance Requirements of the BCA:

No.	Description	DTS Clause	Performance Requirements
Fire Safety Items			
1	**Vehicle Perimeter Access** • The perimeter access for an emergency vehicle is not proposed to be around the perimeter of the proposed stage 3 building but to be combined with the existing Stage 1 retail building. • The setback requirement at the open carparking portion is more than the maximum 18m from the building permitted. • The 6 m wide perimeter vehicle access is not within the allotment to the eastern boundary.	C2.3, C2.4	CP9
2	**Fire separation between carpark and retail** Fire separation between carpark and retail is provided with glazing in lieu of 3 hour fire rating	C2.7, C2.8, C2.9, Spec C1.1	CP2
3	**Extended Travel Distances – Retail** Extended travel distances in the retail portion are as follows: Undercroft carparking Point A - • 83m to the nearest exit in lieu of 40m • 106m distance between alternative exits in lieu of 60m Undercroft carparking Point B - • 72m to the nearest exit in lieu of 40m • 118m distance between alternative exits in lieu of 60m	D1.4, D1.5	DP4, EP2.2

No.	Description	DTS Clause	Performance Requirements
	Shop Floor Point C - • 68m to the nearest exit in lieu of 40m • 104m distance between alternative exits in lieu of 60m Shop Floor Point D - • 85m to the nearest exit in lieu of 40m • 143m distance between alternative exits in lieu of 60m Shop Floor Point E - • 33m to a point of choice in lieu of 20m • 91m to the nearest exit in lieu of 40m • 116m distance between alternative exits in lieu of 60m		
4	**Aggregate Exit Width** To the main retail floor, only 24m aggregate exit width is provided in lieu of 30m.	D1.6	DP4, E.2
5	Automatic doors to the retail mall area are likely to only open up automatically upon fire trip during operational hours and remain shut after hours irrespective of fire trip or power failure	D2.19	DP2, DP4, EP2.2
6	**Smoke Hazard Management** Performance-based smoke hazard management system (automatic exhaust system) is proposed to be provided	E2.2, Spec E2.2	EP2.2
Miscellaneous Items			
7	**Symphonic stormwater drainage**	F1.1	FP1.2, FP1.3
8	**Weatherproofing of External Walls** As there are no deemed to satisfy provisions relating to the weatherproofing of external walls, a performance solution is to be provided by the façade engineer/registered architect demonstrating that the external walls comply with the requirements of Performance Requirement FP1.4.	-	FP1.4

The feasibility and any additional requirements that will apply as a result of the performance solution will need to be confirmed by the professional preparing the performance solution. Any performance solution will need to be prepared by a suitably qualified/accredited professional.

Fire Safety Services

The following key fire safety services are required to meet the minimum DTS requirements.

1.	Sprinklers system throughout
2.	Fire hydrant system throughout
3.	Fire hose reels throughout
4.	Fire precautions during construction
5.	Automatic smoke detection and alarm system throughout
6.	Automatic smoke exhaust throughout

7.	Carpark ventilation systems must comply with Clause 5.5 of AS/NZS1668.1-2015 except that fans with metal blades suitable for operation at normal temperature may be used and the electrical power and control cabling need not be fire rated

Refer to part 7 of this report for further details regarding the required services.

Any fire engineered solution relating to C2.3, C2.4 & CP9 will need to be approved after consultation with the NSW Fire Brigade as part of the Construction Certificate process.

Further Assessment

The assessment of the design documentation has also revealed that the following additional information is required as part of the construction certificate detailed design review

No.	Further information is required for review during CC Stage	Report Reference
1.	Further information is required to show the elevation on the southern boundary to assess the protection of any proposed openings.	7.1
2.	Location of the fire hydrant & fire hose reels for the proposed stage 3 building.	9.1, 9.2, 9.3
3.	Location of the Fire Control Centre	9.8
4.	Layout of the required toilet facilities including the accessible sanitary requirements.	10.1
5.	Energy Efficiency Report	11
6.	Access report	12

Documentation to enable assessment and demonstrate compliance will be required to address the above items prior to approval.

(NSW) 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.

2. Introduction

The proposed development is a new building on Lot 3 connecting the existing shopping centre as one united building. The total floor area of the new development is over 29,000 sqm to include retail tenancies, food and entertainment precinct and undercroft parking over 2 storeys.

The site is located on Lot 3 of the Eastern Creek Quarter Site at Rooty Hill Road South, Eastern Creek.

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.

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 Registered Certifier for the Construction Certificate. For the purposes of this Report, BCA 2019 Amendment 1 has been utilised as the version of the BCA applicable at the time of preparation this Report.

3. Compliance with the Building Code of Australia

The Building Code of Australia is a performance based document, whereby compliance is achieved by complying with the Governing Requirements and the Performance Requirements.

Performance Requirements are satisfied by one of the following:

1) A Performance Solution
2) A Deemed-to-Satisfy Solution
3) A combination of (1) and (2)

4. Documentation of Performance Solutions

A Performance Solution must demonstrate compliance with all relevant Performance Requirements, or the solution must be at least equivalent to the Deemed-to-Satisfy provisions.

Compliance with the Performance Requirements is to be demonstrated through one or a combination of the following:

a) Evidence of suitability in accordance with Part A5 of the BCA that shows the use of a material, product, plumbing and drainage product, form of construction or design meets the relevant Performance Requirements.
b) A Verification Method including the following:
    i. The Verification Methods provided in the NCC.
    ii. Other Verification Methods, accepted by the appropriate authority that show compliance with the relevant Performance Requirements
c) Expert Judgement
d) Comparison with the Deemed-to-Satisfy Provisions

Where a Performance Solution is proposed as the method to achieve compliance, the following steps must be undertaken:

a) Prepare a performance-based design brief in consultation with relevant stakeholders
b) Carry out analysis, using one or more of the assessment methods nominated above, as proposed by the performance-based design brief.
c) Evaluate results from (b) against the acceptance criteria in the performance-based design brief
d) Prepare a final report that includes:

i. All Performance Requirements and/or Deemed-to-Satisfy Provisions identified as applicable
ii. Identification of all assessment methods used
iii. Details of required steps above
iv. Confirmation that the Performance Requirement has been met; and
v. Details of conditions or limitations, if an exist, regarding the Performance Solution.

This process will come into effect on 1 July 2021.

Further investigations, including a site inspection, will be required to ascertain the extent of the upgrade works required for the existing building to ensure that a suitable level of life safety, health and amenity for the occupants within the building is maintained. The upgrade works will be based upon using the current regulations as an applicable benchmark and our expertise to judge what is considered to be suitable.

Notwithstanding the above, where practical benefits and improvements to fire and life safety can be achieved without major cost or disruption, it is recommended that the relevant compliance parameters be upgraded to meet current requirements where possible.

5. Preliminaries

5.1. Building Assessment Data

Summary of Construction Determination:

Part of Project	Building 1
Classification	7a, 6 & 9b
Number of Storeys	2
Rise In Storeys	2
Type of Construction	C
Effective Height (m)	3.3m (RL 44.3 – RL41.0)

Note: The effective height of the project includes all stories included in the rise in stories of the project.

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

Part of Project	BCA Classification	Approx. Floor Area (m^2)	Approximate Volume (m^3)	Assumed Population
Carpark undercroft portion	7a	15,405	N/A (Open on two sides)	N/A
Retail – Lettable space	6	11,501	176,000	3,834
Retail – BOH		4,930		166
Food & Beverage – Lettable space	6	963		963
Food & Beverage – BOH		413		42
Entertainment – Lettable space	9b	1,051		350
Entertainment – BOH		450		16
Retail Circulation Space	6	6,892		N/A

Part of Project	BCA Classification	Approx. Floor Area (m^2)	Approximate Volume (m^3)	Assumed Population
BOH/Storage/Amenities	7b	1,760		57
Total		45,108	176,000	5,428

Notes:

- The above populations have been based on floor areas and calculations in accordance with Table D1.13 of the BCA. For the employees occupying the building at one given time, if the operator can confirm the population number, it will assist accurate calculation of the sanitary facilities required.
- The floor areas to retail portions have been adjusted without ancillary areas such as sanitary facilities, corridors, shelving and or racking layouts in storage areas.
- The carpark areas have been considered ancillary to the use for the purposes of population numbers

Occupiable Outdoor Areas

BCA 2019 introduced specific provisions regarding occupiable outdoor areas. These provisions outline requirements with regards to fire ratings, egress provisions and coverage from essential services and are contained in this report.

An occupiable outdoor area is defined in the BCA as follows:

'a space on a roof, balcony or similar part of a building:
a) That is open to the sky; and
b) To which access is provided, other than access only for maintenance; and
c) That is not open space or directly connected with open space'

5.2. Council Development Approval

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

The proposed development must be consistent with the endorsed drawings and all relevant conditions will need to be satisfied and accurately reflect the construction issue drawings.

Following a review of the Council Development Approval the following conditions are to be resolved prior to the issue of the Construction Certificate.

5.3. Copy of Certificate of Title:

A copy of the Certificate of Title and associated plan of subdivision is required. Where it is proposed to construct any part of the building over, under or within an easement, the consent of the relevant authority and Council is required prior to the issue of the Construction Certificate.

6. Structure

6.1. Structural Provisions (BCA B1):

New structural works are to comply with the applicable requirements of BCA Part B1, including AS/NZS 1170.0-2002, AS/NZS 1170-1-2002, AS/NZS 1170.2-2011 and AS 1170.4-2007.

Depending on the importance level of the building as determined by AS/NZS 1170.0-2002, the non structural elements of the building, including partitions (and non-structural fire walls), ceilings, services and racking/shelving

may be required to comply with the seismic restraint requirements of AS 1170.4-2007. Where this is required, certification will be required confirming that the design of the seismic restraints comply with AS 1170.4-2002. This may be provided by a specialist seismic consultant or by the architect and services design engineers.

It is noted that BCA 2019 introduced a new Verification Method, BV2, which is a pathway available to verify compliance with BCA Performance Requirement BP1.1(a)(iii).

Glazing is to comply with AS1288-2006, and AS2047-2014.

Prior to the issue of the Construction Certificate structural certification is required to be provided by a Professional Engineer registered on the National Engineering Register.

7. Fire Protection

7.1. 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, it is required to be constructed in accordance with the requirements of **Type C** Construction, in accordance with Table 5 & 5.9 of Specification C1.1 of the Building Code of Australia 2019 Amendment 1.

The building has been assessed as a United Building in accordance with A7.0 of the BCA, connecting to the existing shopping centre.

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	**B**	**C**
5, 9b or 9c aged care building	max floor area—	8 000 m^2	5 500 m^2	3 000 m^2
	max volume—	48 000 m^3	33 000 m^3	18 000 m^3
6, 7, 8 or 9a (except for patient care areas)	max floor area—	5 000 m^2	3 500 m^2	2 000 m^2
	max volume—	30 000 m^3	21 000 m^3	12 000 m^3

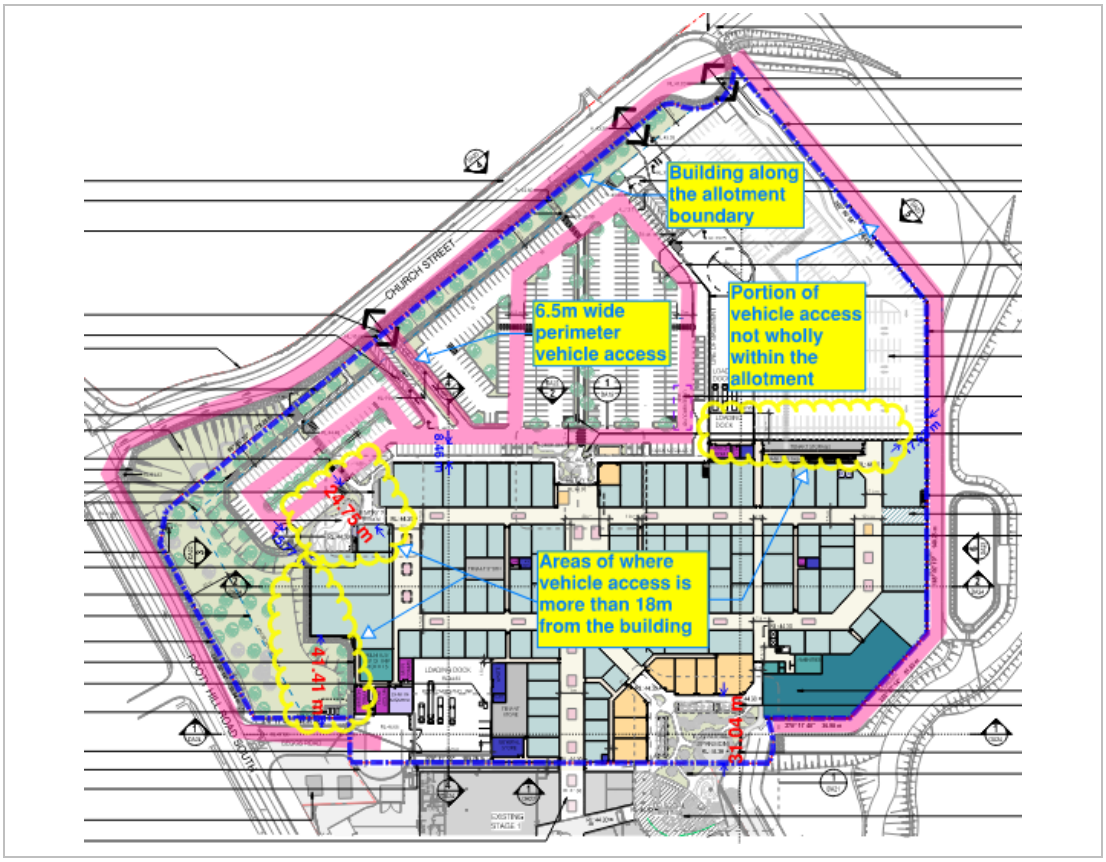
As the building exceeds the area / volume limitations of the BCA provisions, the building is then considered a large isolated building and the following provisions will apply:

- Automatic sprinkler protection to AS2118.1 and BCA Specification E1.5 throughout the development
- Perimeter emergency vehicular access 6m wide located within 18m of the entire building perimeter in accordance with BCA Clause C2.4,
- Smoke exhaust or smoke and heat vents required throughout the development if the building exceeds 18,000m^2 or 108,000m^3 in volume
- Provision of a fire hydrant ring main

In the assessment of the updated plans and in addition to further discussions, the building is agreed to be assessed as a United Building connecting to the existing over two (2) allotments. Therefore, no additional BCA provisions at the boundary are required between Lot 3 and Lot 1.

The external building envelope along the east is proposed to be on the boundary with a 6.5 m wide easement for vehicle and egress access on the adjacent allotment. To meet the requirements of a large isolated building, the vehicle perimeter access requires to be wholly within the allotment except that of a public road. Currently, the vehicle perimeter access is shown to be outside of the allotment along the eastern boundary. In addition, the perimeter vehicle access is required to be within 18 m from the external wall of the building's envelope. The design configuration of the building and the open carparking will not allow the 6 m wide perimeter vehicle access to be provided complying with this requirement of the clause.

It is understood the vehicle perimeter access is being discussed with the accredited fire engineer for it to be addressed as a Performance Solution. In addressing the Performance Solution, factors to be taken of the possibility of the vehicle perimeter access covering two (2) buildings over two (2) separate allotments (Stage 1 & 3), the perimeter vehicle access is more than 18 m from the building, and some portion to be outside the allotment on a proposed easement to be approved under the Development Approval.



7.2. 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 C Construction, Please refer to Appendix D which outlines the required fire rating to be achieved by the development.

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;

- Hydrant Pump Rooms;
- Sprinkler Pump Rooms;

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

Please note that with regards to fire separation, the provisions and required FRL's that apply to the building also apply to an occupiable outdoor space associated with the building.

7.3. Fire Hazard Properties (BCA C1.10 and BCA C1.9)

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 of the Building Code of Australia.

Rigid and flexible air handling ductwork must comply with AS4254 Parts 1 & 2 2012.

7.4. Separation of equipment (C2.12)

Equipment listed below must be separated from the remainder of the building providing a FRL as required by Spec C1.1 but not less than 120/120/120 with a self-closing fire door with an FRL or not less than -/120/30. When separating a lift shaft and life motor room, an FRL of not less than 12/-/- is required.

a) Lift motors and lift control panels; or
b) Emergency generators used to sustain emergency equipment operating in the emergency mode; or
c) Central smoke control plant;

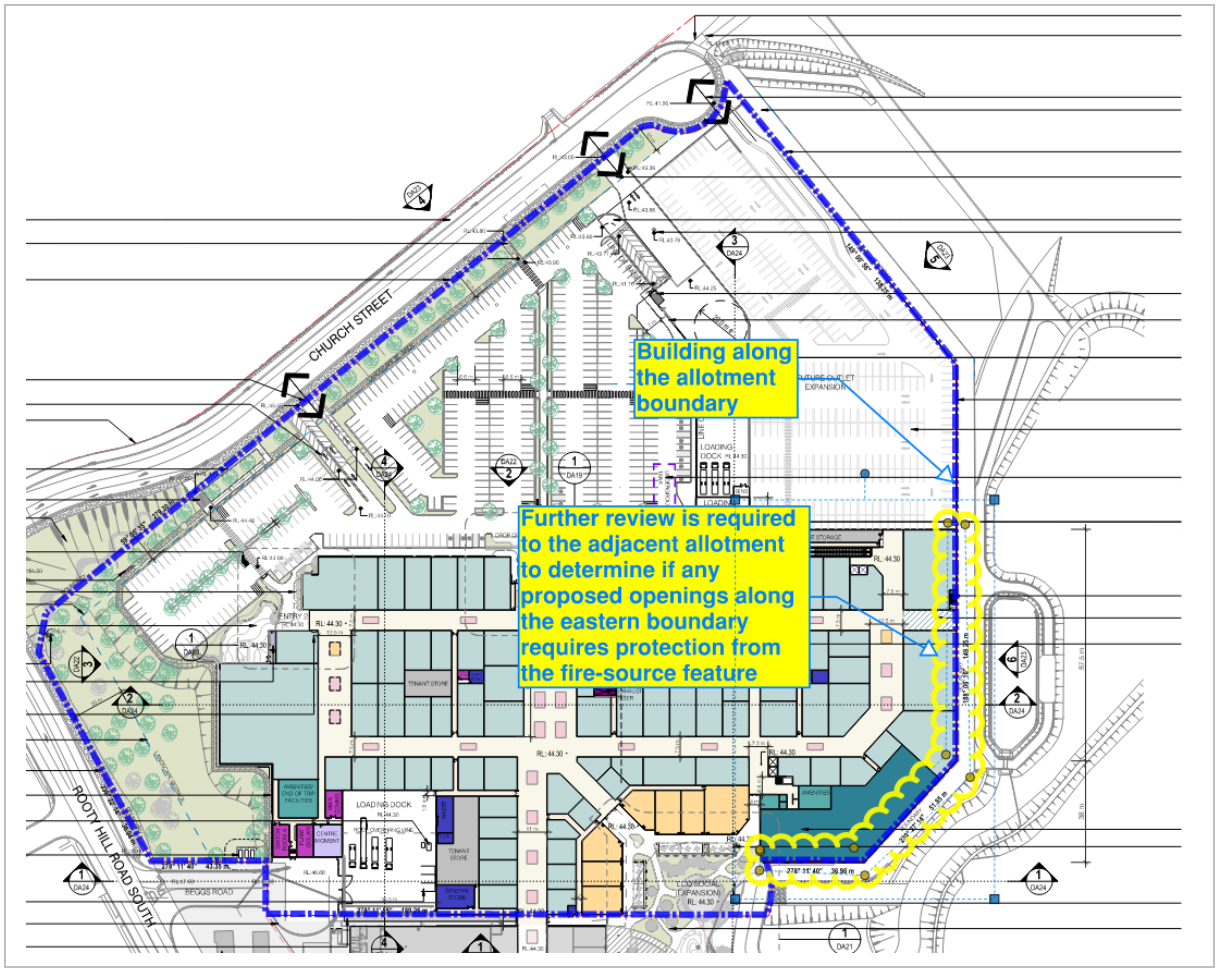
7.5. Protection of Openings in External Walls (BCA C3.2 / C3.3 / C3.4)

The prescriptive provisions of the BCA stipulate that any external opening within 3m of the boundary, within 6m of the far boundary of a road, river, lake or the like that adjoins the allotment, or within 6m of another building on the allotment 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

In the assessment of the updated plans, if any openings are proposed along the eastern boundary will require protection in accordance with BCA clause C3.4, or be addressed as a Performance Solution. However, the adjacent allotment on the eastern boundary, if the adjacent area is a public open space, the openings do not need protection. During the Construction Certificate phase of the development, further information is required to properly ascertain any non-compliance with this clause.



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.

7.6. Protection of Openings fire rated building elements (BCA C3.5, C3.6 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 an FRL the same as the FRL of the floor it is passing through;
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 an FRL the same as the FRL of the floor it is passing through; (or 120/120/120 where it is a room such as a substation);
c) A fire door or a Sliding fire door if installed in the firewall in the linkway between the proposed and existing building will be required to comply with BCA Clause C3.5 and/or C3.6. Alternatively, this could be addressed through a Performance Solution by an Accredited Fire Engineer.

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 the sealing of penetrations / construction of fire rated shafts. In addition, including the specifications how the opening in the linkway between the new and the old building will be addressed.

8. Access and Egress

8.1. Provision for Escape (BCA D1)

The egress provisions for the proposed building are provided by the following:

- External perimeter doorways
- External Doors

The egress provisions that apply to the building also apply to any occupiable outdoor areas.

Detailing issues that will need to be addressed as the design develops include:

- Door Hardware
- Exit Door Operation
- Details of the egress provisions to the Road.
- Door swings

8.2. 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 to 9

- no point on the floor must be more than 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

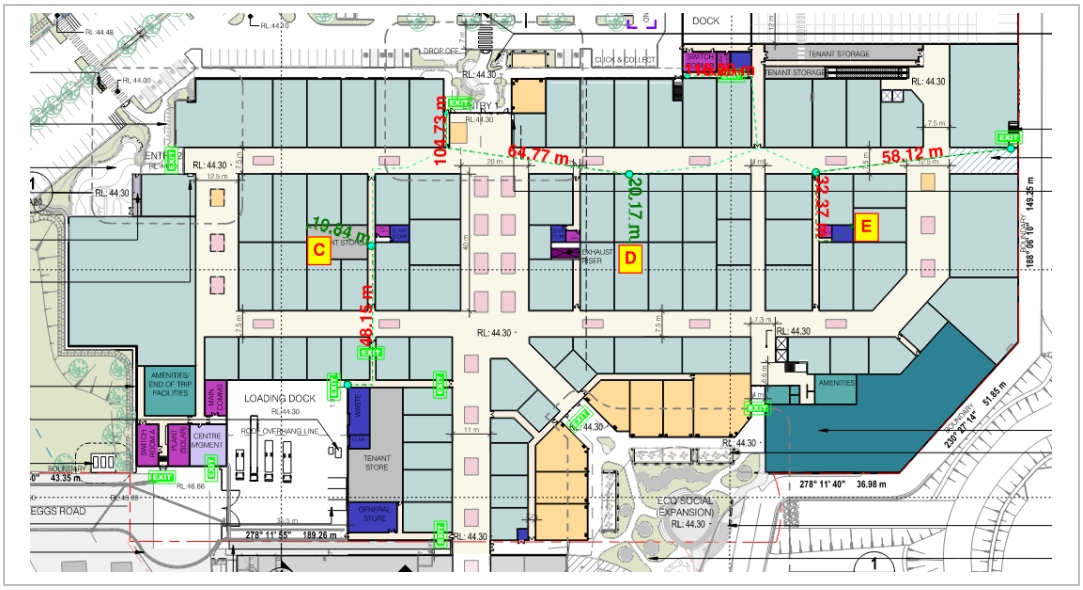
The locations of the proposed exits indicate that the travel distances within the building are as follows:

Area	BCA Provisions (Distance to Point of Choice/ Travel Distance/Distance Between	Assessed Distances			Comments
		To a Point of Choice	Overall Travel Distance	Between Alternate Exits	
Undercroft Carparking Point A	20m/40m/60m	20m	83m	106m	An example of worst-case
Undercroft Carparking Point B	20m/40m/60m	20m	72m	118m	
Shop Floor Point C	20m/40m/60m	20m	68m	104m	

Shop Floor Point D	20m/40m/60m	20m	85m	143m	An example of worst-case
Shop Floor Point E	20m/40m/60m	33m	91m	116m	

The above table demonstrates the worst-case scenario of the extended travel distances. In general, most points of the shop floor area have extended travel distances for the Point of Choice, Overall travel distances, and between alternate exits.

The extended travel distances and distance between the exit stairs will need to be addressed to comply with the requirements of the deemed to satisfy provisions noted above, or be assessed as performance solutions by the Fire Safety Engineer using BCA Performance Requirements DP4 & EP2.2



8.3. Dimensions of Exits (BCA D1.6)

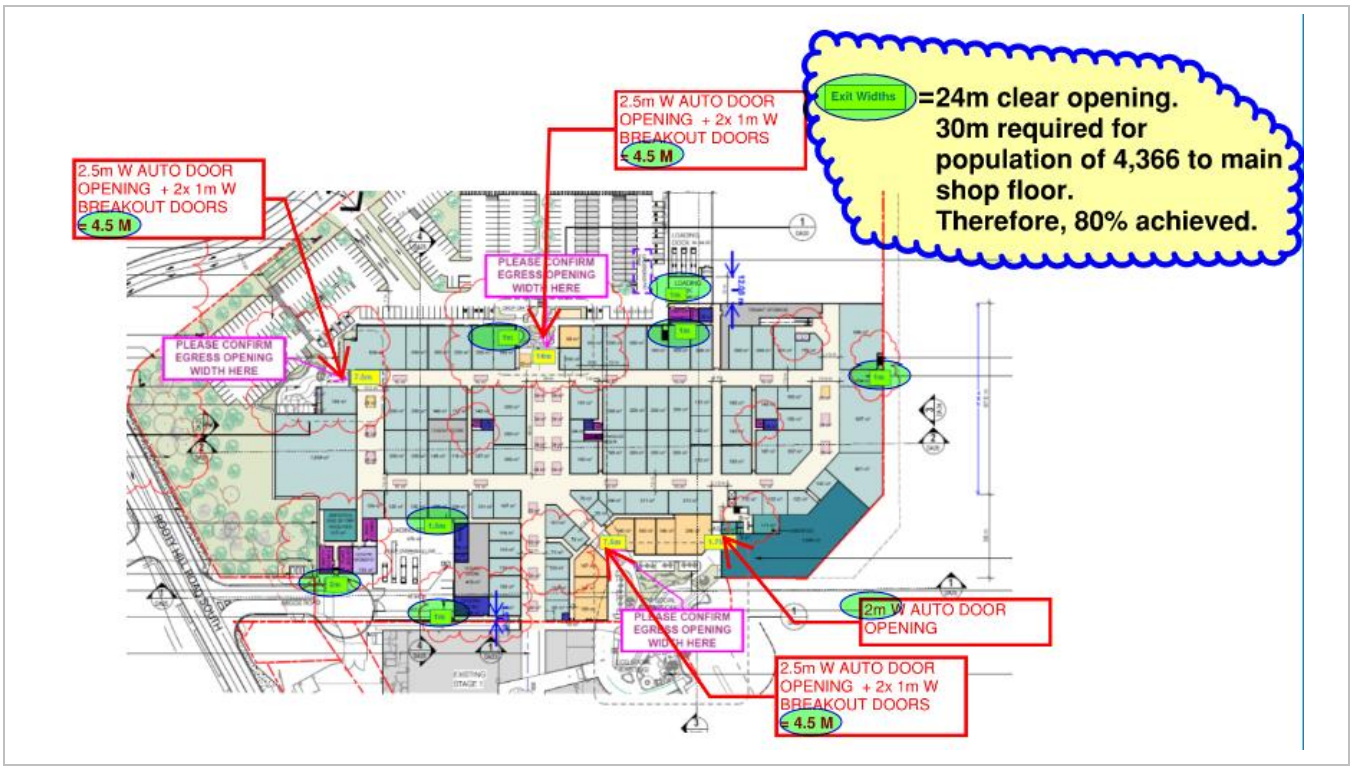
Minimum dimensions of 1000mm and 2000mm height to be provided within exits, with the paths of travel should provide a minimum width of 1000mm (note that all maintenance access, cat walks, etc may comply with AS1657-2018 in which case a 600mm clear width is required).

The following table summarises the exit widths required by BCA Clause D1.6:

Storey	Number of people	Exit Width Required	Exit Width Provided
Main Retail Floor (minus Food & Beverage, and Tavern)	4,366	**30m**	*24m

*The clear opening aggregate exit widths have been determined by the architect as per the mark-up below. It is noted that there is a shortfall of about 6m, which is 80% of the required aggregate width that could be addressed through Performance Solution by an accredited fire engineer.

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).



8.4. Balustrades and Handrails (BCA D2.16 / BCA D2.17 / D2.24)

Generally

Balustrading to a minimum height of 1000mm with a maximum opening of 124mm in any direction should be provided adjacent to balconies, landings, corridors etc where located adjacent to a change in level exceeding 1000mm, or where it is possible to fall through an openable window located more than 4m above the surface beneath.

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.

In addition to the above, handrails are required to both sides of all stairs with a width of 2m or more.

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

8.5. 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 steeper than 1:20 but 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

9. 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.

It is noted that the provisions below also apply to occupiable outdoor areas.

9.1. 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.

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;

The fire services/hydraulic engineer is to confirm the required flow rates for the development.

The building is required to be provided with a booster assembly as part of the fire hydrant requirements. The existing booster system and the fire pump serving the existing adjacent building could be utilised provided it complies with the current Occupation Certification.

A fire ring main is required for the new portion of the development.

9.2. Fire Hose Reels

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

The system is required to provide coverage to the whole portion of the building.

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

Fire hose reel cupboards must not contain any other services such as water meters, etc., and doors to fire hose reel cupboards are not to impede the path of egress unless a performance solution is developed under BCA Performance Requirement EP1.1

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

The hose reels currently are not indicated on plans.

As the design develops, locations of the fire hose reels will be required to ensure compliance with this clause.

9.3. Fire Extinguishers (BCA E1.6)

The provision of portable fire extinguishers is required to BCA Clause E1.6 and AS2444 - 2001 to provide coverage to the whole portion of the building.

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-occupancy units of a Class 9c building)	a) To cover Class AE or E fire risks associated with emergency services switchboards. (Note 1) 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.

Fire extinguishers are to be located in accordance with AS 2444 - 2001, often collocated with fire hydrants and/or fire hose reels.

The fire extinguisher locations currently are not indicated on plans.

As the design develops, locations of the fire extinguishers will be required to ensure compliance with this clause.

9.4. Automatic Sprinkler Protection (BCA E1.5)

Automatic sprinkler protection is required to be provided throughout in accordance with Specification E1.5 and AS2118.1-2017.

The sprinkler system shall be connected to and activate an occupant warning system complying with BCA Specification E2.2a.

Details of the proposed sprinkler system design will need to be reviewed as the design develops.

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

9.5. Smoke Hazard Management (BCA E2.2)

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

- Automatic Smoke Exhaust System activated by Automatic Smoke Detection & Alarm System in accordance with the requirements of BCA Spec E2.2b and AS1670.1-2018 OR
- Automatic Smoke and Heat Vents in accordance with the requirements of BCA Spec E2.2c

  AND
- Carpark ventilation systems must comply with Clause 5.5 of AS/NZS1668.1-2015 Amendment 1 except that fans with metal blades suitable for operation at normal temperature may be used and the electrical power and control cabling need not be fire rated

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.

9.6. Lift Services (BCA E3.4 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, Figure E3.3, E3.7, E3.9 and E3.10 of the BCA.
- Be provided with the following in order to satisfy accessibility requirements:
  - A handrail in accordance with AS1735.12-1999,
  - Minimum internal floor dimensions of 1400 x 1600mm for lifts which travel more than 12m, or 1100 x 1400mm for lifts which travel not more than 12m,
  - Fitted with a series of door opening sensory devices which will detect a 75mm diameter or across the door opening between 50mm and 1550mm above floor level,
  - Have a set of buttons for operating the lift located at heights above level complying with AS1735.12 - 1999

9.7. 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 BCA Part E4 and AS/NZS 2293.1-2018, including the potential use of photo luminescent exit signs.

Details are required to be provided for review.

9.8. Fire Control Centre (BCA E1.8)

As the Class 6 building contains a floor area of greater than 18,000m^2, a fire control centre is required in accordance with BCA Specification E1.8.

The proposed Fire Control Centre has not been indicated on the drawings. As the design develops further review will be required for the location to ensure compliance with this clause.

9.9. Fire Precautions During Construction (BCA E1.9)

In a building during construction:

- No less than one fire extinguisher to suit Class a, B and C fires and electrical fire must be provided at all times on each storey adjacent to the required exit.

10. Health and Amenity

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

Retail

Separate sanitary facilities are required to be provided for male & female 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.

The following table summarises the sanitary facilities required:

Sanitary Facilities Required			
Retail (6) – Patrons	WC	Urinals	Basins
Male	2	3	3
Female	4	-	3
Accessible	1	1	1
The Above Facilities are adequate for 1918 males & 1918 females with a total of 3834 patrons to the shopping centre.			

Sanitary Facilities Required / Provided			
Retail (6) – Employees	WC	Urinals	Basins
Male	4	3	3
Female	6	-	3
Accessible	1	1	1
The Above Facilities are adequate for 83 males & 83 females with a total of 166 patrons to the shopping centre. It should be noted that the accessible sanitary facility if it is provided for the public, could be utilised by the employees as well.			

Sanitary Facilities Required			
Food & Beverage (6) – Patrons	WC	Urinals	Basins
Male	3	6	4
Female	9	-	5
Accessible	1	1	1
The Above Facilities are adequate for 482 males & 482 females with a total of 964 patrons to the Food & Beverage facilities.			

Sanitary Facilities Required / Provided			
Food & Beverage (6) – Employees	WC	Urinals	Basins
Male	2	1	1
Female	3	-	1
Accessible	1	1	1
The Above Facilities are adequate for 22 males & 22 females with a total of 44 employees in the Food & Beverage facilities. It should be noted that the accessible sanitary facility it is provided for the public, could be utilised by the employees as well.			

Sanitary Facilities Required			
Entertainment (9b Public halls, function rooms or the like) – Patrons	WC	Urinals	Basins
Male	2	4	2
Female	5	-	3
Accessible	1	-	1
The Above Facilities are adequate for 175 males & 175 females with a total of 350 patrons in the Entertainment area. It should be noted that the accessible sanitary facility if is provided for the public, could be utilised by the employees as well.			

Sanitary Facilities Required / Provided			
Entertainment (6) – Employees	WC	Urinals	Basins
Male	1	-	1
Female	1	-	1
Accessible	1	1	1
The Above Facilities are adequate for 8 males & 8 females with a total of 16 employees in the Entertainment area. It should be noted that the accessible sanitary facility if is provided for the public, could be utilised by the employees as well. If the employee numbers increase from the total of 20 allowable as per the toilet fixtures, with an additional urinal, it will allow up to 30 employees.			

Detailed designs will need to be developed as to the layout, dimensions, etc of the sanitary facilities.

Note: The Unisex facilities provided for people with disabilities may be counted once for each sex. These facilities are to be provided in accordance with AS1428.1-2009.

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.

10.2. Floor Wastes

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

Floor wastes are details are to be provided as the design develops for the CC stages.

10.3. Light and Ventilation (BCA Part F4)

Class 5, 6, 7, 8 & 9

Mechanical ventilation is required to be provided in accordance with AS1668.2-2012

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

These provisions also apply to areas considered as occupiable outdoor areas.

10.4. Weatherproofing (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.

<u>External above Ground Membranes</u>

All external above ground areas (roof slabs, balconies etc.) shall be protected by a waterproofing system in accordance with AS4654 Parts 1 and 2 – 2012.

For external balconies the waterproofing membrane must have a vertical upward termination height in accordance with the table below dependant on the wind class of the site. The wind class is determined by the structural engineer.

Wind Class Regions A & B	Wind Class Regions C & D	Ultimate Limit State Wind Speed	Termination Height (mm)
N1	-	34	40
N2	-	40	50
N3	C1	50	70
N4	C2	61	100
N5	C3	74	150
N6	C4	86	180

Wet Areas

Internal wet areas throughout the development (e.g. bathrooms, laundries) shall be waterproofed in accordance with AS3740 - 2010 requirements.

Further review will be undertaken as the design develops with respect to the specification of waterproofing membrane, provision of water-stops at doorways etc.

10.5. Stormwater Drainage

Stormwater drainage systems serving the building are to comply with AS3500.3 - 2018.

The use of a syphonic stormwater drainage system is not covered by Australian Standards and any design incorporating one would need an appropriate performance solution will need to be documented by the hydraulic consultant addressing the system compliance against BCA Performance Requirements FP1.2 & FP1.3.

11. Energy Efficiency

11.1. SECTION J (Transition Period)

The commentary below is an assessment based on the provisions included in BCA 2019 Amendment 1.

11.2. SECTION J (JP1 Energy Use)

Efficient energy use must be achieved appropriate to the function and use of the building, level of human comfort, solar radiation, energy source of the services and sealing of the building envelope. To achieve this JV1, JV2, JV3 and JV4 verification methods have been introduced as options available to achieve compliance.

It is noted that a deemed to satisfy pathway is still available.

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

The proposed site will be located in a climate zone 6.

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

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

Verification Methods

The Verification Methods available to demonstrate compliance with the BCA on a performance basis are as follows:

JV1 NABERS Energy for Offices

- To achieve compliance with JP1 a class 5 building must achieve a minimum of 5.5 NABERS Energy for Offices Base Building Commitment Agreement and comply with ANSI/ASHRAI Standard 140.
- To achieve the energy model for (JP1 (i)) solar radiation the base buildings greenhouse gas emissions are not more than 67% of the 5.5 star level when excluding:
  - Tenant supplementary heating; and
  - Cooling systems; and
  - External lighting; and
  - Car park services.
  - A thermal comfort level between predicted mean vote of -1 to +1 is achieve across not less than 95% of the floor area of all occupied zones for not less than 98% f annual hours of operation.

- The building also need to comply with additional requirements of Spec JVa.

JV2 Green Star

- To achieve compliance with JP1 for Class 3,4,5,6, 7, 8, 9 and common area of Class 2 buildings Green Star can be used as a verification method when the calculation method complies with ANSI/ASHRAE Standard, Specification JVb and when:
  - The building complies with simulation requirements and is registers for a Green Star – Design & As-Built rating; and
  - The annual greenhouse gas emissions of the proposed building are less than 90% of the annual greenhouse gas emissions of the reference building; and
  - In the proposed building, a thermal comfort level of between predicted mean vote of -1 to +1 is achieve across not less than 95% of the floor area of all occupied zones for not less than 98% of the annual hours of operation of the building; and
  - The building complies with the additional requirements of Specification JVa.

JV3 Verification Using a Reference Building

- To achieve compliance with JP1 for Class 3,4,5,6, 7, 8, 9 and common area of Class 2 buildings verification using a reference building can be used when the calculation method complies with ANSI/ASHRAE Standard, Specification JVb and when:
  - It is determined that the annual greenhouse gas emissions of the proposed building are not more than the annual greenhouse gas emissions of a reference building when the proposed building is modeled with the proposed services and the proposed building is modelled with the same services as the reference building. The proposed building thermal comfort level is to be between predicted mean vote of -1 to +1 across not less than 95% of the floor area of all occupied zones for not less than 98% of the annual hours of operation; and
  - The building achieves the additional requirements in Specification JVa; and
  - The greenhouse gas emissions of the proposed building may be offset by renewable energy generated and use on site and another process such as reclaimed energy used on site.

JV4 Building Envelope Sealing

- Compliance with sealing of the building against air leakage is verified when the envelope is sealed at an air permeability rate tested in accordance with Method 1 of AS/NZS ISO 9972, of not more than –
  - For a class 2 building or a class 4 part of a building, 10m³hr.m² at 50 Pa reference pressure; or
  - For a class 5, 6, 8, 9a or 9b building other than a ward area in climate zones 1, 7 and 8, 5 m³/hr.m² at 50 Pa reference pressure; or
  - For class 3 or 9c building, or a class 9a ward area in climate zones 1, 3, 4, 6, 7 and 8 5m³/hr.m² at 50 Pa reference pressure.
- Part J3 and performance solution that uses on of the other NCC assessment Methods which verifies that compliance with JP1 (e) will be achieve can also be used as verification methods.

11.3. Building Fabric (Part J1)

Roof and Ceiling Construction (Part J1.3)

For a deemed-to-satisfy solution roofs and or ceilings are to be constructed to provide a total R-Value greater than or equal to-

(i) in climate zones 1, 2, 3, 4 and 5, R3.7 for a downward direction of heat flow; and
(ii) in climate zone 6, R3.2 for a downward direction of heat floor; and

(iii) in climate zone 7, R3.7 for an upward direction of heat flow; and
(iv) in climate zone 8, R4.8 for an upward direction of heat flow;

In climate zones 1, 2, 3, 4, 5, 6 and 7, the solar absorptance of the upper surface of a roof must be not more than 0.45.

Where the layer of insulation is penetrated by the percentages as tabled below, additional upgrading of the remainder of the insulation level is required.

To achieve compliance with J0.2 (c) a roof that has a metal sheet roofing fixed to metal purlins, metal rafters or metal battens and does not have a celling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens must have a thermal break. The thermal break to be consisting of a material with a R-Value of not less than R0.2, installed at all points of contact between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens.

Roof lights (Part J1.4)

Where roof lights are installed they must have :-

(a) a total area of not more than 5% of the floor area of the room or space served; and
(b) transparent and translucent elements, including any imperforate ceiling diffuser, with a combined performance of:-
  (i) for Total system SHGC, in accordance with the below table; and
  (ii) for Total system U-value, not more than U3.9;

Roof light shaft index (see Note 1)	Total area of roof lights up to 3.5% of the floor area of the room or space	Total area of roof lights more than 3.5% and up to 5% of the floor area of the room or space
Less than 1.0	Not more than 0.45	Not more than 0.29
1.0 to less than 2.5	Not more or equal to than 0.51	Not more than 0.33
Greater than 2.5	Not more than or equal to 0.76	Not more than 0.49

External Walls and Glazing (Part 1.5)

For walls and glazing construction the total system U-value must not be greater than-
(i) for a Class 2 common area, a Class 5, 6, 7, 8 or 9b building other than a ward area, U2.0; and
(ii) for a Class 3 or 9c building or a Class 9a ward area –
  (a) in climate zones 1, 3, 4, 6 or 7, U1.1; or
  (b) in climate zones 2 or 5, U2.0; or
  (c) in climate zones 8, U0.9;

The total system U-value of wall-glazing construction should be calculated in accordance with Specification J1.5a.

Wall components of the wall-glazing construction must achieve a minimum total R-Value of R1.0 where the wall is less 80% if the area and reflect the value specified in Table J1.5a where the wall is *0% or more of the area.

There are further design parameters for display glazing and solar admittances for wall-glazing construction, both of which should comply with the relevant provisions of J1.5.

To achieve compliance with J0.2 (c) a wall that does not have a wall lining or has a wall lining that is fixed directly to the same metal frame and has a lightweight external cladding such as weatherboards, fibre-cement or metal sheeting fixed to a metal frame must have a thermal break. The thermal break is to consist of a material with an R-Value of not less than R.02, installed at all points of contact between the external cladding and metal frame.

Floors (Part J1.6)

Floors are to achieve an R rating of 2.0.

11.4. Building sealing (Part J3)

Windows and Doors (Part J3.4)

a) A door, openable window or the alike must be sealed –
   (i) When forming part of the envelope; or
   (ii) In climate zones 4,5,6,7 or 8
b) The requirements of (a) do not apply to –
   (i) A window complying with AS2047; or
   (ii) A fire door or smoke door; or
   (iii) A roller shutter door, roller shutter grille or other security door or device installed only for out of house security
c) A seal to restrict air infiltration –
   (i) For the bottom edge of a door, must be draft protection device; and
   (ii) For the other edged of a door or the edges of an openable window or other such opening, may be a foam or rubber compression strip, fibrous seal or the like.
d) An entrance to a building, if leading to a conditioned space must have an airlock, self-closing door, rapid roller door, revolving door or the like, other than –
   (i) When the conditioned space has a floor area of not more than 50m^2; or
   (ii) Where a café, restaurant, open front shop or the like has –
      (A) A 3m deep un-conditioned zone between the main entrance, including an open front, and the conditioned space; and
      (B) At all other entrances to the café, restaurant, open front shop or the like, self-closing doors.
   (iii) A loading dock entrance, if leading to a conditioned space, must be fitted with a rapid roller door or the like

Exhaust fans (Part J3.5)

An exhaust fan must be fitted with a sealing device such as a self-closing damper or the like when serving a conditioned space or a habitable room in climate zones 4, 5, 6, 7, or 8.

Construction of ceilings, walls and floors (Part J3.6)
A seal to restrict air infiltration must be fitted to each edge of the external doors and openable windows. The seals may be foam or compressible strip, fibrous seal or the like. The main entry doors must have either an airlock, or self-closing doors, or a revolving door.

Ceilings, walls, floors and any openings such as a window frame, door frame, roof light frame or the like must be constructed to minimise air leakage in accordance with the below when forming part of –

(i) The envelope; or
(ii) In climate zones 4, 5, 6, 7 or 8

Construction required by above must be –

(iii) Enclosed by internal lining systems that are close fittings at ceiling, wall and floor junctions; or

(iv) Sealed at junctions and penetrations with –
  (A) Close fitting architrave, skirting or cornice; or
  (B) Expanding foam, rubber compressible strip, caulking or the like

The above does not apply to openings, grilles or the like required for smoke hazard management.

Evaporative coolers (Part J3.7)

An evaporative cooler must be fitted with a self-closing damper or the like –

(a) When serving a heated space; or
(b) In climate zones 4,5,6,7 or 8.

11.5. Air Conditioning and Ventilation systems (Part J5.0)

Air conditioning and ventilation systems must be designed to comply with the following provisions:

- Be capable of being deactivated when the building or part of a building being served by that system is not occupied;
- Where motorised dampers are in place, they should close when the system is deactivated
- Where serving a sole-occupancy unit in a Class 3 building, must not operate when any external door of the sole-occupancy unit that opens to a balcony or the like, is open for more than one minute;
- Time switches should be provided to control an air-conditioning system of more than 2kWr and a heater of more than 1kW $_{\text{heating}}$ used for air-conditioning, and be capable of switching electric power on and off at variable pre-programmed times on variable pre-programmed days.
- Ductwork and fittings in an air-conditioning system should have insulation complying with AS/NZS 4859.1 and have an insulation R-Value greater than or equal to:-
  - for flexible ductwork R1.0; or
  - for cushion boxes, that of the connecting ductwork; or
  - That specified in Table J5.5

Table J5.5

Location of ductwork and fittings	Climate zone 1, 2, 3, 4, 5, 6 or 7	Climate zone 8
Within a conditioned space	1, 2	2.0
Where exposed to direct sunlight	3.0	3.0
All other locations	2.0	3.0

Mechanical:

- Be capable of being deactivated where the building or part of the building served by that system is not occupied
- Time switches must be provided to a mechanical ventilation system with an air flow rate of more than 1000 L/s, capable of switching electric power on and off at variable pre-programmed times and on variable pre-programmed days;

Heaters

A heater used for air-conditioning or as part of an air-conditioning system must be a either a solar heater, gas heater, heat pump heaters, a heater using reclaimed heat or an electric heater.

A gas water heater, that is used as part of an air-conditioning system must:-

(i) if rated to consume 500 MJ/hour of gas or less, achieve a minimum gross thermal efficiency of 86% ; or

(ii) If rated to consume more than 500 MJ/hour of gas, achieve a minimum gross thermal efficiency of 90%

Refrigerant chillers

An air-conditioning system refrigerant chiller must comply with MEPS and the full load operation energy efficiency ratio and integrated part load energy efficiency ratio laid out under clause J5.10 of the BCA when determined in accordance with AHRI 551/591

Unitary air-conditioning equipment

Unitary air-conditioning equipment including packaged air-conditioners, split systems, and variable refrigerant flow systems must comply with MEPS and for a capacity greater than or equal to 65 kWr –

(a) Where water cooled, have a minimum energy efficiency ratio of 4.0 W_r/ $W_{input\ power}$ for cooling when tested in accordance with AS/NZS 3823.1.2 at test condition T1, where input power includes both compressor and fan input power; or

(b) Where air cooled, have a minimum energy efficiency ratio of 2.9 W_r / $W_{input\ power}$ for cooling when tested in accordance with AS/NZS 3823.1.2 at test condition T1, where input power includes both compressor and fan input power.

11.6. Artificial Lighting and Power (Part J6)

Interior Artificial Lighting and Power Control (Part J6.2 & 6.3)

In a sole-occupancy unit of a Class 2 building or Class 4 part the lamp power density/illumination power density of artificial lighting must not exceed the allowance of 5 W/m^2 within a sole-occupancy unit and 4 W/m^2 on a verandah, balcony or the like attached to a sole-occupancy unit.

In a building other than a sole-occupancy unit of a Class 2 building or a Class 4 building for artificial lighting, the aggregate design illumination power load must not exceed the sum of the allowances obtained by multiplying the area of each space by the maximum illumination power density below:-

The maximum illumination power density;

Retail:	14W/m^2
Corridors:	5W/m^2
Storage	1.5W/m^2
Kitchen and food preparation area:	4W/m^2
Car parks:	
(A) General	2W/m^2
(B) Entry zone (first 15m of travel during the daytime	11.5W/m^2
(C) Entry zone (next 4m of travel) during the day	2.5W/m^2
(D) Entry zone (first 20m of travel) during nighttime	2.5W/m^2
Restaurant, café, bar:	14W/m^2

Artificial Lighting must be controlled by a time switch, other control device or a combination of both.

Each light control in a building must not operate lights within an area of more than;

- 250m^2 if in a Class 6 building or Class 8 laboratory
- Not operate lighting for an area more than -
  a) 250m^2 for a space of not more than 2000m^2;

b) 1000m^2 for a space of more than 2000m^2

if in a Class 3, 6, 7, 8 (other than a laboratory) or 9 building;

- 1000m^2 for a space of more than 2000m^2

Interior decorative and display lighting

Interior decorative and display lighting, such as for a foyer mural or art display, must be controlled -

- Separately from other artificial lighting; and
- By a manual switch for each area other than when operating times of the displays are the same in a number of areas (e.g. where in a museum) in which case they may be combined; and
- By a time switch in accordance with Specification J6 where the display lighting exceeds 1 kW

Window display must be controlled separately from other display lighting exceeds 1kW.

Exterior artificial lighting

Artificial lighting attached to or directed at the façade of the building if it exceeds a total of 100W must;

- Use LED luminaires for 90% of the total lighting load; or
- Be controlled by a motion detector in accordance with Specification J6 of the BCA;
- When used for decorative purposes, such as façade lighting or signage lighting, have a separate switch in accordance with Specification J6.

Lifts (Part 6.7)

Lifts must be configured to ensure artificial lighting and ventilation in the car are turned off when it is unused for 15 minutes and achieve the idle and standby energy performance level required, and the energy efficiency class under J6.7 of the BCA.

Escalators and moving walks (Part J6.8)

Escalators and moving walkways must have the ability to slow to between 0.2 m/s and 0.05 m/s when unused for more than 15 minutes.

11.7. Heated Water Supply (Part 7)

Heated water supply (Part J7.2)

A heated water supply system for food preparation and sanitary purposes must be designed and installed in accordance with Part B2 of NCC Volume Three — Plumbing Code of Australia.

12. Access for People with Disabilities

The development is required to comply with the accessibility provisions contained within:

- The Building Code of Australia 2019 Amendment 1;
- Disability (Access to Premises – Buildings) Standards 2010;
- AS1428.1-2009 General Requirements for Access – New Building Work;
- AS1428.4.1 -2009 Tactile Ground Surface Indicators
- AS2890.6-2009 Car Parking for People with Disabilities

Note: With the introduction of the Commonwealth *Disability Discrimination Act (DDA)* in 1992 (enacted in 1993), all organisations have a responsibility to provide equitable and dignified access to goods, services and premises used by occupants. Organisations and individuals since its introduction, are required to work to the objects of the Act which are to eliminate, as far as possible, discrimination against persons on the ground of disability in the **areas of work, accommodation, education, access to premises, clubs and sports, and the provision of goods, facilities, services and land, existing laws and the administration of Commonwealth laws and programs.**

This report assesses against the requirements contained with the Building Code of Australia (and documents referred to therein) and is not considered to be a full assessment against the Disability Discrimination Act.

12.1. 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 Amdt 1 and AS 1428.1. Parts of the building required to be accessible shall comply with the requirements of:-

- AS1428.1-2009 General Requirements for Access – New Building Work;
- AS1428.4.1 -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:

Office/shops (Class 5/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.

12.2. Provision for Access to Buildings

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

- Via the principle pedestrian entry and at least 50% of all other entrances from the allotment boundary
- 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 occupants.

In buildings over 500m^2 in floor area, a non-accessible entrance must not be located more than 50m from an accessible entrance.
Where a pedestrian entry contains multiple doors, the following is required;

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

12.3. Accessibility within Building (BCA D3.3)

A building required to be accessible is required to be equipped with either a AS 1428.1 compliant lift or AS 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 200m^2.

Within the building the following are required;

- Door circulation space as per AS1428.1 Clause 13.3 and as attached in Appendix B;
- 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 and backing <4mm
- Any glazing 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.

12.4. Car Parking (BCA D3.5)

Accessible car parking spaces are required to comply with AS 2890.6-2009 at the rate of 1 space for every 50 carparking spaces provided.

Please provide the total number of parking and the accessible parking as per the ration of 1 to 50 as the design develops towards the CC stages.

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

12.5. 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.

12.6. 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 and 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 one tread width plus 300mm (nominally 700mm as per AS 1428.1-2009 Fig 26(b)), 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.

12.7. 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 products and as per following.

Building Type	Minimum accessible unisex sanitary compartments to be provided
Office, industrial, assembly building, schools, health care except for within a ward area of a Class 9a health-care building	a) 1 on every storey containing sanitary compartments; and b) Where a storey has more than 1 bank of sanitary compartments containing male and female sanitary compartments, at not less than 50% of those banks.

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 AS 1428.1-2009

12.8. Accessible adult change facility (F2.9)

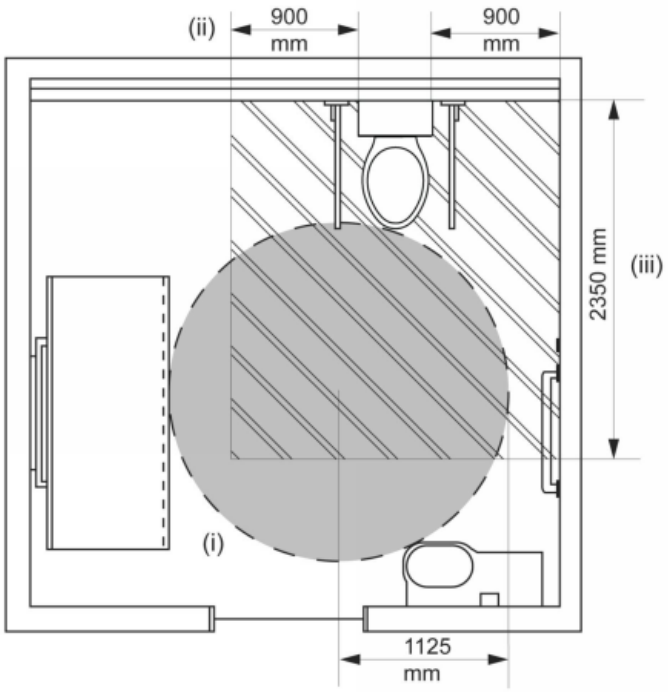
Accessible adult change facilities are required where:

a) a class 6 building that is a shopping centre having an design occupancy of not less than 3,500 persons allowed and contains a minimum of 2 SOU's;

General requirements for the accessible adult change facility include:

a) All required equipment and fixtures to be contained within the same room
b) If it is to be a unisex facility, it must be located so that it can be entered without crossing an area reserved for one sex only.
c) Room height of 2.4m minimum
d) A hoist
e) Toilet pan, seat, backrest, grab rails
f) Washbasins and tap
g) Fixture and fittings

h) Change table
i) Changing rails
j) Automated entrance door
k) Signage
l) Operating instructions for hoist and change table
m) Circulation spaces



12.9. 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
- Braille and tactile signs must be illuminated to ensure *luminance contrast* requirements are met at all times during which the sign is required to be read.

12.10. Hearing Augmentation (BCA D3.7)

A hearing augmentation system shall be installed throughout the building in accordance with the requirements of Clause D3.7 of the BCA, where ever in a 9b building, auditorium conference room, meeting room etc. contain a PA system not used for emergency purposed or any ticket office or teller’s booth or reception where the public is screened from the service provider.

12.11. 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.

13. Appendix A - Reference Documentation

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

Drawing No.	Title	Issue	Date	Revision
DA01	CONTEXT PLAN	DA		P3
DA02	I2C MASTER PLAN	DA		P3
DA03	EXISTIING SITE & STAGE 1 PLAN	DA		P3
DA04	PROPOSED SITE PLAN	DA		P9
DA05	PROPOSED ROOF PLAN	DA		P7
DA06	ZONE A (ENTRY) DETAILS	DA		P2
DA07	ZONE B (ENTRY) DETAILS	DA		P2
DA08	ZONE C (ENTRY) DETAILS	DA		P2
DA09	ELEVATIONS 1	DA		P4
DA10	ELEVATIONS 2	DA		P4
DA11	SECTIONS 1	DA		P6
DA15	SIGNAGE PLAN	DA		P3
DA16	SIGNAGE ELEVATIONS	DA		P1
DA17	SIGNAGE ELEVATIONS	DA		P1
DA18	SIGNAGE ELEVATIONS	DA		P2
DA19	SIGNAGE ELEVATIONS	DA		P1
Drawings used for Revision B Report				
DA18	BASEMENT PLAN	DA	28.06.22	6
DA17	FLOOR PLAN	DA	28.06.22	14
DA19	ROOF PLAN	DA	28.06.22	10
Drawings used for Revision C Report				
DA17	BASEMENT PLAN	DA	11.08.22	12
DA16	FLOOR PLAN	DA	11.08.22	20
DA18	ROOF PLAN	DA	4.08.22	12

- Email correspondence in relation to Aggregate Exit widths dated 26.7.22,
- Discussion based on the building assessed as a United Building over two allotments.

14. 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 Amdt 1 Clause C3.13
2.	Automatic Fail Safe Devices	BCA 2019 Amdt 1 Clause D2.19 & D2.21
3.	Automatic Fire Detection and Alarm System	BCA 2019 Amdt 1 Spec. E2.2a & AS 1670.1 – 2015, AS/NZS 1668.1 - 2015
4.	Automatic Fire Suppression System (sprinklers)	BCA 2019 Amdt 1 Spec. E1.5 & AS 2118.1 – 2017, AS 2118.6 – 2017 (Combined sprinkler & hydrant)
5.	Emergency Lighting	BCA 2019 Amdt 1 Clause E4.2, E4.4 & AS/NZS 2293.1 – 2005 Amdt 1 & 2
6.	Exit Signs	BCA 2019 Amdt 1 Clauses E4.5, NSW E4.6 & E4.8 and AS/NZS 2293.1 – 2018
7.	Fire Control Centres	BCA 2019 Amdt 1 Spec. E1.8
8.	Fire Dampers	BCA 2019 Amdt 1 Clause C3.15, AS/NZS 1668.1 – 2015 & AS 1682.1&2 - 1990
9.	Fire Doors (between the new and the existing building)	BCA 2019 Amdt 1 Clause C3.2, C3.4, C3.5, C3.6, C3.7 & C3.8, Spec C3.4 and AS 1905.1 – 2015
10.	Fire Hose Reel Systems	BCA 2019 Amdt 1 Clause E1.4 & AS 2441 – 2005 Amdt 1
11.	Fire Hydrant Systems	BCA 2019 Amdt 1 Clause E1.3 & AS 2419.1 – 2005 Amdt 1
12.	Fire Seals protecting fire resisting components of the building	BCA 2019 Amdt 1 Clause C3.12, C3.15, C3.16 & AS 1530.4 – 2014
13.	Fire Shutters (between the new and the existing building)	BCA 2019 Amdt 1 Spec. C3.4 & AS 1905.2 – 2005
14.	Lightweight Construction	BCA 2019 Amdt 1 Clause C1.8, C3.17 & AS 1530.3 – 1999
15.	Mechanical Air Handling System (automatic shutdown of air handling system)	BCA 2019 Amdt 1 Clause E2.2, AS/NZS 1668.1 – 2015
16.	Mechanical Air Handling System (smoke exhaust)	BCA 2019 Amdt 1 Clause E2.2, AS/NZS 1668.1 – 2015
17.	Mechanical Air Handling System (carpark)	BCA 2019 Amdt 1 Clause E2.2, AS/NZS 1668.1 – 2015
18.	Perimeter Vehicular Access for emergency vehicles	BCA 2019 Amdt 1 Clause C2.4
19.	Portable Fire Extinguishers	BCA 2019 Amdt 1 Clause E1.6 & AS 2444 – 2001
20.	Warning and Operational Signs	EP&A Reg 2000 Clause 183, BCA 2019 Amdt 1 Clause C3.6, D2.23, E3.3
21.	Building Occupant Warning System	BCA 2019 Amdt 1 Spec. E1.5, BCA Spec. E2.2a & AS 1670.1 – 2015 – Clause 3.22
22.	Fire Collars protecting fire resisting components of the building	BCA 2019 Amdt 1 Clause C3.12, C3.15, C3.16 & AS 1530.4 – 2014
23.	Paths of Travel	EP&A Reg 2000 Clause 183, 184, 184 & 186
24.	Required Exit Doors (power operated)	BCA 2019 Amdt 1 Clause D2.19

* Note that any proposed fire engineering solution for the development will affect the above fire safety schedule.

15. Appendix C - Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2019 Amendment 1:

Table 5 **TYPE C CONSTRUCTION: FRL OF BUILDING ELEMENTS**	**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—				
Less than 1.5 m	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
1.5 to less than 3 m	–/–/–	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
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 1.5 m	90/–/–	90/–/–	90/–/–	90/–/–
1.5 to less than 3 m	–/–/–	60/–/–	60/–/–	60/–/–
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS—	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
INTERNAL WALLS-				
Bounding *public corridors*, public lobbies and the like—	60 / 60/ 60	–/–/–	–/–/–	–/–/–
Between or bounding *sole-occupancy units*—	60/ 60/ 60	–/–/–	–/–/–	–/–/–
Bounding a stair if *required* to be rated—	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
ROOFS	–/–/–	–/–/–	–/–/–	–/–/–

Table 5.2 **REQUIREMENTS FOR CARPARKS**			**FRL (not less than) *Structural adequacy/Integrity/ Insulation*** **ESA/M (not greater than)**
Wall			
(a)	*external wall*		
	(i)	less than 1.5 m from a *fire-source feature* to which it is exposed:	
		Loadbearing	60/60/60
		Non-*loadbearing*	–/60/60
	(ii)	1.5 m or more from a *fire-source feature* to which it is exposed	–/–/–
(b)	*internal wall*		–/–/–
(c)	*fire wall*		
	(i)	from the direction used as a *carpark*	60/60/60
	(ii)	from the direction not used as a *carpark*	90/90/90
Column			

(a)	steel column less than 1.5 m from a *fire-source feature*	60/–/– or 26 m^2/tonne
(b)	any other column less than 1.5 m from a *fire-source feature*	60/–/–
(c)	any other column not covered by (a) or (b)	–/–/–
Beam		
(a)	less than 1.5 m from a *fire-source feature*	
	(i) steel floor beam in continuous contact with a concrete floor slab	60/–/– or 30 m^2/tonne
	(ii) any other beam	60/–/–
(b)	1.5 m or more from a *fire-source feature*	–/–/–
Roof, floor slab and vehicle ramp		–/–/–
Note: ESA/M means the ratio of exposed surface area to mass per unit length.		