



**BUILDING CODE OF AUSTRALIA
REPORT**

Revision: D

2019

**Fig & Wattle
Proposed Mixed Use Development
14-26 Wattle Street, Ultimo NSW 2007**

**Prepared for: Landream Pymont Pty
Ltd**

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Date	Rev No	Issue or Description of Amendment	Assessed By	Approved By	Date Approved
31/05/2019	A	Draft	Ahmad Sammani	-	-
20/06/2019	B	DA Submission	Ahmad Sammani	Aaron Celarc	20/06/2019
21/08/2019	C	Updated DA Package	Ahmad Sammani	Aaron Celarc	21/08/2019
30/08/2019	D	Final - DA Submission	Ahmad Sammani	Aaron Celarc	30/08/2019

Executive Summary

Development Overview

The proposed development is a Mixed Use Development that consists of the following:

- 2x multi-purpose indoor court recreation centre
- Childcare Centre
- Residential Apartments
- Commercial Premises including retail
- Carparking in an above-ground multi storey carpark
- Through site link
- Common area services

Compliance Summary

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

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.	<p>Type of Construction Required The building is required to be of Type A construction.</p> <p>It is anticipated that the FRL associated with the basement storage (Class 7b) will be rationalised from 240/240/240 rated construction to 120/120/120. It is also anticipated that the Commercial FRL be rationalised to 120/120/120 FRL in lieu of 180/180/180</p>	C1.1, Spec C1.1	CP1, CP2
2.	<p>Curtain wall façade junction (Slab edge and fire wall) Smoke separation is anticipated to be provided in lieu of fire separation at the slab edge, where fire compartments are located directly above one another.</p> <p>Fire separation between fire compartments in the same storey will not be provided in accordance with the DTS provisions of the BCA.</p>	Spec C1.1, C2.7, C2.8, C2.9	CP2, CP8
3.	<p>Exit Travel Distance & Distance between Alternative Exits</p> <p>▪ Basement 2:</p> <ul style="list-style-type: none"> - Recreation Centre: <ul style="list-style-type: none"> • Distance to a POC is up to 26m in lieu of 20m • Total distance is up to 46m in lieu of 40m • Distance b/w alt exits is up to 80m in lieu of 60m - EOTF: <ul style="list-style-type: none"> • Distance to a POC is up to 27 m in lieu of 20m - Carpark Supply Plant and North Lobby: <ul style="list-style-type: none"> • Total distance is up to 57m in lieu of 40m • Distance b/w alt exits is up to 83m in lieu of 60m - South Eastern Lobby: <ul style="list-style-type: none"> • Distance b/w alt exits is up to 72m in lieu of 60m - Carpark: <ul style="list-style-type: none"> • Total distance is up to 52m in lieu of 40m • Distance b/w alt exits is up to 96m in lieu of 60m 	D1.4, D1.5	DP4, EP2.2

- **Basement 1:**
 - Loading Dock:
 - Distance to a POC is up to 22m in lieu of 20m
 - Total distance is up to 45m in lieu of 40m
 - Distance b/w alt exits is up to 89m in lieu of 60m
 - Carpark:
 - Total distance is up to 52m in lieu of 40m
 - Distance b/w alt exits is up to 96m in lieu of 60m
- **Level 1:**
 - Fig St Commercial:
 - Total distance is up to 47m in lieu of 40m
 - Distance b/w alt exits is up to 66m in lieu of 60m
- **Level 2:**
 - Fig St Commercial:
 - Total distance is up to 58m in lieu of 40m
 - Distance b/w alt exits is up to 89m in lieu of 60m
 - Central Residential:
 - Distance to a single exit is up to 7m in lieu of 6m
 - Jones St Residential:
 - Distance to a single exit is up to 12m in lieu of 6m
- **Level 3-4:**
 - Fig St Commercial:
 - Total distance is up to 58m in lieu of 40m
 - Distance b/w alt exits is up to 89m in lieu of 60m
 - Wattle St Residential:
 - Distance to a single exit is up to 7m in lieu of 6m
 - Central Residential:
 - Distance to a single exit is up to 7m in lieu of 6m
 - Jones St Residential:
 - Distance to a single exit is up to 12m in lieu of 6m
- **Level 5-6:**
 - Fig St Commercial:
 - Total distance is up to 58m in lieu of 40m
 - Distance b/w alt exits is up to 89m in lieu of 60m
 - Wattle St Residential:
 - Distance to a single exit is up to 8m in lieu of 6m
 - Jones St Residential:
 - Distance to a single exit is up to 12m in lieu of 6m
- **Level 7:**
 - Fig St Commercial:
 - Distance to a single exit is up to 32m in lieu of 20m
 - Jones St Residential:
 - Distance to a single exit is up to 12m in lieu of 6m

4.	<p>Separation of rising and descending stair flights</p> <p>Separation between rising and descending stairs is not provided in accordance with D2.4 at the following locations:</p> <ul style="list-style-type: none"> ▪ Eastern Stair that discharges into Fig Street 	D2.4	DP4
5.	<p>Fire Hydrant System</p> <p>Due to nature of the site having multiple entrances the booster will not be located within site of the main entrance.</p> <p>The pump room does not open to a road or open space, or a door opening to fire-isolated passage or stair which leads to a road or open space;</p>	E1.3	EP1.3

Due to the scissor stair arrangement in the building, the vertical mains pass through the other stair at alternate levels rather than remain in a single fire-isolated stair shaft

6.	Fire Control Room The fire control room is required to comply with Spec E1.8. Currently, the fire control room is not indicated at the front entrance of the building.	E1.8, Spec E1.8	EP1.6
7.	Smoke Hazard Management The removal of Zone Smoke Control System to the commercial tenancies, and if jet fans are proposed to the car parking levels, a Fire Engineered Performance Solution will need to address these departures. Rationalisation of smoke exhaust system to the recreational centre will need to be addressed through a Performance Solution Note: if the population of the recreation centre does not exceed 1000 spectators, then the smoke exhaust system is not required	Part E2, Spec E2.2	EP2.2

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

Fire Safety Services	
1.	Sprinklers system throughout
2.	Fire hydrant system throughout
3.	Fire hose reels (except in the class 2 part)
4.	Zone smoke control system to AS/NZS 1668.1 (except to the class 2 parts)
5.	Fire precautions during construction
6.	Air-pressurization throughout the fire isolated stairs
7.	Automatic smoke detection and alarm system to BCA Specification E2.2
8.	Smoke Exhaust system to the Recreation Centre Note: if the population of the recreation centre does not exceed 1000 spectators, then the smoke exhaust system is not required
9.	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

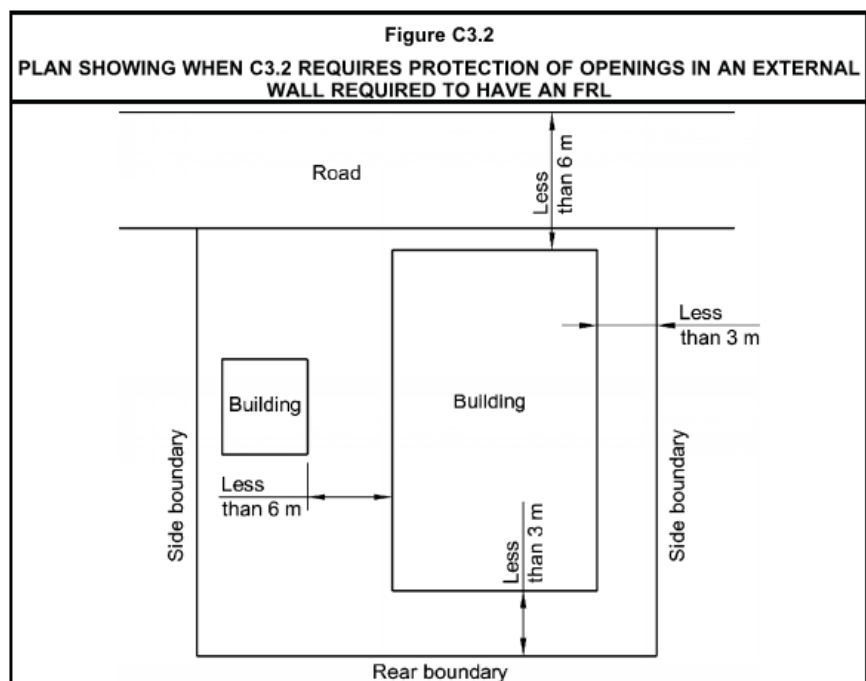
The fire engineered solution relating to EP1.3, EP1.6, and EP2.2 will be subject to consultation with the NSW Fire Brigade as part of the Construction Certificate process under Clause 144 of the Environmental Planning & Assessment Regulation 2000

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
1.	<p>Details of the building elements listed below to be provided:</p> <p>(a) Type A buildings, the following building elements and their components must be non-combustible:</p> <ol style="list-style-type: none">External walls and common walls, including all components incorporated in them including the facade covering, framing and insulation.The flooring and floor framing of lift pits.Non-loadbearing internal walls where they are required to be fire-resisting.A shaft, being a lift, ventilating, pipe, garbage, or similar shaft that is not for the discharge of hot products of combustion, that is non-loadbearing. <p>(b) A loadbearing internal wall and a loadbearing fire wall, including those that are part of a loadbearing shaft, must comply with Specification C1.1</p>
2.	<p>The plans do not detail the fire hazard properties of all floor, floor coverings, wall and ceiling lining materials. Design certification will be required verifying compliance prior to the issue of a CC and a certificate of compliance and test reports for all floor, floor coverings, wall and ceiling lining materials will need to be provided prior to the issue of an OC.</p> <p>The following requirements apply:</p> <p>Sprinkler Protected Areas</p> <ul style="list-style-type: none">Floor Coverings – Critical radiant Flux not less than 1.2 kW/m²Wall and Ceiling Linings –Material Group No. 1, 2 or 3;Other Materials – Spread of Flame Index not exceeding 9 and Smoke Developed Index not exceeding 8;Rigid and flexible air handling ductwork must comply with AS4254 parts 1 & 2 2012
3.	<p>Fire service drawings required to be submitted confirming locations of all proposed fire services infrastructure relevant to the enabling works scope (portable fire extinguishers, fire hydrants/booster assemblies and hose reels etc.)</p>
4.	<p>Please confirm if any lightweight fire-resistant construction is proposed to be utilized. Please submit relevant technical data sheets and test reports of proposed products to confirm compliance with the BCA</p>
5.	<p>BASIX Certificate to be provided</p>
6.	<p>Fire walls have a number of doors located throughout the proposed building with no indication of fire-rated doors in accordance with the BCA. Please provide additional plan notes confirming walls and doors will be fire rated with compliant FRL's</p>
7.	<p>Fire Resistance Levels, Fire compartmentation and bounding construction details to be provided</p>
8.	<p>Accessibility review of the development by an accredited Access Consultant</p>
9.	<p>Lift Installation details to be provided</p>
10.	<p>Details of stairs construction, handrails, balustrades, and protection of openable windows</p>

11. Staff numbers and population to be confirmed
12. Schedule of windows and doors and method and extent of natural lighting
13. Sound Transmission and Insulation
14. If an exit discharges to a roof (the proposed podium) of a building, the roof must—
 - (a) have an FRL of not less than 120/120/120; and
 - (b) not have any roof lights or other openings within 3 m of the path of travel of persons using the exit to reach a road or open space.
15. Openings within 3m of the boundary (fire-source feature) are required to be protected in accordance with C3.4:

-/60- automatic closing fire windows
 -/60/30 fire doors (self-closing)
 Or Wall wetting drenchers



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.

Assessed By,

Ahmad Sammani
 Building Surveyor
 McKenzie Group Consulting (NSW) Pty Ltd

1.0 Introduction

The proposed development is a Mixed Use Development that consists of the following:

- 2x multi-purpose indoor court recreation centre
- Childcare Centre
- Residential Apartments
- Commercial Premises including Commercial and a Supermarket
- Carparking in an above-ground multi storey carpark
- Through site link
- Common area services

The site is located on 14-26 Wattle Street, Ultimo NSW 2007.

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

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

1.1 Current Legislation

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

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

1.2 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

1.3 Structural Provisions (BCA B1)

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

Glazing is to comply with AS1288, and AS2047.

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

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

2.0 PRELIMINARIES

2.1 Building Assessment Data

Summary of Construction Determination: -

Building Assessment Data				
Part of Building	Class	Floor Area	Volume	Occupant No.
Basement 2	6, 7a, 7b, 9b	9,924 m² <ul style="list-style-type: none"> ▪ Stadium: 2,602 ▪ Carpark: 4,444 ▪ Storage: 942 ▪ Commercial: 680 	47,601 m³ <ul style="list-style-type: none"> ▪ Stadium: 28,882 ▪ Carpark: 12,666 ▪ Storage: 2,638 ▪ Commercial: 3,502 	517 persons <ul style="list-style-type: none"> ▪ Stadium: 260 ▪ Carpark: - ▪ Storage: 32 ▪ Commercial: 227
Basement 1	7a	7,334 m² <ul style="list-style-type: none"> ▪ Carpark: 4,623 	15,025 m³ <ul style="list-style-type: none"> ▪ Carpark: 15,025 	Carpark: -
Level 1 Podium	2, 5, 6, 9b	6,414 m² <ul style="list-style-type: none"> ▪ Office: 227 ▪ Café: 349 ▪ Childcare: 2,468 ▪ Fig Commercial: 1,885 ▪ Wattle Resi: 1,485 	19,069 m³ <ul style="list-style-type: none"> ▪ Office: 681 ▪ Café: 1,047 ▪ Childcare: 10,366 ▪ Fig Commercial: 6,975 ▪ Wattle Resi: N/A 	859 persons <ul style="list-style-type: none"> ▪ Office: 23 ▪ Café: 349 ▪ Childcare: 110 (client's advice) ▪ Fig Commercial: 377 ▪ Wattle Resi: N/A
Level 2	2, 6	7,360 m² <ul style="list-style-type: none"> ▪ Jones Resi: 2,189 ▪ Central Resi: 1,410 ▪ Wattle Resi: 1,410 ▪ Fig Commercial: 2,351 	8,699 m³ <ul style="list-style-type: none"> ▪ Jones Resi: N/A ▪ Central Resi: N/A ▪ Wattle Resi: N/A ▪ Fig Commercial: 8,699 	470 persons <ul style="list-style-type: none"> ▪ Jones Resi: N/A ▪ Central Resi: N/A ▪ Wattle Resi: N/A ▪ Fig Commercial: 470
Level 2 Mezzanine	2	1140 m² <ul style="list-style-type: none"> ▪ Jones Resi: 1,140 	Jones Resi: N/A	Jones Resi: N/A
Level 3	2, 6	7,526 m² <ul style="list-style-type: none"> ▪ Jones Resi: 2,179 ▪ Central Resi: 1,410 ▪ Wattle Resi: 1,575 ▪ Fig Commercial: 2,362 	8,740 m³ <ul style="list-style-type: none"> ▪ Jones Resi: N/A ▪ Central Resi: N/A ▪ Wattle Resi: N/A ▪ Fig Commercial: 8,740 	473 persons <ul style="list-style-type: none"> ▪ Jones Resi: N/A ▪ Central Resi: N/A ▪ Wattle Resi: N/A ▪ Fig Commercial: 473
Level 4	2, 6	7,488 m² <ul style="list-style-type: none"> ▪ Jones Resi: 2,179 ▪ Central Resi: 1,410 ▪ Wattle Resi: 1,575 ▪ Fig Commercial: 2,324 	8,599 m³ <ul style="list-style-type: none"> ▪ Jones Resi: N/A ▪ Central Resi: N/A ▪ Wattle Resi: N/A ▪ Fig Commercial: 8,599 	465 persons <ul style="list-style-type: none"> ▪ Jones Resi: N/A ▪ Central Resi: N/A ▪ Wattle Resi: N/A ▪ Fig Commercial: 465
Level 5	2, 6	7,284 m² <ul style="list-style-type: none"> ▪ Jones Resi: 2,347 ▪ Central Resi: 1,149 ▪ Wattle Resi: 1,450 ▪ Fig Commercial: 2,338 	8,650 m³ <ul style="list-style-type: none"> ▪ Jones Resi: N/A ▪ Central Resi: N/A ▪ Wattle Resi: N/A ▪ Fig Commercial: 8,650 	468 persons <ul style="list-style-type: none"> ▪ Jones Resi: N/A ▪ Central Resi: N/A ▪ Wattle Resi: N/A ▪ Fig Commercial: 468
Level 6	2, 6	7,284 m² <ul style="list-style-type: none"> ▪ Jones Resi: 2,347 ▪ Central Resi: 1,149 ▪ Wattle Resi: 1,450 ▪ Fig Commercial: 2,338 	9,820 m³ <ul style="list-style-type: none"> ▪ Jones Resi: N/A ▪ Central Resi: N/A ▪ Wattle Resi: N/A ▪ Fig Commercial: 9,820 	468 persons <ul style="list-style-type: none"> ▪ Jones Resi: N/A ▪ Central Resi: N/A ▪ Wattle Resi: N/A ▪ Fig Commercial: 468

Building Assessment Date				
Part of Building	Class	Floor Area	Volume	Occupant No.
Level 7	2, 6	5538 m2 <ul style="list-style-type: none"> ▪ Jones Resi: 2,347 ▪ Central Resi: 1,149 ▪ Wattle Resi: 1,450 ▪ Fig Commercial: 592 	2,487 m3 <ul style="list-style-type: none"> ▪ Jones Resi: N/A ▪ Central Resi: N/A ▪ Wattle Resi: N/A ▪ Fig Commercial: 2,487 	119 persons <ul style="list-style-type: none"> ▪ Jones Resi: N/A ▪ Central Resi: N/A ▪ Wattle Resi: N/A ▪ Fig Commercial: 119

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

	Fig & Wattle Development
Classification	2, 5, 6, 7a, 7b, 9b
Number of Storeys Contained	10
Rise In Storeys	10
Type of Construction	A
Effective Height (m)	28.25 m

3.0 FIRE PROTECTION

3.1 Fire Compartmentation (BCA C1.1)

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

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

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

- Bounding construction to the sole occupancy units of 90 minutes,
- Separation between the carpark levels and the Commercial/commercial portions of 180 minutes,
- Fire compartmentation of the building at each floor level,

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

Classification	Type of Construction	
		A
5, 9b or 9c aged care building	max floor area—	8 000 m²
	max volume—	48 000 m³
6, 7, 8 or 9a (except for patient care areas)	max floor area—	5 000 m²
	max volume—	30 000 m³

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

It is anticipated that the FRL associated with the basement storage and the residential Storage on Jones St (Class 7b) will be rationalised from 240/240/240 rated construction to 120/120/120.

A Performance Solution will be required to be sought from a qualified Fire Engineer to address the Fire Resistance departures on a Performance basis

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

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

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

3.3 Fire Hazard Properties (BCA C1.10)

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 1.2 kW/m²
- b) Wall and Ceiling Linings – Material Group No. 1 and 2
- c) Other Materials – Spread of Flame Index not exceeding 9 and Smoke Developed Index not exceeding 2

External Wall Cladding

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

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

- a) Plasterboard.
- b) Perforated gypsum lath with a normal paper finish.
- c) Fibrous-plaster sheet.
- d) Fibre-reinforced cement sheeting.
- e) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0.
- f) Bonded laminated materials where—
 - (i) each lamina, including any core, is non-combustible; and
 - (ii) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2mm; and
 - (iii) the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole does not exceed 0 and 3 respectively.

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

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

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

3.4 Protection of Openings in External Walls (BCA C3.2, BCA C3.3, and BCA C3.4)

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

Fire source feature is defined as;

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

3.5 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 in accordance with C1.1;
- 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 in accordance with C1.1 (or 120/120/120 where it is a room such as a substation);
- c) Self-closing -/60/30 fire doors to the doors opening to the fire isolated stairs (note that this also includes the access doors to the condenser units on the plant platforms).

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

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

4.0 EGRESS PROVISIONS

4.1 Provisions for Escape (BCA D1)

The egress provisions from the proposed building are provided by:

- Fire isolated stairways
- External perimeter doorways

Other detailing issues that will need to be addressed include:

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

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.

Furthermore, discharge from exits necessitates passing within 6m of unprotected openings. Where C3.4 protection is not incorporated, a performance solution will be required.

4.3 Exit Travel Distances (BCA D1.4 and BCA D1.5)

The travel distances to exits should not exceed:

Class 5-9

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

Class 2-3

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

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

- **Basement 2:**
 - Recreation Centre:
 - Distance to a POC is up to 26m in lieu of 20m
 - Total distance is up to 46m in lieu of 40m
 - Distance b/w alt exits is up to 80m in lieu of 60m
 - EOTF:
 - Distance to a POC is up to 27 m in lieu of 20m
 - Carpark Supply Plant and North Lobby:
 - Total distance is up to 57m in lieu of 40m
 - Distance b/w alt exits is up to 83m in lieu of 60m
 - South Eastern Lobby:
 - Distance b/w alt exits is up to 72m in lieu of 60m
 - Carpark:
 - Total distance is up to 52m in lieu of 40m
 - Distance b/w alt exits is up to 96m in lieu of 60m
- **Basement 1:**
 - Loading Dock:
 - Distance to a POC is up to 22m in lieu of 20m
 - Total distance is up to 45m in lieu of 40m
 - Distance b/w alt exits is up to 89m in lieu of 60m
 - Carpark:
 - Total distance is up to 52m in lieu of 40m
 - Distance b/w alt exits is up to 96m in lieu of 60m
- **Level 1:**
 - Fig St Commercial:
 - Total distance is up to 47m in lieu of 40m
 - Distance b/w alt exits is up to 66m in lieu of 60m
- **Level 2:**
 - Fig St Commercial:
 - Total distance is up to 58m in lieu of 40m
 - Distance b/w alt exits is up to 89m in lieu of 60m
 - Central Residential:
 - Distance to a single exit is up to 7m in lieu of 6m
 - Jones St Residential:
 - Distance to a single exit is up to 12m in lieu of 6m

- **Level 3-4:**
 - Fig St Commercial:
 - Total distance is up to 58m in lieu of 40m
 - Distance b/w alt exits is up to 89m in lieu of 60m
 - Wattle St Residential:
 - Distance to a single exit is up to 7m in lieu of 6m
 - Central Residential:
 - Distance to a single exit is up to 7m in lieu of 6m
 - Jones St Residential:
 - Distance to a single exit is up to 12m in lieu of 6m
- **Level 5-6:**
 - Fig St Commercial:
 - Total distance is up to 58m in lieu of 40m
 - Distance b/w alt exits is up to 89m in lieu of 60m
 - Wattle St Residential:
 - Distance to a single exit is up to 8m in lieu of 6m
 - Jones St Residential:
 - Distance to a single exit is up to 12m in lieu of 6m
- **Level 7:**
 - Fig St Commercial:
 - Distance to a single exit is up to 32m in lieu of 20m
 - Jones St Residential:
 - Distance to a single exit is up to 12m in lieu of 6m

This will need to be addressed as part of the Fire Engineered Performance Solution

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).

Egress doors details to be provided to determine the aggregate width requirements

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.

Fire Isolated Stairways

Balustrades in the fire isolated stairways and Class 7b or 8 parts of buildings are permitted to contain a 3 rail system, with a bottom rail situated at not more than 150mm above the nosings. The distance between the rails shall not exceed 460mm.

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

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

Openable Windows in Residential Buildings

In bedrooms of Class 2 buildings, and Class 9b early childhood centres, where the distance from the floor level to the level below exceeds 2m, window openings shall be provided with protection in accordance with BCA Clause D2.24.

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

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

The device or screen required must –

- a) Not permit a 125mm sphere to pass through it; and
- b) Resist an outward horizontal action of 250N; and
- c) Have a child resistant release mechanism if the screen or device is able to be removed, unlocked or overridden

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

4.6 Slip Resistance

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

Table D2.14 SLIP-RESISTANCE CLASSIFICATION

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

5.0 ACCESS FOR PEOPLE WITH DISABILITIES

5.1 General Building Access Requirements (BCA D3.1)

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

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

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

Apartment (Class 2 Buildings)

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

Office/shops (Class 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.

Childcare centres

To and within all areas normally used by the occupants.

5.2 Provision for Access to Buildings

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

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

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

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

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

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

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

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

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

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

Within the building the following are required;

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

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

5.4 Car parking (BCA D3.5)

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

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

5.5 Tactile Indicators (BCA D3.8)

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

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

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

Stairs shall be constructed as follows:

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

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

Unisex Accessible Sanitary Facilities

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

Building Type	Minimum accessible unisex sanitary compartments to be provided
Residential apartments	Where sanitary compartments are provided in common areas, not less than 1.
Office, industrial, assembly building, schools, health care except for within a ward area of a Class 9a health-care building	<ol style="list-style-type: none"> 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 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 or 1100mm x 1400mm (whichever is appropriate) in size – with appropriate handrails and auditory commands.

6.0 FIRE SERVICES AND EQUIPMENT

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

6.1 Fire Hydrants (BCA E1.3)

A system of Fire Hydrants is required to be provided in accordance with BCA Clause E1.3 and AS2419.1-2005.

Due to nature of the site having multiple entrances the booster will not be located within site of the main entrance. Furthermore, the pump room does not open to a road or open space, or a door opening to fire-isolated passage or stair which leads to a road or open space.

Due to the scissor stair arrangement in the building, the vertical mains pass through the other stair at alternate levels rather than remain in a single fire-isolated stair shaft

This will need to be addressed as part of the Fire Engineered Performance Solution

6.2 Fire Hose Reels (BCA E1.4)

A Fire Hose Reel System is required to BCA Clause E1.4 and AS2441-2005 to the Class 6, 7a, 7b, and 9b of the development

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

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

6.3 Fire Extinguishers (BCA E1.6)

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

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

Occupancy Class	Risk Class (as defined in AS 2444)
General provisions – Class 2 to 9 buildings (except within sole-occupancy units of a Class 9c building)	<ul style="list-style-type: none"> (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 500m² not provided with fire hose reels (excluding open deck carparks). (e) To cover Class A fire risks in classrooms and associated schools not provided with fire hose reels. (f) To cover Class A fire risks associated with Class 2 or 3 building or class 4 part of building.

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

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

Fire extinguishers are to be located in accordance with AS 2444, often collated 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 AS2118.1-2017 to the following areas:

- Throughout the entire building where the effective height exceeds 25m;
- Throughout any Class 7a car park (other than open deck car parks) containing accommodation for more than 40 vehicles;

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, E4.4, E4.5, E4.6, E4.8)

Emergency Lighting and Exit Signs indicating exit location paths of travel to exits to be provided in accordance with AS2293.1-2018

6.6 Sound Systems and Intercom Systems for Emergency Purposes (BCA E4.9)

A Sound System and Intercom System is required in accordance with AS1670.4-2018 and BCA Clause E4.9

6.7 Fire Control Centre (BCA E1.8)

As the building has an effective height of greater than 25m, a fire control centre is required.

The fire control room is required to comply with Spec E1.8. Currently, the fire control room is not indicated at the front entrance of the building.

Where this is not addressed through design, a performance solution will be required

6.8 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 Detection and Alarm System in accordance with the requirements of BCA Spec E2.2a and AS 1670.1-2018
- Automatic Pressurisation to Fire Isolated Exits in accordance with the requirements of AS/NZS 1668.1-2015
- The commercial, storage, and recreational portions must be provided with a zone pressurisation system between vertically separated fire compartments in accordance with AS 1668.1
- Smoke Exhaust System to the Recreation Centre

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.

The removal of Zone Smoke Control System to the commercial tenancies will need to be addressed as part of the Fire Engineered Performance Solution

Furthermore. The rationalisation of smoke exhaust system to the recreational centre will need to be addressed through a Performance Solution

6.9 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, E3.7, E3.9 and E3.10 of the BCA.
- Stretcher facilities are to be provided within the lifts with minimum dimensions of 600mm wide, 2000mm long and 1400mm high.
- At least two emergency lifts with stretcher facilities in accordance with part E3.4 of the BCA. The two emergency lifts shall be located in separate shafts. These lifts are to serve all storeys that are served by passenger lifts.
- Be provided with the following: -
 - (i) A handrail in accordance with AS 1735.12;
 - (ii) Minimum internal floor dimensions as specified in Table E3.6b of the BCA i.e. 1,400mm x 1,600mm;
 - (iii) Minimum clear door opening complying with AS 1735.12;
 - (iv) Passenger protection system complying with AS 1735.12;
 - (v) Have a set of buttons for operating the lift located at heights above level complying with AS 1735.12;
 - (vi) Lighting in accordance with AS 1735.12;
 - (vii) Automatic audible information within the lift car to identify the level each time the car stops; and
 - (viii) Audible and visual indication at each lift landing to indicate the arrival of the lift car.

6.10 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)

Commercial

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

Apartments

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

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

Each apartment is required to be provided with the following:

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

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

Schools / Education

Separate facilities for staff and students are required to be provided; this also includes the provision of a unisex disabled facility for both staff and students separately.

Bathroom Construction

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

7.2 Floor Wastes (BCA F1.11)

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

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

7.3 Light and Ventilation (BCA Part F4)

Class 2

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

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

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

Class 6, 7, & 9

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

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

In an early childhood centre, the sills of 50% of windows in children's rooms must be located not more than 500 mm above the floor level.

7.4 Sound Transmission and Insulation (BCA F5)

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

Location	Notes	Sound Insulation Requirement
Walls separating habitable rooms		$R_w + C_{tr} \geq 50$
Walls separating habitable room and kitchen or bathroom	Wall must be of Discontinuous Construction	$R_w + C_{tr} \geq 50$
Floor separating habitable rooms	Impact isolation required	$R_w + C_{tr} \geq 50$ $L_{n,w} + C_i \leq 62$
Duct, soil, waste or water supply pipe, including pipes that is located in a floor or wall cavity, serves or passes through more than one room	Adjacent habitable room or Adjacent non-habitable room	$R_w + C_{tr} \geq 40$ or $R_w + C_{tr} \geq 25$
Door to habitable room		$R_w \geq 30$

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

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

7.5 Weatherproofing of External Walls (BCA FP1.4)

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

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

A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause—

- a) unhealthy or dangerous conditions, or loss of amenity for occupants; and*
- b) undue dampness or deterioration of building elements.*

8.0 ENERGY EFFICIENCY

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

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

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

1. The building can comply with the deemed-to-satisfy provisions of the BCA, relating to the following areas:
 - Building Fabric
 - Glazing
 - Building Sealing
 - Air Conditioning & Ventilation Systems
 - Artificial Lighting & Power
 - Hot Water Supply
2. The building can be verified against a reference building as per Verification Method JV3. This requires that the proposed building and its services be shown to have an annual energy consumption of equal or less than the reference building which has been modelled as per the requirements of Part J of the BCA.

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

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

The proposed site will be located in a **climate zone 5**.

Appendix A - Design Documentation

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

Drawing No.	Drawing Title	Date	Drawn By	Rev
DA1001	INDICATIVE REFERENCE SCHEME - BASEMENT 2 PLAN	29.08.2019	Tzannes	12
DA1002	INDICATIVE REFERENCE SCHEME - BASEMENT 1 PLAN	29.08.2019	Tzannes	11
DA1003	INDICATIVE REFERENCE SCHEME – LEVEL 1 PODIUM MID LEVEL 1 JONES LEVEL 1 PLAN	29.08.2019	Tzannes	13
DA1004	INDICATIVE REFERENCE SCHEME – WATTLE LEVEL 2 FIG LEVEL 2 MID LEVEL 2 JONES LEVEL 2 PLAN	29.08.2019	Tzannes	11
DA1005	INDICATIVE REFERENCE SCHEME – WATTLE LEVEL 3 FIG LEVEL 3 MID LEVEL 3 JONES LEVEL 2 MEZZ PLAN	29.08.2019	Tzannes	11
DA1006	INDICATIVE REFERENCE SCHEME – WATTLE LEVEL 4 FIG LEVEL 4 MID LEVEL 4 JONES LEVEL 3	29.08.2019	Tzannes	12
DA1007	INDICATIVE REFERENCE SCHEME – WATTLE LEVEL 5 FIG LEVEL 5 MID LEVEL 5 JONES LEVEL 4	29.08.2019	Tzannes	10
DA1008	INDICATIVE REFERENCE SCHEME – WATTLE LEVEL 6 FIG LEVEL 6 MID LEVEL 6 JONES LEVEL 5	29.08.2019	Tzannes	9
DA1009	INDICATIVE REFERENCE SCHEME – WATTLE LEVEL 7 FIG LEVEL 6 MID LEVEL 7 JONES LEVEL 6	29.08.2019	Tzannes	11
DA1010	INDICATIVE REFERENCE SCHEME – WATTLE ROOF FIG LEVEL 7 MID ROOF JONES LEVEL 7	29.08.2019	Tzannes	8
DA2001	INDICATIVE REFERENCE SCHEME - ELEVATION - JONES STREET	29.08.2019	Tzannes	14
DA2002	INDICATIVE REFERENCE SCHEME - ELEVATION - FIG STREET	29.08.2019	Tzannes	11
DA2003	INDICATIVE REFERENCE SCHEME - ELEVATION - WATTLE STREET	29.08.2019	Tzannes	11
DA2004	INDICATIVE REFERENCE SCHEME - ELEVATION - LIGHT RAIL	29.08.2019	Tzannes	10

Appendix B - Draft Fire Safety Schedule

Essential Fire Safety Measures		Standard of Performance
1.	Access Panels, Doors and Hoppers	BCA 2019 Clause C3.13
2.	Automatic Fail Safe Devices	BCA 2019 Clause D2.19 & D2.21
3.	Automatic Fire Detection and Alarm System	BCA 2019 Spec. E2.2a & AS 1670.1 – 2018, AS/NZS 1668.1 - 2015
4.	Automatic Fire Suppression System	BCA 2019 Spec. E1.5 & AS 2118.1 – 2017, AS 2118.6 – 2012 (Combined sprinkler & hydrant)
5.	Building Occupant Warning System	BCA 2019 Spec. E1.5, BCA 2019 Spec. E2.2a & AS 1670.1 – 2018 – Clause 3.22
6.	Emergency Lifts	BCA 2019 Clause E3.4 & AS 1735.2 – 2001
7.	Emergency Lighting	BCA 2019 Clause E4.2, E4.4 & AS/NZS 2293.1 – 2018 Amdt 1 & 2
8.	EWIS (Sound Systems and Intercom Systems for Emergency Purpose)	BCA 2019 Clause E4.9 & AS 1670.4 - 2018 & AS 4428.4-2004
9.	Emergency Evacuation Plan	AS 3745 – 2002
10.	Exit Signs	BCA 2019 Clauses E4.5, NSW E4.6 & E4.8 and AS/NZS 2293.1 – 2018 Amdt 1 & 2
11.	Fire Control Centres and Rooms	BCA 2019 Spec. E1.8
12.	Fire Blankets	AS 2444 – 2001
13.	Fire Dampers	BCA 2019 Clause C3.15, AS/NZS 1668.1 – 2015 & AS 1682.1&2 - 1990
14.	Fire Doors	BCA 2019 Clause C3.2, C3.4, C3.5, C3.6, C3.7 & C3.8, Spec C3.4 and AS 1905.1 – 2015
15.	Fire Hose Reels	BCA 2019 Clause E1.4 & AS 2441 – 2005 Amdt 1
16.	Fire Hydrant System	BCA 2019 Clause E1.3 & AS 2419.1 – 2005 Amdt 1
17.	Fire Seals, Collars	BCA 2019 Clause C3.15, C3.16 & AS 1530.4 – 2014
18.	Fire Shutters	BCA 2019 Spec. C3.4 & AS 1905.2 – 2005
19.	Fire Windows	BCA 2019 Spec. C3.4
20.	Mechanical Air Handling System	BCA 2019 Clause E2.2, AS/NZS 1668.1 – 2015
21.	Paths of Travel	EP&A Reg 2000 Clause 186
22.	Portable Fire Extinguishers	BCA 2019 Clause E1.6 & AS 2444 – 2001
23.	Pressurising Systems	BCA 2019 Clause E2.2 & AS/NZS 1668.1 – 2015
24.	Required Exit Doors (power operated)	BCA 2019 Clause D2.19
25.	Smoke Hazard Management System	BCA 2019 Part E2 & AS/NZS 1668.1 – 2015
26.	Wall-Wetting Sprinkler and Drencher Systems	BCA 2019 Clause C3.4 & AS 2118.2 – 2010
27.	Warning and Operational Signs	EP&A Reg 2000 Clause 183, BCA 2019 Clause C3.6, D2.23, E3.3
28.	Fire Engineered Performance Solution	To meet the relevant Performance Requirements of BCA 2019

Appendix C- Fire Resistance Levels

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

Table 3 TYPE A CONSTRUCTION: FRL OF BUILDING ELEMENTS

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

Table 3.9 REQUIREMENTS FOR CARPARKS

Building element	FRL (not less than) adequacy/Integrity/Insulation ESA/M (not greater than)	Structural
Wall		
(a) <i>external wall</i>		
(i) less than 3 m from a <i>fire-source feature</i> to which it is exposed:		
<i>Loadbearing</i>	60/60/60	
<i>Non-loadbearing</i>	–/–/60	
(ii) 3 m or more from a <i>fire-source feature</i> to which it is exposed	–/–/–	
(b) <i>internal wall</i>		
(i) <i>loadbearing</i> , other than one supporting only the roof (not used for carparking)	60/–/–	
(ii) supporting only the roof (not used for carparking)	–/–/–	
(iii) <i>non-loadbearing</i>	–/–/–	
(c) <i>fire wall</i>		
(i) from the direction used as a <i>carpark</i>	60/60/60	
(ii) from the direction not used as a <i>carpark</i>	as required by Table 3	
Column		
(a) supporting only the roof (not used for carparking) and 3 m or more from a <i>fire-source feature</i> to which it is exposed	–/–/–	
(b) steel column, other than one covered by (a) and one that does not support a part of a building that is not used as a <i>carpark</i>	60/–/– or 26 m ² /tonne	
(c) any other column not covered by (a) or (b)	60/–/–	
Beam		
(a) steel floor beam in continuous contact with a concrete floor slab	60/–/– or 30 m ² /tonne	
(b) any other beam	60/–/–	
Fire-resisting lift and stair shaft (within the <i>carpark</i> only)	60/60/60	
Floor slab and vehicle ramp	60/60/60	
Roof (not used for carparking)	–/–/–	
Notes:	<ol style="list-style-type: none"> 1. ESA/M means the ratio of exposed surface area to mass per unit length. 2. Refer to Specification E1.5 for special requirements for a sprinkler system in a <i>carpark</i> complying with Table 3.9 and located within a multi-classified building. 	