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BUILDING CODE OF AUSTRALIA REPORT

Revision: A

Forestway Shopping Centre Redevelopment
Warringah Road & Forest Way, Frenchs Forest NSW

Prepared for: Point Polaris

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Date	Rev No	No. of Pages	Issue or Description of Amendment	Assessed By	Approved By	Date Approved
02/10/18	A	26	Preliminary BCA Report	Michael Krogh	Geoff Pearce	02/10/18

Executive Summary

Development Overview

The proposed redevelopment of Forestway Shopping Centre is a development which adds 11,907m2 GLA to the centre, bringing the total GLA to 21,484m2 over two stages.

The stages comprise of:

Stage 1: Additional circa 5,400m2.

Demolition of the carpark area, construction of two levels of basement and construction of Ground Floor retail. As construction is planned for the carpark areas on the periphery of the centre, the existing sitting tenants will mostly stay put during the construction stage. Car parking will be in the two level basement, plus rooftop car parking on Level 1. Advice from pre-qualified builders on staging and buildability will be incorporated at the DA stage.

Stage 2: Additional circa 11,500 m2.

Stage 2 will comprise of Level 1 retail. At that stage, the rooftop car parking will move up one level to Level 2 to allow this space to be converted to retail GLAR.

Compliance Summary

As Accredited Certifiers, we have reviewed architectural design documents prepared by Buchan Group (refer appendix A) for compliance with the Building Code of Australia Amendment 1.

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.	**Perimeter Vehicle Access** Continuous access for emergency vehicles that enables travel in a forward direction around the entire building is not provided as there is no access to the South Eastern corner.	C2.3 & C2.4	CP9
3.	**Separation of Classifications** Separation is required between the travelators on the retail levels (Class 6) and the car park levels (Class 7a).	C2.8	CP2
4.	**Travel Distance** Basement 2 Carpark ▪ Travel distance to a point of choice up to 28m in lieu of 20m and 60m to the nearest exit in lieu of 40m. ▪ Distance between alternative exits up to 103m in lieu of 60m. Basement 1 Carpark	D1.4	DP4, EP2.2

	▪ Travel distance to a point of choice up to 28m in lieu of 20m and 60m to the nearest exit in lieu of 40m. ▪ Distance between alternative exits up to 103m in lieu of 60m. Ground Floor Retail ▪ Travel distance is up to 100m in lieu of 40m. ▪ Distance between alternative exits up to 116m in lieu of 60m. ▪ Travel distance to a point of choice of up to 30m in lieu of 20m for larger tenancies. Level 1 Retail ▪ Travel distance is up to 125m in lieu of 40m. ▪ Distance between alternative exits up to 110m in lieu of 60m. ▪ Travel distance to a point of choice of up to 30m in lieu of 20m for larger tenancies. Level 2 Carpark ▪ Travel distance to a point of choice up to 30m in lieu of 20m and 77m to the nearest exit in lieu of 40m. ▪ Distance between alternative exits up to 117m in lieu of 60m.		
5.	**Aggregate Egress Width** The current exit width provided of 38m in total is insufficient due to the aggregate egress width required for the populations calculated by D1.13 require 56m in total.	D1.6	DP4
6.	**Travel by non-fire isolated stairways** ▪ Travel between level 1 retail and ground floor via an escalator and will discharge further than 20m from the nearest exit.	D1.9	DP4, EP2.2
7.	**Exit Signs** Exit sign are proposed to be mounted greater than 2.7m from the FFL throughout the mall areas.	E4.5	EP4.2
8.	**Smoke Hazard Management** Smoke exhaust rationalisation required in mall areas and majors.	E2.2a	EP2.2

The fire engineered solution relating to EP2.2 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 assessment of the design documentation has also revealed that the following additional information is required in order to assess BCA compliance within the development.

No.	Further Information / Review Required	Report Reference
1.	Hydrant booster to be identified on the drawings.	6.0
2.	Handrails within stairs to be shown on drawings.	4.1

3.	Drawings showing elevations are to be provided.	-
4.	Please advise on the use of any façade materials.	-
5.	Hose reels to be indicated on the drawings.	6.2
6.	Fire hydrants to be indicated on the drawings.	6.1
7.	Fire Indicator Panel to be shown on drawings.	6.0
8.	Amenities to be indicated on the drawings	7.1
9.	Pump Room to be indicated on the drawings	3.5
10.	Please indicate the accessible car spaces for basement level car parking.	5.4
11.	Please provide configuration and layout of all major tenancies.	-

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 redevelopment of Forestway Shopping Centre is a development which adds 16,900m2 GLA to the centre, bringing the total GLA to 26,500m2 over two stages.

The site is located on the corner of Warringah Road and Forest Way, Frenchs Forest NSW.

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 2016 Amendment 1 has been utilised as the version of the BCA applicable at the time of preparation this Report.

The version of the BCA applicable to the project is the current version at the time the Construction Certificate Application is submitted. In this regard, the project is currently being assessed under the requirements of BCA 2016 Amdt 1. However, in the event that the CC application is submitted after 1 May 2019 the version applicable to the project will be BCA 2019.

2.0 PRELIMINARIES

2.1 Building Assessment Data

Summary of Construction Determination: -

Part of Project	Shopping Centre
Classification	6, 7a
Number of Storeys	4
Rise In Storeys	2
Type of Construction	C
Effective Height (m)	<25m

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
Basement 2	7a	11707sqm	N/A	-
Basement 1	7a	11707sqm	N/A	-
Ground Floor	6	12201sqm	N/A	3177
First Floor	6	11239sqm	N/A	1761
Second Floor	7a	11374sqm	N/A	-
Total	-	58228sqm	N/A	4938

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 floor areas have been adjusted without ancillary areas such as sanitary facilities, corridors, shelving and or racking layouts in storage areas.
3. The carpark areas have been considered ancillary to the use for the purposes of population numbers

2.2 Structural Provisions (BCA B1)

Any new structural works are to comply with the applicable requirements of AS/NZS 1170.1 and Part B of the BCA Amendment 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.

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.

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 C Construction** in accordance with Table 5 & 5.9 of Specification C1.1 of the Building Code of Australia 2016 Amendment 1.

The building has been assessed on the basis that there is one fire compartment per storey.

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 of building		
		Type A	Type B	Type C
5, 9b or 9c *Open link in aged care building*	max *Open link in 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 *Open link in patient care areas*)	max *Open link in 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
Note: See **Open link in same page C2.5** for maximum size of compartments in *Open link in patient care areas* in Class 9a *Open link in health care buildings*.				

As the building does not exceed the area / volume limitations of the BCA provisions, the building is not considered a large isolated building and the provisions of C2.3 do not apply:

- Automatic sprinkler protection to AS2118.1 and BCA specifications E1.5 throughout the development / smoke detection and alarm system in accordance with AS1670,
- Perimeter emergency vehicular access 6m wide located within 18m of the entire building perimeter – Perimeter Access is not provided to the South East corner and therefore requires a performance solution.
- Smoke exhaust or smoke and heat vents required throughout the development – This will require a performance solution.

3.2 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 C which outlines the required fire rating to be achieved by the development. These fire ratings are summarised below:-

Building Element	Class 6 Retail	Carpark Class 7a
External Walls	90/90/90	60/60/60
External Columns	90/-/-	60/-/-
Fire Walls	90/90/90	90/90/90
Fire Stair / Shaft Walls	60/60/60	60/60/60
Floors	-/-/-	-/-/-

Roof	-/-/-	-/-/-

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

- 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.

3.3 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:

Sprinkler Protected Areas

a) Floor Coverings – Critical radiant Flux not less than 1.2kW/m2
b) Wall and Ceiling Linings – Material Group No. 1,2,3
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.

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

Floor linings and floor coverings used in lift cars must have a critical radiant flux not less than 2.2, and wall and ceiling linings must be a Material Group No. 1 or 2.

3.5 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 an FRL of -/-/-,

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 of 120/120/120 (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.

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
- Required non-fire isolated stairways if the escalators are nominated as required exits.

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.

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.

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

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 2 Carpark

- Travel distance to a point of choice up to 28m in lieu of 20m and 60m to the nearest exit in lieu of 40m.
- Distance between alternative exits up to 103m in lieu of 60m.

Basement 1 Carpark

- Travel distance to a point of choice up to 28m in lieu of 20m and 60m to the nearest exit in lieu of 40m.
- Distance between alternative exits up to 103m in lieu of 60m.

Ground Floor Retail

- Travel distance is up to 100m in lieu of 40m.
- Distance between alternative exits up to 116m in lieu of 60m.

Level 1 Retail

- Travel distance is up to 125m in lieu of 40m.
- Distance between alternative exits up to 110m in lieu of 60m.

Level 2 Carpark

- Travel distance to a point of choice up to 30m in lieu of 20m and 77m to the nearest exit in lieu of 40m.
- Distance between alternative exits up to 117m in lieu of 60m.

Separation of exits is not shown on the drawings.

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).

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

Storey	Number of People	Exit Width Required	Exit Width Provided
Basement 2	-	5m	5m
Basement 1	-	5m	5m
Ground Floor	3177	26m	18m
First Floor	1761	15m	5m
Second Floor	-	5m	5m
Total	4938	56m	38m

The total aggregate exit width within the building caters for 2560 occupants.

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.

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

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

4.6 Slip Resistance

BCA 2016 Amendment 1 requires a slip resistance rating 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 2016 Amendment 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;
- AS1428.4-2009 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.

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).

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 at the rate of 1 in 50.

The development is proposed to contain 677 car parking spaces which requires a minimum of 14 accessible spaces.

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.

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.

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 need not be provided on a storey or level that is not provided with a passenger lift or ramp complying with AS1428.1-2009

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 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 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.

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 fire pump location is satisfactory.

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.

6.3 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 retail and carpark zones.

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, often collocated with fire hydrants and/or fire hose reels.

6.4 Automatic Sprinkler Protection (BCA E1.5)

Automatic sprinkler protection is required to Specification E1.5 and AS2118.1-1999 or AS2119.1-2017 to the following areas:

- Throughout the entire building if it is classified as large isolated under BCA Clause C2.3;

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

Exit sign are proposed to be mounted greater than 2.7m from the FFL throughout the mall areas.

6.6 Smoke Hazard Management (BCA E2.2)

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

- Zone Smoke Control in accordance with the requirements of AS/NZS 1668.1-2015;
- Automatic Shutdown of Mechanical Systems in accordance with the requirements of AS/NZS 1668.1-2015;
- Automatic Smoke Exhaust System activated by Automatic Smoke Detection & Alarm System in accordance with the requirements of BCA Spec E2.2a and AS1670.1-2015
- Automatic Smoke Detection and Alarm System in accordance with the requirements of BCA Spec E2.2a and AS 1670.1-2004

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.

6.7 Lift Services (BCA E3.42 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.
- 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.

6.8 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.

Please provide sanitary facility detail on plans for 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.

Floor wastes are not indicated.

7.4 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.

The proposed site will be located in a Climate Zone 5.

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

8.1 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
ATP-20002	Level B2 – General Arrangement Plan	N/A	Buchan	A
ATP-20003	Level B1 – General Arrangement Plan	N/A	Buchan	A
ATP-20004	Level GF – General Arrangement Plan	N/A	Buchan	A
ATP-20005	Level 01 – General Arrangement Plan	N/A	Buchan	A
ATP-20006	Level 02 – General Arrangement Plan	N/A	Buchan	A

Appendix B - Draft Fire Safety Schedule

	Essential Fire Safety Measures	Standard of Performance
1.	Automatic Fail Safe Devices	BCA Clause D2.19 & D2.21
2.	Automatic Fire Detection and Alarm System	BCA Spec. E2.2a & AS 1670.1 – 2015, AS/NZS 1668.1 - 2015
3.	Automatic Fire Suppression System	BCA Spec. E1.5 & AS 2118.1 – 1999 or AS2118.1-2017,
4.	Building Occupant Warning System	BCA Spec. E1.5, BCA Spec. E2.2a & AS 1670.1 – 2015 – Clause 3.22
5.	Emergency Lighting	BCA Clause E4.2, E4.4 & AS/NZS 2293.1 – 2005 Amdt 1 & 2
6.	Emergency Evacuation Plan	AS 3745 – 2002
7.	Exit Signs	BCA Clauses E4.5, NSW E4.6 & E4.8 and AS/NZS 2293.1 – 2005 Amdt 1 & 2
8.	Fire Dampers	BCA Clause C3.15, AS/NZS 1668.1 – 2015 & AS 1682.1&2 - 1990
9.	Fire Doors	BCA Clause C3.2, C3.4, C3.5, C3.6, C3.7 & C3.8, Spec C3.4 and AS 1905.1 – 2015
10.	Fire Hose Reels	BCA Clause E1.4 & AS 2441 – 2005 Amdt 1
11.	Fire Hydrant System	BCA Clause E1.3 & AS 2419.1 – 2005 Amdt 1
12.	Fire Seals, Collars	BCA Clause C3.15, C3.16 & AS 1530.4 – 2014
13.	Lightweight Construction	BCA Clause C1.8, C3.17 & AS 1530.3 – 1999
14.	Mechanical Air Handling System	BCA Clause E2.2, AS/NZS 1668.1 – 2015
15.	Paths of Travel	EP&A Reg 2000 Clause 186
16.	Perimeter Vehicular Access for emergency vehicles	BCA Clause C2.4
17.	Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001
18.	Smoke Hazard Management System	BCA Part E2 & AS/NZS 1668.1 – 2015
19.	Smoke Dampers	AS/NZS 1668.1 – 2015
20.	Smoke Detectors and Heat Detectors	BCA Spec E2.2a & AS 1670.1-2015, AS/NZS 1668.1-2015
21.	Warning and Operational Signs	EP&A Reg 2000 Clause 183, BCA Clause C3.6, D2.23, E3.3.

Appendix C - Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2016 Amendment 1:

Table 5 TYPE C 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—				
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

Building element			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.