Code Consultancy Group

BCA ASSESSMENT REPORT

DATE	CLIENT	DEVELOPMENT	REF NO.
05-Mar-2022	Reform Projects	1102 Barrenjoey Road, Palm Beach	22007-1

REPORT STATUS		
Issue No.	**Status**	**Date**
1	Report issued to accompany development application submitted to council	11-March-2022

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EXECUTIVE SUMMARY

Code Consultancy Group Pty Ltd (CCG) has been engaged by Reform Projects to undertake an assessment of the referenced architectural drawings for the proposed development against the Deemed-to-Satisfy provisions of the Building Code of Australia (BCA) 2019, Volume 1 Amendment 1.

In accordance with the client's instructions, we have completed this report with the principal objective of establishing the extent to which the proposal achieves compliance with the Building Code of Australia 2019, Amendment 1, Volume 1 (BCA) including any NSW variations. Within the report we provide recommendations as to the works required to achieve compliance with these requirements.

MATTERS REQUIRING FURTHER INFORMATION AT THE CONSTRUCTION CERTIFICATE STAGE

Item	BCA DtS Ref.	Issue
1.	**Spec. C1.1 & Clause C1.1** Fire resisting construction	Walls located within in 3m of the allotment boundary are to be fire rated in accordance with Table 3 of Specification C1.1 Confirmation is to be provided of the proposed building structure and whether any lightweight construction is proposed, noting that issues with connections between fire rated columns and non-fire rated columns will need to be considered and addressed
2.	**Clause C1.9 / C1.14** Non-combustible building elements	Details of the materials proposed to make up the external walls and all Ancillary Elements attached to the external walls are to be of non-combustible construction of comply with the concessions under Clause C1.9(e) of the BCA documented in an External Wall Disclosure Statement
3.	**Clause C.10** Internal linings - Fire hazard properties	A schedule of internal linings (floors, walls and ceiling) along with Test Reports are required for review to ensure that the materials comply for their proposed uses. Particular attention should be paid to any highly synthetic plastic/rubber-based materials such as AstroTurf or similar floor used to balconies internally and any timber or composite materials linings used internally to ensure that these materials achieve the required fire hazard properties.
4.	**Clause C2.6** Vertical separation of openings in external walls	Applicable where an AS 2118.1-2017 sprinkler system is not proposed - Spandrel protection will be required to the external walls to mitigate fire spread from one floor to the other. Details of the method of achieving this are required, particularly where lightweight construction is used for vertical spandrels
5.	**Clause C2.12** Separation of equipment	Confirmation is required whether the Basement Plant Rooms contain any of the following equipment which would require the room to be separated from the remainder of the building with construction that achieves an FRL of 120/120/120 (or that required by Spec C1.1, whichever is greater) and doorways being self-closing -/120/30 fire doors ▪ Lift motors and lift control panels; ▪ Emergency generators used to sustain emergency equipment operating in the emergency mode; ▪ Central smoke control plant; ▪ Boilers; ▪ A battery or batteries installed in the building that have a voltage exceeding 12 volts and a capacity exceeding 200kWh. Refer to separate comments under BCA Clause E1.10 below regarding the EV Charger
6.	**Clause C3.4** Protection of openings	The method of protection of the opening from Commercial Tenancy 1 which is less than 3m to the northern boundary) is required to be detailed.
7.	**C3.15** Fire Stopping	The proposed fire stopping systems for the project need to start being considered at this stage to ensure that they can be documented for the Construction Certificate stage, noting that the project is likely to be subject to the Design & Building Practitioners Act & Regulation and under this legislation, fire stopping is a regulated design, which requires a Design Compliance Declaration prior to issue of the CC/commencement of work

Item	BCA DtS Ref.	Issue
8.	**Clause D1.17** Access to Lift Pits	Confirmation is required from the lift designer that the lift pit will not exceed 3m in depth. Where the lift pit is deeper than 3m, the requirements oi BCA Clause D1.17 will need to be incorporated into the design.
9.	**Clause D2.8** Storeroom	The Basement Storage Room proposed below the egress stair is to be of 60-minute FLR construction and fitted with a self-closing -/60/30 FRL door
10.	**Clause D2.15 / Part D3** Slip resistance	The slip ratings of the proposed accessible/adaptable apartment and common area buildings parts both internally and externally are to be documented in a schedule and submitted for review with supporting AS 4586-2013 Test Report to ensure that the floor finishes proposed achieve the minimum required slip ratings.
11.	**D2.16** Balustrade	Details of balustrades are requested for review to ensure that horizontal or near horizontal members do not occur within the zone of 150mm to 760mm above the FFL at all levels where the fall below is 4m or more. Note climbable elements include those within the balustrade along with any other fixed object within 900mm of the inside face of the balustrade
12.	**Clause D2.20** Door swing	The tenancy door to commercial 2 is required to be fitted with a hold-open device enabling it to be kept in the open position in the event of egress.
13.	**Part D3** Access to the building	Access to the building via the paved entry from Barrenjoey Rd is to be reviewed by the access consultant to ensure compliance at the DA stage
14.	**Clause F2.5** Ensuite door locations	Ensuite doors within 1.2 meters of the toilet pan are to be fitted with lift-off hinges.
15.	**Clause E1.3** Fire Hydrants	The Plaza Area in front of the booster cabinet is to be maintained as a clear area. Assuming that Barrenjoey Road is to be used as the hardstand for the brigade pumping appliance (truck), FRNSW are to be consulted at the Construction Certificate Stage to ensure that there is sufficient space for the brigade to undertake firefighting duties.
16.	**E1.5 & Spec E1.5a** Sprinklers	Confirmation is to be provided as to what type of sprinkler system the building will be served by, noting that where an AS 2118.1-2017 sprinkler system is provided, spandrel protection will not be required.
17.	**E1.6** Portable fire extinguishers	Portable fire extinguishers are required to be located so that the travel distance from the entrance doorway of any sole-occupancy unit to the nearest fire extinguisher is not more than 10m.
18.	**E1.10** Provision for special hazards	The EV Charger noted in the Basement Car Park is considered a special hazard and as such is recommended that it is assessed by the project Fire Engineer in order to determine whether additional provisions are required to ensure it does not impact on fire-fighting activities.

FIRE ENGINEERED PERFORMANCE SOLUTIONS

The following table provides a list of Deemed-To-Satisfy compliance departures established during the design development phase with the Fire Engineer and project. For ease of reference, the ordering and wording of Performance Solutions in the below table have been kept as consistent with the Fire Engineering Report as possible.

Item	BCA DtS Ref.	Performance Solution	BCA Perf. Req.
1.	**Spec. C1.1 & Clause C1.1** Fire resisting construction	To allow floor slabs within wet areas of the residential areas to have a reduced slab thickness of 180mm to facilitate set-downs for waterproofing. The reduced thickness results in an FRL of 60/60/60 in lieu of the required 90/90/90 FRL.	CP1, CP2
2.	**Spec. C1.1** Fire-Resisting Construction (Separation at Bounding Wall)	To provide fire-rated seals between the SOU internal bounding walls and inside face external wall coverings of the subject building, in lieu of the fire-rated bounding walls extending to the external wall without an external wall cavity.	CP2, CP8
3.	**Clause C1.1, C2.7, C2.8, C2.9 & Spec. C1.1** Fire-Resisting Construction (Retail FRLs)	To reduce the FRLs of the building elements associated with the retail tenancies from (180)/180/180 to (120)/120/120 within the building.	CP1, CP2
4.	**Clause C1.14** Ancillary Elements	To permit joinery which will comprise of combustible elements, attached to the inside face of the external wall that are required to comprise of non-combustible construction.	CP2, CP4
5.	**Clause C2.6** Spandrel Separation	To rationalise the extent of protection to openings affected by reduced levels of spandrel protection and the report will need to demonstrate compliance with the relevant BCA Performance Requirements.	CP1, CP2
6.	**Clause C3.3** Protection of Openings in different fire compartments	To rationalise the method of protection of external openings that are created because of the Level 1 and Level 2 Courtyard/Lightwell, which creates exposure between the external walls and openings within them of the residential Sole Occupancy Units A2 and A4 and the Public Corridors	CP2, CP8
7.	**Clause D1.2** Number of exits	To permit a single exit from the basement level carpark in lieu of two (based on the use of the driveway vehicular ramp as a second alternative exit).	DP4
8.	**Clause D1.3** Fire-Isolated Exits	To permit the central stair to connects four (4) levels in the building being the Class 7a basement carpark, Class 6 Retail at Ground Floor and the two (2) Class 2 Residential Levels. Although the building will be sprinkler protected, the concessions for a four-storey connection do not apply when the stair connects both a retail level and carpark level accordingly. As such, the stair is technically required to be a fire stair and the fire and smoke separation arrangements, the discharge arrangements and void connections are to be considered.	
9.	**Clause D1.4** Egress Travel Distances	To permit the following extended travel distances: ▪ Basement Carpark – Egress distances from the furthest point of the floor is up to 25m in lieu of 20m to the single exit.	DP4, EP2.2

Item	BCA DtS Ref.	Performance Solution	BCA Perf. Req.
10.	**Clause D1.9**	To permit an egress distance from the discharge location of the Basement Level ascending stairway to open space greater than 20m (approximately 24m).	DP4, EP2.2
11.	**Clause D2.12** Roof as Open Space	To permit service penetrations (rainwater outlets, downpipes etc.) through the external slabs of the building treated as roof as open space to be located within 3m of the path of travel from the egress discharge locations	CP2, CP8, DP5 & EP2.2
12.	**Clause D2.20** Door swing	To permit the 2x exit doors from commercial 1 to swing inwards (against the direction of egress).	DP4
13.	**Clause E1.3** Fire Hydrants	To permit the hydrant system to be designed to comply with AS 2419.1-2021 in lieu of AS 2419.1-2005	EP1.3
14.	**Spec. E1.5** Sprinklers	To permit the omission of sprinklers from the Main Switch Room on Basement 1.	EP1.4

OTHER PERFORMANCE SOLUTIONS

Item	BCA DtS Ref.	Performance Solution	BCA Perf. Req.
1.	**Clause F1.0** Deemed-to-Satisfy Provisions	A Performance Solution is required to demonstrate that the external wall assembly design will prevent the penetration of water that could cause unhealthy or dangerous conditions, or loss of amenity for occupants; and undue dampness or deterioration of building elements.	FP1.4

1.0 INTRODUCTION

1.1 REPORT BACKGROUND

Code Consultancy Group Pty Ltd (CCG) has been engaged by Reform Projects to undertake an assessment of the referenced architectural drawings for the proposed development against the Deemed-to-Satisfy provisions of the Building Code of Australia (BCA) 2019, Volume 1 Amendment 1.

In accordance with the client's instructions, we have completed this report with the principal objective of establishing the extent to which the proposal achieves compliance with the Building Code of Australia 2019, Amendment 1, Volume 1 (BCA) including any NSW variations. Within the report we provide recommendations as to the works required to achieve compliance with these requirements.

1.2 REPORT PURPOSE

The purpose of the report is as follows:

- Undertake an assessment of the proposed development against the deemed to satisfy provisions of the National Construction Code Series – Volume 1 – BCA 2019 Amendment 1.
- Identify any BCA compliance departures that require resolution/attention for the proposed development by way of design change or Fire Engineered Performance Solutions prior to the submission of the Construction Certificate application.
- Identify essential fire safety measures that are applicable to the proposed building in accordance with the Environmental Planning and Assessment Regulation 2000.
- Identify any BCA compliance issues that require resolution at the Construction Certificate stage.
- Issue a preliminary fire engineering summary outlining the key compliance matters requiring consideration by the project Fire Safety Engineer to assist in the preparation of the Fire Engineering Brief & Fire Engineering Brief Questionnaire (where required) to Fire & Rescue NSW).
- Verify that the referenced documentation has been reviewed by an appropriately qualified Building Surveyor and demonstrate that compliance with the BCA / Access to Premises – Building Standard 2010 is readily achievable.
- Enable the Registered Certifier to satisfy its statutory obligations under Clause 145 of the Environmental Planning and Assessment Regulation 2000, whilst also taking into due consideration the provisions under Sections 28 and 29 of Part 3 of the Building and Development Certifiers Act 2018 and Clauses 24 and 25 of Part 4 of the Building and Development Certifiers Regulation 2020.

It is important to note that this BCA Report is not a design development or design contribution report. This is a desktop assessment carried out against the presented design using the Building Code of Australia as a benchmark and no contribution to design advice has been provided.

1.3 REPORT DOCUMENTATION RELIEDUPON

The following documentation has been reviewed, referenced and/or relied upon in the preparation of this report:

- National Construction Code Series – Volume 1 of the Building Code of Australia 2019 - Amendment 1 (BCA).
- National Construction Code Series – Guide to the Building Code of Australia 2019 – Amendment 1.
- Environmental Planning & Assessment Act 1979
- Environmental Planning & Assessment Regulation 2000
- Architectural Plans prepared by Rob Mills Architecture as follows:

Drawing Number	Drawing Title	Revision
DA.00	Cover Page	A
DA.01	Site Plan Analysis	A
DA.03	Demolition Plan	A
DA.04	Proposed Site Plan / Roof Plan	A
DA.05	Proposed Basement Plan	A
DA.06	Proposed Ground Floor Plan	A
DA.07	Proposed First Floor Plan	A
DA.08	Proposed Second Floor Plan	A
DA.10	Proposed West Elevation	A
DA.11	Proposed Elevation - North, South & East	A
DA.15	Sections	A
DA.16	Sections	A

1.4 REPORT LIMITATIONS & EXCLUSIONS

The limitations and exclusions of this report are as follows:

- This report is based on a review of the referenced documentation in the report above.
- This Report does not address issues in relation to the design, maintenance or operation electrical, mechanical, hydraulic or fire protection services, Utility Services Provider Requirements (Water, Gas, Telecommunications and Electricity supply authorities), Local Government Act and Regulations, Work Health and Safety Act and Regulations or the like.
- This assessment does not incorporate the detailed requirements of the BCA Referenced Australian Standards and it's the responsibility of design and installation contractors to demonstrate and achieve compliance for all new works.
- Although our assessment has considered Part D3 and F5 of the BCA, detailed assessment is excluded from our services, and this is to be undertaken by an Accessibility Consultant / Acoustic Consultant or addressed via design certification from the Architect.
- Although our assessment has considered Part J of the BCA, detailed assessment of the Energy Efficiency is excluded from our services, and this is to be undertaken by an Energy Efficiency Consultant; or addressed via design certification from the Architect.
- The commentary within this BCA Assessment Report does not relieve the Design Practitioners, Principal Building Practitioners, Accredited Practitioners (Fire Safety) and/or any associated Building Suppliers and Sub Contractors from their statutory obligations under the Work Health Safety Act, Safety in Design Principles, EP&A Act/Regs, and /or their statutory duty of care obligations under the Design and Building Practitioners Act 2020.
- The commentary within this BCA Assessment Report does not relieve the Registered Certifier/Principal Certifier from their statutory obligations under EP&A Regs/Act, Building and Development Certifiers Act/Regs and they are to be satisfied that the proposal meets their requirements prior to approval.
- CCG cannot guarantee acceptance of this report by the Local Council, NSW Fire Brigades or other government authorities.
- It is important to note that without the written permission from CCG, no part of this report may be reproduced in any form or by any means. This report is based solely on client instructions and therefore should not be relied upon or used by any third party without prior knowledge and instructions from CCG.

1.5 SUBJECT SITE

The subject development site is irregular in shape and is accessed via Barrenjoey Road which sits on the Western side of the site. The subject site adjoins an existing residential dwelling on the Southern side, Barrenjoey House to the Northern side and a residential allotment with an access way to the Eastern side.

FIGURE 1: SATELLITE IMAGE OF SUBJECT SITE

1.6 PROPOSED DEVELOPMENT

The proposed development consists of the construction of a top shop housing development which includes six (6) boutique apartments, ground and roof top food and beverage tenancies and basement carparking.

Pedestrian and Vehicular access for the residential units will be via Barrenjoey Road and the proposed principal building characteristics can be defined as follows:

- **Basement –** 22 x Vehicular parking spaces, ancillary residential and commercial storage areas.
- **Ground Floor –** 2 x Commercial Tenancies, commercial terraces, residential lobby and vehicular entrance.
- **Level 1 Floor –** 3 x Residential sole occupancy units (Unit No. A1, A2 and A3);
- **Level 2 Floor –** 2 x Residential sole occupancy units (Unit No. A4, A5);
- **Roof Level -** Reinforced concrete roof structure, lift overrun and plant equipment – No Communal Open Space.

FIGURE 2: PHOTOMONTAGE OF THE SUBJECT DEVELOPMENT

1.7 BUILDING CODE OF AUSTRALIA 2019 (BCA) – AMENDMENT 1

Pursuant to Clauses 145 of the Environmental Planning and Assessment Regulation 2000 all new building work must comply with the current provisions of the National Construction Code Series (Volume 1) Building Code of Australia (BCA) – Amendment 1.

At the date of this assessment, it was anticipated that a Part 6 Construction Certificate Application for the development would be made with a PCA prior to the 1 September 2022 and as such the relevant rendition of the BCA is **BCA 2019 Amendment 1**.

1.8 SECTION A – GENERAL PROVISIONS & KEY BUILDING CHARACTERISTICS:

The key building characteristics and classifications for the proposed development as determined by Volume 1 of the Building Code of Australia are as follows:

Building Characteristics	
BCA Classification:	Class 2 (Residential Flat Building), Class 6 (Retail) & Class 7a (Carparking)
Rise In Storeys:	Three (3)
Storeys Contained:	Four (4)
Type Of Construction:	Type A Construction
Effective Height:	<12m (Level 2 RL of 10.350m – Ground Floor RL of 3.350m = 7m)
Fire Compartmentation:	Complies with BCA Clause C2.2 (as applicable)
Climate Zone	Climate Zone 5

Note 1: Refer to comments under Sections C relating to fire resistance Levels and performance-based solutions.

Note 2: The storage areas adjacent to each carparking space within the basement levels are considered to be ancillary to the Class 2 and Class 7a uses and not hold separate classifications for the purposes of this assessment.

1.9 FIRE SOURCE FEATURES:

The site is situated over a single allotment and the distances from the nearest Fire Source Features / allotment boundaries are as follows:

Fire Source Feature	Distance To Fire Source Feature
Northern Side	<3m from the side boundary (Approx. 1.0m)
Southern Side	>3m from the side allotment boundary (Approx. 4.0m)
Eastern Side	3m from the rear allotment boundary (Approx. 3m)
Western Side	<6m from the far side of Barrenjoey Road (Approx. 20m)

Note: Refer to BCA Clauses C3.2/C3.4 & Spec C1.1 in the report below for further commentary regarding fire source features and requirements for fire protection.

1.10 FLOOR AREA / VOLUME:

The maximum permissible fire compartment sizes for the different classification in the development must comply with the limitations of Table C2.2:

Classification	Fire Compartment Sizes	Complies
Class 2	N/A	Yes
Class 6	Maximum 5,000m^2 and 30,000m^3	Yes
Class 7a	Maximum 5,000m^2 and 30,000m^3	Yes

Note 1: Fire Compartment limitations do not apply to Class 2 residential building parts

Note 2: Fire Compartment limitations do not apply to Class 7a carparks which are sprinkler protected in accordance with Specification E1.5 and AS2118.1 -2017. Notwithstanding the fact the building will be protected with an FPAA 101H sprinkler system (which does not gain the aforementioned concessions), the carpark fire compartment limitations still comply with the provisions of Table C2.2 accordingly.

2.0 BCA ASSESSMENT

The following is a summary of relevant areas of BCA Compliance that will need to be considered & addressed for the proposed residential development prior to the issue of a Construction Certificate.

2.1 SECTION A – CLASSIFICATION OF BUILDINGS & STRUCTURES:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section A of the BCA subject to compliance with the following;

BCA CLAUSE A3.3 – MULTIPLE CLASSIFICATIONS

Each part of a building must be classified separately and where these parts have different purposes – If not more than 10% of the floor area of a storey – being the minor use, is used for a purpose which is a different classification applying to the major use, the classification of the major use may apply to the whole storey.

In this regard, the storage areas adjacent to the carparking spaces are considered to be ancillary to the carpark & residential/commercial uses of the building and not hold separate classifications for the purposes of this assessment.

2.2 SECTION B – STRUCTURAL PROVISIONS:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section B of the BCA subject to compliance with the following:

BCA PART B1 – B3 STRUCTURAL PROVISIONS:

Structural engineering documentation for structural works must comply with the structural provisions of BCA Clauses B1.1, B1.2 & B1.3. Table B1.2 identifies the Importance Levels of Building & Structures that must be considered by the structural engineer.

Note: Structural plans, specifications and design certification are to be prepared by a Structural Engineer and submitted to the satisfaction of the Registered Certifier with the Construction Certificate application.

BCA CLAUSE B1.4 - MATERIALS AND FORMS OF CONSTRUCTION:

Materials and Forms of Construction: Structural resistance of materials and forms of construction must comply with BCA clause B1.4. Structural details and design certification to the satisfaction of the Registered Certifier are to be provided with the Construction Certificate application.

The design must consider (but not be limited to) the following Australian Standards and any other appropriate standards accordingly:

- AS 1170.0 – 2002 General Principles
- AS 1170.1 – 2002, including certification for balustrades (dead and live loads)
- AS 1170.2 – 2011, Wind loads
- AS 1170.4 – 2007, Earthquake loads
- AS 1288 – 2006, Glass in buildings + B1.4(h)(iii) – To protect against nickel sulphide inclusions.
- AS1530.4-2014, Fire-Resistance Tests on Elements of Construction
- AS/NZS 1664.1 and 2 – 1997, Aluminium construction
- AS/NZS 1684. 2, 3 and 4 – 2010 – Residential Timber Framing Construction
- AS 1720.1 – 2010, Design of Timber Structure
- AS 1720.5 – 2015, Nail plated timber roof structures
- AS 2159 – 2009, Piling
- AS 2047 – 2014, Windows in buildings
- AS 3600 – 2018, Concrete code
- AS3666.1 - 2014 Termite Management
- AS 3700 – 2018, Masonry code
- AS 4100 – 1998, Steel Structures and/or AS 4600 – 2018, Cold formed steel
- AS4600 – 2018 – Cold-Formed Steel Structures
- AS5146.1-2015 – Reinforced Autoclave Aerated Concrete Structures

All other relevant Australian Standards, guidelines and referenced/cross referenced applicable standards.

Having regard to the above, the following areas have been identified as matters which may be requiring consideration by the project Structural Engineer and or fire safety engineer:

- Where it is proposed to have structural steel columns and beams utilised, a colour coded mark-up plan to show the location of these structural members and details on the method of fire protection proposed (e.g. 90/90/90 min FRLs in the residential parts) will be required with the Construction Certificate Application.
- Where it is proposed to incorporate permanent Polymer Formwork walls such as Dincel/AFS etc, the use of these wall/load bearing systems are to be disclosed by the project structural engineer and as they do not strictly comply with the DTS provisions for external walls, their proposed use will need to be addressed under a Performance Based Solution by a qualified C10 Fire Safety Engineer.
- It is assumed that there will be no primary timber elements proposed and as such termite mitigation measures are likely not required (TBC). Notwithstanding, it is recommended that this be formally verified to the satisfaction of the Registered Certifier at the Construction Certificate application stage.
- Where it is proposed to not achieve a minimum 200mm thick concrete slab throughout the residential levels (as required by AS3600-2018 for load bearing wall type construction), this will need to be disclosed by the project structural engineer and addressed under a Performance Based Solution by a C10 Fire Safety Engineer. Current section depicts a 400mm thick slabs however this is to be checked through at the CC stages.

Note: The Structural details design certification and fire safety engineering report (where required) to the satisfaction of the Registered Certifier are to be provided with the Construction Certificate application.

2.3 SECTION C – FIRE RESISTANCE AND COMPARTMENTATION:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section C of the BCA subject to compliance with the following:

BCA CLAUSE C1.8 LIGHTWEIGHT CONSTRUCTION:

Lightweight construction must comply with Specification C1.8 if used in a wall system in accordance with sub-clauses (a) & (b). The fire rated applications must comply with manufacturers specifications and tested system reports and be certified accordingly.

Note: Architectural details, specifications and design certification are to be prepared by a suitably qualified design practitioner (Registered Architect) and submitted to the satisfaction of the Registered Certifier with the Construction Certificate application.

BCA CLAUSE C1.9 NON-COMBUSTIBLE BUILDING ELEMENTS:

The provisions of this clause are intended to provide a series of requirements and concessions for the use of non-combustible building elements and these provisions are specified below:

- In a building required to be of Type A or B construction, the following building elements and their components must be non-combustible:
  - 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, must be of non-combustible construction in—
  - a building required to be of Type A construction; and
  - a building required to be of Type B construction, subject to C2.10, in—
    - a Class 2, 3 or 9 building; and
    - a Class 5, 6, 7 or 8 building if the shaft connects more than 2 storeys.
- A loadbearing internal wall and a loadbearing fire wall, including those that are part of a loadbearing shaft, must comply with Specification C1.1.
- The above requirements do not apply to gaskets, caulking, sealants & damp-proof courses.
- The following materials may be used wherever a non-combustible material is required:
  - Plasterboard.
  - Perforated gypsum lath with a normal paper finish.

- Fibrous-plaster sheet.
- Fibre-reinforced cement sheeting.
- 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.
- Bonded laminated materials where—
  - each lamina, including any core, is non-combustible; and
  - each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and
  - the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectively.

In this regard, the new external walls of the building are required to be non-combustible; evidence (as listed below will be required to demonstrate the following materials are either non-combustible or comply with a concession under BCA Clause C1.9(e)

External Wall Element	Requirement	Documentary Evidence
Masonry	Non-Combustible	Technical Data Sheet
Prefinished Metal Sheeting	Coating less than 1mm thick and sheeting non-combustible	AS 1530.1-1994 Test Report & AS 1530.3-1999 Test Report
Sarking	≤1mm thick and Flammability Index of ≤5	AS 1530.2-1992 Test Report
Render	Non-Combustible	AS 1530.1-1994 Test Report
Render Angles/Beads/Trims (Steel or Aluminium)	Non-Combustible - Steel or Aluminium	Technical Data Sheet
Packers	Non-Combustible – Aluminium/other metal	Technical Data Sheet
Insulation	Non-Combustible - Glass or Mineral Wool.	AS 1530.1-1994 Test Report
Internal lining	Non-combustible. Note Plasterboard is permitted	AS 1530.1-1994 Test Report if it isn't plasterboard

BCA CLAUSE C1.10 – EARLY FIRE HAZARD PROPERTIES:

The fire hazard properties of the internal wall and ceiling linings, materials, and assemblies within a class 2 to 9 building must comply with Specification C1.10

Fire hazard properties for all floor, wall and ceiling linings within the building are to comply with BCA Specification C1.10 with regard to smoke development rates, critical radiant flux and group ratings. In this instance, the following fire hazard properties apply:

- Floor linings and coverings must achieve a Critical Radiant Flux of not less than 2.2kW/m2 and a maximum smoke development rate of 750 percent-minutes.
- Wall and ceiling linings are to achieve a minimum Group 3 rating and a Smoke Growth Rate Index of not more than 100 or an Average Specific Extinction Area less than 250 m2/kg.
- Rigid and flexible ductwork must comply with the fire hazard properties in AS4254 Part 1&2.
- Sarking material must achieve a Flammability Index of not more than 5.

BCA CLAUSE C1.14 – ANCILLARY ELEMENTS:

Ancillary element which are fixed, installed, or attached to the internal parts or external face of an external wall that is required to be non-combustible must are required to be non-combustible unless they are one of the following:

- Gutter/downpipe/other plumbing fixture
- A flashing.
- A grate/grille <2m2 associated with a building service.
- An electrical switch/GPO/cover plate, or the like.

- A light fitting.
- A required sign.
- A combustible non-required sign if it achieves a Group Number of 1 or 2 and does not extend beyond one storey or fire compartment.
- A combustible awning, sunshade, canopy, blind, or shading hood if it is located at the ground floor storey or a storey immediately above ground storey and complies with relevant to fire hazard properties
- A part of a security, intercom, or announcement system.
- Wiring.
- A paint, lacquer, or a similar finish.
- A gasket, caulking, sealant, or adhesive associated with the above ancillary elements.

Compliance is readily achievable. Aside from the above permitted materials/elements, all other materials are to be non-combustible. Copies of AS 1530.1-1994 and AS 1530.3-1999 Test Reports are to be provided at the Construction Certificate stage to verify compliance.

BCA CLAUSE C2.6 – VERTICAL SEPARATION OF OPENINGS IN EXTERNAL WALLS:

Although the building is required to be sprinkler protected throughout, spandrel concessions are only adopted where either via a AS 2118.1-2017 or a AS 2118.6-2012 Combined Sprinkler / Hydrant System is installed.

Given our understanding that an FPAA101H sprinkler system is proposed, spandrel separation is required to be provided between openings in consecutive levels and it is to be ensured that the spandrels achieve a minimum FRL of 60/60/60 mins rated in both directions and comply with the dimensions set out in BCA Clause C2.6 accordingly.

In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Solutions by the project Fire Safety Engineer;

- East Elevation (Between Level 1 and Level 2) – spandrels are required along the whole rear elevation between the Level 1 and Level 2 – including the stair lobby/corridor areas. The current details depict a minimum 600m upturn and the fire rating details and heights from the FFL are to be re-assessed at the CC stages.
- West Elevation (between Ground and Level 2) – there are circular sections in the horizontal projections which don't offer compliant horizontal spandrel separation as the 1100mm projections / setbacks are compromised on level 1.
- West Elevation (Between Ground and Level 2)– the openings between the Ground Floor Commercial tenancy, Level 1 Sole Occupancy Unit A1 and Level 2 Sole Occupancy Unit A4 have full height glazing proposed with no horizontal or upturned spandrels. It is understood that a spandrel panel will be constructed behind the glazing and the fire rating details and heights from the FFL are to be re-assessed at the CC stages.
- Central light well (Between Level 1 and Level 2)– the glass openings to the corridor need spandrel and the current details depict glazed balustrades in lieu of 1.0m fire rated spandrel upturns.

It is understood that the design team have engage a C10 Fire Safety Engineer to develop a Performance Solution to rationalise the extent of protection to openings affected by reduced levels of spandrel separation and the report will need to demonstrate compliance with all relevant BCA Performance Requirement (CP2).

BCA CLAUSE C2.10 SEPARATION OF LIFT SHAFTS:

Given the proposed lifts connect more than a total of three (3) consecutive storeys, the shafts they are situated within are required to be fire rated under this clause. Lift landing doors are to be protected in accordance with BCA Clause C3.10 achieving a minimum FRL of -/60/- fire doors that comply with AS1735.11.

BCA CLAUSE C2.12 - SEPARATION OF EQUIPMENT:

Any emergency generators, lift motor equipment, boilers of battery storage enclosures are required to be fire separated from the remainder of the building by construction having a minimum FRL of 120/120/120. Doors to the enclosure are to be self-closing -/120/30 fire doors.

Note: Consideration will need to be given for the need for fire separation to any lift motor equipment or any new server/comms room where it is proposed to have Batteries/UPS's with a total voltage of 12 volts or more

and a storage capacity of 200kWh or more. Lift services contractor & Electrical/IT contractor to advise further in this regard with the Construction Certificate Application.

BCA CLAUSE C2.13 - ELECTRICITY SUPPLY SYSTEMS:

Any electrical substations, electrical conductors, or main switchboards that sustain emergency equipment operating in emergency mode are required to be fire separated from the remainder of the building by construction having a minimum FRL of 120/120/120. Doors to the enclosure are to be self-closing --/120/30 fire doors.

Note 1: The implementation of any required fire hydrant pumps, mechanical supply systems to fire services rooms and/or other essential services needing to continue to operate in fire mode will necessitate the MSB to be fire rated accordingly.

Note 2: There is to be a suitable portable fire extinguisher located in accordance with Clause E1.6 for the BCA and AS2444 – 2001 (e.g., located between 2m and 10m of the MSB room) and the Fire Rating details are to be detailed on the Construction Certificate drawings.

BCA CLAUSE C3.2 – PROTECTION OF OPENINGS IN EXTERNAL WALLS:

Any openings proposed within the external walls that are located within 3m of a side or rear allotment boundary, 3m from an adjoining building on the same allotment or 6m from the far boundary of an adjoining roadway are required to be protected externally in accordance with Clause C3.4. Openings may also be protected by non-translucent construction achieving an FRL of 30 mins such as blade walls or the like.

In this regard, there were no windows identified that are located within 3m of the boundary and which are requiring protection pursuant to this clause.

BCA CLAUSE C3.3 SEPARATION OF EXTERNAL WALLS AND ASSOCIATED OPENINGS IN DIFFERENT FIRE COMPARTMENTS:

The distance between parts of the external walls and any openings with them in different fire compartments must not be less than that set out in Table 3 unless;

- Those parts of each wall have an FRL not less than 60/60/60 mins; and
- Any openings protected in accordance with C3.4.

In this regard, the following areas have been identified as matters which may be requiring further consideration by either way of design change and/or justification from the project Fire Safety Engineer:

- Level 1 and Level 2 Courtyard/Lightwell - The central courtyard/lightwell creates exposure between the external walls and openings within them of the residential Sole Occupancy Units A2 and A4 and the Public Corridors are understood to be addressed as a Performance Solution

BCA CLAUSE C3.4 – ACCEPTABLE METHODS OF PROTECTION:

Where protection of openings is required, doorways, windows and other openings must be protected externally as follows:

- Doorways – External wall- wetting sprinklers as appropriate used with doors that are self-closing or automatic closing; or -/60/30 fire doors that are self-closing or automatic closing.
- Windows – Internal or external wall-wetting sprinklers (as the case may require) and as appropriate used with windows that are automatic closing or permanently fixed in the closed position; or -/60/- automatic closing fire shutters.
- Other openings – Excluding voids – internal or external wall-wetting sprinklers, as appropriate; or
- Construction having FRL not less than -/60/-.

BCA CLAUSE C3.10 – OPENINGS IN FIRE ISOLATED LIFT SHAFTS:

The doors to the lift shafts are to be protected by doors having an FRL of -/60/- and comply with AS 1735.11.

In addition, if the lift call panels exceed 35000mm2 they must be backed by construction with a rating of not less than --/60/60.

BCA CLAUSE C3.11 – BOUNDING CONSTRUCTION:

Bounding construction of the walls to the residential sole occupancy units bounding the corridor and between adjoining units needs to achieve an FRL of 90/90/90 if load bearing or --/60/60 if non-load bearing construction.

A room bounding the corridors (such as services rooms/garbage rooms/parking areas etc) also needs fire separation in line with the above.

The doors to each sole occupancy unit are required to be self-closing --/60/30 fire doors. Other doors that open from rooms into public areas within the residential part of the building must also be self-closing -/60/30 fire doors.

Where brick veneer or lightweight construction is proposed, the fire rated bounding walls need to extend to the outer brick wall face to limit the spread of fire via the cavity. Where double brick is proposed cavity fire stopping with rock wool or the like will be required.

Where brick veneer or lightweight construction is proposed, the fire rated bounding walls need to extend to the outer brick wall face to limit the spread of fire via the cavity. Where double brick is proposed cavity fire stopping with rock wool or the like will be required.

Note 1: Details of the cavity separation at the external walls and roof/floor junctions together with colour coded plans showing the different FRL's for all wall types and any framing members, which are to be of non-combustible material (e.g. streel framing,) are to be provide with the Construction Certificate application.

Note 2: Architectural details, specifications and design certifications are to be prepared by a suitably qualified design practitioner (Registered Architect) and submitted to the satisfaction of the Registered Certifier with the Construction Certificate application. Where Fire Safety Engineering is proposed, a copy of the Fire Engineers Report prepared by a C10 Certifier – Fire Safety is to also be provided.

BCA CLAUSE C3.12 – OPENINGS IN FLOOR AND CEILINGS:

Where services pass through a floor required to have an FRL or a ceiling with a resistance to the incipient spread of fire, the service must be located within a fire rated shaft complying with Table 3 of BCA Specification C1.1, or the service must be protected with appropriate fire seals conforming to BCA C3.15.

Note: Architectural details, specifications and design certifications are to be prepared by a suitably qualified design practitioner (Registered Architect) and submitted to the satisfaction of the Registered Certifier with the Construction Certificate application.

BCA CLAUSE C3.13 – OPENINGS IN SHAFTS:

Openings to service shafts are required to be protected by --/30/30 panel (if in a sanitary compartment), or a self-closing --/60/30 fire door, or a --/60/30 access panel. If the shaft is a garbage shaft, a door hopper of non-combustible construction is permitted to be installed.

Note: Architectural details, specifications and design certifications are to be prepared by a suitably qualified design practitioner (Registered Architect) and submitted to the satisfaction of the Registered Certifier with the Construction Certificate application.

BCA Clause C3.15 Openings for Service Installations: Where service installations penetrate the walls or floors required to have an FRL with respect to integrity and insulation they are to be protected by fire seals having an FRL of the building element concerned.

Fire seals are required to comply with Specification C3.15. Where the mechanical ventilation system penetrates floors or walls that require an FRL the installation is to comply with AS/NZS 1668.1 and AS1682.1/2. All GPO and light switch installations in fire rated lightweight walls will require fire seals (e.g. intumescent boxes). All down lights and/or other installations will also require fire seals (e.g. fire boxes).

BCA CLAUSE C3.16 – CONSTRUCTION JOINTS:

Any construction joints must be fire rated as per the ratings of the building elements within which they are installed.

BCA SPEC. C1.1 – FIRE RESISTING CONSTRUCTION:

The building is of Type A Construction and as such all new building elements will need to comply with the FRL's detailed in Section 3 and Table 3 of BCA Specification C1.1. Architect and Structural engineer to ensure design compliance and builder to confirm as built works achieve relevant FRL's.

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

Notes:

- Note 1: The concession granted under Sub-Clause 2.8 of Specification C1.1 have been considered in this assessment and are applicable if desired as the building is no more than 4 Storeys and has one level of carparking.
- Note 2: All external wall systems including insulations, Render & Metal Cladding must be non-combustible construction and where required to be fire resisting, they must achieve an FRL in line with the Table above – refer to BCA Clause C1.9 & C1.14 for further commentary in this regard.
- Note 3: All fire resisting wall systems including insulations are also to be non-combustible and achieve an FRL in both directions. All external load bearing walls irrespective of distance and non-load bearing walls and columns within 3m of the fire source features in the Class 2 parts must achieve and FRL in accordance with the above table for the classifications concerned.
- Note 4: All load bearing internal walls including loadbearing shaft walls and fire walls are to be concrete or masonry construction and generally achieve FRLs of in accordance with the above table for the classifications concerned.
- Note 5: All internal fire resisting walls must be non-combustible construction and are to extend to the underside of the floor next above or if on the top storey, they must extend to the underside of the non-combustible roof structure.
- Note 6: All floor structures must be non-combustible construction and achieve FRLs in accordance with the above table for the classifications concerned.
- Note 7: The walls to all fire rated shafts (lifts, stairs and services) must achieve the fire rating from both directions i.e. from inside and outside the shaft.

  Additionally, all shafts are required to be enclosed at the top and bottom with fire rated construction having an FRL which is the same as the shaft. See subclause 2.7 for exemptions to this clause for services shafts that project beyond the roof.
- Note 8: The use of structural steel columns & beams supporting floors, roofs, balconies must achieve generally achieve FRL's that are in accordance with the above table for the classifications concerned.

  The use of structural steel columns & beams are to be disclosed and noted on the architectural drawings and fire rated and certified by the architect, structural engineer and fire contractor accordingly. Methods of fire separation of columns is to be consulted with the project structural engineer and detailed on the Construction Certificate drawings.
- Note 9: The lintels within any walls required to be fire rated will achieve the same fire rating as the walls within which they are located. This is not applicable if the opening is less than 3m wide and the masonry is non-load bearing or less than 1.8m wide of the masonry is loadbearing.
- Note 10: Where a finish, lining or ancillary element or service installation is attached to a building element, it must not reduce the fire resistance of that element below that required by the specification. Refer to BCA Clause C1.9 and C1.14 for external walls and ancillary attachments.
- Note 11: All sky lights in the units are to be located a minimum distance of 3m away from each other and a minimum 3m distance from any skylights in the common areas.
- Note 12: All designers are to review BCA Specification C1.1 for further clarifications regarding required Fire Resistance Levels. Departures are to be identified and consultation with the C10 Fire Safety Engineer undertaken to determine whether these can be addressed under Performance Solutions.
- Note 13: Architectural details (including colour coded FRL plans, and separation details, specifications and design certifications are to be prepared by a suitably qualified design practitioner (Registered Architect) and submitted to the satisfaction of the Registered Certifier with the Construction Certificate application. Where Fire Safety Engineering is proposed, a copy of the Fire Engineers Report prepared by a C10 Certifier – Fire Safety is to also be provided.

2.4 SECTION D – ACCESS AND EGRESS:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section D of the BCA subject to the compliance with the following:

BCA CLAUSE D1.2 – NUMBER OF EXITS REQUIRED:

The building is required to be provided with a minimum of one exit from each above ground level storey and a minimum of two (2) exits from each basement level.

In this regard, it should be noted that the basement is not a rise in storeys as it sits wholly beneath the ground level and as such requires a minimum of two (2) exits.

Fire Engineered Performance Solution: It is understood that the design team have engage a C10 Fire Safety Engineer to develop a Performance based Solution to rationalise the single exits to the basement levels and the report will need to demonstrate compliance with all relevant BCA Performance Requirements (DP4/EP2.2).

BCA CLAUSE D1.3 – WHEN FIRE ISOLATED EXITS ARE REQUIRED:

Where an exit stair passes through more than 2 or more than 3 consecutive storeys in a mixed-use building (depending on circumstance), it is required to be contained within a fire rated shaft achieving minimum FRL's in line with those applicable to each part as per BCA Specification C1.1 above.

The shaft is to also be enclosed with a fire rated lid achieving same FRL of the shaft, and the lid is to be designed and constructed to provide fire ratings in both directions.

In this regard, the following areas have been identified as matters which may be requiring further consideration by either way of design change and/or justification from the project Fire Safety Engineer.

The central stair connects four (4) levels in the building being the Class 7a basement carpark, Class 6 Retail at Ground Floor and the two (2) Class 2 Residential Levels. Although the building will be sprinkler protected, the concessions for a four-storey connection do not apply when the stair connects both a retail level and carpark level accordingly. As such, the stair is technically required to be a fire stair and the fire and smoke separation arrangements, and the discharge arrangements are to be considered.

It is understood that Performance Solution will be developed by the Fire Engineer to rationalise the single exits to the basement levels and the report will need to demonstrate compliance with all relevant BCA Performance Requirements (CP2/DP5/EP2.2). The basis of the Performance Solution will be fire separation of the basement level and sprinklers throughout

BCA CLAUSE D1.4 – EXIT TRAVEL DISTANCES:

Class 2 part - The exit travel distances from the entrance doorway of the units, must not be more than 6m to an exit or to a point of choice where two (2) exits are available. Given the building will not be Sprinkler protected throughout in accordance with AS2118.1– 2017 or AS2118.4 - 2012, concessions are not provided under Specification E1.5a permitting extended travel distances from the entrance doorway of the residential sole occupancy units. As such egress from each SOU doo to the top riser of the open stair way must be no greater than 6m.

The exit travel distances from other ancillary areas within the Class 2 parts (not from the unit entrances) must not be more than 20m to an exit or to a point of choice where two (2) exits are available.

Class 6 and 7a part/s - The exit travel distances in the commercial and carpark areas are required to be not more than 20m to an exit or a point where travel in different directions to two or more exits is provided. Where alternative exits are available, the total distance may be increased to 40m accordingly.

The following will be addressed as Fire Engineered Performance Solutions

- Basement Carpark – Egress distances from the furthest southern point of the floor is up to 32m in lieu of 20m to the single exit,
- Ground Floor Public Corridor - Egress distances from the furthest southern point of the public corridor near the stairway is up to 32m in lieu of 20m to the single exit/open space,
- First and Second Floor SOUs - Egress distances from the furthest SOUs on each level to the top riser of the open stairway are up to 12m in lieu of 6m to the single exit.

BCA CLAUSE D1.5 – DISTANCES BETWEEN ALTERNATIVE EXITS:

The distance between alternative exits within the building must not exceed 60m and/or be located less than 9m apart.

In this regard, it is considered that the building generally complies with the egress travel distance provisions of D1.5.

BCA CLAUSE D1.6 – DIMENSIONS OF EXITS AND PATHS OF TRAVEL TO EXITS:

The unobstructed height throughout an exit or a path of travel to an exit must be not less than 2m, except for doorways which may be reduced to not less than 1980mm. In addition, the unobstructed width of an exit or a path of travel to an exit must be not less than 1 metre or the required exit width determined under D1.6.

It is considered that the proposed design of the base building generally complies with the egress provisions of D1.6. However, the Fire Services consultant is to confirm whether there are any departures with the minimum egress widths and heights within the hydrant / Sprinkler pump room once the pump set locations / orientation has been determined (if required).

BCA CLAUSE D1.7 TRAVEL VIA FIRE ISOLATED EXITS:

A fire stair is required to discharge directly to the road or open space unless otherwise into a covered area of the building that is open for at least 1/3 of its perimeter, has a minimum unobstructed height of no less than 3m with and is within 6m to the road or open space.

In addition to the above requirements, where a path of travel from the point of discharge from a fire isolated exit necessitates passing within 6m of any external wall or opening within an external wall of the same building (measure horizontally at right angles), that part of the wall must achieve a minimum FRL of 60/60/60 mins and any opening protected internally in accordance with BCA Clause C3.4 i.e., fire shutters, or drenchers etc.

In this regard, the following areas have been identified as matters which may be requiring further consideration by either way of design change and/or justification from the project Fire Safety Engineer;

Fire Engineered Performance Solution: It is understood that the design team have engage a C10 Fire Safety Engineer to develop a Performance based Solution to rationalise the open fire stair arrangements and the report will need to demonstrate compliance with all relevant BCA Performance Requirements (CP2/DP5/EP2.2). The basis of the Performance Solution will be fire separation of the basement level and sprinklers throughout.

BCA CLAUSE D1.9 – TRAVEL BY NON-FIRE ISOLATED STAIRWAYS OR RAMP:

Class 2 part – The travel distance from the discharge of the stairway to the road or open space must not be more than 15m from a doorway providing egress to a road or open space or 30m from one of two such doorways if travel to each of them is in opposite directions. Furthermore, the total distance of travel via a non-fire isolated stairway from the entrance doorway of the residential sole occupancy units must not exceed 60m.

In this regard, the following will need to be addressed as a Fire Engineered Performance Solution:

- Ground Level discharge location – Egress distances from the discharge location of both the Basement Level ascending stairway and the residential levels descending stairways – to open space is greater than 20m to the single exit/open space (worst case 32m).

BCA CLAUSE D1.10 - DISCHARGE FROM EXITS:

Upon egress occupants must have suitable paths of travel including compliant stairways and ramps (where required) between the building and the Roadway. Graded surfaces must not be steeper than 1:8 and any ramps or stairways will require handrails.

In this regard, it is considered that the building generally complies with the egress provisions of D1.10.

Note: Architectural details of egress paths gradients, specifications and design certifications are to be prepared by a suitably qualified design practitioner (Registered Architect) and submitted to the satisfaction of the Registered Certifier with the Construction Certificate application.

BCA CLAUSE D1.13 – NUMBER OF PERSONS ACCOMMODATED:

Clause D1.13 and Table D1.13 are used to calculate the anticipated number of people in particular types of buildings so that minimum exit widths and the required number of sanitary and other facilities can be calculated. This clause and table are not to be used for non-BCA purposes.

It is considered that the proposed design of the building generally complies with the egress provisions of D1.6 and that the building has ample exits to accommodate the population numbers calculated using Clause D1.13.

BCA PART D2 CONSTRUCTION OF EXITS:

The stair treads and risers, stair landings, door thresholds, balustrades and handrails are to comply with the provisions of these clauses. Further details will be required prior to issue of the Construction Certificate.

BCA CLAUSE D2.2 - FIRE ISOLATED STAIRWAYS AND RAMPS:

A stairway required to be in a fire resisting shaft must be constructed from non-combustible construction and if there is structural failure it must not impair the fire resisting performance of the shaft.

BCA PART D2.3 – NON-FIRE ISOLATED STAIRWAYS AND RAMPS:

In a building having a rise in storeys more than 2, required stairways must be constructed of the following.

- Reinforced Concrete
- Steel with no part less than 6mm thick,

BCA CLAUSE D2.4 SEPARATION OF RISING AND DESCENDING STAIR FLIGHTS:

If a stairway is required to be fire isolated, there must be no connection between rising and descending stair flights and smoke separation between flights in the same shaft are required.

The central stair connects four (4) levels in the building being the Class 7a basement carpark, Class 6 Retail at Ground Floor and the two (2) Class 2 Residential Levels. Although the building will be sprinkler protected, the concessions for a four-storey connection do not apply when the stair connects both a retail level and carpark level accordingly. As such, the stair is technically required to be a fire stair and the discharge arrangements as well as the fire and smoke separation arrangements are to be considered.

BCA CLAUSE D2.7 INSTALLATIONS IN EXITS AND PATHS OF TRAVEL:

Services or equipment comprising electricity meters, distribution boards, central telecommunication distribution boards/equipment, electrical motors etc installed in a corridor or the like leading to a required exit are to be enclosed with non-combustible construction or appropriate fire-protection covering and doorways suitably sealed against smoke spread from the enclosure.

BCA CLAUSE D2.8 ENCLOSURE BENEATH STAIRWAYS:

The enclosure beneath the stairway in the basement level needs to be constructed to ensure it achieves an FRL of 60/60/60 mins rated in both directions. The opening is to be protected with a self-losing --/60/30 fire door.

BCA CLAUSE D2.12 ROOF AS OPEN SPACE:

Where an exit discharges to a roof of a building, the roof must have an FRL of not less than 120/120/120 and there must be no roof lights or other openings located within 3m of the path of travel of persons using the exit to reach a road or open space.

In this regard, the following areas have been identified as matters which may be requiring further consideration by either way of design change and/or justification from the project Fire Safety Engineer.

- Ground floor - Exits from the Residential corridor /common areas on the ground floor discharge over the Basement level roof slab which is considered a roof as open space. Upon discharge, occupants necessitate passing within 3m of certain openings to reach open space (i.e., commercial level openings) and the floor slab may not be designed to achieve an FRL of 120/120/120.

BCA CLAUSE D2.13 – TREADS AND RISERS:

The following will apply in relation to the construction of all stairways:

- Stairways must have not more than 18 and not less than 2 risers in each flight.
- The slope relationship (2 x riser dimension + going dimension) must be within 550-700.
- The goings (G) and Risers (R) must be constant (uniform) throughout each flight.
- The maximum variations are as follows:
  - No more than 5mm between adjacent risers, or between adjacent goings (treads).
  - No more than 10mm between the largest and smallest riser within a flight, or the largest and smallest going within a flight
- Risers must not contain any openings that would permit a 125 mm sphere to pass through.
- Treads must be of solid construction (not mesh or perforated) if the stairway is a non-fire stair or is more than 10m high/connects more than 3 storeys.

- In the case of a required stairway, no winders are permitted in lieu of a landing
- Treads must have a surface or nosing strip with a slip-resistant classification not less than that listed in Table D2.14 when tested in accordance with AS 4586-2013 Slip resistance classification of new pedestrian surface materials.

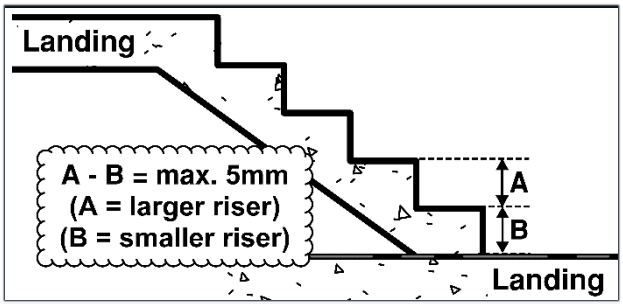


FIGURE 3: MAXIMUM 5MM VARIATION BETWEEN ADJACENT STAIR RISERS

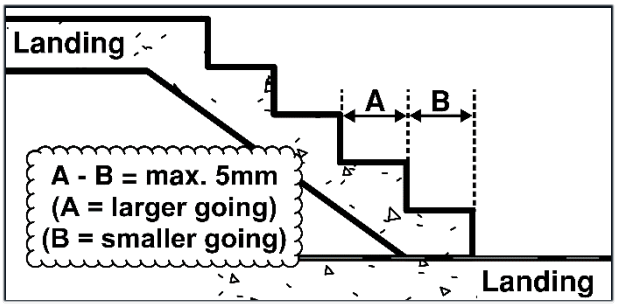
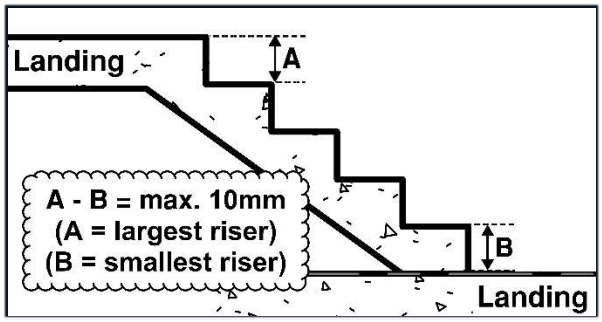


FIGURE 4: MAXIMUM 5MM VARIATION BETWEEN ADJACENT STAIR GOINGS



MAXIMUM 10MM TOTAL VARIATION BETWEEN RISERS OVER A STAIR FLIGHT

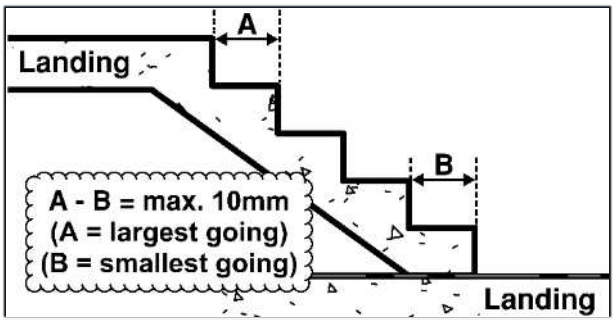


FIGURE 5: MAXIMUM 10MM TOTAL VARIATION BETWEEN GOINGS OVER A STAIR FLIGHT

BCA Table D2.13 Riser and going dimensions

Type	Riser (R)	Going (G) Note 3	Quantity (2R+G)
Public Stairway	115-190mm	250-355mm	550-700
Private Stairway Note 1	115-190mm	240-355mm	550-700

Note 1: Private stairways are stairways in a sole-occupancy unit in a Class 2 building or Class 4 part of a building and in any building, stairways which are not part of a required exit and to which the public do not normally have access

Note 2: Going and riser dimensions must be measured in accordance with BCA Figure D2.13.

Note 3: The going in tapered treads (except winders in lieu of a quarter or half landing) in a curved or spiral stairway is measured:

- 270 mm in from the outer side of the unobstructed width of the stairway if the stairway is less than 1 m wide (applicable to a non-required stairway only); and
- 270 mm from each side of the unobstructed width of the stairway if the stairway is 1 m wide or more.

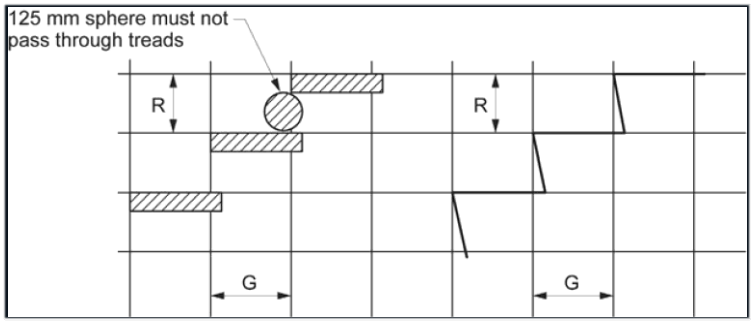


FIGURE 6: BCA FIGURE D2.13 RISER AND GOING DIMENSIONS

BCA CLAUSE D2.14 – LANDINGS:

In a stairway

- Landings must be a minimum of 750mm long, and where it involves a change of direction the length is measured 500mm from the inside edge of the landing
- Have a slip resistance of the surface of the nosing strip in accordance with Table D2.14 and tested in accordance with AS 4586.

In addition to the slip resistance ratings detailed within the table, the slip resistance ratings are required throughout the building as detailed within the HB 198 – 2014 Guidebook for Slip Resistance Ratings are provided below

BCA Table D2.14 - Minimum slip resistance ratings for stairs and ramps		
Building Element	**Dry Surface**	**Wet Surface**
Ramps steeper than 1:14	P4	P5
Ramp steeper than 1:20 but not steeper than 1:14	P3	P4
Tread or landing surface	P3	P4
Nosing or landing strip	P3	P4

Minimum slip resistance ratings required to other parts	
Location	**Minimum Slip Resistance**
Car Park	P2
External walkways etc	P3
Building Entry (wet area)	P3
Building Entry (transitional area)	P2
Building Entry (dry area)	P2
Sanitary Facilities in Common Parts of the Building	P3
Passenger lifts	P2

BCA CLAUSE D2.15 – THRESHOLDS:

Doors (other than those inside the Class 2 SOU's) must not have a ramp or step closer to the door than the width of the door leaf except where opening to open space, where the change in level may be a maximum of 190mm.

Note 1: Threshold ramps are permitted where door open directly to a road or open space and not in any other case.

BCA CLAUSE D2.16 - BALUSTRADES OR OTHER BARRIERS:

Balustrades throughout are to comply with the provisions of this clause. The following summary is provided for your ease of reference.

All balustrades generally must achieve a minimum of 1m in height above any fall more than 1m with no gaps greater than 125mm.

In addition, where the fall exceeds 4m, the balconies must not have any climbable elements (on the barrier or within 1.0m of the barrier) located between 150mm and 760mm above the floor which can serve as climbable elements and footholds for children.

Note: This includes any feature lighting installed within the inside face of concrete / Masonry upturns, gas bayonets, water taps, AC units and any external planter beds located within 1.0m of the balustrades which could serve as a climbable element and/or footholds.

For non-fire isolated stairs where the fall exceeds 1m the balustrading must be a minimum of 865mm above the line of the nosing's of the treads, 1m at the floors and landings and there must be no gaps greater than 125mm throughout.

Glass balustrades are to comply with AS1170.1-2002 (Table C3.3) & AS1288-2006 requiring interlinking rails and end point fixtures. NB: No frameless glass balustrades are permitted.

BCA CLAUSE D2.17 – HANDRAILS:

A handrail is required along one side of all proposed stairways located a minimum of 865-mm above the stair nosing and 1.0m above landings greater than 500mm. The handrail must also be continuous between flights. Please note the additional handrail requirements for stairs required to be accessible under AS1428.1-2009.

BCA CLAUSE D2.21 - OPERATION OF LATCH:

A door in a required exit or in a path of travel to an exit must be readily openable from the side facing a person seeking egress, by a single hand downward action or pushing action on a device located between 900mm and 1100mm above finished floor level. The hardware is to also comply with Section 13 of AS1428.1-2009 (as applicable to the use).

BCA CLAUSE D2.24 - PROTECTION OF OPENABLE WINDOWS:

Each window opening serving a bedroom in a residential building must be provided with a means of protection if the floor below the window is 2m or more above the surface beneath.

Where the lowest level of an openable window is less than 1.7m above the floor, then a window opening is required to be protected either with a device to restrict the window opening to a max. 125mm; or be provided with structurally suitable screens with secure fittings.

The device or screen must be designed to resist a 125mm sphere to pass through the opening or screen and resist an outward horizontal action of 250N against the window restrained by the device or the screen protecting the opening and have a child release mechanism if the screen or device removed, unlocked or overridden.

Further to the above, a barrier such as a balustrade, window sill or the like with a height not less than 865mm above the floor surface is required to all openable windows where the level of the floor is 4m or more above the surface beneath and the barrier is of this nature must not permit a 125mm sphere to pass through it and have any horizontal or near horizontal members between 150mm and 760mm above the floor and must not facilitate climbing.

2.5 BCA PART D3 - ACCESS FOR PEOPLE WITH A DISABILITY:

Access and facilities for people with disabilities will need to be provided to satisfy the requirements of Part D3 of the BCA & AS1428.1-2009, and the Access to Premises – Buildings Standards 2010 satisfying the client's obligations under the DDA. Under Table D3.1, the subject building must be accessible as follows:

Building Characteristics	Access Requirements
Class 2	From the pedestrian entrance to the entrance door of all the residential units. Access is also required to all communal areas.
Class 6	To and within all areas normally used by the occupants
Class 7a	To and within any level containing accessible parking spaces.

In this regard, the above and below details are to be noted on the Construction Certificate documentation and complied with during construction of the development.

Access from the street to the principal pedestrian entrance of the building is to be provided in accordance with AS1428.1-2009. External accessible paths / thoroughfares providing access to the building are to be noted with compliant gradients and landings at entry doors etc. In this regard, we note compliance is readily achieved.

The doors to the entrances and to doors in areas required to be accessible within the building are required to have a clear width of not less than 850mm and satisfy the circulation space requirements under AS 1428.1 – 2009.

The circulation space around all accessible swinging doors is required to comply with Clause 13.3 and Figure 31 of AS 1428.1-2009. Circulation space requirements are to be detailed on the CC drawings – refer to Section 13 of AS1428.1-2009.

All door handles and related hardware to swinging doorways are required to be a type 'D' handle which allows the door to be unlocked and opened with one hand in accordance with Clause 13.5.2.

30% luminance contrasts are to be provided to all new doorways e.g., contrasting between door leaf & jamb; or door leaf & wall; or architrave & wall; or door leaf & architrave and/or door jamb & adjacent wall.

NB: This requirement also applies to the glass doors at main entry which therefore restricts the use of frameless glass.

All frameless glass panels or fully glazed doors on an accessway are to be clearly marking in accordance with AS 1428.1. In this instance, all frameless glass panel or fully glazed doors, including glazing capable of being mistaken

for a doorway or opening, shall be marked with a full width solid non-transparent contrast line not less than 75mm wide and is required to be located between 900mm and 1000mm above floor level.

Every stairway and ramp are required to comply with the requirements under Clause 10 and 11 of AS 1428.1 – 2009 (except existing stair way along the South-West which is only an exit and only requires one (1) handrail). Notwithstanding all the stairs are to be provided with contrast stair nosing's between 50 and 75mm deep across the full width of the path of travel. The strip may be set back 15mm from the front of the nosing and must possess a minimum luminance contrast of 30% to the background. The strip must not extend down the riser more than 10mm.

Handrails are required to both sides with 300mm extensions and full 180 degree turn downs in accordance with Section 11 of AS1428.1-2009.

Note: Fire Stairs need to comply with BCA Clause D2.17(a)(iii)(vi) & Clause D3.3(a)(iii) which require compliance with AS1428.1-2009 clause 12 and 11(f) & (g) respectively i.e., nosing's, handrail design etc.

Stair treads in the exit stairs will need to be off-set as per the diagrams in AS1428.1-2009.

Accessways must have passing spaces complying with AS 1428.1 at maximum 20 metre intervals on those paths of travel where a direct line of sight is not available and turning spaces within 2m of the end of a path of travel and at maximum 20 metre intervals (corridor width of 1540mm required).

Circulation space and corridor widths leading to all the SOU entry doors are to comply with Section 13 of AS1428.1. Circulation space and door dimensions 850mm will be required to the adaptable unit door under AS4299. Note AS4299 also requires access to all common areas such as letter boxes, garbage rooms, communal areas etc, and comments from the accessibility consultant will be required.

Turning bays are required at the end of each corridor where travel is discontinuous.

External and internal surfaces are to comply with Section 7 of AS1428.1-2009.

Walking surfaces to be slip resistant and certification in respect to the slip resistance of any tiles and vinyl will be required at the Occupation Certificate stage to verify compliance with AS/NZS 4586.

Any proposed carpets within the building are to have a pile height or pile thickness not exceeding 11mm and the carpet backing thickness shall not exceed 4mm (total thickness shall not exceed 15mm).

Braille tactile signage is to be provided to all sanitary facilities and ambulant facilities. In addition, the signage to the accessible facilities is to also identify the facility for left & right-handed use.

Braille signage is also required in accordance with the new BCA 2013 provisions at every designated exit door provided with an Exit sign required under E4.5 and state "Exit – Ground".

Tactile indicators are to be provided to all stairs and ramps in the site. In addition, tactile indicators or another type of barrier will need to be provided around the stair obstruction where the stair is less than 2 metre above floor level. Tactiles are also required between the shared zone and vehicular driveway.

Accessible sanitary facility to comply with Section 15 of AS1428.1-2009.

A minimum of 1 accessible car parking space is required where commercial parking spaces are provided in accordance with BCA Clause D3.5 and AS2890.6-2009.

Areas that would be considered inappropriate because of the particular purpose for which the area is used or where it would pose a health or safety risk for people with a disability access is not required to be provided and written confirmation will be required by the client e.g., plant / storage areas.

In addition to the above, we note that Council's DCP may require a percentage of sole occupancy units to comply with the Adaptable Housing Australian Standard AS4299, which calls up compliance with AS1428.1 (in part). As such 'pre and post' adaptation plans together with a detailed design statement are to be submitted with the Construction Certificate application.

In this regard, the following areas have been identified as matters which may be requiring consideration at the Construction Certificate application stage:

There may be insufficient ceiling height clearances above the accessible parking space as a minimum clearance of 2.5m is required to be maintained above the space clear of services and beams etc.

Circulation space to the bedrooms doorways to be revisited at the CC stages.

Circulation space to the Ground floor commercial tenancies will need to be reviewed further at the CC stages.

Unisex accessible sanitary facilities have not been noted on the plans and these are required for each tenancy. Where occupants for each space will exceed more than 10, additional ambulant facilities for each gender (female and male) are required.

Circulation space to the main entry door does not provide for latch side clearances and will need to be subject to a performance solution from the project access consultant.

Accessibility Compliance Report: It is our understanding that the design team will engage the services of an accessibility consultant to review the building design and provide comments, recommendations and any Performance Solutions regarding compliance with Part D3 of the BCA, AS4299 (ADAPTABLE HOUSING) & AS1428.1-2009, and the Access to Premises – Buildings Standards 2010 accordingly.

2.6 SECTION E – ESSENTIAL FIRE SAFETY MEASURES:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section E of the BCA subject to the compliance with the following:

BCA CLAUSE E1.3 – FIRE HYDRANTS:

A Hydrant system is required to be installed in accordance with AS 2419.1 – 2005 given the total floor area of the building exceeding 500msq.

Any required Fire Hydrant Booster assembly that is required must be affixed to the external wall and protected by a radiant heat shield that has an FRL of 90/90/90 located 2m either side and 3m above the outlets in non-sprinkler protected buildings. Boosters are to be located at least 10m from any high voltage mains and at least 2m from any gas meters.

Any Internal Hydrants are to be located within the fire isolated stairways at the landing of the storey they serve or within 4m of an exit on each level. In addition, if floor coverage cannot be achieved supplementary fire hydrants may be provided to suit the operational requirements of the NSW Fire Brigades.

Any 'required' hydrant pump room is required to have a door opening to a road or open space, or a door opening direct into a fire isolated airlock connected to a fire stair.

In this regard, the following areas have been identified as matters which may be requiring further consideration by either way of design change and/or justification from the project Fire Safety Engineer.

The fire hydrant booster is to comply with the provisions of BCA Clause E1.3 and AS2419.1-2005 and be detailed on the CC stage plans for further review.

Details of booster, hydrant landing valves etc together with sweep diagrams of the fire hydrant system are to be provided for further review and assessment with the Construction Certificate application. A detail report identifying design parameters adopted under the FPAA101H standard that conflict with AS2419.1-2005 are to be tables at the Construction certificate stages.

Any departures associated with the systems Standard of Performance (AS2419.1-2005) needs to be identified by the Accredited Practitioner - (Fire Safety) for the design team and Registered Certifiers consideration.

Fire Engineered Performance Solution: It is understood that the design team have engage a C10 Fire Safety Engineer to develop a Performance based Solution to rationalise the Hydrant & Sprinkler system departures accordingly and the report will need to demonstrate compliance with all relevant BCA Performance Requirement (EP1.3) and their design details and certifications are to identify any shortfalls or departures associated with the either the BCA or the relevant Australian Standards.

BCA CLAUSE E1.4 – HOSE REELS:

A fire hose reel system is required to serve a building (excluding the Class 2 parts) where one or more internal fire hydrants are installed or in a building where the floor area of the fire compartment is greater than 500m² and the system is to be designed to comply with AS 2441 – 2005.

Hose reels are required to be located within 4m of an exit or adjacent to internal Hydrants (other than hydrants located in fire isolated exits).

In addition, Fire Hose Reels must be located so that the hose will not pass-through doorways fitted with a fire door, other than a door associated with Clauses C2.12, C2.13. C3.11 and C3.13.

In this regard, it is considered that the building generally complies with the hose reel provisions of provisions of E1.4 about their location in the building.

BCA CLAUSE E1.5 – SPRINKLERS:

A sprinkler system in accordance with FPAS 101H is proposed. Although the sprinklers may technically not be required due to the basement level being below ground and not considered a rise in storeys, it is noted that the sprinklers will be required to address design departures such as spandrels and extended egress distances.

The sprinkler valves are to be enclosed in a secured room and be accessible directly from the road and open space.

In this regard, the following areas have been identified as matters which may be requiring consideration by either way of redesign or via justification from the project Fire Safety Engineer.

The fire sprinkler booster is to comply with the provisions of BCA Clause E1.5 and FPAA101H and be detailed on the CC stage plans for further review.

Details of booster, sprinkler valves, hydrant connections etc are to be provided for further review and assessment with the Construction Certificate application. A detail report identifying design parameters adopted under the FPAA101H standard that conflict with AS2419.1-2005 are to be tables at the Construction certificate stages.

The sprinkler valve room is required to be accessible directly from the roadway.

Any departures associated with the systems Standard of Performance (FPAA101HH & AS2419.1- 2005) needs to be identified by the Accredited Practitioner - (Fire Safety) for the design team and Registered Certifiers consideration.

Any other departures associated with the systems Standard of Performance (AS2118.1-2017) needs to be identified by the Accredited Practitioner (Fire Safety) for the design team and Registered Certifiers consideration.

Fire Engineered Performance Solution: It is understood that the design team have engage a C10 Fire Safety Engineer to develop a Performance based Solution to rationalise the Sprinkler and Hydrant system departures accordingly and the report will need to demonstrate compliance with all relevant BCA Performance Requirements (EP1.4).

BCA CLAUSE E1.6 – PORTABLE FIRE EXTINGUISHERS:

Portable fire extinguishers are to be installed in accordance with clause E1.6 and AS 2444. (e.g., within 2 and 10m from any MSB, within 10m of each SOU entry door. Refer to E1.6 for type of extinguishers required.

BCA CLAUSE E2.2 – SMOKE HAZARD MANAGEMENT:

Class 2 to 9 buildings must comply with the provisions of the Clause / Specification and Tables within to manage smoke during a fire. Smoke hazard provisions apply to buildings and are to be installed in accordance with Table E2.2a & E2.2b as applicable.

Any mechanical ventilation systems in the building are required to be designed in accordance with AS/NZS 1668.2 (A/C systems) incorporating smoke dampers where air handling ducts penetrate any building elements separating fire compartments served. i.e., any shared A/C equipment via fire separated areas must have fire / smoke dampers.

A Clause 3, 4 or 5 Automatic Fire Detection & Alarm System is required to be installed throughout the entire building in accordance with BCA Spec E2.2a and AS1670.1-2018 and/or AS3786-2014.

A Clause 7 Building Occupant Warning system must be provided THROUGHOUT THE BUILDING including carpark, residential and external communal areas in accordance with AS1670.4-2018.

A fire indicator panel needs to be installed at the MAIN ENTRANCE of the building and within proximity of the fire hydrant booster assemblies and clear access around the panel so that it is 500mm from any internal wall or other obstruction.

Note 1: Given the building will be provided with a Sprinkler system in accordance with FPAA101H throughout, the concession under Clause 3 & 4 of Specification E2.2a permits the omission of smoke detectors/ Alarms within common areas and other public spaces. Notwithstanding, a review of the system is required by the fire safety engineer to consider whether any additional fire detectors are required as part of the fire safety strategy for the building.

Note 2: The fire services design engineer must be an Accredited Practitioner - (fire Safety) having relevant accreditation with the Fire Protection Association of Australia (FPAA) or the Department of Fair trading. Furthermore, the designer must have suitable qualifications in the respective fields they are designing to, and their design details and certifications are to identify any shortfalls or departures associated with the either the BCA or the relevant Australian Standards

Note 3: Architectural details, specifications and design certifications are to be prepared by a suitably qualified design practitioner (Registered Architect) and submitted to the satisfaction of the Registered Certifier with the Construction Certificate application. Where Fire Safety Engineering is proposed, a copy of the Fire Engineers Report prepared by a C10 Certifier – Fire Safety is to also be provided.

BCA CLAUSE E3.3 – WARNING AGAINST USE OF LIFTS IN FIRE:

Signage “DO NO USE LIFT IF THERE IS A FIRE” is to be provided near the lift call button in letters not less than 10-mm in height.

BCA CLAUSE E3.6 – FACILITIES FOR PEOPLE WITH DISABILITIES:

As the lifts are required to be provided for disabled access, they must be compliant with a lift specified under Table E3.6a (as appropriate) and the provisions of AS1735.12 as follows:

- Have complying handrails.

- Have minimum internal floor dimensions of 1400 x 1600mm (also refer to stretcher lift dimensions).
- Have doors with a minimum clear width of 900mm.
- Be fitted with a series of door opening sensory devices / passenger protection devices.
- Upper lift landing door requirements.
- Have lift and landing control buttons.
- Appropriate lighting provisions.
- Audible and visual indications, and
- Emergency hands free communication devices.

Note: Lift supplier details, specifications and design certifications are to be prepared by a suitably qualified person and submitted to the satisfaction of the Registered Certifier with the Construction Certificate application.

BCA CLAUSE E4.2 & E4.4 – EMERGENCY LIGHTING:

Emergency Lighting is required in the building in accordance with AS 2293.1-2018.

BCA CLAUSE E4.5 & E4.6 – EXIT SIGNS:

Exit signs must be clearly visible to persons approaching the exit and must be installed on, above or adjacent to each door providing egress from a building. Signs are required to comply with AS 2293.1-2018.

2.7 BCA SECTION F – HEALTH & AMENITY:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section F of the BCA subject to the compliance with the following:

BCA CLAUSE F1.0 – WEATHERPROOFING OF EXTERNAL WALLS:

External walls are to prevent the penetration of water that could cause unhealthy, dangerous condition or loss of amenity to occupants and cause undue dampness or deterioration of building elements.

BCA Performance Solution: As there is no DTS provision that addressed the above, the Architect will need to provide a Performance Based Solution to address BCA Clause F1.0 and BCA Performance Requirement FP4.1 to demonstrate the external façade has been designed to prevent the penetration of water through the external walls.

BCA CLAUSE F1.1 – STORMWATER DRAINAGE:

Stormwater drainage must be installed as per AS 3500.3 -2018. All plumbing works are to comply with National Construction Code (NCC) Volumes 1 - Building Code of Australia and Volume 3 - Plumbing Code of Australia.

BCA CLAUSE F1.4 – EXTERNAL ABOVE GROUND MEMBRANES:

Waterproofing membranes for external above ground use must comply with AS4654 Parts 1 and 2.

BCA CLAUSE F1.5 – ROOF COVERINGS:

This clause details the materials and appropriate standards, with which roofs must be covered with. Roofing must comply with:

- Concrete roof tiles complying with AS 2049-2002 and fixed as per AS 2050 -2018.
- Cellulose cement corrugated sheeting compiling with AS/NZS 2908.1-2000 and installed as per AS/NZS 1562.2 - 1999
- Metal roof sheeting comply with AS 1562.1 - 2018
- Plastic roof sheeting complying with AS/NZS 4256 parts 1, 2 3 and 5 and AS/NZS 1562.3 - 1996

BCA CLAUSE F1.6 – SARKING:

Sarking must be installed to roof and walls for weatherproofing as per AS/NZS 4200.1 and 2 - 2017.

BCA CLAUSE F1.7 – WATERPROOFING OF WET AREAS:

Wet areas in the building are required to comply with AS 3740-2010.

Note: Drainage/Puddle floor waste flanges are required to ALL floor wastes. Shower roses which are ceiling mounted require waterproofing application to extend to the full height to the wall and ceilings to be water resistant.

BCA CLAUSE F1.9 & F1.10 – DAMP PROOFING:

Compliance with the provisions of the BCA and the referenced Australian Standard is required.

BCA CLAUSE F1.11 – PROVISIONS OF FLOOR WASTES:

All bathroom & laundry facilities within the class 2 Residential Sole Occupancy Units are to have floors that are graded to a floor waste to permit the drainage of water.

Note 1: Drainage/Puddle floor waste flanges are required to ALL floor wastes.

Note 2: Architectural details, specifications and design certifications are to be prepared by a suitably qualified design practitioner (Registered Architect) and submitted to the satisfaction of the Registered Certifier with the Construction Certificate application.

BCA CLAUSE F1.13 – GLAZED ASSEMBLIES:

Glazed assemblies in an external wall of a building are required to comply with AS 2047 -2014 requirements for resistance to water penetration. All other glazing installations are to comply with AS1288-2006 and full height glazing is to be toughened glass and provided with decals/motifs.

BCA CLAUSE F2.1 – FACILITIES IN RESIDENTIAL BUILDINGS:

Each Class 2 sole-occupant unit is to be provided with a Kitchen sink and facilities for the preparation and cooking of food, bath or shower, closet pan & wash basins, laundry facilities including wash tub, and space for a washing machine and dryer proposed in the same room as the washing machine or clothesline with no less than 7.5m of line. In this regard, it is considered that the proposed design of the building can comply with provision of clause F2.1.

BCA CLAUSE F2.3 – FACILITIES IN CLASS 3-9 BUILDINGS:

This clause provides the minimum requirements for sanitary facilities to be provided in Class 2-9 buildings.

It is noted that although the commercial tenancies show sanitary facility, final numbers are to be assessed once the tenancies ae let – where and F&B will consist of more than 20 occupants in each space.

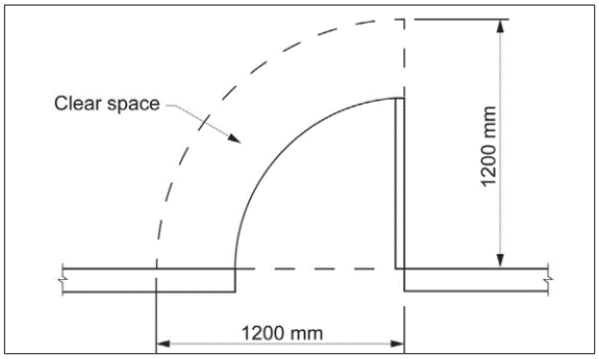
Note: Architectural details, specifications and design certifications are to be prepared by a suitably qualified design practitioner (Registered Architect) and submitted to the satisfaction of the Registered Certifier with the Construction Certificate application.

BCA CLAUSE F2.4 – FACILITIES FOR PEOPLE WITH A DISABILITY:

A unisex accessible sanitary facility is required, and it must comply with Section 15 of AS1428.1-2009. Where the commercial tenancies will be for food and beverage purposes and more than 20 occupants are proposed in either tenancy or combined, additional facilities will be required, and female and male ambulant facilities will be required to be provided and they must comply with Section 16 of AS1428.1-2009.

It is noted that although the commercial tenancies show sanitary facility, final numbers are to be assessed once the tenancies ae let – where and F&B will consist of more than 20 occupants in each space.

BCA Clause F2.5 – Construction of Sanitary Compartments:



The door to fully enclosed sanitary facilities must open outwards, slide or be readily removable from the outside unless there is a clear space of 1.2m measured in accordance with figure F2.5.

In this regard, details of all doors to fully enclosed sanitary facilities throughout all buildings are to be provided accordingly on the Construction Certificate drawings: The door schedule has noted the doors within 1.2m of the WC to be provided with lift off hinges.

Note: Architectural details, Specifications and design certification are to be prepared by a suitably qualified design practitioners (Registered Architect) to the satisfaction of the Registered Certifier are to be provided with the Construction Certificate application.

BCA CLAUSE F3.1 – HEIGHT OF ROOMS:

The floor to ceiling heights in the Class 2 Residential part of the building must not be less than 2.4m in habitable rooms and 2.1 in kitchens, laundries, and bathrooms. Notwithstanding, SEPP 65 requirement

necessitate higher ceiling heights of 2.7m and commitments made under the Statement of Environmental Effect will need to consider compliance accordingly.

In addition, the floor to ceiling heights in the remainder must be 2.4m (generally in common areas) and the store areas, toilets and corridors etc. may be 2.1-metres.

The floor to ceiling height in car parking areas must be not less than 2.2m to comply with BCA minimum requirements and AS2890.1 the carparking design standard. NB: Accessible parking spaces require 2.5m above the designated spots. Floor to ceiling heights in the remainder must be 2.4m generally in retail space and store areas, toilets and corridors etc. may be 2.1-metres.

BCA CLAUSE F4.2 – PROVISION OF NATURAL LIGHT:

Natural light is required to be provided to all habitable rooms in accordance with F4.2. NB: The definition of Habitable Room includes a bedroom, living/dining room, kitchen, study etc.

In this regard, it is considered that the proposed design of the building generally complies with natural light provision of clause F4.1. However, an assessment of the Natural light provisions to the Kitchen to the level 1 unit will need to be considered against the setback provisions and BCA Clause F4.2(b)(iii).

BCA CLAUSE F4.3 – NATURAL LIGHT BORROWED FROM ADJOINING ROOM:

Natural light is required to be provided to all habitable rooms in accordance with F4.2 and where borrowed light from an adjoining room is relied upon it must comply with the parameters of this clause being:

- The glazed panel in the external wall has an opening area of not less than 10% of the room it serves, and
- The adjoining room has openings that have an aggregate light transmitting area of not less than 10% of the combined floor areas of both rooms.

BCA CLAUSE F4.4 – ARTIFICIAL LIGHTING:

Artificial lighting is required where it is necessary to minimise the hazard to occupants during an emergency evacuation. In this regard, we note that artificial lighting is required throughout the building in accordance with AS/NZS 1680.0-2009

Note: Design statement to the satisfaction of the Registered Certifier is to be provided with the Construction Certificate application.

BCA CLAUSE F4.5 – VENTILATION OF ROOMS:

The building is required to be provided with either mechanical ventilation complying with AS1668.2-2012 or natural ventilation achieving 5% of the floor area of the room served.

BCA CLAUSE F4.11 – CARPARKS:

The carpark is required to be ventilated in accordance with AS1668.2 - 2012.

Note: Mechanical Services details, Specifications and design certifications are to be prepared by a suitably qualified design practitioners (Mechanical Services Engineers) to the satisfaction of the Registered Certifier are to be provided with the Construction Certificate application.

BCA PART F5 - DETERMINATION OF IMPACT SOUND INSULATION RATINGS:

A report from an acoustic consultant is to be submitted prior to the issue of the Construction Certificate to confirm the design complies with the requirements of Part F5.

BCA CLAUSE F5.3 - DETERMINATION OF IMPACT SOUND INSULATION RATINGS:

The walls within the Class 2 Residential part of the building that are required to have an impact sound insulation rating must be of discontinuous construction.

Note: Discontinuous construction means a wall having a minimum 20mm cavity between 2 separate leaves, and for masonry, wall ties are of a resilient type. For all other construction there is no mechanical link between leaves except at the periphery.

BCA CLAUSE F5.4 - SOUND INSULATION RATING OF FLOORS:

The floors separating the sole occupancy units in the Class 2 part of the building as well as between the class 2 and other classes are required to have an airborne sound insulation rating of not less than 50 and an impact sound pressure level of not more than 62.

BCA CLAUSE F5.5 – SOUND INSULATION RATING OF WALLS:

A wall separating a sole occupancy unit from another part of the building must have an Row + Ctr airborne of not less than 50 where separating sole-occupancy units. Where separating units from a bathroom, sanitary compartment, laundry, kitchen in another sole occupancy unit or a plant room/ lift shaft/other classification have an Rw (airborne) not less than 50 and are provided with discontinuous construction as per clause F5.3b.

BCA CLAUSE F5.6 – SOUND INSULATION RATING OF SERVICES:

Where a duct, soil, waste or water supply pipe passes through more than one sole occupancy unit, the duct or pipe must be separated from the rooms of a sole occupancy unit by construction having an airborne sound insulation rating of not less than 40 if the adjoining room is habitable or 25 if it is a kitchen or non-habitable room.

BCA CLAUSE F5.7 – SOUND INSULATION OF PUMPS:

A design certificate is to be provided from an Acoustic Consultant confirming that the proposed design can meet the requirements of Part F5.

BCA PART F6 CONDENSATION MANAGEMENT:

Architectural details and design certification is required to address the condensation management provisions of the BCA.

BCA CLAUSE F6.2 – PLIABLE BUILDING MEMBRANES:

The provision of this clause applies to Class 2 parts of the building and requires any pliable building membrane used in external walls to comply with AS/NZS 4200.1 & 2 and the provisions of Clause F6.2 above.

BCA CLAUSE F6.3 – FLOW RATE AND VENTILATION OF EXHAUST SYSTEMS:

The provision of this clause requires kitchen, bathroom and laundry exhaust systems in class 2 Buildings to have a minimum flow rate of 25L/s for a bathroom and 40L/s to a Kitchen and laundry and is to discharge directly to outdoor air via a shaft or duct.

2.8 BCA SECTION G – HEALTH & AMENITY:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section G of the BCA subject to the compliance with the following:

BCA CLAUSE G1.01 (NSW) – PROVISION FOR CLEANING OF WINDOWS:

A building must provide a safe manner of cleaning windows located three (3) or more storeys above ground level. In this regard, the windows must be able to be cleaned from within the building, or provisions made for cleaning of windows by a method complying with the WH&S Act 2000 and regulations made under the Act e.g., roof anchors etc.

BCA CLAUSE G6.2 – FIRE HAZARD PROPERTIES:

This clause sets out requirements for Open Occupiable Outdoor Areas. Floor, wall & ceiling linings, insulations, sarking, and any other linings and/or attachments in an open occupiable outdoor area (i.e., Common Open Balcony, terrace walkway, etc) are required to comply with the requirements under this Clause and the Clause & Specification C1.10 accordingly:

In this regard we provide the following notes which are to be read in conjunction with the tables in the BCA:

- All reflective foils such as sarking/insulations need to achieve compliance and have a flammability index of not greater than 5.
- All insulation materials (including sarking, mineral wool and other fabricated batt, poly or the like products) located in external walls and other walls required to be non-combustible, must be tested to comply with AS1530.1 or be addressed under Performance Solutions.
- Ceiling and wall linings are to have a Material Group Number of 1, 2 or 3 in sprinklered protected buildings.
- Timber feature wall or ceiling linings (or the like) are to comply with the Material Group Ratings under Table C1.10 and are also to have a Material Group Number of 1, 2 or 3 in sprinklered protected buildings.
- Flooring such as timber decking, vinyl, floating floors etc need to achieve a Critical Radiant Flux of not less than 2.2 (in non-sprinkler protected parts) and not less than 1.2 (where sprinklers are installed)

2.9 BCA SECTION J – ENERGY EFFICIENCY

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section J of the BCA subject to the compliance with the following:

BCA SECTION J ENERGY EFFICIENCY:

The Class 2 Building part will be subject to the Building Sustainability Index (BASIX) which will require the recommendations on the certificate to be clearly demonstrated on the Construction Certificate drawings.

In addition, the DTS requirements of NSW Variations of Section J (Energy Efficiency) of the BCA will need to apply to the proposed Class 2 parts of the development.

The proposed 7a parts of the building will also be subject to the Energy Efficiency requirements under this section. In this regard the applicable requirements include

- J1 – Building Fabric,
- J3 – Building Sealing,
- J5 – Air Conditioning and Ventilation Systems,
- J6 – Artificial Lighting and Power,
- J7 – Hot Water Supply and J8 – facilities for energy monitoring.

The building is located in Climate Zone 5 and the relevant provisions of the BCA are to be applied to each classification concerned adoringly.

Note: In order to demonstrate compliance, it is understood that a Basix Certificate/Section J report from an ESD Consultant will be submitted with the Construction Certificate Application. Glazing calculators to accompany reports.

3.0 CONCLUSION

This BCA Assessment report contains an assessment of the referenced architectural documentation for the proposed development located at 1102 Barrenjoey Road, Palm Beach NSW 2108, against the Deemed- to-Satisfy provisions and Performance Requirements of the National Construction Code Series (Volume 1) Building Code of Australia 2019 Amendment 1.

In accordance with the above, CCG can verify that the proposed building design will achieve compliance with the BCA through a combination of compliance with the DTS provisions and Performance Requirements of the BCA,

In view of the above assessment, we can confirm that compliance with the BCA is readily achievable, subject to compliance with the key matters outlined in this report being appropriately addressed by the project Fire Safety Engineer, Competent Fire Safety Practitioners/Design Consultants, Access Consultant, ESD Consultant and other key Stakeholders, that compliance with the BCA is readily achievable.

If you have any questions or require further information, please do not hesitate to contact me on 0498 761 218 or via email: patrick@codecg.com.au

Yours sincerely,

Patrick Cameron | Director
Code Consultancy Group

Registered Building Surveyor (Unrestricted) – NSW FairTrading (Registration No. BDC4585)
Accredited Building Surveyor (Level 1) - Australian Institute of Building Surveyors (Accreditation No. 7645)
Member Passive Fire Protection Technical Advisory Committee – FPA Australia (Membership No. 54355)
Member Society of Fire Safety – Engineers Australia (EA ID: 5988062)

4.0 APPENDIX: PRELIMINARY FIRE SAFETY SCHEDULE

The following essential fire safety measures shall be implemented in the whole of the building premises and each of the fire safety measures must satisfy the standard of performance listed in the schedule, which, for the purposes of Clause 168 of the Environmental Planning and Assessment Regulation 2000, will be deemed to be the current fire safety schedule for the building.

Statutory Fire Safety Measure	Design/Installation Standard
Access Panels, Doors & Hoppers	BCA Clause C3.13 & AS 1530.4 - 2014 and Manufacturer's Specification
Alarm Signalling Equipment	AS 1670.3 – 2018 and Manufacturer's Specification
Automatic Fire Suppression Systems (sprinklers)	BCA Specification E1.5 & FPAA101H Manufacturer's Specification & Fire Engineering Report (once issued)
Automatic Fire Detection and Alarm System	BCA Spec E2.2a, AS1670.1-2018 and/or AS3786-2014 and Manufacturer's Specification
Building Occupant Warning System	BCA Spec E2.2 and Clause 3.22 of AS 1670.1 – 2018 and the nominated Sprinkler standards and Manufacturer's Specification
Emergency Lighting	BCA Clause E4.4 & AS2293.1 - 2018 and Manufacturer's Specification
Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS 2293.1 - 2018 and Manufacturer's Specification
Fire Dampers	BCA Clause C3.15, AS1668.1 - 2015 & AS 1682.1 & 2 - 2015 and Manufacturer's Specification
Fire Doors	BCA Clause C2.12, C2.13, C3.8, C3.11, D2.8 and AS 1905.1 – 2015 and Manufacturer's Specification
Fire Hose Reels	BCA Clause E1.4 & AS 2441 – 2005 and Manufacturer's Specification
Fire Hydrant Systems	Clause E1.3 & AS 2419.1 – 2005, FPAA101H and Manufacturer's Specification & Fire Engineering Report (once issued)
Fire Seals	BCA Clause C3.15, AS 1530.4 – 2014 & AS 4072.1 – 2005 and Manufacturer's Specification
Mechanical Air Handling Systems	BCA Clause E2.2, AS/NZS 1668.1 - 2015 & AS 1668.2 – 2012 and Manufacturers Specifications
Lightweight Construction (Bounding Construction)	BCA Clause C1.8, AS1530.4-2014 and Manufacturers Specifications
Paths of Travel	EP & A Regulation Clause 186 & Fire Engineering Report (once issued)
Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001
Smoke Alarms	BCA Spec E2.2a and AS3786-2014 and Manufacturer's Specification.
Wall-Wetting Sprinklers (Used to protect Openings)	BCA Clause C3.4, & AS 2118.2 – 2010 and Manufacturer's Specification + Fire Engineered Performance Based Solution
Warning & Operational signs	Section 183 of the EP & A Regulations 2000, BCA Clause E3.3
Fire Engineered Performance Solutions	Fire Engineering Report (once issued)

Note: The above schedule may be subject to change upon recommendation from the fire safety engineer or FRNSW at the Construction Certificate stage.