



A Bureau Veritas Group Company

PRELIMINARY BUILDING CODE OF AUSTRALIA COMPLIANCE REPORT

Gran Central Residential Development

**134-142 Parramatta Road, 26-38 Good
Street & 59-61 Cowper Street, Granville**

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Executive Summary

McKenzie Group Consulting was engaged by Starryland Australia C/- PDS Group to conduct a BCA assessment of the proposed residential building located at 134-142 Parramatta Road, 26-38 Good Street & 59-61 Cowper Street, Granville.

Compliance Summary

As Private Certifiers, we have reviewed architectural design documents prepared by PBD Architects (refer Appendix A) for compliance with the Building Code of Australia 2019 and the Disability Access to Premises (Buildings) Standard 2010.

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

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.	Fire Resistance Separation between façade, fire rated slab and fire rated walls	C1.1, Spec C1.1	CP1, CP2
2.	FRL requirements It is proposed to rationalise the FRL's under a fire engineered solution in the following instances: - The required FRL's for the retail element of the building are proposed to be rationalised and reduced to under the 180 minutes required to 120 minutes. This includes the void connection entry and lift lobbies at ground and Level 1 and different classifications between storeys at Level 1/Ground - Different classifications situated one above the other in adjoining storeys at Level 1 and Ground can be reduced to under the 180 minutes required to 120 minutes.	C1.1, C2.8, C2.9	EP2.2
3.	Travel distances Refer to Section 4.2 of this report for the nominated egress travel distance departures to be addressed through performance based solution.	D1.4, D1.5	DP4, DP5, EP2.2
4.	Travel via a Fire-Isolated Exits Multiple exits are noted to discharge into a common fire isolated passageway, in lieu of their own fire isolated passageways. In addition, the fire isolated exits and passageways discharge to a point with a building which is not open for at least 2/3 of the perimeter	D1.7	DP4
5.	Fire hydrants The following technical non-compliances with E1.3 of the BCA and AS2419.1 to be assessed:	E1.3	EP1.5

- Ground level fire hydrants are located at intermediate levels in the stairs (and not therefore on the same storey they are serving in accordance with AS241.91) to stairs facing Cowper St.
- fire hydrant pump room is located at the basement;
- the booster is located to the Parramatta Rd frontage which would not be considered the main entrance to the building.

6	Fire hydrants The following technical departures are to be addressed by the fire engineer in a performance based solution	E1.3	EP1.5
	• It is noted that a combined hydrant and sprinkler system is proposed to be installed. The nature of the scissor stairways does not permit the hydrant riser to be located within a single stairway compartment and passes through multiple compartments. • It is proposed to design the combined system using AS2118.1-2017 in lieu of AS2118.1-1999 as required by AS2118.6-2012		
7	Swinging Door - Horizontal Exits Throughout residential floors, fire rated doors between the carpark and residential compartments are relied upon as horizontal exits in both direction but only swings in a single direction. The swing of the doorway must be in both directions or alternatively addressed in a performance solution by an accredited fire engineer.	D2.20	DP4 & EP2.2

The submission for Construction Certificate will need to include verification from a suitably accredited fire engineer for the above. The fire engineered solution relating to EP2.2 & EP1.5 will need to be approved after consultation with the NSW Fire Brigade as part of the Construction Certificate process.

It also further noted that the following performance solutions for health amenities issues will need to be sought:-

Health & Amenities Items			
1.	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	F1.0	FP1.4

Key elements of design

The assessment of the design documentation has revealed that the following key information is required in order to ensure BCA compliance within the development:-

1. Details of the compartment walls and floors separating different classifications to be provided.
2. Communal areas that are required to be separated from the bounding corridor noted on:

- Level 2 (this is open to the bounding corridor at the moment and is required to be fire-separated in bounding construction)
- Level 3 – the top of bounding corridor (void) to Level 2 below should be clarified that it is fire-separated.
- Ground/Level 1 entry and lift lobbies (x2) to be fire-separated as a separation of classification with 180/180/ 180. (Please note that this FRL may be able to be rationalised through fire engineering)

Clarification/redesign as appropriate to be provided for the above.

3. Alternative exit stairs amalgamate at ground (and do not discharge directly to open space at Ground level) for fire –isolated stairs between gridlines 6-7/G-I and between gridlines D/F & 7/8) Exits should be separated, discharge direct by their own fire-isolated stair enclosure or via a fire-isolated passageway to open space and should discharge as reasonably as practical from each other. Details to be provided.
4. Ground floor Class 7a carparking area - where security gates are in place an access door for egress will be required. This to be indicated on revised documentation and further comments on compliance may come about dependant on location
5. Redesign/clarification to be provided for the following instances for access to 2 exits
 - Indoor chamber/substation exits <9m apart therefore no access to alternative exits (ground)

Where redesign can-not incorporate these changes a fire engineered solution meeting the performance provisions of the BCA may be applicable.

6. Exit widths to the outdoor communal area at Level 4 are not compliant with the prescriptive provisions of the BCA due to large communal areas. It is therefore recommended that a redefinition of this area to confirm that the width of the stairs provided will provide compliance due to the amount of terrace space that is useable (i.e. landscaping and features will reduce this area and therefore population numbers should decrease considerably).
7. Please provide fire services drawings showing fire services throughout the building, including hydrants, hose reels, sprinklers, emergency lighting, exit signage & EWIS as appropriate. Any variations to compliance with the standards required by the BCA to be identified for inclusion with any fire engineered solution. Concurrence with MFB may be required.
8. Hydrant coverage is not provided in accordance with AS2419.1 in the following areas:
 - 1) Basement carparking : Far NE corner does not appear to have coverage
 - 2) Ground:
 - fire hydrant coverage to all retail to Good St & Parramatta Road, BOH areas, vehicular ramp and NE corner of carpark does not appear to be provided
 - Fire hydrant coverage to Toilets amenities fronting Parramatta Rd.
 - 3) Level 1:
 - Fire hydrants do not have coverage to top NE corner of carpark
 - Fire hydrants do not have coverage to all residential units 101 & 102
 - 4) Level 2:
 - Coverage to Units 209 & 210 & 201 & parts of 202 & associated corridors not able to be achieved in accordance with AS2419.1
 - Coverage not achieved to top NE corner of carpark and top half of vehicular ramp
 - 5) Level 3:
 - Coverage to Unit 301 & 302 & 310 & parts of 309 & associated corridors not able to be achieved in accordance with AS2419.1
 - Coverage to NE corner of carpark not achieved
 - 6) Level 4: Coverage to Unit 414 not able to be achieved in accordance with AS2419.1

- 7) Level 5: Coverage to Unit 514 not able to be achieved in accordance with AS2419.1
- 8) Level 6-21: Coverage to Unit 14 not able to be achieved in accordance with AS2419.1
- 9) Level 22-23: Coverage to Unit 2212, 2312 not able to be achieved in accordance with AS2419.1
- 10) Level 24: Coverage to Unit 2406 not able to be achieved in accordance with AS2419.1

Protection to the booster provision at Parramatta Road to be provided in accordance with AS2419.1 and E1.3 of the BCA.

9. Fire hose reel coverage in the following areas does not appear to be provided in accordance with E1.4 and AS 2441:
 - 1) Basement carparking. From fhr to furthest point of NE corner (between gridlines I/3)
 - 2) Ground
 - FHR coverage and fire hydrant coverage to all retail to Good St & Parramatta Rod, vehicular ramp and NE corner of carpark does not appear to be provided
 - Fire hose reel coverage to Toilets amenities fronting Parramatta Rd to be clarified
 - FHR greater than 4m adjacent to exit stair in carpark facing Retail on Cowper St.
 - 3) Level 1:
 - No FHR coverage to parts of residential areas 102 and the whole of units 101, 110, 109 and associated bounding corridor
 - No FHR coverage to vehicular ramp and NE corner of carpark
 - 4) Level 2:
 - No FHR coverage to parts of residential areas 202 and to the whole of units 201, 210, 209 and associated bounding corridor.
 - No FHR coverage to the top of vehicular ramp and carpark at NE corner
 - 5) Level 3:
 - Coverage is not achieved to units 301, 309 & 310, to parts of unit 302
 - No FHR coverage to NE corner of carpark
 - 6) Level 4: The last room of unit 414 does not achieve coverage in accordance with AS 2441
 - 7) Level 5: The last room of unit 514 does not achieve coverage in accordance with AS 2441
 - 8) Level 6-21: The last room of unit 14 does not achieve coverage in accordance with AS 2441
 - 9) Level 22-23: The last room of units 2212, 2312 does not achieve coverage in accordance with AS 2441
 - 10) Level 24: The last room of unit 2406 does not achieve coverage in accordance with AS 2441

Redesign of the above to be provided.

10. Full details of the type of retail being provided (shop/café/restaurant), types of sanitary facilities, including layouts, ambulant facilities and sexes are required to be indicated on the drawings to provide further assessment.
11. Ambulant sanitary provisions do not appear to have been provided. Design for this to be included.
12. Elevations and calculations by the architect to be provided to show compliance with natural light/ventilation provisions.

The assessment of the design documentation has also revealed that the following additional information is required in order to assess BCA compliance prior to the issue of the Construction Certificate.

1. Please provide details of the finishes to floors, walls and ceilings.
2. Details of the non-combustible building elements and ancillary elements to be provided in accordance with C1.9 and C1.14 of the BCA
3. Details of the public corridors smoke-proof walls construction complying with Clause 2 of Specification C2.5 to be provided.
4. Clarification of separation of rising and descending stairs construction. Details to be provided in Construction Certificate documentation.
5. Details of the exits discharges to open space where it is at a different level to the public road it is connected to, to be provided in accordance with D1.10.
6. Full details of proposed stairs, including construction materials, handrails, balustrades, and landings slip resistance to be provided.
7. There is a proposed security gate to main exit doors to Cowper St. Details of how this is to comply with this clause and D2.21 to be provided in Construction Certificate documentation.
8. Details to be provided of door latching devices to comply with D2.21 of the BCA, and power-operated or sliding door compliance with D2.19 of the BCA.
9. Re-entry from fire-isolated exits in accordance with D2.22 of the BCA details to be provided.
- 10 Details of the protection to windows must be provided with protection where the floor below the window is 2m or more above the surface beneath to a bedroom in a Class 2 building.
- 11 Details of thresholds throughout the buildings to be provided.
- 12 Details to be provided to show compliance with Clause 11 AS 1428.1 for stairways.
- 13 Details of accessible braille and tactile signage complying with Specification D3.6 and clause D3.6 to be provided.
- 14 Details of the portable fire extinguishers in accordance with E1.6 of the BCA to be provided.
- 15 Details of lift compliances with Part E of the BCA.
- 16 Stormwater details to be provided for compliance with AS/NZS 3500.3
- 17 A fire control centre is required. Details are required to be provided for review for compliance with E1.8.
- 18 Details to compliance with the sound insulation provisions of Part F5 to be provided.
- 19 Details of the separation of the public bounding corridors exceeding 40m in length being divided into intervals of not more than 40m by smoke proof walls complying with Clause 2 of BCA Specification C2.5 to be provided.
- 20 Details of compliance with energy provisions of the BCA for the building fabric, glazing, building sealing, air conditioning & ventilation systems, artificial lighting & power and hot water supply.
- 21 Details of condensation management for external walls and exhaust systems to the Class 2 part to be provided for compliance with F6.4.
- 22 Confirmation the Outdoor Communal Area on Level 4 is for use only by the residents and no public access will be provided.
- 23 Ground – garbage room is not provided with an alternative exit. Where a swing door is provided to the perimeter leading to the driveway, protection of opening is required.

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.

Prepared by,

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2.1 Introduction

The proposed development comprises of the erection of a twenty four (24) storey residential building with communal facilities associated ground floor retail facilities, basement carparking and additional carparking to Level 3.

The site is located at 132-142 Parramatta Road, 26-38 Good Street & 59-61 Cowper Street, Granville.

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.

2.2 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.

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

2.3 PRELIMINARIES

2.4 Building Assessment Data

Summary of Construction Determination: -

Part of Project	Building
Classification	2, 6, 7a, 7b
Number of Storeys	25
Rise In Storeys	24
Type of Construction	A
Effective Height (m)	78.9m

Part of Project	BCA Classification	Approx. Floor Area (m ²)	Approximate Volume (m ³)	Assumed Population
Basement	7a	3468m ²	Note 3	114
Ground	5, 6, 7a, 7b	3551m ²	Note 3	480
Level 1	2, 7a, 7b	3425 m ²	Note 3	105
Level 2	2, 7a, 7b	3575 m ²	Note 3	23
Level 3	2, 7a, 7b	3468 m ²	Note 3	23
Level 4	2	1529 m ²	Note 3	120
Level 4 Outdoor occupiable area	2	1123m ²	-	1123
Level 5	2	1566 m ²	Note 3	<200
Level 6-21	2	1566 m ²	Note 5	<200
Level 22-23	2	1434 m ²	Note 3	<200
Level 24	2	830 m ²	Note 3	<200

Notes:

1. The above areas do not include circulation spaces, amenities and other ancillary areas not relevant to population figures.
2. Population numbers have been based on clause D1.13 of the BCA
3. The architect to confirm volumes in the building.
4. Outdoor occupiable areas have been included in population/area figures

2.5 Structural Provisions (BCA B1)

Any new structural works are to comply with the applicable requirements of BCA Part B1, including the new verification method BV2, and AS/NZS 1170.0-2002, AS/NZS 1170-1-2002, AS/NZS1170.2-2011.

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

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

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 buildings, the building is required to be Type A Construction in accordance with Table 3 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 residential portions of 120 minutes,
- Separation between the residential use and retail portions of 180 minutes. It is also noted that separation would be required at entry/lift lobbies through the void connection. Please note it is proposed to rationalise this FRL under a fire engineered solution.

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

Type of Construction - A		
Class 6 building	Max floor area -	5,000 m ²
	Max volume -	30,000 m ³

3.2 Fire Resistance (BCA C1.1, C2.8, C2.9)

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.

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

- Lift motor rooms
- Electricity Supply,
- Hydrant Pump Rooms,
- Sprinkler Pump Rooms

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

If a building has parts of different classifications in the same storey located alongside one another each building element in that storey should have the higher FRL prescribed in Specification C1.1 or the parts must be separated in that storey by a fire wall with the higher FRL. This would occur in the following areas:

- Ground: Fire wall between retail and residential. Please also note that residential lift and entrance lobby needs to be separated at Ground and level 1 (entry lobby is connected via a void for these two levels) with 180/180/180 construction. This may be able to be rationalised through fire engineering to 120 minutes;
- Level 1: Fire wall between residential and carparking should be considered;
- Level 2 Fire wall between residential and carparking should be considered;
- Level 3 Fire wall between residential and carparking should be considered'

Where parts of a different classification are situated one above the other in adjoining storeys they must be separated by a floor between the adjoining parts not less than that prescribed in Specification C1.1 for the classification for the **lower** storey in accordance with clause C2.9. This would occur at the following locations:

- Ground level Class 6 & Class 2 120 mins (Class 7a below)
- Level 1 Class 7a & Class 2 = 180 mins (Class 6 lower storey)
- Level 2 = Class 7a & Class 2 = 120 minutes
- Level 3 = Class 7a & Class 2 = 120 minutes
- Level 4; Class 2 (outdoor occupiable area) 120/120/120 as carparking below
- Level 5- 24 Residential (Level 5 should achieve 90/90/90 as residential below)

It maybe possible to rationalise the higher FRL required at Level 1 under a fire engineered solution.

Compartmentation drawings to be provided to show the different FRLs for fire walls and floor compartmentation.

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

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

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

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

The buildings different classifications would necessitate fire wall construction to be provided. Detailed drawings should be provided and protection of openings would be required as above.

3.4 Bounding Construction: Class 2 buildings (BCA C3.10)

A doorway in a Class 2 building must be protected if it provides access from a sole-occupancy unit to a public corridor, room not within a sole-occupancy unit, another sole-occupancy unit.

A door in a Class 2 building must be protected if it provides access from a room not within a sole-occupancy unit to a public corridor.

Protection must be a self-closing fire door -/60/30 FRL

It is noted that there are communal areas that are required to be separated from the bounding corridor noted on:

- Level 2 (this is open to the bounding corridor at the moment and is required to be fire-separated in bounding construction)
- Level 3 – the top of bounding corridor (void) to Level 2 below should be clarified that it is fire-separated.
- Ground/Level 1 entry and lift lobbies (x2) to be fire-separated as a separation of classification with 180/180/ 180. Please note that this FRL may be able to be rationalised through fire engineering.

Clarification/redesign as appropriate to be provided for the above.

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

The fire hazard properties of fixed surface linings and mechanical ductwork will also need to be addressed within the detailed documentation phase pursuant to Specification C1.10 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, 2, 3 to the Class 2 part (except that the fire-isolated exits wall & ceiling linings should achieve Material Group 1)
- c) Wall and Ceiling Linings – Material Group No. 1, 2, 3 to the Class 6 part (except that the fire control rooms for wall & ceiling linings should achieve Material Group 1)
- d) Fire control rooms (except for where covered under c) above) which are subject to Specification E1.8 and fire-isolated exits, other than a sarking type material, should have a Spread of Flame Index of not more than 0 and Smoke-Developed Index of not more than 2.

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 in accordance with AS 5637.1

It is also noted that there are occupiable outdoor areas (i.e. communal terrace at Level 4). These are required to comply with the following compliance for fire hazard properties:-

Subject to the below, a lining, material or assembly in an occupiable outdoor areas must comply with C1.10 as for an internal element. The following fire hazard properties of a lining, material or assembly in an occupiable outdoor area are not required to comply with C1.10:-

- (i) Average specific extinction area
- (ii) Smoke-developed index
- (iii) Smoke development rate
- (iv) Smoke growth rate index

External Wall Cladding

As the building is of Type A construction the external walls and common walls (including all components incorporated in them including the façade covering, framing and insulation), the flooring and floor framing of lift pits and non-loadbearing internal walls are required to be fire-resisting, must be non-combustible.

A lift, ventilating, pipe, garbage or similar shaft that is non-loadbearing must be of non-combustible material construction.

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) Sarking-type materials that do not exceed 1 mm in thickness and have a Flammability Index not greater than 5.
- g) 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 specifies that ancillary elements may not 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.
- i) An awning, sunshade, canopy, blind or shading hood other than one provided under a) should not serve an exit, where it would render the exits unusable in a fire and should-
 - 1) Meet the relevant requirements under Table 4 of Specification C1.10 as for an internal element; and
 - 2) Serves at storey at ground level or immediately above a storey at ground level
- j) A part of a security, intercom or announcement system;
- k) Wiring
- l) A paint, lacquer or a similar finish

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

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

Public corridors exceeding 40m in length to be divided into intervals of not more than 40m by smoke proof walls complying with Clause 2 of BCA Specification C2.5. These have yet to be detailed on the drawing provided.

4.0 EGRESS PROVISIONS

4.1 Provisions for Escape (BCA D1)

The egress provisions from the proposed building is provided by external perimeter doorways and internal stairs.

Other detailing issues that will need to be addressed include:

- Door Hardware
- Exit door operation
- Details of the egress provisions to the Road.

Throughout residential floors, fire rated doors between the carpark and residential compartments are relied upon as horizontal exits in both direction but only swings in a single direction.

The swing of the doorway must be in both directions or alternatively addressed in a performance solution by an accredited fire engineer.

4.2 Exit Travel Distances (BCA D1.2, D1.4 & D1.5)

In buildings of effective height of over 25m no less than 2 exits must be provided. Without passing through another sole-occupancy every occupant of a storey or part of storey must have access to at least 2 exits as required. Redesign/clarification to be provided for the following instances:

Access to 2 exits to be provided as building over 25m in effective height:

- Access to 2 exits not provided to fire pump room and fire tank room as directly off fire stair (basement)
- Retail (ground) to Parramatta Rd
- Indoor chamber/substation exits <9m apart therefore no access to alternative exits (ground)
- Clarification of pedestrian path of egress from MRV garbage collection / loading bay at ground area (need to access alternative through to carpark and no path defined through vehicular way) (ground)

Where redesign can not incorporate these changes a fire engineered solution meeting the performance provisions of the BCA may be applicable.

The travel distances to exits should not exceed:

Class 2 & 3

- 6m from an exit or from a point of choice from the entrance doorway of a sole occupancy unit
- 20m from a single exit at the level of egress to a road or open space
- No point on the floor of a room which is not in a sole-occupancy unit must be more than 20m from an exit or from a point at which travel in different directions to 2 exits is available.
- Alternate exits not more than 45m apart

Class 5, 6, 7a

- 20m to a single exit or point of choice(POC) 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 not be satisfied in the following areas. A performance solution would be required to justify the following:

- 1) Travel distances greater than 20m to a point of choice to the carpark/retail:
 - Ground – garbage room is not provided with an alternative exit. Where a swing door is provided to the perimeter leading to the driveway, protection of opening is required.
 - Please note that where security gates are in place an access door for egress will be required. This to be indicated on revised documentation and further comments on compliance may come about dependant on location
 - Level 3: Greater than 20m to a point of choice from the vehicular ramp (20.6m)
 - Level 4: Up to 25m to a point of choice in lieu of 20m from the outdoor occupiable area
- 2) Travel distances greater than 40m to an exit from the carpark
 - Basement carparking greater than 40m to an exit (55m)
 - Ground: Greater than 40m to an exit from the male toilets(42.5m)
 - Level 1 - 3: Greater than 40m (52m) within the carpark
 - Level 4: Greater than 40m to an exit to the outdoor occupiable outdoor area (52m)
- 3) Travel distances to the residential where the entrance doorway of any sole-occupancy unit is more than 6m from an exit or from a point of choice to alternative exits:

Tower B

 - Throughout Residential Levels: Up to 11.5m to a point of choice in lieu of 6m from Unit Stack 14 Throughout
- 4) Greater than 45 m (residential) or greater than 60m (carparking/retail) between exits:
 - Basement – travel distance between exits through POC 97.9m (>60m) at basement caparking (worst case)
 - Ground: travel distance between exits greater than 60m (64.2m) from Good st to Cowper St (ground)
 - Level 1: Greater than 45m & 60m (93.1m) between exits (residential goes through carpark for secondary exit)
 - Level 2: Greater than 45m & 60m (93.6m) between exits (residential goes through carpark for secondary exit)

- Level 3: Greater than 45m & 60m (93.9m) between exits (residential goes through carpark for secondary exit)

4.3 Swinging doors (BCA D2.20)

A swinging door in a required exit or forming part of a required exit should open in the direction of egress. Please note the following doors do not open in the direction of egress:

- Ground level Retail door do not open in direction of egress to both Parramatta rd and Cowper St.
- Ground level Retail units facing Cowper St
- Ground level Building Managers Office

It is considered that where redesign can-not occur that the above can be addressed in a fire engineered 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).

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).

The following non-compliances with adequate egress width were noted in the building and should be redesigned:

- a) Ground 345m² retail tenancy only has access to one exit and the exit width door width at 1m would not be sufficient for the persons needed to exit there – 1.250m would be required.
- b) Alternative exit stairs amalgamate at ground (and do not discharge directly to open space) for fire – isolated stairs between gridlines 6-7/G-I and between gridlines D/F & 7/8)

Additional egress width would be needed for expected occupancy numbers but this area will need to be redesigned due to discharge of fire stairs not being direct to open space so excessive aggregated exit width is likely to be resolved in redesign.

- c) Exit widths to the occupiable outdoor area at Level 4 are not compliant with the prescriptive provisions of the BCA due to large communal outdoors areas. Please noted that for occupiable outdoor populations would exceed 1123 persons and would require 11 metres of egress width in themselves, whereas 4 metres has been provided to include for the normal residences. It is expected with landscaping and further detailing of outdoor occupiable area that this will be reduced.

It is therefore recommended that this area is more defined so that the actual amount of terrace space that is useable is indicated (i.e. landscaping and features will reduce this area and therefore population numbers considerably).

Occupiable outdoor area is defined as a space on a roof, balcony or similar part of a building-

- (a) That is open to the sky; and
- (b) To which access is provided, other than access only for maintenance; and
- (c) That is not open space or directly connected with open space;

4.5 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.

Stairs do not discharge directly to open space at Ground level for the five fire –isolated stairs between gridlines 6-7/G-I and between gridlines D/F & 7/8).

Furthermore two sets of alternative exit stairs amalgamate at ground. Exits should be separated and should discharge as reasonably as practical from each other.

A redesign to this area is required.

4.6 Fire Stair Re-Entry (BCA D2.22)

The doors of a fire isolated exit must not be locked from the inside so as to allow provision for fire stair re-entry in fire isolated exits serving any storey above any effective height of 25m.

The requirement for doors to remain unlocked do not apply to a door fitted with a fail-safe device that automatically unlocks the door upon activation of a fire alarm and –

- a) On at least every fourth storey the doors are not able to be locked and a sign is fixed on such doors stating that re-entry is available; or

An intercommunication system, or an audible or visual alarm system operated from within the enclosure is provided, and a sign is fixed adjacent to such doors explaining its purpose and method of operation.

4.7 Slip Resistance

There are requirements in BCA 2019 for slip resistance of stairway treads and ramp surfaces. The requirements are as follows:

Table D2.14 SLIP-RESISTANCE CLASSIFICATION

<u>Application</u>	<u>Surface conditions</u>	
	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

4.8 Openable Windows in bedrooms (BCA D2.24)

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

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

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

The device or screen required must –

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

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

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:-

- AS1428.1-2001 General Requirements for Access – New Building Work;
- AS1428.4.1 -2009 Tactile Ground Surface Indicators
- AS2890.0-2009 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 sole occupancy units and to the entrance door of all sole occupancy units on that floor, and to at least one type of each common facility, such as gyms, shops, laundries (shared), etc.
- Where an AS1428.1 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.
- The building must provide access to and within all areas normally used by the occupants to the Class 5, 6 and 7 parts.
- Access to be provided to any level containing accessible carparking.

Shops (Class 6 buildings)

To and within all areas normally used by the occupants

Car parks (Class 7a buildings)

To and within any level containing accessible car parking spaces.

General: Access to all storage cages would be an issue as there is not enough access length of approach to the entrance doors so does not comply. D3.4 exemption may be applicable.

5.2 Provision for Access to Buildings

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

- Via the principal 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.

Detailed plans to be provided showing accessways from the main points of a pedestrian entry at the allotment boundary to the principal entries of the building

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

Within the building the following are required;

- Door circulation space as per AS1428.1;
- 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)
- Details to be provided to show compliance with Clause 11 and 11(f) & (g) of AS 1428.1 for stairways.

The design would generally comply with the prescriptive provisions of the BCA and AS1428.1-2009.

- Every passenger lift must comply with E3.6. Details to be provided at Construction Certificate stage.
- Details to be provided to show compliance with Clause 11 AS 1428.1 for stairways.
- Detailed layouts of walkways and ramps in accordance with AS1428.1 to be provided in detailed documentation stage.
- accessways in residential corridors will be required to have smoke doors which will affect the line of site. Passing spaces are required to be provided at max 20m intervals and these have not been provided in accordance with AS1428.1 (not adequate width of 1.8m)

5.4 Accessible carparking (BCA D3.5)

Accessible carparking spaces area required to be provided to a carparking area on the same allotment as the buildings required to be accessible. These need to comply with AS/NZS 2890.6.

The provision of accessible carparking spaces is required as below:

- Class 6 - 1 space for every 50 carparking spaces or part thereof

A number of accessible carparking spaces have been provided. Therefore the building is able to comply.

5.5 Tactile Indicators (BCA D3.8)

Tactile indicators are required to be provided to warn occupants of all 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 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
Retail	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.
Residential apartments	Where sanitary compartments are provided in common areas, not less than 1.

Ambulant Facilities

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

Accessible and ambulant facilities to be provided and indicated on drawings.

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.

Compliant accessible facilities have not been indicated on the plans. Details to be provided in further documentation.

5.7 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;
- Identify each door required by BCA Clause E4.5 to be provided with an exit sign, stating 'EXIT' and 'Level' number

Further details to be provided for in the Construction Certificate documentation.

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.

Please provide fire services drawings showing fire services throughout the building.

6.1 Fire Hydrants (BCA E1.3)

A system of Fire Hydrants is required to be provided in accordance with BCA 2019 Clause E1.3 and AS2419.1-2005 to the whole of the building. Please provide pressure and flow calculations for review.

In respect of coverage for compliance the following is noted:

- 11) Basement carparking : Far NE corner does not appear to have coverage
- 12) Ground:
 - fire hydrant coverage to all retail to Good St & Parramatta Road, BOH areas, vehicular ramp and NE corner of carpark does not appear to be provided
 - Fire hydrant coverage to Toilets amenities fronting Parramatta Rd.
 - Fire hydrants are located at intermediate levels in the stairs (and not therefore on the same storey they are serving in accordance with AS241.91.) to stairs facing Cowper St.
- 13) Level 1:
 - Fire hydrants do not have coverage to top NE corner of carpark
 - Fire hydrants do not have coverage to all residential units 101 & 102
- 14) Level 2:
 - Coverage to Units 209 & 210 & 201 & parts of 202 & associated corridors not able to be achieved in accordance with AS2419.1
 - Coverage not achieved to top NE corner of carpark and top half of vehicular ramp
- 15) Level 3:
 - Coverage to Unit 301 & 302 & 310 & parts of 309 & associated corridors not able to be achieved in accordance with AS2419.1
 - Coverage to NE corner of carpark not achieved
- 16) Level 4: Coverage to Unit 414 not able to be achieved in accordance with AS2419.1
- 17) Level 5: Coverage to Unit 514 not able to be achieved in accordance with AS2419.1
- 18) Level 6-21: Coverage to Unit 14 not able to be achieved in accordance with AS2419.1
- 19) Level 22-23: Coverage to Unit 2212, 2312 not able to be achieved in accordance with AS2419.1
- 20) Level 24: Coverage to Unit 2406 not able to be achieved in accordance with AS2419.1

It is further noted that the fire hydrant pump room is located at the basement and the booster is located to the Parramatta Rd frontage which would not be considered the main entrance to the building. This to be assessed under the performance provisions of the BCA.

Protection to the booster provision at Parramatta Road to be provided in accordance with AS2419.1 and E1.3 of the BCA.

6.2 Fire Hose Reels (BCA E1.4)

Fire hose reels are to be provided to the basement carpark and to serve the 6 parts of the building but are not required to the Class 2 parts of the building. Fire hose reels are to be located within 4m of exits and provide coverage within the building based on a 36m hose length. Where required, additional fire hose reels shall be located internally as required to provide coverage.

Fire service drawings to be provided indicating compliance.

6.3 Fire Extinguishers (BCA E1.6)

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

Table E1.6 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 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.

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

The fire extinguisher locations are not indicated and will be further assessed as design develops.

6.4 Automatic Sprinkler Protection (BCA E1.5)

Automatic sprinkler protection is required throughout the building in accordance with Table E1.5, Specification E1.5 and AS2118.1-2017.

An occupant warning system should be provided in accordance with BCA Specification E1.5. Please also note that the occupiable outdoor areas on Level 4 should comply with the sprinkler provisions in accordance with Specification E1.5 (except for Clause 7 (b)(i) to include for occupiable areas).

Any variations to compliance with these standards are to be identified for any inclusions with any proposed alternative fire engineered solution.

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 AS2293.1-2018.

Details are required to be provided for review. The building is indicated with having occupiable outdoor areas (i.e. communal terraces to the roof). Please note that the emergency lighting and exit signs to be viewed as applicable to occupiable outdoor areas in accordance with G6.8 of the BCA

6.6 Sound systems and intercom systems for emergency purposes

A Sound System and Intercom System is required in accordance with AS1670.4-2018 and BCA Clause E4.9. Details are required to be provided for review. The building is indicated with having occupiable outdoor areas

(i.e. Level 4 occupiable outdoor area) Please note that the EWIS is to be audible/viewed as applicable to occupiable outdoor areas in accordance with G6.8 of the BCA

6.7 Fire control centres

As the building has an effective height of greater than 50m, a fire control room is required. Details are required to be provided for review.

6.8 Smoke Hazard Management (BCA E2.2)

The following smoke hazard management systems should be in place in the building:-

- An air-handling system which does not form part of a smoke hazard management system in accordance with Table E2.2a or Table E2.2b & which recycles air from one fire compartment to another fire compartment or operates in a manner that may unduly contribute to the spread of smoke from one fire compartment to another fire compartment must-
 - (i) Be designed and installed to operate as a smoke control system in accordance with AS1668.1 or
 - (ii) (A) incorporate smoke dampers where the air-handling ducts penetrate any elements separating the fire compartments served; and
(B) be arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke detectors complying with clause 7.5 of AS 1670.1;
- The class 2 building is required to be provided with an automatic smoke detection and alarm system complying with Specification E2.2a.
- The class 7a part of the building provided with a mechanical ventilation system in accordance with AS 1668.2 must comply with clause 5.5 of AS 1668.1 except that fans with metal blades suitable for operation at normal temperature may be used and the electrical power and control cabling need not be fire rated;
- Fire-isolated stairways are required to be provided with automatic air-pressurisation systems in accordance with AS 1668.1;

Any variations to compliance with these standards are to be identified for any inclusions with any proposed alternative fire engineered solution. Concurrence with NSWFB may be required.

6.9 Lift Services (BCA E3.4 and E3.6)

The passenger lifts to be installed are to be:-

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

- For lifts serving more than 2 levels, automatic audible information within the lift car identifying the level each time the car stops, and audible and visual indication at each lift landing to indicate the arrival of a car

7.0 HEALTH AND AMENITY

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

Retail

Employees and the public may share the same facilities in the Class 6 part of the building provided that the number of facilities provided is not less than the total number of facilities required for employees plus those required for the public. If not more than 10 people are employed, a unisex facility may be provided.

Apartments

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.

Note: a kitchen sink or washbasin must not be counted as a laundry washtub.

The drawings do not clarify the provision of space for a clothes drying facility or a laundry tub. Details to be provided to provide clarification.

Retail facilities

Retail facilities differ as to whether they are provided for shops or for restaurants/cafes. Clarification to be provided to determine what facilities would be required. It is noted that facilities have been provided at ground level. However please note the further requirements for people with disabilities contained within this report.

Full details of the type of retail being provided (shop/café/restaurant), types of sanitary facilities, including layouts, ambulant facilities and sexes are required to be indicated on the drawings to provide 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 Light and Ventilation (BCA Part F4)

Class 2 buildings

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.

Calculations by the architect to be provided to show compliance with this clause.

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

Class 6 (retail) parts of the building

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

Class 7a basement carparking

Every storey of a carpark must have a:-

- (a) A system of mechanical ventilation complying with AS1668.2; or
- (b) A system of natural ventilation complying with Section 4 of AS 1668.4

Details to be provided in Construction Certificate documentation.

7.3 Sound Transmission and Insulation

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.

7.4 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.*

External above Ground Membranes

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

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

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

Wet Areas

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

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

8.0 ENERGY EFFICIENCY

8.1 Energy efficiency

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 such as Verification Method JV2, JV3 and JV4 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.

Appendix A - Design Documentation

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

Drawing No.	Title	Date	Drawn By	Rev
DA100	Site Plan	15.10.19	PBD Architects	A
DA101	Basement	15.10.19	PBD Architects	A
DA 102	Ground Floor Plan	15.10.19	PBD Architects	A
DA 103	Level 1 Plan	15.10.19	PBD Architects	A
DA 104	Level 2 Plan	15.10.19	PBD Architects	A
DA 105	Level 3 Plan	15.10.19	PBD Architects	A
DA 106	Level 4 Plan	15.10.19	PBD Architects	A
DA 107	Level 5 Plan	15.10.19	PBD Architects	A
DA 108	Level 6- 21 Plan	15.10.19	PBD Architects	A
DA 109	Level 22-23 Plan	15.10.19	PBD Architects	A
DA 110	Level 24 Plan	15.10.19	PBD Architects	A
DA 111	Roof Plan	15.10.19	PBD Architects	A
DA 201	North Elevation Parramatta Road	15.10.19	PBD Architects	A
DA 202	East Elevation Good Street	15.10.19	PBD Architects	A
DA 203	South Elevation Cowper Street	15.10.19	PBD Architects	A
DA 204	West Elevation	15.10.19	PBD Architects	A
DA 301	Section A	15.10.19	PBD Architects	A
DA 302	Section B	15.10.19	PBD Architects	A

Appendix B - Draft Fire Safety Schedule

	Essential Fire Safety Measures	Standard of Performance
1.	Access Panels, Doors and Hoppers	BCA Clause C3.13
2.	Automatic Fail Safe Devices	BCA Clause D2.19 & D2.21
3.	Automatic Smoke Detection and Alarm System	Clause 3 or 4 or 5 BCA Spec. E2.2a, AS 1670.1 – 2018, AS/NZS 1668.1 – 2015, AS 3786-2014
4.	Automatic Fire Suppression System	BCA Spec. E1.5 & AS 2118.1 – 2017 Amdt 1, AS 2118.6 – 2012 (Combined sprinkler & hydrant)
5.	Building Occupant Warning System activated by the Sprinkler System	BCA Spec. E1.5 & Specification E2.2a Clause 7
6.	Emergency Lifts	BCA Clause E3.4
7.	Emergency Lighting	BCA Clause E4.2, E4.4 & AS/NZS 2293.1 – 2018
8.	EWIS	BCA Clause E4.9 & AS 1670.4 - 2018
9.	Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS/NZS 2293.1 – 2018
10.	Exit Signs (non-illuminated)	BCA Clause E4.7
11.	Fire Control Centres and Rooms	BCA Spec. E1.8
12.	Fire Blankets	BCA Clause E1.6, and AS 2444 – 2001
13.	Fire Dampers	BCA Clause C2.12, C3.15, Spec C2.5, D1.7, E2.2, E2.3, F4.12, Spec E2.2, E2.3, Spec E2.2b, & AS 1668.1 – 2015
14.	Fire Doors	BCA Clause C3.2, C3.4, C3.5, C3.6, C3.7 & C3.8 and AS 1905.1 – 2015
15.	Fire Hose Reels	BCA Clause E1.4 & AS 2441 – 2005 Amdt 1
16.	Fire Hydrant System	Clause C2.12, E1.3, Spec E1.5a, & AS 2419.1 – 2005 Amdt 1
17.	Fire Seals	BCA Clause C3.15, C3.16, Spec C3.15, Spec D1.12, & AS 1530.4 –2014
18.	Fire Shutters	BCA Spec. C3.4 & AS 1905.2 – 2005
19.	Fire Windows	BCA Spec. C3.4
20.	Lightweight Construction	BCA Clause C1.8, Spec C1.8
21.	Mechanical Air Handling System	BCA Clause E2.2, AS/NZS 1668.1 – 2015 & AS 1668.2 – 2012
22.	Paths of Travel	EP&A Reg 2000 Clause 186
23.	Portable Fire Extinguishers	BCA Clause E1.6 & H3.11, AS 2444 – 2001
24.	Pressurising Systems	BCA Clause E2.2 & AS/NZS 1668.1 – 2015
25.	Required Exit Doors (power operated)	BCA Clause D2.19 (b)(iv)
26.	Smoke Hazard Management System	BCA Part E2 & AS/NZS 1668.1 – 2015
27.	Smoke Dampers	BCA Clause Spec E2.2, E2.3, Spec E2.2b, & AS/NZS 1668.1 – 2015
28.	Smoke Doors	BCA Spec. C3.4

	Essential Fire Safety Measures	Standard of Performance
29.	Stand-by Power System	BCA Clause G3.8
30.	Wall-Wetting Sprinklers	BCA Clause C3.4
31.	Warning and Operational Signs	Section 183 of the EP & A Regulations 2000, AS 1905.1 – 2015, BC Clause D2.23, E3.3

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	Class of building — FRL: (in minutes)			
	<i>Structural adequacy/Integrity/Insulation</i>			
	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
<i>Bounding public corridors, public lobbies and the like</i>				
<i>Loadbearing</i>	90/ 90/ 90	120/-/-	180/-/-	240/-/-
<i>Non-loadbearing</i>	-/ 60/ 60	-/-/-	-/-/-	-/-/-
<i>Between or bounding sole-occupancy units</i>				
<i>Loadbearing</i>	90/ 90/ 90	120/-/-	180/-/-	240/-/-
<i>Non-loadbearing</i>	-/ 60/ 60	-/-/-	-/-/-	-/-/-
<i>Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion</i>				
<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