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Building Code of Australia Capability Report

Tcon Constructions Pty Ltd

Blocks A, B & G / 400-404 Cabramatta Road West, 2-18 Orange Grove Road and 6 Links Avenue, Cabramatta

14 December 2022

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Report number	Comments	Report date
01	Draft issued	4 November 2022
02	Draft reissued	16 November 2022
03	Final issued	14 December 2022

Contents

Building Code of Australia Capability Report

1. Executive Summary

(a) This report presents the findings of an assessment of the townhouse development at Blocks A, B & G / 400-404 Cabramatta Road West, 2-18 Orange Grove Road and 6 Links Avenue, Cabramatta, assessed against the provisions of Volume 2 of the Building Code of Australia, Edition 2019, Amendment 1 (the **BCA**).

(b) The assessment identified the following major variations that require action as described in the body of this report:

(i) 3.8.1.2 - Windows in shower areas with a sill height of less than 1.8m.

(ii) 3.8.5.2 - Skylights to Units 46-53 to be openable and having a ventilation area of not less than 5% of the floor area of the studies.

(c) In summary, the assessment found that compliance with the BCA can be achieved, subject to compliance with Part 5.

2. Introduction

2.1. General

This report presents the findings of an assessment of the townhouse development at Blocks A, B & G / 400-404 Cabramatta Road West, 2-18 Orange Grove Road and 6 Links Avenue, Cabramatta, assessed against the provisions of the **BCA**.

2.2. Report Basis, Limitations & Assumptions

(a) The purpose of this report is to provide an assessment of the development against the current requirements of the BCA.

(b) It is conveyed that this report should not be construed to infer that an assessment for compliance with the following has been undertaken:

(i) Access and Facilities for People with a Disability and Energy Efficiency provisions of the BCA;

(ii) Work Health & Safety Act and Regulations;

(iii) SafeWork NSW requirements;

(iv) Structural and Services Design Documentation;

(v) The individual requirements of service authorities (i.e. Telecommunication Carriers, Sydney Water, Energy Providers);

(vi) The Disability Discrimination Act (DDA) 1992;

(vii) The requirements of the Australian Standards (**AS**) and Australian/New Zealand Standards (**AS/NZS**);

(ix) Consideration of any structural elements or geotechnical matters relating to the building;

(x) Consideration of any fire services operations (including hydraulic, electrical or other systems);

(xi) Assessment of plumbing and drainage installations, including stormwater;

(xii) Assessment of mechanical plant operations, electrical systems or security systems;

(xiii) Determining full compliance with the deemed-to-satisfy provisions of the BCA;

(xiv) Reporting of any hazardous materials or site contamination;

(xv) Consideration of energy or water authority requirements;

(xvi) Consideration of the local Council's local planning policies;

(xvii) Assessment of any development applications or the approval of any local authority requirements;

(xviii) Energy efficiency, including NAThers requirements;

(xix) Any performance solutions relating to the building;

(xx) Any legislative requirement, including Council requirements regarding the installation of onsite fire hydrant systems.

(xxi) Any proposed lot subdivision of the development and its impact of the creation of multiple allotment boundaries and resulting compliance of the subject development with the DTS provisions of Part 3.7 of the BCA.

(c) The following assumptions have been made in the assessment:

(i) Each unit is a single dwelling.

(ii) Where spaces within units are open plan and interconnect a number of different uses, they are interpreted as being a single room.

(iii) The wall cladding shown on the architectural plans does not consist of any timber wall cladding as indicated in Part 3.5.4 of the BCA.

(iv) The balconies, verandahs and the like are not Class 10a buildings (except where noted in this report) but are considered as attachments to the external wall to which they are attached to.

2.3. Regulatory Framework

The following has been considered in the formulation of this report:

(a) Environmental Planning and Assessment Act 1979;

(b) Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021; and

(c) Environmental Planning and Assessment Regulation 2021.

2.4. Information Sources

The following information has been used in the formulation of this report:

(a) Architectural drawings with Project No. 22020 prepared by Designiche Pty Ltd as listed in Table 1 below:

Title or Description of Drawing	Drawing No	Issue	Date
Site Plan	04	A	11.11.22
Ground Floor	06	A	11.11.22
First Floor Plan	07	A	11.11.22
Attic Plan	08	A	11.11.22
Elevations 1 of 2	09	A	11.11.22
Elevations 2 of 2	10	A	11.11.22
Sections	11	A	11.11.22
Sections	12	A	11.11.22

Table 1 – Architectural drawings

3. Development Description

3.1. General

In accordance with the BCA, the assessment undertaken relates to 2 and 3 storey townhouse buildings.

3.2. Building Description

Table 1 below outlines key classification criteria in accordance with the BCA.

BCA clause		Description of requirement
A6	Classification	Class 1a (townhouses)

Table 1 – DTS criteria

4. BCA Assessment Summary

4.1. General

(a) The following table summarises the compliance status of the design in terms of each applicable prescriptive provision of the BCA and indicates a capability for compliance with the BCA.

(b) For those instances of 'compliance required', commentary and resolutions are provided within Part 5.

4.2. Part 3.0 – Structural Provisions

BCA Clause		Status
3.0.1	Structural provisions	Refer to Part 5

4.3. Part 3.1 – Site Preparation

BCA Clause		Status
3.1.1.1	Un-retained bulk earthworks — site cut	Refer to Part 5
3.1.1.2	Un-retained bulk earthworks — fill	Refer to Part 5
3.1.3.0	Drainage	Refer to Part 5
3.1.4	Termite risk management	Refer to Part 5

4.4. Part 3.2 – Footings and Slabs

BCA Clause		Status
3.2.0	Footings and slabs	Refer to Part 5

4.5. Part 3.3 – Masonry

BCA Clause		Status
3.3.1.0	Unreinforced masonry	Refer to Part 5
3.3.2.0	Reinforced masonry	Refer to Part 5
3.3.3.0	Masonry accessories	Refer to Part 5
3.3.4.0	Weatherproofing of masonry	Refer to Part 5
3.3.5.0	Masonry veneer	Refer to Part 5

4.6. Part 3.4 – Framing

BCA Clause		Status
3.4.2.0	Steel framing	Refer to Part 5
3.4.3.0	Timber framing	Refer to Part 5
3.4.4.0	Structural steel members	Refer to Part 5

4.7. Part 3.5 – Roof and Wall Cladding

BCA Clause		Status
3.5.1.0	Sheet roofing	Refer to Part 5
3.5.3.0	Gutters and downpipes	Refer to Part 5
3.5.4.4	Sheet wall cladding	Refer to Part 5
3.5.4.5	Eaves and soffit linings	Refer to Part 5
3.5.4.6	Flashings to wall openings	Refer to Part 5
3.5.4.7	Clearance between cladding and ground	Refer to Part 5
3.5.4.8	Parapet cappings	Refer to Part 5
3.5.5.0	Metal wall cladding	Refer to Part 5

4.8. Part 3.6 – Glazing

BCA Clause		Status
3.6.0	Glazing	Refer to Part 5

4.9. Part 3.7 – Fire Safety

BCA Clause		Status
3.7.1.2	Fire hazard properties	Refer to Part 5
3.7.2.2	External walls of Class 1 buildings	Refer to Part 5
3.7.2.4	Construction of external walls	Refer to Part 5
3.7.2.7	Allowable encroachments	Refer to Part 5
3.7.2.8	Roof lights	Complies
3.7.3.2	Separating walls	Refer to Part 5
3.7.3.3	Services in separating walls	Refer to Part 5
3.7.3.4	Roof lights	Complies
3.7.5.2	Smoke alarm requirements	Refer to Part 5
3.7.5.3	Location of smoke alarms – Class 1a buildings	Refer to Part 5
3.7.5.5	Installation of smoke alarms	Refer to Part 5

4.10. Part 3.8 – Health and Amenity

BCA Clause		Status
3.8.1.2	Wet areas	Refer to Part 5
3.8.1.3	External above ground membranes	Refer to Part 5
3.8.2.2	Heights of rooms and other spaces	Refer to Part 5
3.8.3.2	Required facilities	Complies
3.8.3.3	Construction of sanitary compartments	Complies
3.8.4.2	Natural light	Refer to Part 5
3.8.4.3	Artificial lighting	Refer to Part 5
3.8.5.2	Ventilation requirements	Refer to Part 5
3.8.5.3	Location of sanitary compartments	Complies
3.8.6.2	Sound insulation requirements	Refer to Part 5

3.8.6.3	Determination of airborne sound insulation ratings	Refer to Part 5
3.8.6.4	Construction of sound insulated walls	Refer to Part 5
3.8.6.5	Services	Refer to Part 5
3.8.7.2	Pliable building membrane	Refer to Part 5
3.8.7.3	Flow rate and discharge of exhaust systems	Refer to Part 5
3.8.7.4	Ventilation of roof spaces	Refer to Part 5

4.11. Part 3.9 – Safe Movement and Access

BCA Clause		Status
3.9.1.2	Stairway construction	Refer to Part 5
3.9.1.4	Slip-resistance	Refer to Part 5
3.9.1.5	Landings	Refer to Part 5
3.9.1.6	Thresholds	Refer to Part 5
3.9.2.2	Barriers to prevent falls	Refer to Part 5
3.9.2.3	Construction of barriers to prevent falls	Refer to Part 5
3.9.2.4	Handrails	Refer to Part 5
3.9.2.6	Protection of openable windows – bedrooms	Refer to Part 5
3.9.2.7	Protection of openable windows – rooms other than bedrooms	Refer to Part 5

4.12. Part 3.10 – Additional Construction Requirements

BCA Clause		Status
3.10.2.0	Earthquake areas	Refer to Part 5
3.10.3.0	Flood hazard areas	Refer to Part 5
3.10.5.0	Construction in bushfire prone areas	Refer to Part 5
3.10.6.0	Attachment of decks and balconies to external walls of buildings	Refer to Part 5

4.13. Part 3.12 – Energy Efficiency

BCA Clause		Status
3.12.3	Building sealing	Refer to Part 5
3.12.5	Services	Refer to Part 5

5. BCA Issues Requiring Resolution

5.1. General

(a) With reference to the 'BCA Assessment Summary' contained within Part 4, the following commentary and resolutions are provided.

(b) This commentary and resolutions are formulated for demonstrating compliance with the relevant provisions of the BCA.

5.2. Part 3.0 – Structural Provisions

3.0.1	Compliance with this part is achieved when a building is constructed in accordance with the relevant provisions of other parts relating to structural elements.

5.3. Part 3.1 – Site Preparation

3.1.1.1 A site cut using an un-retained bulk embankment must comply with this part.

3.1.1.2 Fill using an un-retained embankment must comply with this part.

3.1.3.0 Drainage satisfies the requirements of this part when it is designed and constructed in accordance with AS/NZS3500.3-2018.

3.1.4

(a) Primary building elements consisting of the following materials are considered not subject to termite attack:

- (i) Steel, aluminium, or other metals.
- (ii) Concrete.
- (iii) Masonry.
- (iv) Fibre-reinforced cement.
- (v) Timber — naturally termite resistant in accordance with Appendix C of AS 3660.1-2014.
- (vi) Timber — preservative treated in accordance with Appendix D of AS 3660.1-2014

(b) Where a termite management system is required, it must:

- (i) Be selected appropriate to Table 3.1.4.1;
- (ii) Comply with AS3660.1-2014 or have been tested and passed the tests required by Section 5 of AS3660.3-2014; and
- (iii) Have a durable notice is permanently fixed to the building in a prominent location, such as a meter box or the like, indicating:
  - (A) The termite management system used;
  - (B) The date of installation of the system;
  - (C) Where a chemical is used, its life expectancy as listed on the appropriate authority's register label; and
  - (D) The installer's or manufacturer's recommendations for the scope and frequency of future inspections for termite activity.
- (iv) Where a chemical termite management system is used, the chemical must be included on the appropriate authority's pesticides register.

5.4. Part 3.2 – Footings and Slabs

3.2.0 Footings and slabs satisfy the requirements of this part when installed in accordance with one of the following:

(a) The footing or slab is constructed in accordance with AS2870-2011; or

(b) Piled footings are designed in accordance with AS2159-2009.

5.5. Part 3.3 – Masonry

3.3.1.0-3.3.5.0 Masonry satisfies the requirements of this part when it is designed and constructed in accordance with:

(a) AS3700-2018; or

(b) AS4773.1-2015 and AS4773.2-2015.

5.6. Part 3.4 – Framing

3.4.2.0 Steel framing satisfies the requirements of this part when it is designed and constructed in accordance with one of the following:

(a) Residential and low-rise steel framing:

(i) Design: NASH Standard 'Residential and Low-Rise Steel Framing' Part 1, 2005 Edition.

(ii) Design solutions: NASH Standard 'Residential and Low-Rise Steel Framing' Part 2, 2005 Edition.

(b) AS4100-1998.

(c) AS/NZS4600-2018.

3.4.3.0 Timber framing satisfies the requirements of this part when it is designed and constructed in accordance with:

(a) AS1720.1-2010;

(b) A1720.5-2015;

(c) AS1684.2-2010; or

(d) AS1684.4-2010.

3.4.4.0 The use of structural steel sections satisfies the requirements of this part when they are designed and constructed in accordance with:

(a) AS4100-1998; or

(b) AS/NZS4600-2018.

5.7. Part 3.5 – Roof and Wall Cladding

3.5.1.0 Metal roofing satisfies the requirements of this part when it complies with AS1562.1-2018.

3.5.3.0 Gutters and downpipes satisfy the requirements of this part if they are designed and constructed in accordance with AS/NZS3500.3-2018.

3.5.4.4 Where provided, fibre-cement sheet wall cladding must:

(a) Comply with AS/NZS2908.2-2000 or ISO8336-1993E; and

(b) Be fixed in accordance with Table 3.5.4.3.

3.5.4.5 Where provided, external fibre-cement sheets and linings used as eaves and soffit linings must:

(a) Comply with AS/NZS2908.2-2000 or ISO8336-1993E; and

(b) Be fixed in accordance with Table 3.5.4.6 and Figure 3.5.4.4 using:

(i) 2.8×30 mm Fibre-cement nails;

(ii) No. 8 Wafer head screws (for 4.5mm and 6mm sheets only); or

(iii) No. 8 Self embedding head screws (for 6 mm sheets only).

3.5.4.6 Openings in external wall cladding exposed to the weather must be flashed with materials complying with AS/NZS2904-1995 and in accordance with this part.

3.5.4.7 The minimum clearance from the bottom of the wall cladding to the adjoining finished ground level must be:

(a) 100 mm in low rainfall intensity areas or sandy, well-drained areas;

(b) 50 mm above impermeable (paved or concreted) areas that slope away from the building in accordance with 3.1.3.3(a); or

(c) 150 mm in any other case.

3.5.4.8 Where a wall cladding is used to from a parapet wall, the cladding must be attached to a supporting frame and have a capping installed that complies with this part.

3.5.5.0 Metal wall cladding satisfies the requirements of this part when it is designed and constructed in accordance with AS1562.1-2018.

5.8. Part 3.6 – Glazing

3.6.0 Glazing and windows satisfy the requirements of this part where designed and installed in accordance with:

(a) AS2047-2014 (i.e. glazed assemblies in external wall); and

(b) AS1288-2006 (i.e. glazed assemblies not in an external wall, including but not limited to shower screens, mirrors and balustrades).

5.9. Part 3.7 – Fire Safety

3.7.1.2

(a) Sarking-type materials used in the roof must have a flammability index not greater than 5.

(b) Flexible ductwork used for the transfer of products initiating from a heat source that contains a flame must comply with the fire hazard properties set out in AS 4254.1-2012 (i.e. gas cooktop).

3.7.2.2 An external wall of a Class 1 building, and any openings in that wall, must comply with 3.7.2.4 if the wall is less than:

(a) 900mm from an allotment boundary other than the boundary adjoining a road alignment or other public space; or

(b) 1.8m from another building on the same allotment other than a Class 10 building associated with the Class 1 building or a detached part of the same Class 1 building.

This includes the attic external walls that are within 1.8m of the vertical projection of the separating wall on the lower storeys.

3.7.2.4

(a) External walls (including gables) required to be fire-resisting must:

(i) Commence at the footings or ground slab, except where the external wall commences above a separating wall complying with 3.7.3.2; and

(ii) Extend to:

(A) The underside of a non-combustible roof covering, except that a wall may terminate not more than 200mm from the underside of a non-combustible roof covering, where the area between the external wall and underside of the roof covering is sealed with a non-combustible fascia, gutter or flashing; or

(B) The underside of a non-combustible eaves lining; and

(b) A wall required by (a) must:

(i) Have an FRL of not less than 60/60/60 when tested from the outside;

(ii) Be of masonry-veneer construction in which the external masonry veneer is not less than 90mm thick; or

(iii) Be of masonry construction not less than 90mm thick.

(c) For the external walls that commence above a separating wall, the construction of the external wall, including provision of non-combustible roofing, fascia and gutter shall comply with the appropriate part under Figure 3.7.2.3.

(d) For all external walls required to be fire-resisting, including those walls that comprise of an external wall that commences above a separating wall, the building element used in the wall construction must be used to construct the entire wall.

3.7.2.7

(a) Encroachments allowed within 900mm of an allotment boundary or within 1.8m of another building on the same allotment are:

(i) Non-combustible fascias, gutters and downpipes;

(ii) Light fittings, electricity or gas meters, aerials or antennas;

(iii) Pergolas, sun blinds or water tanks; and

(iv) Unroofed terraces, landings, steps and ramps not more than 1m in height.

(b) Encroachments allowed upto but not closer than 450mm from an allotment boundary or upto but not closer than 900mm of another building on the same allotment or associated encroachments of another building on the same allotment are:

(i) Combustible fascias, gutters and downpipes;

(ii) Eaves with non-combustible roof cladding and non-combustible lining; and

(iii) Flues, chimneys, domestic fuel tanks, cooling or heating appliances or other services.

(c) For the external walls that commence above a separating wall, the construction of the external wall, including provision of non-combustible roofing, fascia and gutter must comply with the appropriate part under Figure 3.7.2.3 of the BCA and the requirements of this Clause.

(d) For these walls, no eave overhang is permitted.

3.7.3.2

The internal separating wall between units must be in accordance with the following:

(a) Achieve an FRL of 60/60/60 (tested from both sides) or be of masonry construction not less than 90mm thick;

(b) Commence at the footings or ground slab and extend of the underside of the non-combustible roof covering;

(c) If of lightweight construction, must be tested in accordance with Specification C1.8 of Volume 1;

(d) Must not be crossed by timber or other combustible building elements except for roof battens with dimensions of 75mm x 50mm or less, or roof sarking;

(e) Must have any gap between the top of the wall and the underside of the roof covering packed with mineral fibre or other suitable fire-resisting material;

(f) The gap between the separating wall and the external masonry veneer is to be no more than 50mm and packed with mineral fibre or other suitable fire-resisting material with packing arranged to maintain weatherproofing requirements of 3.3.4; and

(g) Eaves, verandahs and similar spaces that are open to the roof space and are common must be separated by non-combustible vertical lining.

3.7.3.3

(a) Any services openings within the separating wall must have construction with an FRL of --/60/60.

(b) If an electrical wire or cable penetrates the separating wall, the service and building element at the penetration or the service must be installed in accordance with this Part of the BCA.

(c) If an electrical switch, outlet, socket or the like is accommodated in the separating wall, the service and building element at the penetration or the service must be installed in accordance with this Part of the BCA.

(d) Other than where a tested system is used, if an electrical switch, socket, outlet or the like is accommodated in a hollow separating wall, the cavity immediately behind the service must be framed and packed with mineral fibre or other suitable fire resistant material.

3.7.5.2

The units must have smoke alarms complying with AS3786-2014 that are connected to consumer mains power. The smoke alarms in each unit must be interconnected.

3.7.5.3

Smoke alarms must be installed in each unit on or near the ceiling in:

(a) Any storey containing bedrooms:

(i) Between each part of the unit containing bedrooms and the remainder of the unit;

(ii) Where bedrooms are served by a hallway, in that hallway; and

(b) Any other storey not containing bedrooms.

3.7.5.5

Smoke alarms must be installed on or near the ceiling, in accordance with the following:

(a) Where a smoke alarm is located on the ceiling it must be:

(i) A minimum of 300mm away from the corner junction of the wall and ceiling; and

(ii) Between 500mm and 1500mm away from the high point and apexes of the ceiling, if the room has a sloping ceiling.

(b) Where (a) is not possible, the smoke alarm may be installed on the wall, and located a minimum of 300mm and a maximum of 500mm off the ceiling at the junction with the wall.

5.10. Part 3.8 – Health and Amenity

3.8.1.2 Building elements in wet areas must:

(a) Be waterproof or water resistant in accordance with Table 3.8.1.1 of the BCA; and

(b) Comply with AS3740-2010.

Attention is directed but not limited to the following:

(a) Windows in shower areas with a sill height of less than 1.8m.

3.8.1.3 Waterproofing membranes for external above ground use must comply with AS4654-2012.

3.8.2.2 Heights of rooms and other spaces must be not less than:

(a) In a habitable room excluding a kitchen — 2.4m; and

(b) In a kitchen — 2.1m; and

(c) In a corridor, passageway or the like — 2.1m; and

(d) In a bathroom, shower room, laundry, sanitary compartment, airlock, pantry, storeroom, garage, car parking area or the like — 2.1m; and

(e) In a room or space with a sloping ceiling or projections below the ceiling line within:

(i) A habitable room - a height of not less than 2.4m over two-thirds of the floor area of the room or space; and

(ii) A non-habitable room (including sanitary compartments underneath stairways) — a height of not less than 2.1m for at least two-thirds of the floor area of the room or space,

and when calculating the floor area of a room or space, any part that has a ceiling height of less than 1.5m is not included; and

(f) In a stairway, ramp, landing, or the like — 2.0m measured vertically above the nosing line of stairway treads or the floor surface of a ramp, landing or the like.

3.8.4.2 Natural lighting must be provided to habitable rooms in accordance with the following:

(a) Windows having a light transmitting area exclusive of framing members of 10% of the floor area of the room and are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like;

(b) Roof lights having a light transmitting area exclusive of framing members of 3% of the floor area of the room and are open to the sky; or

(c) A proportional combination of (a) and (b).

Natural light to a room may come through one or more glazed panels or openings from an adjoining room (including an enclosed verandah) if:

(a) The glazed panels or openings have an aggregate light transmitting area of not less than 10% of the floor area of the room to which it provides light; and

(b) The adjoining room has:

(i) Windows, excluding roof lights, that:

(A) Have an aggregate light transmitting area of not less than 10% of the combined floor areas of both rooms; and

(B) Are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like; or

(c) Roof lights having an aggregate light transmitting area of not less than 3% of the combined floor area of both rooms and are open to the sky; or

(d) A proportional combination of windows and roof lights required by (b) and (c).

3.8.4.3 Sanitary compartments, bathrooms, shower rooms, airlocks and laundries that are not provided with natural lighting complying with 3.8.4.2 must have artificial lighting complying with the following:

(a) At a rate of not less than 1 light fitting per 16m^2 of floor area; or

(b) In accordance with AS/NZS1680.0-2009.

3.8.5.2 Ventilation must be provided to a habitable room, sanitary compartment, bathroom, laundry and any other room occupied by a person for any purpose by any of the following means:

(a) Openings, windows, doors or other devices which can be opened:

(i) With a ventilating area of not less than 5% of the floor area of the room required to be ventilated; and

(ii) Open to suitably sized court, or space open to the sky or an open verandah, carport of the like:

(b) An exhaust fan or other means of mechanical ventilation may be used to ventilate a sanitary compartment, laundry, kitchen or bathroom provided contaminated air exhausts comply with 3.8.7.3 of the BCA.

Natural ventilation to a room may come through a window, opening, door or other device from an adjoining room (including an enclosed verandah) if:

(a) The room to be ventilated or the adjoining room is not a sanitary compartment; and

(b) The window, opening, door or other device has a ventilating area of not less than 5% of the floor area of the room to be ventilated; and

(c) The adjoining room has a window, opening, door or other device with a ventilating area of not less than 5% of the combined floor areas of both rooms; and

(d) The ventilating areas specified may be reduced as appropriate if direct natural ventilation is provided from another source.

Attention is directed but not limited to the following:

(a) Skylights to Units 46-53 to be openable and having a ventilation area of not less than 5% of the floor area of the studies.

3.8.6.2 The separating walls between the units must:

(a) Achieve a $R_w + C_{tr}$ (airborne) of not less than 50;

(b) Be of discontinuous construction as outlined in 3.8.6.2 of the BCA, if it separates a bathroom, sanitary compartment, laundry or kitchen in one dwelling from a habitable room (other than a kitchen) in an adjoining dwelling building; and

(c) Must continue to:

(i) The underside of the roof above; or

(ii) A ceiling that provides the sound insulation required for the wall.

3.8.6.3 The separating walls between the units must comply with this part.

3.8.6.4 To achieve the appropriate level of sound insulation, the separating walls must be constructed in accordance with the requirements of this part.

3.8.6.5

(a) Services in the separating wall between the dwellings must comply with this part.

(b) Services must not be chased into concrete or masonry separating walls.

3.8.7.2

(a) Where a pliable building membrane is installed in an external wall, it must comply with this part.

(b) Except for single skin masonry or single skin concrete, where a pliable building membrane is not installed in an external wall, the primary water control layer must be separated from water sensitive materials by a drained cavity.

3.8.7.3

(a) An exhaust system installed in a kitchen, bathroom, sanitary compartment or laundry must have a minimum flow rate of:

(i) 25 L/s for a bathroom or sanitary compartment; and

(ii) 40 L/s for a kitchen or laundry.

(b) Exhaust from a bathroom, sanitary compartment, or laundry must be discharged:

(i) Directly or via a shaft or duct to outdoor air; or

(ii) To a roof space that is ventilated in accordance with 3.8.7.4.

3.8.7.4

(a) Where an exhaust system covered by 3.8.7.3 discharges into a roof space, the roof space must be ventilated to outdoor air through evenly distributed openings.

(b) Openings required by (a) must have a total unobstructed area of 1/300 of the respective ceiling area if the roof pitch is more than 22°, or 1/150 of the respective ceiling area if the roof pitch is not more than 22°.

(c) 30% of the total unobstructed area required by (b) must be located not more than 900mm below the ridge or highest point of the roof space, measured vertically, with the remaining required area provided by eave vent.

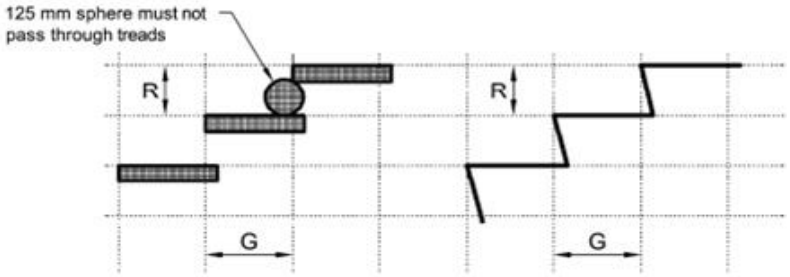
5.11. Part 3.9 – Safe Movement and Access

3.9.1.2

(a) A stairway must be designed to take the loading forces in accordance with AS/NZS1170.1-2002;

(b) A stairway must not more than 18 and not less than 2 risers in each flight;

(c) The going, riser and steepness dimension of the stairway are to be within the following range:



Riser (R)		Going (G)		Slope Relationship (2R+G)	
Max	**Min**	**Max**	**Min**	**Max**	**Min**
190	115	355	240	700	550

(d) The risers and goings are to be constant throughout the flight except variations of no greater than 5mm are permitted between adjacent risers or goings and no greater than 10mm are permitted between the smallest and largest goings or risers in a flight; and

(e) In the case of a stairway with winders:

(i) A maximum 3 consecutive winders in lieu of a quarter landing in a flight and a maximum of 6 consecutive winders in lieu of a half landing; and

(ii) The going of all winders in lieu of a quarter or half landing may vary from the going of the straight treads within the same flight provided that the going of such winders in constant.

3.9.1.4

The stair treads and landings must have a surface or nosing strip achieving a slip-resistance classification of P3 or R10 for likely dry surface conditions or P4 or R11 for likely wet surface conditions, tested in accordance with AS4586-2013.

3.9.1.5

Landings must a gradient not steeper than 1:50.

3.9.1.6

Where a threshold of a doorway is more than 230mm above the adjoining surface, it must incorporate steps having riser and going dimensions in accordance with 3.9.1.2.

3.9.2.2

(a) A continuous barrier must be provided along the side of a trafficable surface, such as:

(i) A stairway, ramp or the like; and

(ii) A floor, corridor, hallway, balcony, deck, verandah, mezzanine, access bridge or the like; and

(iii) A roof top space or the like to which general access is provided; and

(iv) Any delineated path of access to a building,

where it is possible to fall 1m or more measured from the level of the trafficable surface to the surface beneath.

(b) The requirements of (a) do not apply to:

(i) A retaining wall unless the retaining wall forms part of, or is directly associated with a delineated path of access to a building from the road, or a delineated path of access between buildings; or

(ii) A barrier provided to an openable window covered by 3.9.2.6 and 3.9.2.7.

3.9.2.3 A barrier required by 3.9.2.2 must comply with the following:

(a) To a height not less than 865mm above the nosing line of the stair treads;

(b) To a height not less than 1000mm above the floor of any balcony or the like;

(c) Any opening does not permit a 125mm sphere to pass through it and for stairways, the space is measured above the nosings;

(d) Where it is possible to fall more than 4m, any horizontal elements within the barrier between 150mm and 760mm above the floor must not facilitate climbing (where the 4m is measured from the floor level of the trafficable surface to the surface beneath); and

(e) Must be designed to take the loading forces in accordance with AS/NZS1170.1-2002.

3.9.2.4

(a) Handrails must be constructed as follows:

(i) Be located along one side of each stairway flight providing a change in elevation of 1m or more;

(ii) Be located along the full length of the stairway flight, except in the case where a handrail is associated with a barrier, the handrail maybe terminate where the barrier terminates;

(iii) Have the top surface of the handrail not less than 865mm vertically above the nosings of the stair treads; and

(iv) Have no obstruction on or above them will tend to break a hand hold, except for newel posts, ball type stanchions or the like.

(b) The above does not apply to a winder where a newel post is installed to provide a handhold, or a landing.

3.9.2.6

(a) Window openings to bedrooms require protection, if the floor below the window is 2m above the surface beneath.

(b) Protection need not be provided where the lowest level of the window opening covered by (a) is 1.7m or more above the finished floor level.

(c) Where the lowest level of the window opening covered by (a) is less than 1.7m above the floor, protection can be in the form of the following:

(i) The openable portion of the window must be protected with a device to restrict the window opening or a screen with secure fittings;

(ii) The device or screen must not permit a sphere greater than 125mm to pass through the window opening or screen;

(iii) Resist the outward horizontal action of 250N against the window or screen;

(iv) have a child resistant release mechanism if the screen or device is able to be removed, unlocked or overridden; and

(d) Where a device or screen provided in accordance with (c)(i) is able to be removed, unlocked or overridden, a barrier with a height not less than 865mm above the floor is required to the openable window in addition to window protection.

(e) The barrier covered by (d) must not permit a 125mm sphere to pass through it, and not have any horizontal or near horizontal elements between 150 mm and 760 mm above the floor that facilitate climbing.

3.9.2.7

(a) A window opening in a room other than a bedroom must be provided with protection where the floor below the window is 4m or more above the surface beneath.

(b) The openable part of the window covered by (a) must be protected with a barrier with a height not less than 865mm above the floor.

(c) The barrier covered by (b) must not permit a 125mm sphere to pass through it, and not have any horizontal or near horizontal elements between 150 mm and 760 mm above the floor that facilitate climbing.

5.12. Part 3.10 – Additional Construction Requirements

3.10.2.0 If the subject site is located within an area with seismic activity, a building is to be constructed in accordance with Part 3.0 above.

3.10.3.0 If the subject site is located within a flood hazard area, a building is to be designed and constructed in accordance with the ABCB Standard for Construction of Buildings in Floor Hazard Areas.

3.10.5.0 If a building is in a designated bushfire prone area, the building must comply with AS3959-2018.

3.10.6.0 Where a deck or balcony relies on the external wall of a building or structure for support, the method of attachment, including any fixings, to the external wall must comply with the requirements of this part.

5.13. Part 3.12 – Energy Efficiency

3.12.3 Building sealing is to comply with this part.

3.12.5 Services are to comply with this part.

6. Conclusion

6.1. General

Based on the above, compliance with the BCA can be achieved, subject to compliance with Part 5.

If you require any further assistance or have any additional queries, please do not hesitate in contacting us directly.

Yours sincerely,

Nehme Moujalli
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Building Code of Australia Capability Report

Tcon Constructions Pty Ltd

Blocks C-F / 400-404 Cabramatta Road West, 2-18 Orange Grove Road and 6 Links Avenue, Cabramatta

15 December 2022

Our reference #:	**2022101**
Report number:	03
Report date:	15 December 2022
Project details:	Blocks C-F / 400-404 Cabramatta Road West, 2-18 Orange Grove Road and 6 Links Avenue, Cabramatta
Contact details:	Ahmed Taleb admin@talebconstruction.com.au

Revision History

Report number	Comments	Report date
01	Draft issued	7 October 2022
02	Draft reissued	16 November 2022
03	Final issued	15 December 2022

Contents

Building Code of Australia Capability Report

1. Executive Summary

(a) This report presents the findings of an assessment of the townhouse development at Blocks C-F / 400-404 Cabramatta Road West, 2-18 Orange Grove Road and 6 Links Avenue, Cabramatta, assessed against the provisions of Volume 1 of the Building Code of Australia, Edition 2019, Amendment 1 (the **BCA**).

(b) The assessment identified the following major variations that require action as described in the body of this report:

(i) F2.1 – Provision of clothes drying facilities to units.

(ii) F4.1 – Natural light to retreats to Units 36-42.

(c) In summary, the assessment found that compliance with the BCA can be achieved, subject to compliance with Parts 4-7.

2. Introduction

2.1. General

This report presents the findings of an assessment of the development at Blocks C-F / 400-404 Cabramatta Road West, 2-18 Orange Grove Road and 6 Links Avenue, Cabramatta, assessed against the provisions of the BCA.

2.2. Report Basis, Limitations & Assumptions

(a) The purpose of this is to provide an assessment of the development against the current requirements of the BCA.

(b) It is conveyed that this report should not be construed to infer that an assessment for compliance with the following has been undertaken:

(i) Access and Facilities for People with a Disability and Energy Efficiency provisions of the BCA;

(ii) Work Health & Safety Act and Regulations;

(iii) SafeWork NSW requirements;

(iv) Structural and Services Design Documentation;

(v) The individual requirements of service authorities (i.e. Telecommunication Carriers, Sydney Water, Energy Providers);

(vi) The Disability Discrimination Act 1992;

(vii) BASIX requirements;

(viii) The requirements of the Australian Standards (**AS**) and Australian/New Zealand Standards (**AS/NZS**);

(ix) Consideration of any structural elements or geotechnical matters relating to the building;

(x) Consideration of any fire services operations (including hydraulic, electrical or other systems);

(xi) Assessment of plumbing and drainage installations, including stormwater;

(xii) Assessment of mechanical plant operations, electrical systems or security systems;

(xiii) Determining full compliance with the deemed-to-satisfy provisions of the BCA;

(xiv) Reporting of any hazardous materials or site contamination;

(xv) Consideration of energy or water authority requirements;

(xvi) Consideration of the local Council's local planning policies;

(xvii) Assessment of any development applications or the approval of any local authority requirements;

(xviii) Energy efficiency, including NAThers requirements; and

(xix) Any performance solutions relating to the building.

(c) The following assumptions have been used in the assessment:

(i) Each unit is a separate sole-occupancy unit.

(ii) Exit 2 to the basement is a non-fire-isolated stairway.

2.3. Regulatory Framework

The following has been considered in the formulation of this report:

(a) Environmental Planning and Assessment Act 1979.

(b) Environmental Planning and Assessment Regulation 2021.

(c) Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021.

2.4. Information Sources

The following has been used in the formulation of this report:

(a) Architectural drawings with Project No. 22020 prepared by Designiche Pty Ltd as listed in Table 1 below:

Title or Description of Drawing	Drawing No	Issue	Date
Site Plan	04	A	11.11.22
Basement Plan	05	A	11.11.22
Ground Floor	06	A	11.11.22
First Floor Plan	07	A	11.11.22
Attic Plan	08	A	11.11.22
Elevations 1 of 2	09	A	11.11.22
Elevations 2 of 2	10	A	11.11.22
Sections	11	A	11.11.22
Sections	12	A	11.11.22

Table 1 – Architectural drawings

3. Development Description

3.1. General

In accordance with the BCA, the assessment undertaken relates to a 3 storey townhouse building with basement.

3.2. Building Description

Table 1 below outlines key classification criteria for the building in accordance with the BCA.

BCA clause		Description of requirement
Schedule 3	Effective Height	<12m
A6	Classification	Class 2 (residential) & Class 7a (carparking)
C1.1	Type of Construction	Type A Construction
C1.2	Rise in Storeys	Rise in storeys of 3

Table 1 – DTS criteria

4. BCA Assessment Summary

4.1. General

(a) The following table summarises the compliance status of the design in terms of each applicable prescriptive provision of the BCA and indicates a capability for compliance with the BCA.

(b) For those instances, commentary and resolutions are provided within Parts 5-7.

4.2. Section B – Structure

BCA Clause		Status
B1.1	Resistance to actions	Refer to Part 5
B1.2	Determination of individual actions	Refer to Part 5
B1.4	Materials and form of construction	Refer to Part 5
B1.6	Construction of buildings in flood hazard areas	Refer to Part 5

4.3. Section C – Fire Resistance

BCA Clause		Status
C1.1	Type of construction required	Refer to Parts 5 and 6
C1.8	Structural tests for lightweight construction	Refer to Parts 5, 6 and 7
C1.9	Non-combustible building elements	Refer to Part 5
C1.10	Fire hazard properties	Refer to Part 5
C1.14	Ancillary elements	Refer to Part 5
C2.6	Vertical separation of opening in external walls	Refer to Part 5
C2.7	Fire walls	Refer to Part 5
C2.8	Separation of classifications in the same storey	Refer to Part 5
C2.9	Separation of classifications in different storeys	Refer to Part 5
C2.12	Separation of equipment	Refer to Parts 5 and 7
C2.13	Electricity supply system	Refer to Parts 5 and 7
C3.2	Protection of openings in external walls	Complies
C3.5	Doorways in fire walls	Refer to Parts 5 and 7
C3.10	Openings in fire-isolated lift shafts	Refer to Parts 5 and 7
C3.12	Openings in floors and ceilings for services	Refer to Parts 5 and 7
C3.13	Openings in shafts	Refer to Parts 5 and 7
C3.15	Openings for service installations	Refer to Parts 5 and 7

C3.16	Construction joints	Refer to Parts 5 and 7
C3.17	Columns protected with lightweight construction to achieve an FRL	Refer to Parts 5 and 7

4.4. Section D – Access and Egress

BCA Clause		Status
D1.2	Number of exits required	Complies
D1.4	Exit travel distances	Complies
D1.5	Distance between alternative exits	Complies
D1.6	Dimensions of exits and paths of travel to exits	Refer to Part 5
D1.9	Travel by non-fire -isolated stairways or ramps	Complies
D1.10	Discharge from exits	Refer to Part 5
D1.17	Access to lift pits	Refer to Part 5
D2.3	Non-fire-isolated stairways and ramps	Refer to Part 5
D2.7	Installations in exits and paths of travel	Refer to Part 5
D2.13	Goings and risers	Refer to Part 5
D2.14	Landings	Refer to Part 5
D2.15	Thresholds	Refer to Part 5
D2.16	Barriers to prevent falls	Refer to Part 5
D2.17	Handrails	Refer to Part 5
D2.19	Doorways and doors	Complies
D2.20	Swinging doors	Complies
D2.21	Operation of latch	Refer to Part 5
D2.24	Protection of openable windows	Refer to Part 5

4.5. Section E – Services and Equipment

BCA Clause		Status
E1.3	Fire hydrants	Refer to Parts 5 and 7
E1.4	Fire hose reels	Refer to Parts 5 and 7
E1.5	Sprinklers	Refer to Parts 5 and 7
E1.6	Portable fire extinguishers	Refer to Parts 5 and 7
E2.2	Smoke hazard management – general requirements	Refer to Parts 5 and 7
E3.1	Lift Installation	Refer to Part 5
E3.3	Warning against the use of lifts in fire	Refer to Parts 5 and 7
E4.2	Emergency lighting requirements	Refer to Parts 5 and 7
E4.4	Design and operation of emergency lighting	Refer to Part 7
E4.5	Exit signs	Refer to Parts 5 and 7
E4.6	Direction signs	Refer to Parts 5 and 7
E4.8	Design and operation of exit signs	Refer to Part 7

4.6. Section F – Health and Amenity

BCA Clause		Status
F1.0	Weatherproofing	Refer to Part 5
F1.1	Stormwater drainage	Refer to Part 5
F1.4	External above ground membranes	Refer to Part 5
F1.5	Roof coverings	Refer to Part 5
F1.6	Sarking	Refer to Part 5
F1.7	Waterproofing of wet areas in buildings	Refer to Part 5
F1.9	Damp-proofing	Refer to Part 5
F1.10	Damp-proofing of floors on the ground	Refer to Part 5
F1.11	Provision of floor wastes	Refer to Part 5
F1.13	Glazed assemblies	Refer to Part 5
F2.1	Facilities in residential buildings	Refer to Part 5
F2.5	Construction of sanitary compartments	Refer to Part 5
F3.1	Height of rooms and other spaces	Refer to Part 5
F4.1	Provision of natural light	Complies
F4.2	Methods and extent of natural light	Refer to Part 5
F4.4	Artificial lighting	Refer to Part 5
F4.5	Ventilation of rooms	Refer to Part 5
F4.6	Natural ventilation	Refer to Part 5
F4.11	Carparks	Refer to Part 5
F5.4	Sound insulation rating of floors	Refer to Part 5
F5.5	Sound insulation rating of walls	Refer to Part 5
F5.6	Sound insulation rating of internal services	Refer to Part 5
F5.7	Sound isolation of pumps	Refer to Part 5
F6.2	Pliable building membrane	Refer to Part 5
F6.3	Flow rate and discharge of exhaust systems	Refer to Part 5
F6.4	Ventilation of roof spaces	Refer to Part 5

4.7. Section G – Ancillary Provisions

BCA Clause		Status
G1.101	Provision for cleaning windows	Refer to Part 5
G5.1	Bushfire prone areas	Refer to Part 5
G6.2	Fire hazard properties	Refer to Part 5

5. BCA Issues Requiring Resolution

5.1. General

(a) With reference to the 'BCA Assessment Summary' contained within Part 4, the following commentary and resolutions are provided.

(b) This commentary and resolutions are formulated for demonstrating compliance with the relevant provisions of the BCA.

5.2. Section B – Structure

B1.1

The resistance of a building must be greater than the most critical action effect determined by B1.2, AS/NZS 1170.0-2002 and B1.4.

B1.2

The structural design of a building must be determined in accordance with the varying "actions" considerations contained within this clause (i.e. permanent actions, imposed actions, wind / earthquake actions).

B1.4

The structural resistance of materials and forms of construction must be determined in accordance with the following, as appropriate:

(a) Masonry – AS3700-2018.

(b) Concrete – AS3600-2018.

(c) Steel construction – AS4100-1998 or AS/NZS4600-2018.

(d) Timber construction – AS1720.1-2010.

(e) Piling – AS2159-2009.

(f) Glazed assemblies within an external wall – AS2047-2014.

(g) Glazed assemblies not within an external wall – AS1288-2006.

(h) Termite risk management (where a primary building element is subject to attack by subterranean termites) – AS3660.1-2014.

(i) Metal roofing – AS1562.1-2018.

B1.6

If a building is in a flood hazard area, the building must comply with the ABCB Standard for Construction of Buildings in Flood Hazard Areas.

5.3. Section C – Fire Resistance

C1.1

The minimum type of fire-resisting construction of a building must be that specified in Table C1.1 and Specification C1.1 (see Part 6 for specific fire-resisting requirements for the building).

C1.8

(a) Any lightweight construction must comply with Specification C1.8 if it is used in a wall system:

  (i) That is required to have an FRL; or

  (ii) For a lift shaft, stair shaft, service shaft or an external wall bounding a public corridor.

(b) If lightweight construction is used to achieve an FRL for steel columns or the like, it must comply with this clause.

C1.9

(a) The following building elements and their components must be non-combustible:

(i) External walls, including all components incorporated in them including the facade covering, framing and insulation.

(ii) The flooring and floor framing of lift pits.

(iii) Non-loadbearing internal walls having an FRL.

(b) 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.

(c) A loadbearing internal wall and a loadbearing fire wall, including those that are part of a loadbearing shaft, must comply with Specification C1.1.

(d) The requirements of (a) and (b) do not apply to gaskets, caulking, sealants, termite management systems, glass (including laminated glass), thermal breaks associated with glazing systems and damp-proof courses.

(e) The following materials maybe used where a non-combustible material is required:

(i) Plasterboard;

(ii) Fibre-reinforced cement sheeting;

(iii) Prefinished metal sheeting with a combustible surface finish not exceeding 1mm thickness and where the Spread-of-Flame Index of the product is not greater than 1;

(iv) Sarking-type materials that do not exceed 1mm in thickness and have a Flammability Index is not greater than 5; or

(v) Bonded laminated materials where:

(A) Each lamina, including any core, is non-combustible;

(B) Each advise layer does not exceed 1mm in thickness and the total thickness of adhesive layers does not exceed 2mm; and

(C) The Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectfully.

C1.10

The fire hazard properties for materials must be as follows:

(a) Floor linings and floor coverings

(i) A critical radiant flux not less than 1.2kW/m^2 for sprinklered parts;

(ii) A critical radiant flux not less than 2.2kW/m^2 for non-sprinklered parts;

(iii) A maximum smoke development rate of 750 percent-minutes for non-sprinklered parts;

(iv) A Group 1 or Group 2 material for any portion of the floor covering that continues more than 150mm up a wall.

(b) Wall and ceiling linings

(i) Be a Group 1, Group 2 or Group 3 material; and

(ii) Have a smoke growth rate index of not more than 100 or an average specific extinction area less than 250m^2/kg for non-sprinklered parts.

(c) Air-handling ductwork

(i) Rigid and flexible ductwork complying with the fire hazard properties set out in AS4254-2012.

(d) Other materials

(i) Sarking-type materials having a Flammability Index not more than 5. Note a material other than one located within a fire-isolated exit, maybe covered on all faces by concrete or masonry not less than 50mm thick, as an alternative to meeting the specified indices.

(ii) Other materials and insulation materials other than sarking-type materials having a Spread-of-Flame Index of not more than 9 and a Smoke-Developed Index of not more than 8 if the Spread-of- Flame Index is more than 5. Note:

(A) A material other than one located within a fire-isolated exit, maybe covered on all faces by concrete or masonry not less than 50mm thick, as an alternative to meeting the specified indices.

(B) In the case of a composite member or assembly, the member of assembly must be constructed so that when assembled as proposed in a building:

i. Any material which does not comply with the above is protected on all sides and edges from exposure to the air;

ii. The member or assembly, when tested to Schedule 6 has a Spread-of-Flame Index and a Smoke-Developed-Index not exceeding this presented above; and

iii. The member of assembly retains the protection in position so that it prevents ignition of the material and continues to screen it from access to free air for a period of not less than 10 minutes.

C1.14

An ancillary element must not be fixed, installed or attached to the internal parts or external face of an external wall that is required to be non-combustible unless it is one of the following:

(a) An ancillary element that is non-combustible.

(b) A gutter, downpipe or other plumbing fixture or fitting.

(c) A flashing.

(d) A grate or grille not more than 2m^2 in area associated with a building service.

(e) An electrical switch, socket-outlet, cover plate or the like.

(f) A light fitting.

(g) A required sign.

(h) A sign other than one provided under (a) or (g) that:

(i) Achieves a group number of 1 or 2;

(ii) Does not extend beyond one storey;

(iii) Does not extend beyond one fire compartment; and

(iv) Is separated vertically from other signs permitted under (h) by at least 2 storeys.

(i) An awning, sunshade, canopy, blind or shading hood other than one provided under (a) that:

(i) Meets the requirements of Table 4 of Specification C1.10 as for an internal element; and

(ii) Serves a storey:

(A) At ground level; or

(B) Immediately above a storey at ground level; and

(iii) Does not serve an exit, where it would render the exit unusable in a fire.

(j) Apart of a security, intercom or announcement system.

(k) Wiring.

(l) A paint, lacquer or a similar finish.

(m) A gasket, caulking, sealant or adhesive directly associated with (a) to (k).

C2.6 Openings in external walls (including externals walls not having an FRL of 60/60/60 both ways), where any part of the window or other opening in an external wall is above another opening in the storey next below and its vertical projection falls no further than 450mm outside the lower opening (measured horizontally), must contain vertical separation via either of the following means:

(a) The provision of spandrels within the external walls not less than 900mm in height that extend not less than 600mm above the finished floor level. The spandrels must be non-combustible and have an FRL not less than 60/60/60; and

(b) The provision of horizontal aprons/projections that project outwards from the external face of the external wall not less than 1100mm and extend along the external wall not less than 450mm beyond the openings concerned. The horizontal projections must be non-combustible and have an FRL not less than 60/60/60.

C2.7 The fire wall separating different classifications in the basement must be constructed in accordance with the following:

(a) Have an FRL of not less than 120/120/120, including any building element providing lateral or vertical support;

(b) Any openings in the fire wall must not reduce the FRL; and

(c) Extend to the underside of the floor above.

C2.8 The internal parts of the units must be separated from the remainder of the basement with walls complying with C2.7 above.

C2.9 The intermediate floor between the basement and the ground floor must have an FRL of not less than 120/120/120.

C2.12

(a) The following equipment must be separated from the remainder of the building with construction having an FRL of not less than 120/120/120 and any access doorway protected with a self-closing fire door having an FRL of not less than --/120/30:

(i) Lift motors and lift control panels;

(ii) Emergency generators used to sustain emergency equipment operating in emergency mode;

(iii) Central smoke control plant;

(iv) Boilers; or

(v) A battery system installed in the building that has a total voltage of 12 volts or more and a storage capacity of 200kWh or more.

(b) Equipment need not be separated in accordance with the above if the equipment comprises:

(i) Smoke exhaust fans located in the air stream which are constructed for high temperature operation in accordance with Specification E2.2b;

(ii) Stair pressuring equipment installed in compliance with the relevant provisions of AS1668.1-2015;

(iii) A lift installation without a machine room; or

(iv) Equipment otherwise adequality separated from the remainder of the building.

(c) Separation of on-site fire pumps must comply with the requirements of AS2419.1-2005.

C2.13

(a) A main electrical switchboard which sustains any emergency equipment, must be separated from any other part of the building with construction having an FRL of not less than 120/120/120 and any access doorway protected with a self-closing fire door having an FRL of not less than --/120/30.

(b) All switchboards in the electrical installation, which sustain the electricity supply to the emergency equipment, must be constructed so that emergency equipment switchgear is separated from non-emergency equipment switchgear by metal partitions designed to minimise the spread of a fault from the non-emergency switchgear.

(c) For the purposes of the above, emergency equipment includes:

(i) Fire hydrant booster pumps;

(ii) Pumps for automatic sprinkler systems or the like;

(iii) Air handling systems designed to exhaust and control the spread of fire and smoke;

(iv) Emergency lifts;

(v) Control and indicating equipment; and

(vi) Emergency warning and intercom systems.

C3.5

The doorways within the fire walls in the basement must be protected by fire doors having an FRL of not less than --/120/30 that are self-closing.

C3.12	Where a service passes through a floor required to have an FRL (in this case, the intermediate floor between the basement and the ground floor) or a ceiling required to have a resistance to the incipient spread of fire, the service must be protected by either a shaft in accordance with C1.1 above or in accordance with C3.15.
C3.13	Any opening in a wall providing access to a ventilating, pipe, garbage or other service shaft must be protected as follows: (a) If it is in a sanitary compartment – a door or panel, which together with its frame, is non-combustible or has an FRL of not less than ---/30/30; (b) A self-closing fire door or hopper having an FRL of not less than --/60/30; (c) An access panel having an FRL of not less than --/60/30; or (d) If the shaft is a garbage shaft – a door or hopper of non-combustible construction.
C3.15	Where an electrical, electronic, plumbing, mechanical ventilation, air conditioning or other service penetrates a building element (other than an external wall or roof) that is required to have an FRL or a resistance to the incipient spread of fire, that installation must comply with this clause.
C3.16	Construction joints, spaces and the like in and between building elements required to have an FRL with respect to integrity and insulation must be protected in a manner identical with a prototype tested in accordance with AS 1530.4-2014 to achieve the required FRL.
C3.17	Where a column is protected by lightweight construction to achieve the required FRL, passes through a building element that is also required to have an FRL, it must be installed using a method and materials identical with the prototype assembly of the construction which has achieved not less than the required FRL.

5.4. Section D – Access and Egress

D1.6	The path of travel to an exit and any required exit must have: (a) An unobstructed height throughout of not less than 2m (except a doorway, which can be 1980mm); and (b) An unobstructed width of not less than 1m (except a doorway, which can be 750mm).
D1.10	(a) An exit must not be blocked at the point of discharge and where necessary, suitable barriers must be provided to prevent vehicles from blocking the exit, or access to it. (b) The paths of travel to the road from the discharge point of the exits must have an unobstructed width of 1m and be via a stairway, ramp or other incline having a gradient of no steeper than 1:8 or complying with AS1428.1-2009 (where required to be accessible for people with a disability).
D1.17	Access into a lift pit must be through the lift landing doors provided on the lowest level.

D2.3

Stairways (including landings and any supporting building elements) serving as exits must be constructed of:

(a) Reinforced or prestressed concrete or steel;

(b) Steel in no part less than 6mm thick; or

(c) Timber that has a finished thickness of 44mm, has an average density of not less than 800 kg/m^3 at a moisture content of 12% and has not been joined by means of glue unless it has been laminated and glued with resorcinol formaldehyde or resorcinol phenol formaldehyde glue.

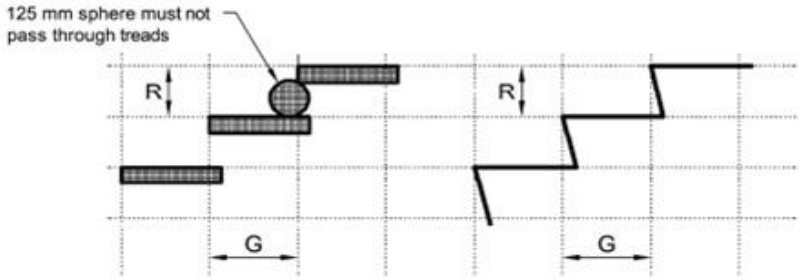
D2.7

(a) Gas or other fuel services are not permitted to be installed within the required exits.

(b) Any services or equipment (being electrical meters, distribution boards or the like) installed within the path of travel to an exit must be enclosed by non-combustible construction or a fire-protective covering (i.e. 1 layer of 13mm fire-protective grade plasterboard) with doorway(s) or opening(s) suitably sealed against smoke spreading from the enclosure.

D2.13

The stairways must meet the following:



Riser (R)		Going (G)		Slope Relationship (2R+G)	
Max	**Min**	**Max**	**Min**	**Max**	**Min**
190	115	355	240 (private)	700	550
190	115	355	250 (public)	700	550

(a) The number of risers in a single flight must be between 2-18.

(b) The stairways in the units can have:

(i) Not more than 3 winders in lieu of a quarter landing; and

(ii) Not more than 6 winders in lieu of a half landing.

(c) The going of all winders in lieu of a quarter or half landing may vary from the going of the straight treads within the same flight provided that the going of all such winders is constant.

(d) The risers and goings must be constant throughout the flight except variations of no greater than 5mm are permitted between adjacent risers or goings and no greater than 10mm are permitted between the smallest and largest goings or risers in a flight.

(e) The stair treads must have a surface or nosing edge strip achieving a slip-resistance classification of P3 or R10 in dry or P4 or R11 in wet tested in accordance with AS4586-2013.

D2.14

In a stairway:

(a) Landings are to be a minimum of 750mm long with a gradient not steeper than 1:50; and

(b) Have a:

(i) A surface with a slip-resistance classification of not less than P3 or R10 in dry or P4 or R11 in wet when tested in accordance with AS4586-2013; or

(ii) A strip at the edge of the landing with a slip-resistance classification of not less than P3 or R10 in dry or P4 or R11 in wet when tested in accordance with AS4586-2013, where the edge does not lead to a stairway flight below.

D2.15

(a) The threshold of a doorway is not permitted to incorporate a step or ramp at any point closer to the doorway than the width of the door leaf.

(b) That is unless the doorway opens to a road or open space (i.e. open to the sky) and:

(i) In a building required to be accessible, is provided with a threshold or step ramp in accordance with AS1428.1-2009; or

(ii) In all other cases, the door sill is not more than 190mm above the finished surface of the ground.

D2.16

A continuous barrier must be constructed along the side of a trafficable surface that is 1m or more the surface beneath as follows:

(a) To a height not less than 865mm above the nosings of the stair treads or the floor of a ramp;

(b) To a height not less than 1000mm above the floor of any access path, balcony, landing or the like;

(c) Any opening does not permit a 125mm sphere to pass through it and for stairs, the space is measured above the nosings; and

(d) For floors more than 4m above the surface beneath, any horizontal or near horizontal elements between 150mm and 760mm must not facilitate climbing.

D2.17

Handrails are to be constructed as follows:

(a) Common areas

(i) Be located along one side of each stairway flight and ramp;

(i) Be located along each side if the total width of the stairway or ramp is 2m or more;

(iii) Be fixed at a height of 865mm above the nosings of the stair treads or ramp; and

(iv) Be continuous between stairway flight landings and have no obstruction on or above them will tend to break a hand hold.

(b) Within units (except where a stairway provides a change in elevation of less than 1m)

(i) Be located along one side of each stairway flight;

(ii) Be located along the full length of the stairway flight, except in the case where a handrail is associated with a barrier, the handrail maybe terminate where the barrier terminates;

(iii) Have the top surface of the handrail not less than 865mm vertically above the nosings of the stair treads; and

(iv) Have no obstruction on or above them will tend to break a hand hold, except for newel posts, ball type stanchions or the like.

D2.21

Any door in a required exit, forming part of a required exit or in the path of travel to a required exit (excluding unit entry doors) must be readily operable without a key from the side that faces a person seeking egress, and:

(a) By a single hand pushing or downward action on a single device located between 900mm and 1100mm from the floor;

(i) Be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and

(ii) Have a clearance between the handle and the back plate or door face at the centre grip section of the handle of not less than 35mm nor more than 45mm; or

(b) A single hand pushing action on a single device which is located between 900mm and 1.2m above the floor.

D2.24

(a) Window openings to bedrooms require protection, if the floor below the window is 2m above the surface beneath.

(b) Protection need not be provided where the lowest level of the window is 1.7m or more above the finished floor level.

(c) Protection can be in the form of the following:

(i) The openable portion of the window must be protected with a device to restrict the window opening or a screen with secure fittings;

(ii) The device or screen must not permit a sphere greater than 125mm is permitted to pass through;

(iii) Resist the outward horizontal action of 250N against the window or screen; and

(iv) Have a child resistant release mechanism can be removed, unlocked or overridden.

(d) A barrier with a height of not less than 865mm above the floor is required to an openable window:

(i) In addition, to window protection as per (c) above; and

(ii) Where the floor below the window is 4m or more above the floor or if the window is not covered above.

(e) The above barrier must not:

(i) Permit a 125mm sphere to pass through it; and

(ii) Any horizontal or near horizontal elements between 150mm and 760mm must not facilitate climbing.

5.5. Section E – Services and Equipment

E1.3

(a) A fire hydrant system complying with AS2419.1-2005 must serve the building.

(b) The system is to be designed and certified by a suitably accredited practitioner (fire safety).

E1.4

(a) A fire hose reel complying with AS2441-2005 must be installed to the basement.

(b) Fire hose reels must be located within 4m of an exit, except that a fire hose reel need not be located adjacent to every exit provided system coverage can be achieved.

(c) The system is to be designed and certified by a suitably accredited practitioner (fire safety).

E1.5

(a) A sprinkler system complying with AS2118.1-2017 and Specification E1.5 must be installed to the basement.

(b) Sprinkler alarm valves must be located in a secure room or enclosure which has direct egress to a road or open space (i.e. open to the sky).

(c) The system is to be designed and certified by a suitably accredited practitioner (fire safety).

E1.6

Portable fire extinguishers complying with AS2444-2001 must be installed as follows:

(a) To cover Class AE or E fire risks associated with emergency services switchboards;

(b) To cover Class B fire risks (if more than 50L excluding vehicle fuel tanks is stored).

E2.2

The following smoke hazard management systems are required:

(a) Units

(i) Each unit requires smoke alarm(s) complying with Clause 3 of Specification E2.2a on or near the ceiling at each storey.

(ii) The system is to be designed and certified by a suitably accredited practitioner (fire safety).

(b) Carpark

(i) A mechanical ventilation system complying with AS1668.2-2012 and Clause 5.5 of AS/NZS1668.1-2015, expect that:

(A) Fans with metal blades suitable for operation at normal temperature may be used; and

(B) The electrical power and control cabling need not be fire rated.

(ii) The system is to be designed and certified by a professional mechanical engineer.

E3.1 An electric passenger lift installation or electrohydraulic passenger lift installation must comply with Specification E3.1.

E3.3 Warning signage must be displayed near every call button for the passenger lift to the requirements of this clause at every storey.

E4.2 Emergency lighting complying with AS/NZS2293.1-2018 is to be installed throughout the basement and in the exit stairway.

E4.5 Exit signs complying with AS/NZS2293.1-2018 are to be installed above or adjacent to any doorways serving as required exits from the basement and final doors from the exits.

E4.6 If an exit is not clear to persons occupying or visiting the basement, then exit signs complying with AS/NZS2293.1-2018 must be installed in appropriate positions indicating the direction to a required exit.

5.6. Section F – Health and Amenity

F1.0 FP1.4 for the prevention of penetration of water through external walls must be complied with. A professional facade engineer is requried to achieve compliance.

F1.1 Stormwater drainage must comply with AS/NZS 3500.3-2018.

F1.4 Waterproofing membranes for external above ground use must comply with AS4654-2012.

F1.5

(a) A roof must be covered with metal sheet roofing complying with AS 1562.1-2018.

(b) As concrete complying with AS3600-2018 is not listed as a roof covering under this clause, a professional facade engineer is requried to achieve compliance.

F1.6 Sarking type materials used for weatherproofing of roofs and walls must comply with AS/NZS4200-2017.

F1.7 Building elements in wet areas must be water-resistant or waterproof in accordance with Table F1.7 and comply AS3740-2010.

F1.9 Where a damp-proof course is provided, it must consist of:

(a) A material that complies with AS/NZS2904-1995; or

(b) Impervious termite shields in accordance with AS3660.1-2014.

F1.10	A floor laid directly onto ground or fill must be provided with a vapour barrier complying with AS2870-2011.
F1.11	Bathrooms and laundries within each unit require floor wastes and the floor graded to the floor wastes to permit drainage of water.
F1.13	Windows in the external walls must comply with the requirements of AS2047-2014 for resistance to water penetration, except the following windows need not comply: (a) Skylights, roof lights and windows in other than the vertical plane. (b) Sliding and swinging glazed doors without a frame. (c) Windows constructed on site and architectural one-off windows, which are not design tested in accordance with AS 2047-2014. (d) Second-hand windows, re-used windows and recycled windows. (e) Heritage windows.
F2.1	The units require clothes drying facilities comprising a clothes line or hoist with not less than 7.5m of line, or space for a heat-operated drying cabinet or appliance in the same room as the clothes washing facilities.
F2.5	The door to a fully enclosed WC or bathroom must: (a) Open outwards; (b) Slide; or (c) Be readily removable from the outside of the compartment (i.e. lift-off hinges), unless there is a clear space of at least 1.2m, measured between the closet pan within the compartment and hinge side of the doorway.
F3.1	Unobstructed heights are as follows: (a) Habitable rooms et al. excluding kitchens and the like – 2.4m. (b) In a room or space with a sloping ceiling or projections below the ceiling line within a non-habitable room a height of not less than 2.1m not less than 2/3 of the floor area of the room or space. when calculating the floor area of the room or space, any part that has a ceiling height of less than 1.5m is not included. (c) In a stairway – 2m. (d) Public corridors, sanitary facilities, kitchens, laundries, carpark, storeroom and the like – 2.1m.
F4.1	Natural light must be provided to the retreats to Units 36-42.
F4.2	Required natural light must be provided by the following:

(a) Windows having an aggregate light transmitting area measured exclusive of framing members, glazing bars or other obstructions of not less than 10% of the floor area of the room; and

(b) Are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like; or

(c) Roof light(s) having a light transmitting area exclusive of framing members of not less than 3% of the floor area of the room; and

(e) Are open to the sky; or

(f) A proportional combination of windows and roof lights as required above.

F4.4 Where compliant natural light is not available, artificial lighting complying with AS/NZS1680.0-2009 must be installed:

(a) Generally

(i) To required stairways and passageways.

(b) Units

(i) To sanitary compartments, bathrooms, common stairways and other spaces used in common by the occupants of the building.

(c) Other parts

(i) To all rooms that are frequently occupied, all spaces required to be accessible, all corridors, lobbies, internal stairways, other circulation spaces and paths of egress.

F4.5 A sanitary compartment, bathroom, shower room, laundry and any other room occupied by a person for any purpose must have:

(a) Natural ventilation complying with F4.6 below; or

(b) Mechanical ventilation complying with AS1668.2-2012.

F4.6 Natural ventilation must consist of permanent openings, windows, doors or other devices which can be opened:

(a) With an aggregate opening or openable size not less than 5% of the floor area of the room required to be ventilated; and

(b) Open to:

(i) Suitably sized court, or space open to the sky;

(ii) An open verandah, carport, or the like.

F4.11 The carpark requires ventilation by either:

(a) Mechanical means complying with AS1668.2-2012; or

(b) Natural means complying with Section 4 of AS1668.4-2012.

F5.4 The intermediate floor between the basement and ground floor units must have an $R_w + C_{tr}$ (airborne) not less than 50 and an $L_{n,w}$ (impact) not more than 62.

F5.5 Internal walls must:

(a) Have a R_w + Ctr (airborne) of not less than 50 if it separates units;

(b) Have a R_w (airborne) of not less than 50 if it separates a unit from lift shaft, stairway, public corridor or parts of a different classification;

(c) Be of discontinuous construction if a wall separates:

(i) A bathroom, sanitary compartment, laundry or kitchen in a unit from a habitable room (other than a kitchen in an adjoining unit); or

(ii) A unit from a lift shaft;

(d) A door that separates a unit from a common area must have a R_w of not less than 30;

(e) Services must not be chased into concrete or masonry elements; and

(f) A wall required to have a sound insulation must be constructed such that it continues to the underside of:

(i) The underside of the floor above;

(ii) A ceiling that provides the sound insulation required for the wall; or

(iii) The underside of the roof above.

F5.6 Any duct, soil, stormwater, waste or water supply pipe (including a duct or pipe that is in a wall or floor cavity) serves or passes through more than 1 unit, the duct or pipe must be separated from the rooms of any unit by construction with an $R_w + C_{tr}$ (airborne) not less than:

(a) 40 if the adjacent room is a habitable room (other than a kitchen); or

(b) 25 if the adjacent room is a kitchen or non-habitable room.

F5.7 A flexible coupling must be used at the point of connection between the service pipes in a building and any circulating or other pump.

F6.2 For the units, where a pliable building membrane is installed in an external wall, it must comply with this clause.

F6.3 For the units, an exhaust system installed in a kitchen, bathroom or sanitary compartment or laundry must comply with this clause.

F6.4 For the units, exhaust from a bathroom, sanitary compartment or laundry discharged directly to a roof space, the roof space must comply with this clause.

5.7. Section G – Ancillary Provisions

G1.101 The windows located 3 or more storeys above the street level must be able to be cleaned from wholly within the building or by a method complying with Work Health and Safety Act 2011 and Regulations made under the Act.

G5.1 If a building is in a designated bushfire prone area, the building must comply with AS3959-2018.

G6.2 A lining, material or assembly in the occupied outdoor areas must comply with C1.10 as for an internal lining, excluding average specific extinction area, smoke-developed Index, smoke development rate and smoke growth rate index.

6. Construction Details

In a building required to be of Type A construction:

(a) Where a part of a building required to have an FRL depends upon direct vertical or lateral support from another part to maintain its FRL that supporting part, must an FRL not less required by the part of the building being supporting and be non-combustible.

(b) A lintel must have the FRL required for that part of the building in which it is situated, unless it does not contribute to the support of a fire door, fire window or fire shutter, and:

(i) It spans an opening in a non-loadbearing wall of a Class 2 or 3 building; or

(ii) It spans an opening in masonry which is not more than 150mm thick and:

(A) Not more than 3m wide if the masonry is non-loadbearing; or

(B) Not more than 1.8m wide if the masonry is loadbearing and part of a solid wall or one of the leaves of a cavity wall.

(c) Shafts required to have an FRL, must be enclosed at the top and bottom by construction having an FRL not less than that required for the walls of a non-loadbearing shaft in the same building, except that these provisions need not apply to:

(i) The top of a shaft extending beyond the roof covering, other than one enclosing a fire-isolated stairway or ramp; or

(ii) The bottom of a shaft if it is non-combustible and laid directly on the ground.

(d) Each building element listed in the Table below and any beam or column incorporated in it, must have an FRL not less than that listed in the Table for the class of building concerned.

(e) A loadbearing internal wall and a loadbearing fire wall (including those that are part of a loadbearing shaft, must be constructed from concrete or masonry.

(f) External walls must be non-combustible including any render and achieve an FRL both ways.

(g) The method of attaching or installing a finish, lining or ancillary element or service installation to a building must not reduce the fire-resistance of that element to below that required.

(h) Any internal wall required to have an FRL with respect to integrity and insulation must extend to:

(i) The underside of the floor next above;

(ii) The underside of a roof complying with the Table below;

(iii) If under Clause 3.5 of Specification C1.1 the roof is not required to comply with the Table below, the underside of the non-combustible roof covering and, except for roof battens with dimensions of 75mm x 50mm or less or roof sarking, must not be crossed by timber or other combustible building elements; or

(iv) A ceiling that is immediately below the roof and has a resistance to the incipient spread of fire to the roof space between the ceiling and the roof of not less than 60 minutes.

(i) In the storey immediately below the roof, internal columns other than those referred to in (j) below and internal walls other than fire walls and shaft walls may have an FRL of not less than 60/60/60.

(j) The FRLs specified in the Table below for an external column apply also to those parts of an internal column that face and are within 1.5m of a window and are exposed through that window to a fire-source feature.

Building element	Class of building—FRL: (in minutes)			
	Structural adequacy/Integrity/Insulation			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any fire-source feature to which it is exposed is—				
For loadbearing parts—				

less than 1.5m	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 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, where the distance from any fire-source feature to which it is exposed is—				
less than 3 m	90/ - / -	120/ - / -	180/ - / -	240/ - / -
3 m or more	- / - / -	- / - / -	- / - / -	- / - / -
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 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

Table 2 – FRLs

7. Statutory Fire Safety Measures

The statutory fire safety measures listed below are to be installed to the commentary contained in Parts 4 and 5.

Statutory Fire Safety Measures	Minimum Standard of Performance
1. Access panels, doors and hoppers to fire resisting shafts (if installed)	C3.13 of the BCA / AS1530.4-2014
2. Automatic fire suppression system (sprinklers)	Specification E1.5 of the BCA / AS2118.1-2017
3. Building occupant warning system	Clause 8 of Specification E1.5 & Clause 7 of Specification E2.2a of the BCA
4. Emergency lighting	E4.2, E4.3 & E4.4 of the BCA / AS/NZS2293.1-2018

5.	Exit signs	E4.5, E4.6 & E4.8 of the BCA / AS/NZS2293.1-2018
6.	Fire dampers (if installed)	C3.15 of the BCA / AS1668.1-2015
7.	Fire doors	C2.12 (if installed), C2.13 (if installed) & Specification C3.4 of the BCA / AS1905.1-2015
8.	Fire hydrant system	E1.3 of the BCA / AS2419.1-2005
9.	Fire seals protecting openings in fire resisting components of building	C3.15, C3.16 & Specification C3.15 of the BCA / AS4072.1-2005 & AS1530.4-2014
10.	Hose reel system	E1.4 of the BCA / AS2441-2005
11.	Lightweight construction (if installed)	C1.8, C3.17 & Specification C1.8 of the BCA / AS1530.4-2014
12.	Mechanical air handling system (carpark ventilation system)	E2.2 of the BCA
13.	Portable fire extinguishers (if installed)	E1.6 of the BCA / AS2444-2001
14.	Smoke alarms and heat alarms	Clause 3 of Specification E2.2a of the BCA / AS3786-2014
15.	Warning and operational signs	E3.3 of the BCA

Table 3 – Statutory fire safety measures

8. Conclusion

8.1. General

Having regard to the above commentary, compliance with the BCA is capable, subject to compliance with Parts 4-7

If you require any further assistance or have any additional queries, please do not hesitate in contacting us directly.

Yours sincerely,

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Building Code of Australia Capability Report

Tcon Constructions Pty Ltd

400-404 Cabramatta Road West, 2-18 Orange Grove Road and 6 Links Avenue, Cabramatta

15 December 2022

Our reference #:	**2022101**
Report number:	02
Report date:	15 December 2022
Project details:	400-404 Cabramatta Road West, 2-18 Orange Grove Road and 6 Links Avenue, Cabramatta
Contact details:	Ahmed Taleb admin@talebconstruction.com.au

Revision History

Report number	Comments	Report date
01	Draft issued	7 October 2022
02	Final issued	14 December 2022

Contents

Building Code of Australia Capability Report

1. Executive Summary

(a) This report presents the findings of an assessment of the residential flat building development at 400-404 Cabramatta Road West, 2-18 Orange Grove Road and 6 Links Avenue, Cabramatta, assessed against the provisions of Volume 1 of the Building Code of Australia, Edition 2019, Amendment 1 (the **BCA**).

(b) The assessment identified the following variations that require action as described in the body of this report:

(i) C3.3 – Openings in different fire compartments.

(ii) C3.11 - Separation of the Gym / Community Space and window from the public corridor on the Ground Floor.

(iii) D1.2 – Exits not leading to a road or open space.

(iv) D1.4 – Excessive travel distances.

(v) D1.6 – Unobstructed width of the path of travel to exits.

(vi) D1.7 – Discharge of the fire-isolated stairways.

(vii) D1.7 – Discharge of fire-isolated exits to the road necessitates passing by openings.

(viii) D1.10 – Discharge from exits.

(ix) F1.0 - Weatherproofing of external walls

(x) F1.5 – Concrete complying with AS3600-2018 is not listed as a roof covering.

(xi) F2.1 – Clothes drying facilities to units.

(xii) F4.2 & F4.3 – Natural light to habitable rooms.

(xiii) F4.6 & F4.7 – Natural ventilation to habitable rooms.

(xiv) G1.1 – Suitable barrier to restrict access by young children to the immediate pool surrounds.

(c) In summary, the assessment found that compliance with the BCA can be achieved, subject to compliance with Parts 4-7.

2. Introduction

2.1. General

This report presents the findings of an assessment of the residential flat building development at 402 Cabaramatta Road, West Cabramatta, assessed against the provisions of the BCA.

2.2. Report Basis, Limitations & Assumptions

(a) The purpose of this is to provide an assessment of the development against the current requirements of the BCA.

(b) It is conveyed that this report should not be construed to infer that an assessment for compliance with the following has been undertaken:

(i) Access and Facilities for People with a Disability and Energy Efficiency provisions of the BCA;

(ii) Work Health & Safety Act and Regulations;

(iii) SafeWork NSW requirements;

(iv) Structural and Services Design Documentation;

(v) The individual requirements of service authorities (i.e. Telecommunication Carriers, Sydney Water, Energy Providers);

(vi) The Disability Discrimination Act 1992;

(vii) BASIX requirements;

(viii) The requirements of the Australian Standards (**AS**) and Australian / New Zealand Standards (**AS/NZS**);

(ix) Consideration of any structural elements or geotechnical matters relating to the building;

(x) Consideration of any fire services operations (including hydraulic, electrical or other systems);

(xi) Assessment of plumbing and drainage installations, including stormwater;

(xii) Assessment of mechanical plant operations, electrical systems or security systems;

(xiii) Determining full compliance with the deemed-to-satisfy provisions of the BCA;

(xiv) Reporting of any hazardous materials or site contamination;

(xv) Consideration of energy or water authority requirements;

(xvi) Consideration of the local Council's local planning policies;

(xvii) Assessment of any development applications or the approval of any local authority requirements;

(xviii) Energy efficiency, including NAThers requirements; and

(xix) Any performance solutions relating to the building.

(c) The following assumptions have been used in the assessment:

(i) Each unit is a separate sole-occupancy unit.

(ii) The Ground Floor contains a public corridor.

(iii) The building is fitted with a sprinkler system complying with AS2118.1-2017.

2.3. Regulatory Framework

The following legislation has been considered in the formulation of this report:

(a) Environmental Planning and Assessment Act 1979.

(b) Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021.

(c) Environmental Planning and Assessment 2021.

2.4. Information Sources

The following information has been used in the formulation of this report:

(a) Architectural plans prepared by Aleksander Projects received on 9 December 2022.

3. Development Description

3.1. General

In accordance with the BCA, the assessment undertaken relates to the construction of a residential flat building.

3.2. Building Description

Table 1 below outlines key classification criteria for the building in accordance with the BCA.

BCA clause		Description of requirement
Schedule 3	Effective Height	~15.5m
A6	Classification	Class 2 (residential), Class 7a (carparking), Class 10b (swimming pool)
C1.1	Type of Construction	Type A Construction
C1.2	Rise in Storeys	Rise in storeys of 6

Table 1 – DTS criteria

4. BCA Assessment Summary

4.1. General

(a) The following table summarises the compliance status of the design in terms of each applicable prescriptive provision of the BCA and indicates a capability for compliance with the BCA.

(b) For those instances, commentary and resolutions are provided within Parts 5-6.

4.2. Section B – Structure

BCA Clause		Status
B1.1	Resistance to actions	Refer to Part 5
B1.2	Determination of individual actions	Refer to Part 5
B1.4	Materials and form of construction	Refer to Part 5
B1.6	Construction of buildings in flood hazard areas	Refer to Part 5

4.3. Section C – Fire Resistance

BCA Clause		Status
C1.1	Type of construction required	Refer to Parts 5 and 6
C1.8	Structural tests for lightweight construction	Refer to Parts 5-7
C1.9	Non-combustible building elements	Refer to Part 5
C1.10	Fire hazard properties	Refer to Part 5
C1.14	Ancillary elements	Refer to Part 5
C2.7	Fire walls	Refer to Part 5
C2.8	Separation of classifications in the same storey	Refer to Part 5
C2.9	Separation of classifications in different storeys	Refer to Part 5
C2.10	Separation of lift shafts	Refer to Part 5
C2.11	Stairways and lifts in the one shaft	Complies
C2.12	Separation of equipment	Refer to Parts 5 and 6
C2.13	Electricity supply system	Refer to Parts 5 and 6
C2.14	Public corridors in class 2 and 3 buildings	Refer to Part 5
C3.2	Protection of openings in external walls	Complies
C3.3	Separation of external walls and associated openings in different fire compartments	Refer to Part 5
C3.8	Openings in fire-isolated exits	Refer to Parts 5 and 7
C3.9	Service penetrations in fire-isolated exits	Refer to Part 5
C3.10	Openings in fire-isolated lift shafts	Refer to Parts 5 and 7
C3.11	Bounding construction: class 2, 3 and 4 buildings	Refer to Parts 5 and 7

C3.12	Openings in floors and ceilings for services	Refer to Part 5
C3.13	Openings in shafts	Refer to Parts 5 and 7
C3.15	Openings for service installations	Refer to Parts 5 and 7
C3.16	Construction joints	Refer to Parts 5 and 7
C3.17	Columns protected with lightweight construction to achieve an FRL	Refer to Parts 5 and 7

4.4. Section D – Access and Egress

BCA Clause		Status
D1.2	Number of exits required	Refer to Part 5
D1.3	When fire-isolated stairways and ramps are required	Complies
D1.4	Exit travel distances	Refer to Part 5
D1.5	Distance between alternative exits	Complies
D1.6	Dimensions of exits and paths of travel to exits	Refer to Part 5
D1.7	Travel via fire-isolated exits	Refer to Part 5
D1.10	Discharge from exits	Refer to Part 5
D1.17	Access to lift pits	Refer to Part 5
D2.2	Fire-isolated stairways and ramps	Refer to Part 5
D2.4	Separation of rising and descending stair flights	Refer to Part 5
D2.7	Installations in exits and paths of travel	Refer to Part 5
D2.12	Roof as open space	Refer to Part 5
D2.13	Goings and risers	Refer to Part 5
D2.14	Landings	Refer to Part 5
D2.15	Thresholds	Refer to Part 5
D2.16	Barriers to prevent falls	Refer to Part 5
D2.17	Handrails	Refer to Part 5
D2.19	Doorways and doors	Complies
D2.20	Swinging doors	Complies
D2.21	Operation of latch	Refer to Part 5
D2.23	Signs on doors	Refer to Parts 5 and 7
D2.24	Protection of openable windows	Refer to Part 5

4.5. Section E – Services and Equipment

BCA Clause		Status
E1.3	Fire hydrants	Refer to Parts 5 and 7
E1.4	Fire hose reels	Refer to Parts 5 and 7
E1.5	Sprinklers	Refer to Parts 5 and 7
E1.6	Portable fire extinguishers	Refer to Parts 5 and 7
E2.2	Smoke hazard management – general requirements	Refer to Parts 5 and 7
E3.1	Lift installations	Refer to Part 5
E3.2	Stretcher facility in lifts	Refer to Part 5
E3.3	Warning against the use of lifts in fire	Refer to Parts 5 and 7
E3.7	Fire service controls	Refer to Part 5
E3.9	Fire service recall switch	Refer to Part 5
E3.10	Lift car fire service drive control switch	Refer to Part 5
E4.2	Emergency lighting requirements	Refer to Parts 5 and 7

E4.3	Measurement of distance	Refer to Part 7
E4.4	Design and operation of emergency lighting	Refer to Part 5
E4.5	Exit signs	Refer to Parts 5 and 7
E4.6	Direction signs	Refer to Parts 5 and 7
E4.8	Design and operation of exit signs	Refer to Part 7

4.6. Section F – Health and Amenity

BCA Clause		Status
F1.0	Weatherproofing	Refer to Part 5
F1.1	Stormwater drainage	Refer to Part 5
F1.4	External above ground membranes	Refer to Part 5
F1.5	Roof coverings	Refer to Part 5
F1.6	Sarking	Refer to Part 5
F1.7	Waterproofing of wet areas in buildings	Refer to Part 5
F1.9	Damp-proofing	Refer to Part 5
F1.10	Damp-proofing of floors on the ground	Refer to Part 5
F1.11	Provision of floor wastes	Refer to Part 5
F1.13	Glazed assemblies	Refer to Part 5
F2.1	Facilities in residential buildings	Refer to Part 5
F2.5	Construction of sanitary compartments	Refer to Part 5
F3.1	Height of rooms and other spaces	Refer to Part 5
F4.1	Provision of natural light	Refer to Part 5
F4.2	Methods and extent of natural light	Refer to Part 5
F4.4	Artificial lighting	Refer to Part 5
F4.5	Ventilation of rooms	Refer to Part 5
F4.8	Restriction on location of sanitary compartments	Complies
F4.11	Carparks	Refer to Part 5
F5.4	Sound insulation rating of floors	Refer to Part 5
F5.5	Sound insulation rating of walls	Refer to Part 5
F5.6	Sound insulation rating of internal services	Refer to Part 5
F5.7	Sound isolation of pumps	Refer to Part 5
F6.2	Pliable building membrane	Refer to Part 5
F6.3	Flow rate and discharge of exhaust systems	Refer to Part 5
F6.4	Ventilation of roof spaces	Refer to Part 5

4.7. Section G – Ancillary Provisions

BCA Clause		Status
G1.1	Swimming pools	Refer to Part 5
G1.101	Provision for cleaning windows	Refer to Part 5
G5.1	Bushfire prone areas	Refer to Part 5

5. BCA Issues Requiring Resolution

5.1. General

(a) With reference to the 'BCA Assessment Summary' contained within Part 4, the following commentary and resolutions are provided.

(b) This commentary and resolutions are formulated for demonstrating compliance with the relevant provisions of the BCA.

5.2. Section B – Structure

B1.1

The resistance of a building or structure must be greater than the most critical action effect determined by B1.2, AS/NZS 1170.0-2002 and B1.4.

B1.2

The structural design of the building must be determined in accordance with the varying "actions" considerations contained within this clause (i.e. permanent actions, imposed actions, wind / earthquake actions).

B1.4

The structural resistance of materials and forms of construction must be determined in accordance with the following:

(a) Masonry – AS 3700-2018.

(b) Concrete – AS 3600-2018.

(c) Steel – AS4100-1998 or AS/NZS4600-2018.

(d) Piling – AS2159-2009.

(e) Timber – AS1720.1-2010.

(f) Glazed assemblies within an external wall – AS2047-2014.

(g) Glazing assemblies not within an external wall – AS1288-2006.

(h) Termite risk management (where a primary building element is subject to attack by subterranean termites) – AS3660.1-2014.

B1.6

If the building is in a flood hazard area, the building must comply with the ABCB Standard for Construction of Buildings in Flood Hazard Areas.

5.3. Section C – Fire Resistance

C1.1

Generally

(a) The minimum type of fire-resisting construction of a building must be that specified in Table C1.1 and Specification C1.1 (see Part 6 for specific fire-resisting requirements for the building), noting that the FRL for each building element for each storey must be not less than that listed in the Table under Part 6 for the particular class of building as shown below:

(i) Basement 1 and Basement 2 – Class 7a.

(ii) Ground Floor – Class 2 & Class 7a.

(iii) Remaining Levels – Class 2.

C1.8

(a) Any lightweight construction must comply with Specification C1.8 if it is used in a wall system:

(i) That is required to have an FRL; or

(ii) For a lift shaft, stair shaft, service shaft or an external wall bounding a public corridor.

(b) If lightweight construction is used to achieve an FRL for steel columns or the like, it must comply with this clause.

C1.9

(a) The following building elements and their components must be non-combustible:

(i) External walls, including all components incorporated in them including the facade covering, framing and insulation.

(ii) The flooring and floor framing of lift pits.

(iii) Non-loadbearing internal walls having an FRL.

(b) 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.

(c) A loadbearing internal wall and a loading fire wall, including those that are part of a loadbearing shaft, must comply with Specification C1.1.

(d) The requirements of (a) and (b) do not apply to gaskets, caulking, sealants, termite management systems, glass (including laminated glass), thermal breaks associated with glazing systems and damp-proof courses.

(e) The following materials maybe used where a non-combustible material is required:

(i) Plasterboard;

(ii) Fibre-reinforced cement sheeting;

(iii) Prefinished metal sheeting with a combustible surface finish not exceeding 1mm thickness and where the Spread-of-Flame Index of the product is not greater than 1; or

(iv) Sarking-type materials that do not exceed 1mm in thickness and have a Flammability Index is not greater than 5.

C1.10

The fire hazard properties for materials must be as follows:

(a) Floor linings and floor coverings

(i) A critical radiant flux not less than 1.2kW/m^2;

(ii) A critical radiant flux not less than 2.2kW/m^2 in fire-isolated exits; and

(iii) A Group 1 or Group 2 material for any portion of the floor covering that continues more than 150mm up a wall.

(b) Wall linings and ceiling linings

(i) Be a Group 1 material for fire-isolated exits; and

(ii) Be a Group 1, Group 2 or Group 3 material for other locations.

(c) Air-handling ductwork

(i) Rigid and flexible ductwork complying with the fire hazard properties set out in AS4254-2012.

(d) Lift cars

(i) Have a critical radiant flux not less than 2.2kW/m^2 for any floor linings and floor coverings; and

(ii) Be a Group 1 or Group 2 material for any portion of the floor covering that continues more than 150mm up a wall.

(e) Other materials

(i) Fire-isolated exits, other than a sarking-type material used in a ceiling or used as an attachment or part of an attachment to a building element having a Spread-of-Flame Index of not more than 0 and a Smoke-Developed Index of not more than 2. Note a material used as an attachment or part of an attachment to a building element, if combustible, be attached directly to a non-combustible substrate and not exceed 1mm finished thickness.

(ii) Sarking-type materials in a fire-isolated exit having a Flammability index not more than 0.

(iii) Sarking-type materials in other locations having a Flammability index not more than 5.

(iv) Other materials and insulation materials having a Spread-of-Flame Index of not more than 9 and a Smoke-Developed Index of not more than 8 if the Spread-of- Flame Index is more than 5.

C1.14

An ancillary element must not be fixed, installed or attached to the internal parts or external face of an external wall that is required to be non-combustible unless it is one of the following:

(a) An ancillary element that is non-combustible.

(b) A gutter, downpipe or other plumbing fixture or fitting.

(c) A flashing.

(d) A grate or grille not more than 2m^2 in area associated with a building service.

(e) An electrical switch, socket-outlet, cover plate or the like.

(f) A light fitting.

(g) A required sign.

(h) A sign other than one provided under (a) or (g) that:

(i) Achieves a group number of 1 or 2;

(ii) Does not extend beyond one storey;

(iii) Does not extend beyond one fire compartment; and

(iv) Is separated vertically from other signs permitted under (h) by at least 2 storeys.

(i) An awning, sunshade, canopy, blind or shading hood other than one provided under (a) that:

(i) Meets the requirements of Table 4 of Specification C1.10 as for an internal element; and

(ii) Serves a storey:

(A) At ground level; or

(B) Immediately above a storey at ground level; and

(iii) Does not serve an exit, where it would render the exit unusable in a

fire.

(j) Apart of a security, intercom or announcement system.

(k) Wiring.

(l) A paint, lacquer or a similar finish.

(m) A gasket, caulking, sealant or adhesive directly associated with (a) to (k).

C2.7

The fire wall separating different classifications on the Ground Floor must be constructed in accordance with the following:

(a) Have the greater FER between each of the adjoining parts, including any building element providing lateral or vertical support;

(b) Any openings in the fire wall must not reduce the FRL; and

(c) Extend to the underside of the floor above.

C2.8

The walls separating the different classifications on the Ground Floor as shown in Figure 1 below must comply C2.7 above. **Red** means an FRL of 120/120/120

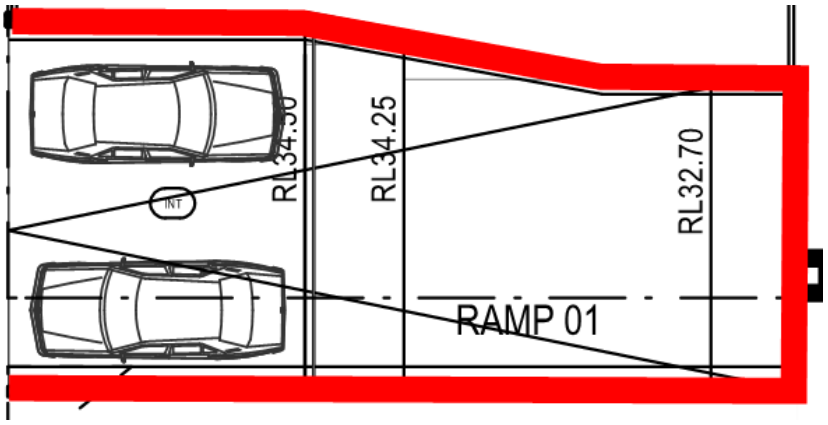


Figure 1 – Indicative location of fire wall

C2.9

(a) The intermediate floors between the Basement 2 & Basement 1, Basement 1 and Ground Floor and Ground Floor & Level 1 parts where separated by the fire wall in red in Figure 1 above must have an FRL of not less than 120/120/120; and

(b) The remaining intermediate floors must have an FRL of not less than 90/90/90.

C2.10

(a) The lifts must be separated from Basement 2 & Basement 1 in a shaft which has an FRL of not less than 120/120/120 for loadbearing walls or --/120/120 for non-loadbearing walls; and

(b) The lifts must be separated from the remaining storeys in a shaft which has an FRL of not less than 90/90/90 for loadbearing walls or --/90/90 for non-loadbearing walls.

C2.12

(a) The following equipment must be separated from the remainder of the building with construction having an FRL of not less than 120/120/120 and any access doorway protected with a self-closing fire door having an FRL

of not less than --/120/30:

(i) Lift motors and lift control panels;

(ii) Emergency generators used to sustain emergency equipment operating in emergency mode;

(iii) Central smoke control plant;

(iv) Boilers; or

(v) A battery system installed in the building that has a total voltage of 12 volts or more and a storage capacity of 200kWh or more.

(b) Equipment need not be separated in accordance with the above if the equipment comprises:

(i) Smoke exhaust fans located in the air stream which are constructed for high temperature operation in accordance with Specification E2.2b;

(ii) Stair pressuring equipment installed in compliance with the relevant provisions of AS1668.1-2015;

(iii) A lift installation without a machine room; or

(iv) Equipment otherwise adequality separated from the remainder of the building.

(c) Separation of on-site fire pumps must comply with the requirements of AS2419.1-2005.

C2.13

(a) A main electrical switchboard which sustains any emergency equipment, must be separated from any other part of the building with construction having an FRL of not less than 120/120/120 and have any access doorway protected with a self-closing fire door having an FRL of not less than --/120/30.

(b) Where emergency equipment is requried in a building, all switchboards in the electrical installation, which sustain the electricity supply to the emergency equipment, must be constructed so that emergency equipment switchgear is separated from non-emergency equipment switchgear by metal partitions designed to minimise the spread of a fault from the non-emergency switchgear.

(c) For the purposes of the above, emergency equipment includes:

(i) Fire hydrant booster pumps;

(ii) Pumps for automatic sprinkler systems or the like;

(iii) Air handling systems designed to exhaust and control the spread of fire and smoke;

(iv) Emergency lifts;

(v) Control and indicating equipment; and

(vi) Emergency warning and intercom systems.

C2.14

(a) The public corridor on the Ground Floor is greater than 40m.

(b) In this regard, divide the public corridor into intervals of not more than 40m with smoke-proof wall(s) and smoke door(s) complying with Specification C2.5.

C3.3

(a) Various openings within external walls to different fire compartments on the Ground Floor are less than 6m apart.

(b) External walls to different fire compartments on the Ground Floor are less than 6m apart must have an FRL of not less than 60/60/60.

(c) Rather than protecting the openings, a Fire Engineering Report (**FER**) justifying the variation could be pursued at construction certificate stage. This may be subject to prior comment from FRNSW as part of the Performance Based Design Brief/FEBQ process.

C3.8

(a) The doorways that open into the fire-isolated stairways and are not doors that open to a road or open space (i.e. open to the sky) must be protected by fire doors having an FRL of not less than --/60/30 that are self-closing or automatic closing.

(b) The automatic closing operation must be initiated by the activation of a smoke detector or any other detector deemed suitable inaccordance with AS1670.1-2018 and located on each side of the fire wall not more than 1.5m horizontal distance from the opening.

(c) Where any other required suitable fire alarm system, including a sprinkler system is installed in the building, activation of the system must also initiate the automatic closing operation.

C3.9

A fire-isolated stairway must not be penetrated by any services other than:

(a) Electrical wiring associated with lighting, fire services or surveillance equipment; or

(b) Water supply pipes for fire services.

C3.10

(a) The entrance doorways to the lift shafts must be protected by fire doors having an FRL of not less than --/60/-- that:

(i) Comply with AS1735.11-1986; and

(ii) Are set to remain closed except when discharging or receiving passengers, goods or vehicles.

(b) A lift call panel, indicator panel or other panel in the wall of a lift shaft must be backed by construction having an FRL of not less than –/60/60 if it exceeds 35000mm^2 in area.

C3.11

(a) All doorways providing access to the enclosed balconies and public corridors from the units must be protected with fire doors having an FRL of not less than --/60/30 that are self-closing.

(b) All doorways providing access from a room not within units to the enclosed balconies and public corridors must be protected with fire doors having an FRL of not less than --/60/30 that are self-closing.

(c) Any other openings bounding the public corridors which are required to have an FRL with respect to integrity and insulation must be protected to not reduce the fire-resisting performance of the wall (i.e. FRL of not less --/60/60).

Attention is directed but not limited to the following:

(a) Separation of the Gym / Community Space from the public corridor on the

Ground Floor.

(b) Window to B3 to Unit A103 that bounds the public corridor on the Ground Floor.

C3.12 Where a service passes through a floor required to have an FRL or a ceiling having a resistance to the incipient spread of fire that service must be protected by either a shaft in accordance with C1.1 or in accordance with C3.15.

C3.13 Any opening in a wall providing access to a ventilating, pipe, garbage or other service shaft must be protected as follows:

(a) If it is in a sanitary compartment – a door or panel, which together with its frame, is non-combustible or has an FRL of not less than ---/30/30;

(b) A self-closing fire door or hopper having an FRL of not less than --/60/30;

(c) An access panel having an FRL of not less than --/60/30; or

(d) If the shaft is a garbage shaft – a door or hopper of non-combustible construction.

Attention is directed but not limited to the following:

(a) Rollershutter to Garbage Room 01 that forms part of a shaft.

C3.15 Where an electrical, electronic, plumbing, mechanical ventilation, air conditioning or other service penetrates a building element (other than an external wall or roof) that is required to have an FRL or a resistance to the incipient spread of fire, that installation must comply with this clause.

C3.16 Construction joints, spaces and the like in and between building elements required to have an FRL with respect to integrity and insulation must be protected in a manner identical with a prototype tested in accordance with AS 1530.4-2014 to achieve the required FRL.

C3.17 Where a column is protected by lightweight construction to achieve the required FRL, passes through a building element that is also required to have an FRL, it must be installed using a method and materials identical with the prototype assembly of the construction which has achieved not less than the required FRL.

5.4. Section D – Access and Egress

D1.2

(a) The external doors leading from the public corridor serving as exits on the Ground Floor do not lead to a road or open space as occupants are requried to pass under the building prior to reaching open space.

(b) Rather than redesigning, a FER justifying the variation could be pursued at construction certificate stage. This may be subject to prior comment from FRNSW as part of the Performance Based Design Brief/FEBQ process.

D1.4

(a) Basement 2

(i) The travel distance to a point of choice to alternative exits is greater than 20m (being upto 21m).

(b) Basement 1

(i) The travel distance to a point of choice to alternative exits is greater

than 20m (being upto 27m).

(c) Levels 2-6

(i) The travel distance to an exit from various units is greater than 12m (being upto 14.5m).

(d) Rather than redesigning, a FER justifying the variations could be pursued at construction certificate stage. This may be subject to prior comment from FRNSW as part of the Performance Based Design Brief/FEBQ process.

D1.6

The path of travel to an exit and any required exit must have:

(a) An unobstructed height throughout of not less than 2m (except a doorway, which can be 1980mm); and

(b) An unobstructed width not less than 1m (except a doorway, which can be 750mm in an area not required to be accessible and 850mm in an area required to be accessible).

Attention is directed but not limited to the following:

(a) Storage cages to Basement 1 and Basement 2.

(b) Between storage cages and columns to Basement 1 and Basement 2.

D1.7

(a) Eastern fire-isolated stairway

(i) The stairway discharges to a point on the Ground Floor that is open for less than 2/3 of its perimeter.

(ii) The path of travel from the discharge point of the exit requires passing within 6m of an external wall of the same building (including openings).

(b) Western fire-isolated stairway

(i) The stairway discharges into a covered area that is open for less than 1/3 of its perimeter and has an unobstructed clear height throughout, including the perimeter openings of not less than 3m.

(ii) The path of travel from the discharge point of the exit requires passing within 6m of an external wall of the same building (including openings).

(c) Rather than redesigning, a FER justifying the variations could be pursued at construction certificate stage. This may be subject to prior comment from FRNSW as part of the Performance Based Design Brief/FEBQ process.

D1.10

(a) The path of travel to the road from each exit (including any gate leading to the road) must have an unobstructed width throughout of not less than 1m.

(b) The path of travel to the road must have an unobstructed width of 1m and be via a stairway, ramp or other incline having a gradient of no steeper than 1:8 or complying with AS1428.1-2009 (where required to be accessible for people with a disability).

D1.17

Access into a lift pit must be through the lift landing doors provided on the lowest level.

D2.2

Any fire-isolated stairway shaft (including supporting building elements) is be constructed:

(a) Of non-combustible materials; and

(b) So that if there is local failure it will not cause structural damage to or impair the fire-resistance of the shaft.

D2.4

The construction that separates or is common to the rising and descending flights of the fire-isolated exits must be non-combustible and be smoke proof in accordance with Clause 2 of Specification C2.5.

D2.7

(a) Access to service shafts and services other than to fire-fighting or detection equipment must not be provided from a fire-isolated stairway;

(b) Gas or other fuel services are not permitted to be installed within the stairway; and

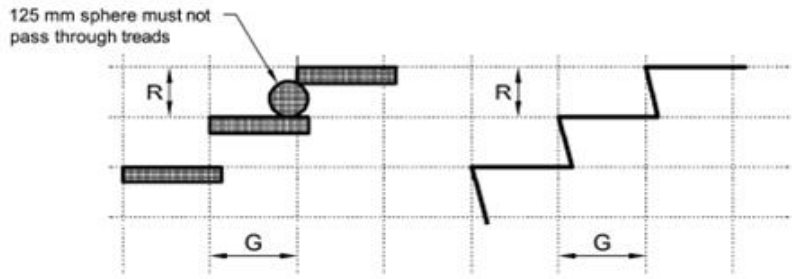
(c) Any services or equipment (being electrical meters, distribution boards or the like) installed within a corridor must be enclosed by non-combustible construction or a fire-protective covering (i.e. 1 layer of 13mm fire-protective grade plasterboard) with doorway(s) or opening(s) suitably sealed against smoke spreading from the enclosure.

D2.12

The roof of Basement 1 must have an FRL of not less than 120/120/120.

D2.13

(a) The going, riser and steepness dimension of the stairways must be within the following range:



Riser (R)		Going (G)		Slope Relationship (2R+G)	
Max	**Min**	**Max**	**Min**	**Max**	**Min**
190	115	355	250 (public)	700	550

(b) The risers and goings must be constant throughout the flight except variations of no greater than 5mm are permitted between adjacent risers or goings and no greater than 10mm are permitted between the smallest and largest goings or risers in a flight; and

(c) The stair treads must have a surface or nosing strip achieving a slip-resistance classification of P3 or R10 in dry or P4 or R11 in wet tested in accordance with AS4586-2013.

D2.14

In a stairway:

(a) Landings are to be a minimum of 750mm long with a gradient not steeper than 1:50; and

(b) Have a:

(i) A surface with a slip-resistance classification of not less than P3 or R10 in dry or P4 or R11 in wet when tested in accordance with AS4586-2013; or

(ii) A strip at the edge of the landing with a slip-resistance classification of not less than P3 or R10 in dry or P4 or R11 in wet when tested in accordance with AS4586-2013, where the edge does not lead to a stairway flight below.

D2.15

(a) The threshold of a doorway is not permitted to incorporate a step or ramp at any point closer to the doorway than the width of the door leaf.

(b) That is unless the doorway opens to a road or open space (i.e. open to the sky) and:

(i) In a building required to be accessible, is provided with a threshold or step ramp in accordance with AS1428.1-2009; or

(ii) In all other cases, the door sill is not more than 190mm above the finished surface of the ground.

D2.16

A continuous barrier must be constructed along the side of a trafficable surface that is 1m or more the surface beneath as follows:

(a) To a height not less than 865mm above the nosings of the stair treads or the floor of a ramp;

(b) To a height not less than 1000mm above the floor of any access path, balcony, landing or the like;

(c) Any opening does not permit a 125mm sphere to pass through it and for stairs, the space is measured above the nosings;

(d) For floors more than 4m above the surface beneath, any horizontal or near horizontal elements between 150mm and 760mm must not facilitate climbing; and

(e) For barriers in a fire-isolated stairway used primarily for emergency purposes openings between balustrades can be up to 300mm or where rails are used, the bottom rail must be a maximum of 150mm above the stair nosings line or from the landing or floor and the opening between rails must not be more than 460mm.

D2.17

Handrails must be constructed as follows:

(a) Be located along at least one side of the ramp or flight;

(b) Be fixed at a height of not less than 865mm measured above the nosings of the stair treads and the floor surface of the ramp, landing or the like; and

(c) Be continuous between stair flight landings and have no obstruction on or above them will tend to break a hand hold.

D2.21

Any door in a required exit, forming part of a required exit or in the path of travel

to a required exit (including any gate or door in the path of travel to the road) must be readily operable without a key from the side that faces a person seeking egress, and:

(a) By a single hand pushing or downward action on a single device located between 900mm and 1100mm from the floor;

(i) Be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and

(ii) Have a clearance between the handle and the back plate or door face at the centre grip section of the handle of not less than 35mm nor more than 45mm; or

(b) A single hand pushing action on a single device which is located between 900mm and 1.2m above the floor.

D2.23

Signage complying with this clause to alert persons that the operation of certain must be installed to the following doors:

(a) Smoke door(s)

(i) On the side that faces a person seeking egress and if the door is fitted with a device for holding it in the open position, on either the wall adjacent to the doorway or both sides of the door.

(b) Fire-isolated stairways

(i) On the outside of the doors providing access to the fire-isolated stairways.

(ii) On both sides of the final doors leading from the fire-isolated stairways.

D2.24

(a) Window openings to bedrooms require protection, if the floor below the window is 2m above the surface beneath.

(b) Protection need not be provided where the lowest level of the window is 1.7m or more above the finished floor level.

(c) Protection can be in the form of the following:

(i) The openable portion of the window must be protected with a device to restrict the window opening or a screen with secure fittings;

(ii) The device or screen must not permit a sphere greater than 125mm is permitted to pass through;

(iii) Resist the outward horizontal action of 250N against the window or screen; and

(iv) Have a child resistant release mechanism can be removed, unlocked or overridden.

(d) A barrier with a height of not less than 865mm above the floor is required to an openable window:

(i) In addition, to window protection as per (c) above; and

(ii) Where the floor below the window is 4m or more above the floor or if the window is not covered above.

(e) The above barrier must not:

(i) Permit a 125mm sphere to pass through it; and

(ii) Any horizontal or near horizontal elements between 150mm and 760mm must not facilitate climbing.

5.5. Section E – Services and Equipment

E1.3

(a) A fire hydrant system complying with AS2419.1-2005 must serve the building; and

(b) The system is to be designed and certified by a suitably accredited practitioner (fire safety).

E1.4

(a) A fire hose reel complying with AS2441-2005 must be installed to the non-residential parts if 1 or more internal fire hydrants are installed;

(b) Fire hose reels must be located within 4m of exits;

(c) The system is to be designed and certified by a suitably accredited practitioner (fire safety).

E1.5

(a) The sprinkler system is to comply with relevant requirements of Specification E1.5 and Specification E1.5a of the BCA and AS2118.1-2017;

(b) Sprinkler alarm valves must be located in a secure room or enclosure which has direct egress to a road or open space (i.e. open to the sky); and

(c) The system is to be designed and certified by a suitably accredited practitioner (fire safety).

E1.6

Portable fire extinguishers complying with AS2444-2001 must be installed as follows:

(a) 2.5kg ABE type portable fire extinguishers where one or more internal hydrants are installed. The travel distance to an extinguisher must not exceed 10m from the entrance doorway of each unit;

(b) To cover Class AE or E fire risks associated with emergency services switchboards; and

(c) To cover Class B fire risks (if more than 50L excluding vehicle fuel tanks is stored).

E2.2

The building requires the following smoke hazard management systems:

(a) Residential part

(i) Each unit requires a smoke alarm complying with Clause 3 of Specification E2.2a on or near the ceiling.

(ii) Public corridors and other internal public spaces require smoke alarms located in accordance with AS1670.1-2018 and connected to activate a building occupant warning system in accordance with Clause 7 of Specification E2.2a.

(iii) The system is to be designed and certified by a suitably accredited practitioner (fire safety).

(b) Carpark part

(i) Where provided with a mechanical ventilation system complying with AS1668.2-2012, it must comply with Clause 5.5 of AS1668.1-2015, expect that:

(A) Fans with metal blades suitable for operation at normal temperature may be used; and

(B) The electrical power and control cabling need not be fire rated.

E3.1 An electric passenger lift installation or electrohydraulic passenger lift installation must comply with Specification E3.1.

E3.2 A stretcher facility must be provided in each passenger lift and must accommodate a raised stretcher with a patient lying on it horizontally by providing a clear space not less than 600mm wide x 2000mm long x 1400mm high above the floor level.

E3.3 Warning signage must be displayed near every call button for the passenger lifts.

E3.7 The passenger lifts must have:

(a) A fire service recall control switch complying with E3.9; and

(b) A lift car fire service drive control switch complying with E3.10.

E3.9 A fire service recall operational switch must comply with the requirements of E3.9.

E3.10 A lift car fire service drive control switch must comply with the requirements of E3.10.

E4.2 Emergency lighting complying with AS/NZS2293.1-2018 must be installed throughout the building (excluding within units).

E4.5 Exit signage complying with AS/NZS2293.1-2018 must be installed above or adjacent doors serving as exits or the edge of the building and final doors from the fire-isolated stairways.

E4.6 If an exit is not clear to persons occupying or visiting the building, then exit signs complying with AS/NZS2293.1-2018 must be installed in appropriate positions in corridors, hallways, lobbies and the like, indicating the direction to a required exit.

5.6. Section F – Health and Amenity

F1.0 FP1.4 for the prevention of penetration of water through external walls must be complied with. Advice should be obtained from a professional facade engineer to achieve compliance.

F1.1 Stormwater drainage must comply with AS/NZS 3500.3-2018.

F1.4	Waterproofing membranes for external above ground use such as balconies or roofs must comply with AS4654-2012.
F1.5	Concrete complying with AS3600-2018 is not listed as a roof covering under this clause, so advice should be obtained from a professional facade engineer to achieve compliance.
F1.6	Sarking type materials used for weatherproofing of roofs and walls must comply with AS/NZS4200-2017.
F1.7	Building elements in wet areas must be water-resistant or waterproof in accordance with Table F1.7 and comply AS3740-2010.
F1.9	Where a damp-proof course is provided, it must consist of: (a) A material that complies with AS/NZS2904-1995; or (b) Impervious termite shields in accordance with AS3660.1-2014.
F1.10	A floor laid directly onto ground or fill must be provided with a vapour barrier complying with AS2870-2011.
F1.11	Bathrooms and laundries must contain floor wastes and the floor graded to the floor wastes to permit drainage of water.
F1.13	Windows in the external walls must comply with the requirements of AS2047-2014 for resistance to water penetration, except the following windows need not comply: (a) Skylights, roof lights and windows in other than the vertical plane. (b) Sliding and swinging glazed doors without a frame. (a) Windows constructed on site and architectural one-off windows, which are not design tested in accordance with AS 2047-2014. (b) Second-hand windows, re-used windows and recycled windows. (c) Heritage windows.
F2.1	Clothes drying facilities comprising a clothesline or hoist with not less than 7.5m of line or space for a heat-operated drying cabinet or appliance in the same room as the clothes washing facilities must be provided to each unit.
F2.5	The door to a fully enclosed WC or bathroom must: (a) Open outwards; (b) Slide; or (c) Be readily removable from the outside of the compartment (i.e. lift-off hinges), unless there is a clear space of at least 1.2m, measured between the closet pan within the compartment and hinge side of the doorway.

F3.1 Unobstructed heights must be as follows:

(a) Habitable rooms et al. excluding kitchens and the like – not less than 2.4m;

(b) Stairways – not less than 2m; and

(c) Public corridors, sanitary facilities, kitchens, carpark, storeroom and the like – not less than 2.1m.

F4.1 Natural light complying with F4.2 or F4.3 below must be provided to all habitable rooms.

F4.2

(a) Required natural light to habitable rooms must be provided by the following:

(i) Windows having an aggregate light transmitting area measured exclusive of framing members, glazing bars or other obstructions of not less than 10% of the floor area of the room; and

(ii) Are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like; or

(iii) Roof light(s) having a light transmitting area exclusive of framing members of not less than 3% of the floor area of the room; and

(iv) Are open to the sky; or

(v) Proportional combination of windows and roof lights as required above.

(b) A required window that faces a wall of the same building must not be less than a horizonal distance from that wall that is greater than 1m or 50% of the square root of the exterior height of the wall in which the window is located, measured in m from its sill.

(c) Attention is directed but not limited to the following:

(i) The windows to habitable rooms facing a wall of the same building.

(ii) Window to B3 to Unit A103 that bounds the public corridor on the Ground Floor.

F4.3

(a) Required natural light to a room may come through one or more glazed panels or openings from an adjoining room (including an enclosed verandah) if:

(i) Both rooms are within the same unit or the enclosed verandah is on common property;

(ii) The glazed panels or openings have an aggregate light transmitting area of not less than 10% of the *floor area* of the room to which it provides light; and

(iii) The adjoining room has:

(A) Windows, excluding roof lights, that:

i. Have an aggregate light transmitting area of not less than 10% of the combined floor areas of both rooms; and

ii. Are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like; or

(B) Roof lights, that:

i. Have an aggregate light transmitting area of not less than 3% of the combined floor areas of both rooms; and

ii. Open to the sky; or

iii. A proportional combination of windows and roof lights required by (A) and (B).

(b) The areas specified in (a)(ii) and (a)(iii) may be reduced as appropriate if direct natural light is provided from another source.

F4.4

Artificial lighting complying with AS/NZS1680.0-2009 must be installed:

(a) Generally

(i) To required stairways.

(b) Carpark part

(i) To all rooms that are frequently occupied, all spaces required to be accessible, all corridors, lobbies, internal stairways, other circulation spaces and paths of egress.

(c) Residential part

(i) To sanitary compartments, bathrooms, laundries, common stairways and other spaces used in common by the occupants of the building.

F4.5

A habitable room, sanitary compartment, bathroom, shower room, laundry and any other room occupied by a person for any purpose must have:

(a) Natural ventilation complying with F4.6 below); or

(a) Mechanical ventilation complying with AS1668.2-2012.

F4.6

Natural ventilation provided in accordance with F4.5(a) must consist of openings, windows, doors or other devices which can be opened:

(a) With a ventilating area not less than 5% of the floor area of the room required to be ventilated; and

(b) Open to:

(i) A suitably sized court, or space open to the sky; or

(ii) an open verandah, carport, or the like;

(iii) an adjoining room in accordance with F4.7.

F4.7

(a) Natural ventilation to a room may come through a window, opening, door or other device from an adjoining room (including an enclosed verandah) if both rooms are within the same unit or the enclosed verandah is common property, and:

(i) The room to be ventilated is not a sanitary compartment;

(ii) The window, opening, door or other device has a ventilating area of

not less than 5% of the floor area of the room to be ventilated; and

(iii) The adjoining room has a window, opening, door or other device with a ventilating area of not less than 5% of the combined floor areas of both rooms.

(b) The ventilating areas specified above may be reduced as appropriate if direct natural ventilation is provided from another source.

F4.11 The carpark part requires ventilation by either:

(a) Mechanical means complying with AS1668.2-2012; or

(b) Natural means complying with Section 4 of AS1668.4-2012.

F5.4 The intermediate floors to Level 1 and above must have a $R_w + C_{tr}$ (airborne) not less than 50 and an $L_{n,w}$ (impact) not more than 62.

F5.5 Generally, internal walls to the residential parts must be constructed as follows:

(a) Walls that separate units must have an $R_w + C_{tr}$ (airborne) of not less than 50;

(b) Walls that separate units from public corridors, internal exit stairway, lift, other rooms or the like and different classifications must have an R_w (airborne) of not less than 50;

(c) Be of discontinuous construction if the wall separates a bathroom, sanitary compartment, laundry or kitchen in a unit from a habitable room (other than a kitchen) in an adjoining unit) or a unit from a lift shaft;

(d) Doorways providing access to units from public corridors must have an R_w of not less than 30;

(e) Services must not be chased into concrete or masonry elements; and

(f) A wall required to have a sound insulation must be constructed such that it continues to the underside of:

(i) The underside of the floor above;

(ii) A ceiling that provides the sound insulation required for the wall; or

(iii) The underside of the roof above.

F5.6 Any duct, soil, stormwater, waste or water supply pipe (including a duct or pipe that is in a wall or floor cavity) serves or passes through more than 1 unit, the duct or pipe must be separated from the rooms of any unit by construction with an $R_w + C_{tr}$ (airborne) not less than:

(a) 40 if the adjacent room is a habitable room (other than a kitchen); or

(a) 25 if the adjacent room is a kitchen or non-habitable room.

F5.7 A flexible coupling must be used at the point of connection between the service pipes in a building and any circulating or other pump.

F6.2 For the units, where a pliable building membrane is installed in an external wall, it must comply with this clause.

F6.3 For the units, an exhaust system installed in a kitchen, bathroom or sanitary

	compartment or laundry must comply with this clause.
F6.4	For the units, exhaust from a bathroom, sanitary compartment or laundry discharged directly to a roof space, the roof space must comply with this clause.

5.7. Section G – Ancillary Provisions

G1.1	The swimming pool must have suitable barriers to restrict access by young children to the intermediate pool surrounds in accordance: (a) AS1926.1-2012; (b) AS1926.2-2007; and (c) Clause 9 of the Swimming Pools Regulation 2018.
G1.101	The windows located 3 or more storeys above the street level must be able to be cleaned from wholly within the building or by a method complying with Work Health and Safety Act 2011 and Regulations made under the Act.
G5.1	If the building is in a designated bushfire prone area, the building must comply with AS3959-2018.

6. Construction Details

In a building required to be of Type A construction:

(a) Where a part of a building requried to have an FRL depends upon direct vertical or lateral support from another part to maintain its FRL that supporting part, must an FRL not less required by the part of the building being supporting and be non-combustible.

(b) A lintel must have the FRL required for that part of the building in which it is situated, unless it does not contribute to the support of a fire door, fire window or fire shutter, and:

  (i) It spans an opening in a non-loadbearing wall of a Class 2 or 3 building; or

  (ii) It spans an opening in masonry which is not more than 150mm thick and:

    (A) Not more than 3m wide if the masonry is non-loadbearing; or

    (B) Not more than 1.8m wide if the masonry is loadbearing and part of a solid wall or one of the leaves of a cavity wall.

(c) Shafts must be enclosed at the top and bottom by construction having an FRL not less than that required for the walls of a non-loadbearing shaft in the same building, except that these provisions need not apply to:

  (i) The top of a shaft extending beyond the roof covering, other than one enclosing a fire-isolated stairway; or

  (ii) The bottom of a shaft if it is non-combustible and laid directly on the ground.

(d) Each building element listed in the Table below and any beam or column incorporated in it, must have an FRL not less than that listed in the Table for the class of building concerned.

(e) External walls, common walls including all components incorporated in them including the facade covering, framing and insulation must be non-combustible.

(f) External walls must be non-combustible including any render and achieve an FRL from both sides.

(g) The method of attaching or installing a finish, lining or ancillary element or service installation to a building must not reduce the fire-resistance of that element to below that required.

(h) Any internal wall required to have an FRL with respect to integrity and insulation must extend to:

(i) The underside of the floor next above;

(ii) The underside of a roof complying with the Table below;

(iii) If under Clause 3.5 of Specification C1.1 roof is not required to comply with the Table below, the underside of the non-combustible roof covering and, except for roof battens with dimensions of 75mm x 50mm or less or roof sarking, must not be crossed by timber or other combustible building elements; or

(iv) A ceiling that is immediately below the roof and has a resistance to the incipient spread of fire to the roof space between the ceiling and the roof of not less than 60 minutes.

(i) A loadbearing internal wall and a loadbearing fire wall (including those that are part of a loadbearing shaft) must be of concrete or masonry.

(j) The FRLs specified in the Table below for an external column apply also to those parts of an internal column that face and are within 1.5m of a window and are exposed through that window to a fire-source feature.

Building element	Class of building—FRL: (in minutes)			
	Structural adequacy/Integrity/Insulation			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any fire-source feature to which it is exposed is—				
For loadbearing parts—				
less than 1.5m	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 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, where the distance from any fire-source feature to which it is exposed is—				
less than 3 m	90/ - / -	120/ - / -	180/ - / -	240/ - / -
3 m or more	- / - / -	- / - / -	- / - / -	- / - / -
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 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

Table 2 – FRLs

7. Statutory Fire Safety Measures

The statutory fire safety measures listed below are to be installed within the building to the commentary contained above.

Statutory Fire Safety Measures	Minimum Standard of Performance
1. Access panels, doors and hoppers to fire resisting shafts	C3.13 of the BCA / AS1530.1-1994 / AS1530.4-2014
2. Automatic fire detection and alarm system	Clause 3 of Specification E2.2a of the BCA / AS3786-2014
3. Automatic fire suppression system (sprinklers)	Specifications E1.5 & E1.5a of the BCA / AS2118.1-2017
4. Building occupant warning system	Clause 7 of Specification E2.2a of the BCA
5. Emergency lighting	E4.2, E4.3 & E4.4 of the BCA / AS/NZS2293.1-2018
6. Exit signs	E4.5, E4.6 & E4.8 of the BCA / AS/NZS2293.1-2018
7. Fire alarm communication link	AS1670.3-2018
8. Fire doors	C2.12 (if provided), C2.13 (if provided), C3.8, C3.10, C3.11 and Specification C3.4 of the BCA, AS1905.1-2015 / AS1735.11-1986
9. Fire hydrant system	E1.3 of the BCA / AS2419.1-2005
10. Fire seals protecting openings in fire resisting components of building	C3.15, C3.16 & Specification C3.15 of the BCA / AS4072.1-2005, AS1530.4-2014
11. Hose reel system	E1.4 of the BCA / AS2441-2005
12. Lightweight construction (if installed)	C1.8, C3.17 & Specification C1.8 of the BCA / AS1530.4-2014
13. Mechanical air handling systems (carpark ventilation system)	E2.2 of the BCA / AS1668.1-2015
14. Portable fire extinguishers	E1.6 of the BCA / AS2444-2001
15. Warning and operational signs	D2.23 & E3.3 of the BCA
16. FER	TBA

Table 3 – Statutory fire safety measures

8. Conclusion

8.1. General

Having regard to the above commentary, compliance with the BCA is capable, subject to compliance with Parts 4-7.

If you require any further assistance or have any additional queries, please do not hesitate in contacting us directly.

Yours sincerely,

Nehme Moujalli
Director
InCode Solutions Pty Ltd