



Date: 31 May 2021
Our Ref: P210066 (2)

Mr George Minas
P.O. Box 3188
Bankstown Square NSW 2200

Dear Mr Minas,

RE: 15 Avoca St, Goulburn
BCA COMPLIANCE ASSESSMENT REPORT

Please find enclosed our BCA Design Compliance Report prepared in respect of the proposed design contained within the architectural documentation provided.

We have been engaged by you to undertake a BCA Compliance Report of the subject existing building.

It is recognized that this older building will not comply in many ways with the current Building Code requirements and in this regard it is our aim to identify key compliance issues and provide recommendations in regard to improving the level of Fire Safety within the building.

Specifically this report relates to works as listed below which are the subject of conciliation between the owner and Goulburn Mulwaree Council

The subject building elements are:-

At ground:

- There will be 3 enclosed storage spaces (1, 2, and 4) not linked to any unit.
- There is an open storage space (3)
- There is no groundskeeper/store under the building. These are now proposed as unenclosed undercroft parking spaces linked to U6, with bathroom and benchtop to remain, but no kitchen.
- Ground floor of unit 6 is storage, laundry and bath. The stairs are to be demolished. Kitchen facilities to be removed, although benchtops remain for laundry/storage purposes.
- There is a groundskeepers tool work shed separate to the main building.

At first floor, the stairs in U6 are infilled, and the kitchen placed in this location.

Should you require any further information, please do not hesitate to contact me on the number provided.

Yours faithfully

A handwritten signature in black ink, appearing to read 'Kieran Tobin', followed by a horizontal line.

Kieran Tobin
Director

BCA COMPLIANCE ASSESSMENT REPORT

PREPARED FOR
MR GEORGE MINAS

REGARDING
15 Avoca St, Goulburn

Prepared By



REPORT REGISTER

The following report register documents the development and issue of this report and project as undertaken by this office, in accordance with the *Quality Assurance* policy of BCA Vision Pty Ltd.

Our Reference	Issue No.	Remarks	Issue Date
P210066	1	Draft Report	27 May 2021
P210066	2	BCA Compliance Assessment Report	31 May 2021

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1.0 INTRODUCTION

1.1 GENERAL

This “BCA Compliance Assessment” report has been prepared at the request of Mr George Minas and relates to 15 Avoca St, Goulburn.

The subject building is an existing two storey concrete and masonry residential building with a mixture of masonry and lightweight walls and tile and metal roofs.

Specifically this report relates to works as listed below which are the subject of conciliation between the owner and Goulburn Mulwaree Council

The subject building elements are:-

At ground it is proposed that:

- There will be 3 enclosed storage spaces (1, 2, and 4) not linked to any unit.
- There is an open storage space (3)
- There is no groundskeeper/store under the building.
These are now proposed as unenclosed undercroft parking spaces linked to U6, with bathroom and benchtop to remain, but no kitchen.
- Ground floor of unit 6 is proposed as storage, laundry and bath.
The stairs are to be demolished.
Kitchen facilities to be removed, although benchtops remain for laundry/storage purposes.
- There is a groundskeepers tool work shed separate to the main building.

At first floor, the stairs in U6 are infilled, and the kitchen placed in this location.

1.2 REPORT BASIS

The content of this report reflects –

- (a) The principles and provisions of BCA 2019 (amendment 1), Performance Requirement BP1.4, Parts C, D1 D2, and F (as they relate to the subject portion of the building)
- (b) An inspection of the building by BCA Vision on Monday the 24th of May 2021,
- (c) Architectural documentation (revision C) prepared by Archiplan Design Studios and dated 28/05/21

1.3 EXCLUSIONS

It is conveyed that this report should not construed to infer that an assessment for compliance with the following has been undertaken –

- (a) Structural adequacy of the existing building;
- (b) General building services;
- (c) BCA Vision have not removed building Fabric and in this regard must make assumptions in regard to parts of the building which are not visible. BCA Vision cannot guarantee these assumptions and in this regard further inspection by the relevant parties (owner and occupier) is encouraged;

- (d) The individual requirements of service providers (i.e. Telstra, Water Supply, Energy Australia);
- (e) The individual requirements of the Workcover Authority;
- (f) Disability Discrimination Act (DDA);
- (g) Reporting on hazardous materials, OH&S matters or site contamination;
- (h) Assessment of any structural elements or geotechnical matters relating to the building, including any;
- (i) Consideration of any fire services operations (including hydraulic, electrical or other systems);
- (j) Assessment of plumbing and drainage installations, including stormwater;
- (k) Assessment of mechanical plant operations, electrical systems or security systems;
- (l) Heritage significance;
- (m) Consideration of energy or water authority requirements;
- (n) Consideration of Council's local planning policies;
- (o) Environmental or planning issues;
- (p) Requirements of statutory authorities;
- (q) Sections B (other than B1.4), D3, F, G, H, J or I of the BCA are not considered;
- (r) Provision of any construction approvals or certification under Part 4A or Part 5 of the Environmental.

1.4 REPORT PURPOSE

- (d) The purpose of this report is to identify the extent to which the architectural design documentation complies with the relevant prescriptive provisions of the BCA 2019 (amendment 1), Performance Requirement BP1.4, Parts C, D1 D2, and F (as they relate to the subject portion of the building).

Assessment of the proposed design considers each prescriptive BCA provision, and identifies such as either: –

- (a) Being complied with; or
- (b) Not being complied with; or
- (c) Requiring the provision further detail with the future Building Permit or other application or
- (d) Not being relevant to the particular building works proposal.

The status of the design, in terms of these four (4) categories, is summarised within Part 3 of this report.

Where prescriptive non-compliance is identified, suitable recommendations to remedy the non-compliance shall be detailed in Part 4.

In instances where insufficient detail exists, summary of the information required from the project team for inclusion within future applications (i.e. Building Permit) shall also be outlined in Part 4.

2.0 BUILDING DESCRIPTION

2.1 GENERAL

In the context of the Building Code of Australia (BCA), the subject development is described within items 2.2 – 2.6 below.

2.2 RISE IN STOREYS (CLAUSE C1.2)

The building is proposed to have a rise in storeys of two (2)

2.3 BUILDING CLASSIFICATION (CLAUSE A3.2)

The entire building incorporates the following classifications:-

CLASS	DESCRIPTION
Class 2	A residential building,
Class 7b	A Storage area
Class 10a	A private garage

2.4 EFFECTIVE HEIGHT (CLAUSE A1.1)

The building does not have an effective height exceeding 12m.

2.5 TYPE OF CONSTRUCTION (TABLE C1.1)

The building is required to be Type B Construction

Building element	Class of building — FRL: (in minutes)	
	<i>Structural Adequacy/Integrity/Insulation</i>	
	2	7b
EXTERNAL WALL (including any column and other building element incorporated within it) or other external building element, where the distance from any <i>fire-source feature</i> to which it is exposed is—		
For <i>loadbearing</i> parts—		
less than 1.5 m	90/ 90/ 90	240/240/240
1.5 to less than 3 m	90/ 60/ 30	240/180/120
3 to less than 9 m	90/ 30/ 30	240/ 90/ 60
9 to less than 18 m	90/ 30/—	240/ 60/—
18 m or more	—/—/—	—/—/—

For non- <u>bearing</u> parts—		
less than 1.5 m	—/ 90/ 90	—/240/240
1.5 to less than 3 m	—/ 60/ 30	—/180/120
3 m or more	—/—/—	—/—/—
EXTERNAL COLUMN not incorporated in an <u>external wall</u> , where the distance from any <u>fire-source feature</u> to which it is exposed is—		
For <u>loadbearing</u> columns—		
less than 18 m	90/—/—	240/—/—
18 m or more	—/—/—	—/—/—
For non- <u>loadbearing</u> columns—		
	—/—/—	—/—/—
COMMON WALLS and FIRE WALLS—	90/ 90/ 90	240/240/240
INTERNAL WALLS—		
<u>Fire-resisting</u> lift and stair <u>shafts</u> —		
<u>Loadbearing</u>	90/ 90/ 90	240/120/120
<u>Fire-resisting</u> stair <u>shafts</u> —		
Non- <u>loadbearing</u>	—/ 90/ 90	—/120/120
Bounding <u>public corridors</u> , public lobbies and the like—		
<u>Loadbearing</u>	60/ 60/ 60	240/—/—
Non- <u>loadbearing</u>	—/ 60/ 60	—/—/—
Between or bounding <u>sole-occupancy units</u> —		
<u>Loadbearing</u>	60/ 60/ 60	240/—/—
Non- <u>loadbearing</u>	—/ 60/ 60	—/—/—
OTHER LOADBEARING INTERNAL WALLS		
and COLUMNS—	60/—/—	240/—/—
ROOFS	—/—/—	—/—/—

2.6 PART B1.4 – BUILDING IN FLOOD PRONE LANDS

We are advised that the building is constructed within flood prone land

The BCA Requires compliance with ABCB Standard - Construction of buildings in flood hazard areas

We have not been advised of a flood study for the area so it is not possible to determine to what the degree the building may be affected.

On inspection it was identified that the existing ground floor walls were single leaf masonry.

Infill enclosure off the spaces had been achieved through the provision of:-

- a) Lightweight timber walls with plasterboard linings
- b) Timber clad gates to the storage areas.

In addition, positions of the groundkeepers space and ground floor of unit 6 had been provided with a linoleum floor covering.

Storage spaces 1, 2, 3 and 4 were unlined but enclosed for security.

The Ground keepers' room had been provided with a tiled bathroom.

Ground Floor of unit 6 contained a timber stair, kitchen and tiled bathroom.

Generally the building Material requirements are outlined within the standard as follows:-

Clause ref	ABCB Standard Requirement	Comment/Recommendation
2.4	<p>Floor height requirements</p> <p>Unless otherwise specified by the appropriate authority-</p> <p>(a) the finished floor level of habitable rooms must be above the FHL; and</p> <p>(b) the finished floor level of enclosed non-habitable rooms must be no more than 1.0 m below the DFL. Note:</p> <p>The structural provisions of this Standard are based on the DFL being a maximum of 1.0 m above the finished floor level of enclosed rooms.</p> <p>Therefore, if the appropriate authority permits more than 1.0 m, additional structural analysis should be undertaken.</p>	<p>Floor Height requirements cannot be determined without a Flood Stud</p>

2.5	<p>Footing system requirements</p> <p>General The footing system of a structure must provide the required support to prevent flotation, collapse or significant permanent movement resulting from the flood actions specified in Section 2.3. Geotechnical considerations</p> <p>The footing system design must account for instability and decrease in structural capacity associated with soil properties when wet, erosion and scour, liquefaction, and subsidence resulting from the flood actions specified in Section 2.3, depending on the geotechnical characteristics of the site.</p> <p>Footing system depth</p> <p>The footing system depth must be adequate to provide the support required in 2.5.1 taking into account the geotechnical considerations of 2.5.2. Piers, posts, columns and piles Piers, posts, columns and piles used to elevate buildings to the required elevation must take account of:</p> <ul style="list-style-type: none">(a) the potential erosion action due to flood; and(b) the potential debris actions. <p>Use of fill</p> <p>Fill providing support to the footing system must be designed to maintain that support under conditions of flooding, including rapid rise and draw-down of flood waters, prolonged inundation, erosion and scour, without exceeding the maximum design differential movement of the footing system as specified in AS 2870.</p> <p>Use of slabs</p> <p>(a) Slabs must:</p> <ul style="list-style-type: none">(i) be installed on fill in accordance with 2.5.5, or on undisturbed soil of adequate bearing capacity; and(ii) have adequate strength to resist the design actions even if the supporting soil under the slab is undermined by erosion. <p>(b) The bottom of the slab edge (usually the edge beam or edge footing) must be at or below the depth of expected scour.</p> <p>(a) Any enclosure below the FHL must have openings to allow for automatic entry and exit of floodwater for all floods up to the FHL.</p>	<p>On receipt of a Floor Study we recommend engaging a Structural Engineer to determine the Structural Adequacy of the existing structure.</p>
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	<p>(b) The openings must meet the following criteria-</p> <p>(i) doors and windows must not be counted as openings but openings can be installed in doors and windows; and</p> <p>(ii) there must be a minimum of two openings on different sides of each enclosed area; and</p> <p>(iii) the total net area of all openings must be at least 1% of the enclosed area; and</p> <p>(iv) openings must permit a 75 mm sphere to pass through; and</p> <p>(v) any opening covers must not impede the flow of water.</p>	
2.7	<p>Requirements for structural attachments</p> <p>(a) Erosion control structures that are attached to the foundation or superstructure of the building must be structurally adequate and not reduce the structural capacity of the building during the DFE.</p> <p>(b) Decks, patios, stairways, ramps and the like below the FHL that are attached to the building must be structurally adequate and not reduce the structural capacity of the building during the DFE.</p>	On receipt of a Floor Study we recommend engaging a Structural Engineer to determine the Structural Adequacy of the existing structure.
2.8	<p>Material requirements</p> <p>(a) Materials used for structural purposes and located below the FHL must be capable of resisting damage, deterioration, corrosion or decay taking into account the likely time the material would be in contact with flood water and the likely time it would take for the material to subsequently dry out.</p> <p>(b) For the purposes of (a), materials used for structural purposes include loadbearing columns, bracing members, structural connections, fasteners, wall framing members and the like.</p> <p>(a) Utilities and related equipment, other than an electrical meter for the building, must not be placed below the FHL unless they have been designed specifically to cope with flood water inundation.</p> <p>Note: The location of electrical meters is regulated by the electrical authority.</p> <p>(b) Buried systems must be placed at a depth sufficient to prevent damage due to scour and erosion during the DFE.</p>	Required adjustment to the electrical and mechanical ventilation equipment can be made on receipt of a Flood Study

	<p>(c) Exposed systems must be designed to withstand the flood related actions (buoyancy, flow, debris and wave). Electrical Unless the electrical supply authority determines otherwise:</p> <p>(a) Electrical switches must be placed above the FHL.</p> <p>(b) Electrical conduits and cables installed below the FHL must be waterproofed or placed in waterproofed enclosures.</p> <p>Mechanical and HVAC systems, tanks and the like Ductwork, tanks, gas storage cylinders and the like must be placed above the FHL or designed, constructed, installed and anchored to resist all flood-related actions and other actions during the DFE with appropriate load factors as given in Table</p>	
2.9	<p>Requirements for utilities</p> <p>General</p> <p>(a) Utilities and related equipment, other than an electrical meter for the building, must not be placed below the FHL unless they have been designed specifically to cope with flood water inundation. Note: The location of electrical meters is regulated by the electrical authority.</p> <p>(b) Buried systems must be placed at a depth sufficient to prevent damage due to scour and erosion during the DFE.</p> <p>(c) Exposed systems must be designed to withstand the flood related actions (buoyancy, flow, debris and wave).</p>	Required adjustment to the electrical and mechanical ventilation equipment can be made n receipt of a Flood Study
2.10	<p>Requirements for egress</p> <p>Egress from a balcony, verandah, deck, door, window or the like must be available to allow a person in the building to be rescued by emergency services personnel, if rescue during a flood event up to the DFE is required</p>	<p>It is noted that the existing balcony serves as egress from units 4 to 6.</p> <p>The balcony is partly of timber construction and in our opinion not suitable for exposure within a flood event.</p> <p>Our recommendation is to replace the existing deck with a non combustible, flood resistant structure.</p>

3.0 BCA ASSESSMENT – SUMMARY

3.1. GENERAL

The tables contained within items 3.2 – 3.5 below summarise the compliance status of the proposed architectural design in terms of each prescriptive provision of the Building Code of Australia.

For those instances of either “prescriptive non-compliance” or “Detail required” (where further discussion on compliance is required), a detailed analysis and commentary is provided within Part 4.

3.2. SECTION C – FIRE RESISTANCE

BCA reference	Complies	Does not comply	Detail required	Not relevant
Spec. C1.1 – fire resisting construction		✓		
C1.3 – buildings of multiple classification				✓
C1.4 – mixed types of construction				✓
C1.5 – two storey Class 2 or 3 buildings				✓
C1.6 – Class 4 parts of a building				✓
C1.7 – open spectator stands & indoor sports stadiums				✓
C1.8 – lightweight construction				✓
C1.10 – fire hazard properties			✓	
C1.11 – performance of external walls				✓
C1.12 – non-combustible materials				✓
C2.2 – general floor area & volume limits				✓
C2.3 – large isolated buildings				✓
C2.4 – requirements for open spaces & vehicular access				✓
C2.5 – Class 9a and 9c buildings				✓
C2.6 – vertical separation of openings in external walls				✓
C2.7 – separation of firewalls				✓
C2.8 – separation of classifications in same storey				✓
C2.9 – separation of classifications in different storeys		✓		✓
C2.10 – separation of lift shafts				
C2.11 – stairways and lifts in one shaft				✓
C2.12 – separation of equipment				✓
C2.13 – electricity supply system				✓
C2.14 – public corridors in Class 2 and 3 buildings				✓
C3.2 – openings in external walls				✓*
C3.3 – separation of external walls & associated openings				✓
C3.4 – acceptable methods of protection				✓*
C3.5 – doorways in firewalls				✓
C3.6 – sliding fire doors				✓
C3.7 – doorways in horizontal exits				✓
C3.8 – openings in fire-isolated exits				✓
C3.9 – service penetrations in fire-isolated exits				✓
C3.10 – openings in fire-isolated lift shafts				
C3.11 – bounding construction: Class 2, 3, 4 and 9 buildings				✓*
C3.12 – openings in floors & ceilings for services			✓	
C3.13 – openings in shafts			✓	
C3.15 – openings for service installations			✓	
C3.16 – construction joints			✓	
C3.17 – columns protected with f/r lightweight construction			✓	
✓* = Existing building element unaffected by the subject works				

3.3. SECTION D – ACCESS AND EGRESS

BCA reference	Complies	Does not comply	Detail required	Not relevant
D1.2 – number of exits required	✓			
D1.3 – when fire-isolated exits are required				✓
D1.4 – exit travel distances	✓			
D1.5 – distance between alternative exits				✓
D1.6 – dimensions of exits and paths of travel to exits		✓		
D1.7 – travel via fire-isolated exits				✓
D1.8 – external stairways or ramps in lieu of fire-isolated exits				✓
D1.9 – travel via non-fire isolated stairways or ramps	✓			
D1.10 – discharge from exits	✓			
D1.11 – horizontal exits				✓
D1.12 – non-required stairways or ramps				✓
D1.13 – number of persons accommodated				✓
D1.16 – plant rooms and lift motor rooms: concession				✓
D1.17 – access to lift pits				✓
D2.2 – fire-isolated stairways and ramps				✓
D2.3 – non-fire isolated stairways and ramps				✓
D2.4 – separation of rising and descending stair flights				✓
D2.5 – open access ramps and balconies				✓
D2.6 – smoke lobbies				✓
D2.7 – installations in exits and paths of travel				✓
D2.8 – enclosure of space under stairs and ramps				✓
D2.9 – width of stairways				✓
D2.10 – pedestrian ramps				✓
D2.11 – fire-isolated passageways				✓
D2.12 – roof as open space				✓
D2.13 – goings and risers		✓		
D2.14 – landings				✓
D2.15 – thresholds				✓
D2.16 – balustrades		✓		
D2.17 – handrails		✓		
D2.18 – fixed platforms, walkways, stairways and ladders				✓
D2.19 – doorways and doors				✓
D2.20 – swinging doors				✓
D2.21 – operation of latch				✓
D2.22 – re-entry from fire-isolated exits				✓
D2.23 – signs on doors				✓
D2.24 – Openable windows				✓

3.1. SECTION F – HEALTH AND AMENITY

BCA reference	Complies	Does not comply	Detail required	Not relevant
FP1.4 Weatherproofing		✓		
F1.1 – stormwater drainage				✓*
F1.5 – roof coverings				✓*
F1.6 – sarking				✓*
F1.7 – water proofing of wet areas			✓	
F1.9 – damp proofing		✓		
F1.10 – damp proofing of floors on ground		✓		
F1.11 – floor wastes	✓			
F1.12 – sub-floor ventilation				✓
F1.13 – glazed assemblies			✓	
F2.1 – facilities in residential buildings			✓	
F2.3 – facilities in Class 3 to 9 buildings				✓
F2.4 – facilities for people with disabilities				✓
F2.5 – construction of sanitary compartments			✓	
F2.7 – microbial (legionella) control				✓
F2.8 – waste management				✓
F3.1 – height of rooms		✓		
F4.1 – provision of natural light				✓*
F4.2 – methods and extent of natural lighting				✓*
F4.3 – natural lighting borrowed from adjoining room				✓
F4.4 – artificial lighting	✓			
F4.5 – ventilation of rooms	✓**			
F4.6 – natural ventilation				✓*
F4.7 – ventilation borrowed from an adjoining room				✓
F4.8 – restriction on position of water closets and urinals				✓
F4.9 – airlocks				✓
F4.11 – car parks				
F4.12 – kitchen local exhaust ventilation				✓
F5.2 – sound transmission class: interpretation		✓		
F5.3 – sound transmission of floors between units		✓		
F5.4 – sound insulation of walls between units				✓
F5.5 – sound insulation rating of walls				✓
F5.6 – sound insulation rating of services		✓		
F5.7 – sound insulation of pumps				✓
✓* = Existing building element unaffected by the subject works				
✓** = ventilation is acceptable for non habitable areas				

4.0 BCA ASSESSMENT – DETAILED ANALYSIS

4.1 GENERAL

With reference to the “BCA Assessment Summary” contained within Part 3 above, the following detailed analysis and commentary is provided.

This commentary is formulated to enable the design documentation to be further progressed, for the purpose of evidencing the attainment of compliance with the relevant provisions of the BCA.

- (e) In our opinion compliance with the Building Code of Australia 2019 (amendment 1), Performance Requirement BP1.4, Parts C, D1 D2, and F (as they relate to the subject portion of the building) can be achieved in regard to the proposed works subject to the implementation of the following details into the Construction documentation.

4.2 SECTION C – FIRE RESISTANCE

CLAUSE	CLAUSE REQUIREMENT	ACTION/RECOMENDATION
Cl. C1.1	Type of construction required (a) The minimum Type of <i>fire-resisting construction</i> of a building must be that specified in Table C1.1 and Specification C1.1, (b) Type A construction is the most fire-resistant and Type C the least fire-resistant of the Types of construction.	Generally the building construction must achieve the minimum FRL requirements specified within clause 2.3 (page 3, 4 & 5) of this report for Type B Construction. Point 1 The subfloor storage spaces draw a class 7b classification under the BCA requiring fire separation from the class 2 portion.

		<p>To achieve this, we would recommend.</p> <ul style="list-style-type: none">a) Removal of the infill lightweight timber structure.b) Provision throughout the ground floor of a floor/ceiling system incorporating a ceiling which has a resistance to the incipient spread of fire to the space above itself of not less than 60 minutes <p>Point 2</p> <p>It is noted that the existing balcony serves as egress from units 4 to 6. The balcony is partly of timber construction and it is noted that BCA Specification C1.1 prevents the use of a combustible timber structure as a means of egress from the building.</p> <p>Our recommendation is to replace the existing deck with a non combustible structure.</p> <p>Point 3</p> <p>Service penetrations within the units through the required fire rated (incipient) ceilings and floor slabs require protection in accordance with Clause C3.12 and C3.15 with a product tested and certified in accordance with AS 1530.</p>
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		(i) All systems used must be AS1530 Fire Tested and certified systems installed in exact accordance with the product prototype.
Cl. C1.10	<p>Fire Hazard Properties</p> <p>(a) The <i>fire hazard properties</i> of the following linings, materials and assemblies in a Class 2 to 9 building must comply with Specification C1.10</p>	<p>Confirmation of the Fire Hazard properties will be required where new floor coverings are proposed that compliance with Specification C1.1 can be achieved</p> <p>Floor linings and floor coverings</p> <p>A floor lining or floor covering must have—</p> <p>(a) a <i>critical radiant flux</i> not less than a grouping of 2.2; and</p> <p>(b) in a building not protected by a sprinkler system complying with Specification E1.5, a maximum <i>smoke development rate</i> of 750 percent-minutes; and</p> <p>(c) a group number complying with Clause 6(a)(ii), for any portion of the floor covering that is continued more than 150 mm up a wall.</p> <p>Wall and ceiling linings – requires groupings as follows</p> <p>Fire Isolated Exit = Grouping of 1</p> <p>Public Corridors = a grouping of 1,2</p> <p>Other areas = a grouping of 1,2,3</p> <p>(a) For the purposes of this Clause, the</p>

		<p><i>group number</i> of a material is determined by either—</p> <ul style="list-style-type: none">(i) physical testing in accordance with AS ISO 9705; or(ii) prediction in accordance with Clause 3 of Specification A2.4 using data obtained by testing the material at 50 kW/m² irradiance in the horizontal orientation with edge frame in accordance with AS/NZS 3837. <p>(b) The <i>group number</i> of a material is as follows when tested or predicted in accordance with sub-clause (a):</p> <ul style="list-style-type: none">(i) A Group 1 material is one that does not reach <i>flashover</i> when exposed to 100 kW for 600 seconds followed by exposure to 300 kW for 600 seconds.(ii) A Group 2 material is one that reaches <i>flashover</i> following exposure to 300 kW within 600 seconds after not reaching <i>flashover</i> when exposed to 100 kW for 600 seconds.(iii) A Group 3 material is one that reaches <i>flashover</i> in more than 120 seconds but within 600 seconds when exposed to 100 kW.(iv) A Group 4 material is one that reaches <i>flashover</i> within 120 seconds when exposed to 100 kW. <p>(c) A material used as a finish, surface,</p>
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		<p>lining or attachment to a wall or ceiling must be a Group 1, Group 2 or Group 3 material used in accordance with Table 3 and for buildings not fitted with a sprinkler system complying with Specification E1.5, have—</p> <p>(i) a <i>smoke growth rate index</i> not more than 100; or</p> <p>(ii) an <i>average specific extinction area</i> less than 250 m²/kg.</p>
Cl. C2.9	<p>Separation of classifications in different storeys</p> <p>If parts of different classification are situated one above the other in adjoining storeys they must be separated as follows:</p> <p>(a) Type A construction — The floor between the adjoining parts must have an FRL of not less than that prescribed in Specification C1.1 for the classification of the lower storey.</p> <p>(b) Type B or C construction — If one of the adjoining parts is of Class 2, 3 or 4, the floor separating the part from the storey below must—</p> <p>(i) be a floor/ceiling system incorporating a ceiling which has a resistance to the incipient spread of fire to the space above itself of not less than 60 minutes; or</p> <p>(ii) have an FRL of at least 30/30/30; or (iii) have a fire-protective covering on the underside of the floor, including beams incorporated in it, if the floor is combustible or of metal.</p>	For Reference – refer to Clause C1.1 recommendations
Cl. C3.12	Service openings through any floors in the building must be either fire sealed or enclosed in a fire rated shaft, using materials having an FRL not less than the floor concerned.	For Reference – refer to Clause C1.1 recommendations
Cl. C3.13	Openings to shafts must be self-closing and 1-hour fire rated (i.e. access panels, doors, hoppers).	For Reference – refer to Clause C1.1 recommendations
Cl. C3.15	<p>Openings for service installations</p> <p>Where an electrical, electronic, plumbing, mechanical ventilation, air-conditioning or other service penetrates a building element (other than an <i>external wall</i> or roof) that is <i>required</i> to have an FRL with</p>	For Reference – refer to Clause C1.1 recommendations

respect to *integrity* or *insulation* or a *resistance to the incipient spread of fire*, that installation must comply with any one of the following:

(a) **Tested systems**

- (i) The service, building element and any protection method at the penetration are identical with a prototype assembly of the service, building element and protection method which has been tested in accordance with AS 4072.1 and AS 1530.4 and has achieved the *required FRL* or *resistance to the incipient spread of fire*.
- (ii) It complies with (i) except for the *insulation* criteria relating to the service if—
 - (A) the service is a pipe system comprised entirely of metal (excluding pipe seals or the like); and
 - (B) any *combustible* building element is not located within 100 mm of the service for a distance of 2 m from the penetration; and
 - (C) *combustible* material is not able to be located within 100 mm of the service for a distance of 2 m from the penetration; and
 - (D) it is not located in a *required exit*.

(b) **Ventilation and air-conditioning** — In the case of ventilating or air-conditioning ducts or equipment, the installation is in accordance with AS/NZS 1668.1.

(c) **Compliance with Specification C3.15**

- (i) The service is a pipe system comprised entirely of metal (excluding pipe seals or the like) and is installed in accordance with Specification C3.15 and it—
 - (A) penetrates a wall, floor or ceiling, but not a ceiling *required* to have a *resistance to the incipient spread of fire*; and
 - (B) connects not more than 2 *fire compartments* in addition to any *fire-resisting service shafts*; and
 - (C) does not contain a flammable or *combustible* liquid or gas.
- (ii) The service is sanitary plumbing installed in accordance with Specification C3.15 and it—
 - (A) is of metal or UPVC pipe; and
 - (B) penetrates the floors of a Class 5, 6, 7, 8 or 9b building; and
 - (C) is in a *sanitary compartment* separated from other parts of the building by walls with the FRL

	<p><i>required</i> by Specification C1.1 for a stair <i>shaft</i> in the building and a <i>self-closing</i> –/60/30 fire door.</p> <p>(iii) The service is a wire or cable, or a cluster of wires or cables installed in accordance with Specification C3.15 and it—</p> <p>(A) penetrates a wall, floor or ceiling, but not a ceiling <i>required</i> to have a <i>resistance to the incipient spread of fire</i>; and</p> <p>(B) connects not more than 2 <i>fire compartments</i> in addition to any <i>fire-resisting</i> service <i>shafts</i>.</p> <p>(iv) The service is an electrical switch, outlet, or the like, and it is installed in accordance with Specification C3.15.</p>	
Cl. C3.16	Construction joints between fire resistant elements must be fire sealed with a material having a fire resistance level not less than the elements being joined.	For Reference – refer to Clause C1.1 recommendations

4.4 SECTION D – ACCESS AND EGRESS

CLAUSE	CLAUSE REQUIREMENT	ACTION/RECOMENDATION
Cl. D1.6	<p>Dimensions of exits and paths of travel to exits In a <u>required exit</u> or path of travel to an <u>exit</u>—</p> <ul style="list-style-type: none"> (a) the unobstructed height throughout must be not less than 2 m, except the unobstructed height of any doorway may be reduced to not less than 1980 mm; and (b) the unobstructed width of each <u>exit</u> or path of travel to an <u>exit</u>, except for doorways, must be not less than 1m 	<p>It is noted that the balcony serving as egress from units 4 to 6 is 950mm wide which is less than the required unobstructed width of 1000mm.</p> <p>We recommend that the balcony is modified to allow for a compliant egress width</p>
Cl. D2.13	<p>Goings and risers</p> <ul style="list-style-type: none"> (a) A stairway must have— <ul style="list-style-type: none"> (i) not more than 18 and not less than 2 risers in each flight; and (ii) going (G), riser (R) and quantity (2R + G) in accordance with Table D2.13, except as permitted by (b) and (c); and (iii) constant goings and risers throughout each flight, except as permitted by (b) and (c), and the dimensions of goings (G) and risers (R) in accordance with (a)(ii) are considered constant if the variation between— <ul style="list-style-type: none"> (A) adjacent risers, or between adjacent goings, is no greater than 5 mm; and (B) the largest and smallest riser within a flight, or the largest and smallest going within a flight, does not exceed 10 mm; and (iv) risers which do not have any openings that would allow a 125 mm sphere to pass through between the treads; 	<p>External stairs</p> <p>The west side concrete (1/2) flight of stairs has goings ranging from 348mm to 360mm These exceed the maximum concession of 5mm between consecutive stairs and 10mm in the whole (minimum to maximum).</p> <p>It is recognised that the stairs are not new works however - Our recommendation is that the stair should be modified to comply.</p> <p>We recommend providing non slip nosings with a minimum 30% colour contrast to the nosing's of the external stairs</p>
Cl. D2.16	<p>Balustrades or other barriers</p> <ul style="list-style-type: none"> (a) A continuous balustrade or other barrier must be provided along the side of any roof to which public access is provided, any stairway or ramp, any floor, corridor, hallway, balcony, deck, verandah, <u>mezzanine</u>, access bridge or the like and along the side of any delineated path of access to a building, if— <ul style="list-style-type: none"> (i) it is not bounded by a wall; and 	<p>The Balustrade to the balcony servicing units 4 to 6 achieves a height of 850mm above finished floor level rather than the 1000mm required.</p> <p>Gaps within the balusters to the balcony and stair/s balustrade has openings (at worst</p>

- (ii) its level above the surface beneath, is more than—
 - (A) 4 m where it is possible for a person to fall through an openable window; or
 - (B) 1 m in any other case.
- (c) A balustrade or other barrier in—
 - (i) fire-isolated stairways, fire-isolated ramps and other areas used primarily for emergency purposes, excluding external stairways and external ramps; and
 - (ii) Class 7 (other than car parks) and Class 8 buildings and parts of buildings containing those classes, must comply with (g) and (h)(i).
- (d) A balustrade or other barrier in stairways and ramps, other than those covered in (c), must comply with (g) and (h)(ii).
- (e) A balustrade or other barrier along the side of a horizontal or near horizontal surface such as a—
 - (i) roof to which public access is provided and any path of access to a building; and
 - (ii) floor, corridor, hallway, balcony, verandah, mezzanine, access bridge or the like, must comply with (g) and (h)(ii).
- (g) The height of a balustrade or other barrier must be constructed in accordance with the following:
 - (i) The height is not less than 865 mm above the nosings of the stair treads or the floor of a ramp or other path of travel with a gradient not less than 1:20.
 - (ii) The height is not less than—
 - (A) 1 m above the floor of any access path, balcony, landing or the like where the path of travel has a gradient less than 1:20; or
 - (B) 865 mm above the floor of a landing to a stair or ramp where the balustrade or other barrier is provided along the inside edge of the landing and does not exceed a length of 500 mm; or
 - (C) 865 mm above the floor beneath an openable window.
 - (iii) A transition zone may be incorporated where the balustrade or other barrier height changes from 865 mm on the stair flight or ramp to 1 m at the landing.
 - (iv) For a balustrade or other barrier provided under (f), the height above the floor must be not less than—

dimension) of 330mm; which exceed the maximum 125mm.

It is recognised that the balustrades are not new works however - we recommend that the balustrades and hand rails are modified to comply.

	<p>(A) 1 m; or</p> <p>(B) 700 mm and a horizontal projection extends not less than 1 m outwards from the top of the balustrade.</p> <p>(h) Openings in a balustrade or other barrier must be constructed in accordance with the following:</p> <p>(i) For a balustrade or other barrier provided under (c)—</p> <p>(A) the space between balusters or the width of any opening (including any openable <u>window</u> or panel) must not be more than 300 mm; or</p> <p>(B) where rails are used, a rail must be provided at a height of not more than 150 mm above the nosings of the stair treads or the floor of the landing, balcony or the like and the space between rails must not be more than 460 mm.</p> <p>(ii) For a balustrade or other barrier other than those provided under (c)—</p> <p>(A) any opening does not permit a 125 mm sphere to pass through it and for stairs, the space is measured above the nosings; and</p> <p>(B) for floors more than 4 m above the surface beneath, any horizontal or near horizontal elements between 150 mm and 760 mm above the floor must not facilitate climbing.</p>	
Cl. D2.17	<p>Handrails must be provided to at least one side of all stairways and ramps less than 2-metres in width, and to both sides where more than 2-metres in width, and must: –</p> <p><input type="checkbox"/> Be continuous between stair flight landings</p> <p><input type="checkbox"/> Have no obstruction that would cause a break in the hand hold</p> <p>Have one rail fixed at a height not less than 865-mm</p>	<p>The handrail to the east serving the balcony achieves a height above nosing's of 830mm which is less than the 865mm required, We recommend increasing the handrail to the compliant height</p>

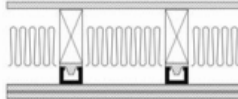
5.5 SECTION F – HEALTH AND AMENITY

CLAUSE	CLAUSE REQUIREMENT	ACTION/RECOMENDATION
FP1.4	<p>Weatherproofing</p> <p>A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause—</p> <p>(a) unhealthy or dangerous conditions, or loss of amenity for occupants; and</p> <p>(b) undue dampness or deterioration of building elements.</p>	<p>The Pre-existing ground floor walls are single leaf masonry and in our opinion are not suitable to prevent moisture infiltration.</p> <p>New infill walls and enclosures are of timber construction with timber cladding and are not suitable to prevent moisture infiltration</p>
Cl. F1.7	Wet areas must be water proofed in accordance with AS 3740	A Waterproofing certificate from a qualified installer must be obtained for the ground floor bathrooms
Cl. F1.10	<p>Damp-proofing of floors on the ground</p> <p>If a floor of a room is laid on the ground or on fill, moisture from the ground must be prevented from reaching the upper surface of the floor and adjacent walls by the insertion of a vapour barrier in accordance with AS 2870, except damp-proofing need not be provided if—</p> <p>(a) weatherproofing is not <i>required</i>; or</p> <p>(b) the floor is the base of a stair, lift or similar <i>shaft</i> which is adequately drained by gravitation or mechanical means.</p>	<p>Evidence of an existing vapour barrier could not be determined from a visual inspection however in our opinion it is unlikely given the age and previous use of the ground floor area that a membrane would exist.</p> <p>A vapour barrier is provided to prevent moister rising from the ground.</p>
Cl. F1.13	<p>Glazed assemblies</p> <p>(a) Subject to (b) and (c), the following glazed assemblies in an <i>external wall</i>, must comply with AS 2047 requirements for resistance to water penetration:</p> <p>(i) Windows.</p> <p>(ii) Sliding doors with a frame.</p>	A Certificate should be obtained from the supplier or installer to qualify that windows to the subject areas have been installed in accordance with AS 2047 and AS 1288

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| <ul style="list-style-type: none">(iii) Adjustable louvres.(iv) Shopfronts.(v) Window walls with one-piece framing. <p>(b) The following buildings need not comply with (a):</p> <ul style="list-style-type: none">(i) A Class 7 or 8 building where in the particular case there is no necessity for compliance.(ii) A garage, tool shed, <i>sanitary compartment</i>, or the like, forming part of a building used for other purposes, except where the construction of the garage, tool shed, <i>sanitary compartment</i> or the like contributes to the weatherproofing of the other part of the building.(iii) An <i>open spectator stand</i> or <i>open-deck carpark</i>. <p>(c) The following glazed assemblies need not comply with (a):</p> <ul style="list-style-type: none">(i) All glazed assemblies not in an <i>external wall</i>.(ii) Hinged doors, including French doors and bi-fold doors.(iii) Revolving doors.(iv) Fixed louvres.(v) Skylights, roof lights and windows in other than the vertical plane.(vi) Sliding doors without a frame.(vii) Shopfront doors.(viii) Windows constructed on site and architectural one-off windows, which are not design tested in accordance with AS 2047.(ix) Second-hand windows, re-used windows, recycled windows and replacement windows.(x) Heritage windows. | |
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<p>Cl. F2.5</p>	<p>Construction of sanitary compartments</p> <p>(b) The door to a fully enclosed <i>sanitary compartment</i> must—</p> <ul style="list-style-type: none"> (i) open outwards; or (ii) slide; or (iii) be readily removable from the outside of the <i>sanitary compartment</i>, <p>unless there is a clear space of at least 1.2 m, measured in accordance with Figure F2.5, between the closet pan within the <i>sanitary compartment</i> and the doorway.</p>	<p>The door to Unit 6 ground floor bathroom must be provided with lift off hinges to allow it to be readily removable from the outside.</p>
<p>Cl. F3.1</p>	<p>Height of rooms and other spaces</p> <p>The ceiling height must be not less than—</p> <ul style="list-style-type: none"> (a) in a Class 2 or 3 building or Class 4 part of a building— <ul style="list-style-type: none"> (i) a kitchen, laundry, or the like — 2.1 m; and (ii) a corridor, passageway or the like — 2.1 m; and (iii) a <u>habitable room</u> excluding a kitchen — 2.4 m; and (iv) in a room or space with a sloping ceiling or projections below the ceiling line within— <ul style="list-style-type: none"> (A) a <u>habitable room</u>— <ul style="list-style-type: none"> (aa) in an attic — a height of not less than 2.2 m for not less than two-thirds of the floor area of the room or space; and (bb) in other rooms — a height of not less than 2.4 m for not less than two-thirds of the floor area of the room or space; and (B) a non- <u>habitable room</u> — a height of not less than 2.1 m for not less than two-thirds of the floor area of the room or space; and 	<p>The height achieved generally within the storage areas is</p> <p>To bearer height 1.86m from floor level</p> <p>To joist height 2.08m from floor level</p> <p>To the underside of the flooring is 2.23m from floor level</p> <p>In our opinion this is generally acceptable for a storage area however it is noted that this will be further reduced to achieve the acoustic requirements of Part F5 of the BCA</p> <p>The height achieved generally within the ground floor of unit 6 is</p> <p>General ceiling height 2.03m from floor level and</p> <p>Bathroom ceiling height 2.02m from floor level</p> <p>Ceiling heights within this area are required to achieve a height of 2.1m</p> <p>However it may be possible to assess the ceiling height against Performance</p>

	when calculating the floor area of a room or space, any part that has a ceiling height of less than 1.5 m is not included	<p>requirement FP3.1 – a separate report would be required to achieve this once the final ceiling heights (in consideration of the acoustic requirements) has been determined.</p> <p>It is noted that ceiling heights will be further reduced to achieve the acoustic requirements of Part F5 of the BCA</p>
Cl. F5.3	<p>The floor of the residential units must have an impact sound insulation rating:</p> <ul style="list-style-type: none"> <input type="checkbox"/> having the required value for weighted normalised impact sound pressure level with spectrum adaptation term ($L_{n,w}+C_1$) determined in accordance with AS/IOSO 717.2 using results from laboratory measurements; or <input type="checkbox"/> complying with Specification F5.2 and walls with an impact sound insulation rating must be discontinuous construction. 	The existing timber floor separation between units 4 to 6 and the ground floor spaces does not achieve a compliant acoustic separation.
Cl. F5.4	<p>The floors of the residential units need have an $R_w + C_r$ (airborne) of not less than 50 and an $L_{n,w}+C_1$ (impact) not more than 62 .</p> <p>Table 3 Acceptable forms of construction for floors</p>	Compliant Acoustic separation is required between units 4 to 6 and the ground floor spaces refer to detail

	<table><tr><th colspan="4">Floor construction type: Timber</th></tr><tr><td>19 mm thick chipboard floor sheeting with—</td><td></td><td></td><td></td></tr><tr><td>(a) 190×45 mm timber joists at 450 mm centres; and</td><td></td><td></td><td></td></tr><tr><td>(b) R2.5 glass wool insulation positioned between timber joists; and</td><td></td><td></td><td></td></tr><tr><td>(c) 28 mm metal furring channels and isolation mounts fixed to underside of joists, isolation mounts to be of natural rubber with a dynamic factor of not more than 1.1 and static deflection of not less than 3 mm at actual operating load; and</td><td>50</td><td>62</td><td>50</td></tr><tr><td>(d) two layers of 16 mm fire-protective grade plasterboard fixed to furring channels.</td><td></td><td></td><td></td></tr></table>	Floor construction type: Timber				19 mm thick chipboard floor sheeting with—				(a) 190×45 mm timber joists at 450 mm centres; and				(b) R2.5 glass wool insulation positioned between timber joists; and				(c) 28 mm metal furring channels and isolation mounts fixed to underside of joists, isolation mounts to be of natural rubber with a dynamic factor of not more than 1.1 and static deflection of not less than 3 mm at actual operating load; and	50	62	50	(d) two layers of 16 mm fire-protective grade plasterboard fixed to furring channels.				
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Cl. F5.6	<p>Ducts, soil waste or water supply pipes that serve or pass through more than one residential unit must be separated by construction with an R_w (airborne) of not less than:—</p> <ul style="list-style-type: none">❑ 40 where adjacent to a habitable room (other than a kitchen);❑ 25 if the room is a kitchen or non-habitable room.	Verification will be required with the Construction Documentation																								

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