



Date: 28 October 2021

Our Ref: P210171

Bentag Pty Ltd
Unit 1, 3 Birdwood Ave,
Collaroy NSW 2097
Att: Mr Neville Stanford

Dear Neville,

**RE: 3 Birdwood Ave, Collaroy
FIRE SAFETY ASSESSMENT REPORT**

Please find enclosed our Fire Safety Audit Report prepared in respect of the existing building situated at the above listed site.

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.

This commentary enables the project team to readily identify and understand the nature and extent of information required within the Building Permit (or other) application to demonstrate the attainment of BCA compliance.

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 be 'Kieran Tobin', with a horizontal line extending to the right.

Kieran Tobin
Director

FIRE SAFETY ASSESSMENT REPORT

PREPARED FOR
BENTAG PTY LTD

REGARDING
3 Birdwood Ave, Collaroy

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
P210171	1	Fire Safety Assessment Report	28 October 2021

The format, technical content and intellectual property associated with this report remain the property of BCA Vision Pty Limited, and has been prepared and may only be used, for the development / buildings the subject of this report.

CONTENTS PAGE

1.0	INTRODUCTION.....	1
1.1	General.....	1
1.2	Report Basis.....	1
1.3	Exclusions	1
1.4	Report Purpose.....	2
2.0	BUILDING DESCRIPTION	3
2.1	General.....	3
2.2	Rise in Storeys (Clause C1.2)	3
2.3	Building Classification (Clause A3.2).....	3
2.4	Effective Height (Clause A1.1).....	3
2.5	Type of Construction (Table C1.1).....	3
2.6	Access to Buildings (the Access to Premises Code).....	5
3.0	BCA ASSESSMENT – SUMMARY	6
3.1.	General.....	6
3.2.	Section C – Fire resistance	6
3.3.	Section D – Access and Egress	7
3.4.	Section E – Services and Equipment.....	8
4.0	BCA ASSESSMENT – DETAILED ANALYSIS	1
4.1	General.....	1
4.2	Section C – Fire Resistance	1
4.4	Section D – Access and Egress	8
4.5	Section E – Services and Equipment.....	10
5.0	SUMMARY OF RECOMMENDED WORKS	1
6.0	FIRE SAFETY SCHEDULE	3

1.0 INTRODUCTION

1.1 GENERAL

This “BCA Compliance Assessment” report has been prepared at the request of Bentag Pty Ltd and relates to 3 Birdwood Ave, Collaroy.

The subject building is an existing three storey concrete and masonry residential building.

This report is required to accompany an application for Strata Subdivision to Council.

The intent of this report is to assess the level of Fire Safety available to the building with a view to improving the level of fire safety available to building occupants. It is not intended to recommend implicit compliance within this older building, it is intended to propose methods where applicable which may improve Fire safety.

1.2 REPORT BASIS

The content of this report reflects –

- (a) The principles and provisions of BCA 2019 Parts C, D1, D2 and E
- (b) An inspection of the building by BCA Vision on Tuesday the 26th of October 2021;
- (c) Draft Plan of Subdivision prepared by Paul Barry Byrne
- (d) Strata Survey Summary prepared by Paul Barry Byrne and dated 18/10/21
- (e) Floor Finish Test Report – Fire Hazard Properties, prepared by AWTA Product Testing and dated 11/11/15
- (f) Glazed Window and Door Test Report prepared by Exona Earrington Fire and dated 09/08/17

1.3 EXCLUSIONS

It is conveyed that this report should not be 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, 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

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, Parts C, D1, D2 and E.

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 has a rise in storeys of three (3)

2.3 BUILDING CLASSIFICATION (CLAUSE A3.2)

The entire building incorporates the following classifications:-

CLASS	DESCRIPTION
Class 2	A residential building
Class 10	Private garages

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)

Type A Construction

Table 4 TYPE A CONSTRUCTION: FRL OF BUILDING ELEMENTS

External walls, common walls flooring and floor framing of lift pits must be non-combustible.

Any internal wall having an FRL must extend to –

- (i) the underside of the floor above; or
- (ii) the underside of a complying roof; or
- (iii) if the roof is not required to comply, the underside of the non-combustible roof covering and must not be crossed by combustible building elements (except 75 x 50 mm roof battens); or
- (iv) a ceiling immediately below the roof having a resistance to the incipient spread of fire to the roof space of not less than 60 minutes.

Attachments not to impair fire-resistance

- (a) A combustible material may be used as a finish or lining to a wall or roof, or in a sign, sunscreen or blind, awning, or other attachment to a building element which has the required FRL if—
 - (i) the material is exempted under C1.10 or complies with the fire hazard properties prescribed in Specification C1.10; and
 - (ii) it is not located near or directly above a required exit so as to make the exit unusable in a fire; and
 - (iii) it does not otherwise constitute an undue risk of fire spread via the facade of the building.
- (b) The attachment of a facing or finish, or the installation of ducting or any other service, to a part of a building required to have an FRL must not impair the required FRL of that part.

Class 2 and 3 buildings: Concession

- (a) A Class 2 or 3 building having a rise in storeys of not more than 3 need not comply with Clauses 3.1(b), (d) and (e) of Specification C1.1 and the requirement of C2.6 for non-combustible material, if it is constructed using—
 - (i) timber framing throughout; or
 - (ii) non-combustible material throughout; or (iii) a combination of (i) and (ii), provided—

- (iv) * * * * *
- (v) any insulation installed in the cavity of a wall required to have an FRL is non- combustible; and
- (vi) the building is fitted with an automatic smoke alarm system complying with Specification E2.2a.

Table 3 TYPE A CONSTRUCTION: FRL OF BUILDING ELEMENTS

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

Building element	Class of building — FRL: (in minutes)			
	<i>Structural adequacy/ Integrity/ Insulation</i>			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
<i>Loadbearing</i>	90/ 90/ 90	120/ 90/ 90	180/120/120	240/120/120
<i>Non- loadbearing</i>	-/ 90/ 90	-/ 90/ 90	-/120/120	-/120/120
OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES				
and COLUMNS—	90/-/-	120/-/-	180/-/-	240/-/-
FLOORS	90/ 90/ 90	120/120/120	180/180/180	240/240/240
ROOFS	90/ 60/ 30	120/ 60/ 30	180/ 60/ 30	240/ 90/ 60

2.6 ACCESS TO BUILDINGS (THE ACCESS TO PREMISES CODE)

A concession exists within the Access to Premises Code in regard to residential unit buildings approved prior to 2011.

There is no legislative trigger to upgrade the existing building to increase “Access” to the building

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				✓

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	✓		✓	

3.4. SECTION E – SERVICES AND EQUIPMENT

BCA reference	Complies	Does not comply	Detail required	Not relevant
E1.3 – fire hydrants				✓
E1.4 – fire hose reels				✓
E1.5 – sprinklers				✓
E1.6 – portable fire extinguishers			✓	
E1.8 – fire control centres				✓
E1.9 – fire precautions during construction				✓
E1.10 – provision for special hazards				✓
E2.2a – general provisions			✓	
E2.2b – specific provisions				✓
E2.3 – provision for special hazards				✓
E3.2 – stretcher facility in lifts				✓
E3.3 – warning against use of lifts in fire				
E3.4 – emergency lifts				✓
E3.5 – landings				✓
E3.6 – facilities for people with disabilities				✓
E3.7 – fire service controls				✓
E3.8 – aged care buildings				✓
E3.9 – Fire Service Recall switch				✓
E3.10 – Lift Car Drive Control switch				✓
E4.2 – emergency lighting			✓	
E4.4 – design and operation of emergency lighting			✓	
E4.5 – exit signs			✓	
E4.6 – direction signs				✓
E4.7 – Class 2 and 3 buildings and Class 4 parts: exemptions				✓
E4.8 – design and operation of exit signs			✓	
E4.9 – emergency warning and intercommunication systems				✓

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.

In our opinion compliance with the Building Code of Australia 2019 Parts C, D1, D2 and E 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 A Construction. We note in this regard that: Internal and external walls within the building are masonry and comply. The Concrete slab separating the ground

		floor between levels separating the Ground floor and level 1 & Level 1 and Level 2. The plaster ceilings within Level 2 does not currently comply and a fire separating wall does not exist within the roof space. In regard to separation within Level 2 and the roof space recommend the following works Either a) Provide a ceiling with a resistance to the incipient spread of fire for 60 minutes to the second floor; The ceiling system should be an AS 1530 tested and certified system installed in exact accordance with the product specification. OR b) Extend the existing fire separating wall within the first floor from ceiling level to the underside of the roof covering. Note This method will require removal or alteration to structural roof timbers to ensure that non compliant penetrations do not exist post construction and in this regard would require advice from a structural engineer in regard to structural roof support.
--	--	---

		Or c) An Alternate system may be employed through the implementation of smoke/heat detectors within the roof space and within each room of each unit - where the detectors will be spaced in accordance with AS1670 and BCA Spec E2.2a. Sounders are to be located such that a sound pressure level of not less than 85 dB(A) is provided at the door of each sole occupancy unit. Reason: - to assist in the containment of fire to the room of origin and to comply with the requirements of Specification C1.1 of the Building Code of Australia and to provide occupants with early warning so that the building can be evacuated in the event of a fire.
CI C2.13	Separation of equipment (a) Equipment other than that described in (b) and (c) must be separated from the remainder of the building with construction complying with (d), if that equipment comprises— (i) lift motors and lift control panels; or (ii) emergency generators used to sustain emergency equipment operating in the emergency mode; or (iii) central smoke control plant; or (iv) <i>boilers</i>; or	The Main Switch Board enclosure below the stairs at Level 1 requires a -/120/30 self closing Fire Door and a Fire rated frame (to 120 minutes)

	(v) a <i>battery system</i> installed in the building that has a total voltage of 12 volts or more and a storage capacity of 200 kWh or more. (b) Equipment need not be separated in accordance with (a) if the equipment comprises— (i) smoke control exhaust fans located in the air stream which are constructed for high temperature operation in accordance with Specification E2.2b; or (ii) stair pressurising equipment installed in compliance with the relevant provisions of AS 1668.1; or (iii) a lift installation without a machine-room; or (iv) equipment otherwise adequately separated from the remainder of the building. (c) Separation of on-site fire pumps must comply with the requirements of AS 2419.1. (d) Separating construction must have— (i) except as provided by (ii)— (A) an FRL as <i>required</i> by Specification C1.1, but not less than 120/120/120; and (B) any doorway protected with a <i>self-closing</i> fire door having an FRL of not less than – /120/30; or (ii) when separating a lift <i>shaft</i> and lift motor room, an FRL not less than 120/–/–.	
Cl. C3.2	Protection of openings in external walls Openings in an <i>external wall</i> that is <i>required</i> to have an FRL must— (a) if the distance between the opening and the <i>fire-source feature</i> to which it is exposed is less than— (i) 3 m from a side or rear boundary of the allotment; or (ii) 6 m from the far boundary of a road, river, lake or the like adjoining the allotment, if not located in a <i>storey</i> at or near ground level; or (iii) 6 m from another building on the allotment that is not Class 10, be protected in accordance with C3.4 and if wall-wetting sprinklers are used, they are located externally	Walls to the East achieve a setback of 2.27m from the boundary fire source feature. Walls to the west achieve a 2.535m setback from the boundary fire source feature This is less than the 3m setback required by Clause C3.2 however we make no recommendation for additional protection to these windows due to:- The set out was presumed to be compliant at the time of construction. The windows within 3m although openable provide a significant level of fire protection. There is a reasonable setback from the

		property boundary fire source feature given the age of the building. There is no reduction in the level of fire safety proposed in regard to this building feature.
Cl. C3.11	Bounding construction: Class 2 and 3 buildings and Class 4 parts (a) A doorway in a Class 2 or 3 building must be protected if it provides access from a sole-occupancy unit to— (i) a public corridor, public lobby, or the like; or (ii) a room not within a sole-occupancy unit; or (iii) the landing of an internal non fire-isolated stairway that serves as a required exit; or (iv) another sole-occupancy unit. (b) A doorway in a Class 2 or 3 building must be protected if it provides access from a room not within a sole-occupancy unit to— (i) a public corridor, public lobby, or the like; or (ii) the landing of an internal non fire-isolated stairway that serves as a required exit. (c) A doorway in a Class 4 part of a building must be protected if it provides access to any other internal part of the building. (d) Protection for a doorway must be at least— (i) in a building of Type A construction — a self-closing –/60/30 fire door;	The Unit doors are not currently compliant:- The unit doors must be substituted with - /60/30 self closing fire doors and fire rated frames complying with AS 1905. In addition deadlocks must be removed -or substituted with deadlocking devices that do not interfere with the self-closing action of the doors.
Cl. C3.16	Openings for service installations 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 respect to <i>integrity</i> or <i>insulation</i> or <i>resistance to the incipient spread of fire</i>, 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— (A) 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 <i>required</i> FRL or <i>resistance to the incipient spread of fire</i>; or	Service Penetrations Plumbing service penetrations were identified as follows: - Garage sanitary plumbing traps - Riser in kitchen - Riser in WC - Riser in linen cupboard - Water service pipes in linen cupboard These services are metal and do not require fire collars but do require a tight fit at the

(B) differ from a prototype assembly of the service, building element and protection method in accordance with Section 4 of AS 4072.1.

(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*.

(iii) The determination of the *required* FRL must be confirmed in a report from an *Accredited Testing Laboratory* in accordance with Schedule 5.

(b) Ventilation and air-conditioning — In the case of ventilating or air-conditioning ducts or equipment, the installation is in accordance with AS 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 *required* by Specification C1.1 for a stair *shaft* in the building and a *self-closing* –/60/30 fire door.

(iii) The service is a wire or cable, or a cluster of wires or cables installed in accordance with

penetration point.

We recommend providing a fire rated mortar to fill and reduce the gaps at these points.

A section of PVC pipe has been installed within the garage – we recommend providing a fire rated enclosure to the PVC section to achieve an FRL of –/90/-

Exhaust fans were identified within Level 2 which penetrate the ceiling.

The penetration must be either

- a) Removed and ducting directed to exhaust out the external wall; or
- b) A Fire Tested enclosure and a fire damper are to be provided
- c) The products must be an AS 1530 fire tested product to achieve an FRL of –/60/-

Lighting cables penetrating the ceiling within Level 2 must be provided with a fire rated mastic fire tested to achieve an FRL of –/60/-

	Specification C3.15 and it— (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 (B) connects not more than 2 <i>fire compartments</i> in addition to any <i>fire-resisting service shafts</i> . (iv) The service is an electrical switch, outlet, or the like, and it is installed in accordance with Specification C3.15.	
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

4.4 SECTION D – ACCESS AND EGRESS

CLAUSE	CLAUSE REQUIREMENT	ACTION/RECOMENDATION
Cl. D2.16	Balustrades or other barriers (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— (i) it is not bounded by a wall; and (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 <u>window</u>; or (B) 1 m in any other case. (c) A balustrade or other barrier in— (i) <u>fire-isolated stairways</u>, <u>fire-isolated ramps</u> and other areas used primarily for emergency purposes, excluding external stairways and external ramps; and (ii) Class 7 (other than <u>car parks</u>) 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, <u>mezzanine</u>, 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	The balustrade to the internal stair at each Level 2 is less than the required 1000mm height - We recommend increasing the height of the balustrades to each stair to 1000mm above floor level.

	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 <u>window</u>. (iii) A transition zone may be incorporated where the balustrade or other barrier height changes from 865 mm on the stair <u>flight</u> 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— (A) 1 m; or (B) 700 mm and a horizontal projection extends not less than 1 m outwards from the top of the balustrade. (h) Openings in a balustrade or other barrier must be constructed in accordance with the following: (i) For a balustrade or other barrier provided under (c)— (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 (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. (ii) For a balustrade or other barrier other than those provided under (c)— (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 (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.	
Cl. D2.17	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: – ☐ Be continuous between stair flight landings ☐ Have no obstruction that would cause a break in the hand hold Have one rail fixed at a height not less than 865-mm	The handrail to the internal stair achieves a height of less than the required 865mm above stair nosing's We recommend increasing each stair handrail to the compliant height.

4.5 SECTION E – SERVICES AND EQUIPMENT

CLAUSE	CLAUSE REQUIREMENT	ACTION/RECOMENDATION
Cl. E1.6	Portable fire extinguishers (a) Portable fire extinguishers must be— (i) provided as listed in Table E1.6; and (ii) for a Class 2, 3 or 5 building or Class 4 part of a building, provided— (A) to serve the whole Class 2, 3 or 5 building or Class 4 part of a building where one or more internal fire hydrants are installed; or (B) where internal fire hydrants are not installed, to serve any <i>fire compartment</i> with a <i>floor area</i> greater than 500 m², and for the purposes of this clause, a <i>sole-occupancy unit</i> in a Class 2 or 3 building or Class 4 part of a building is considered to be a <i>fire compartment</i>; and (iii) subject to (b), selected, located and distributed in accordance with Sections 1, 2, 3 and 4 of AS 2444. (b) Portable fire extinguishers provided in a Class 2 or 3 building or Class 4 part of a building must be— (i) an ABE type fire extinguisher; and (ii) a minimum size of 2.5 kg; and (iii) distributed outside a <i>sole-occupancy unit</i>— (A) to serve only the <i>storey</i> at which they are located; and (B) so that the travel distance from the entrance doorway of any <i>sole-occupancy unit</i> to the nearest fire extinguisher is not more than 10 m.	We recommend providing a 2.5kg, type ABE smoke alarm at the common foyers in Levels 1 and 2
Cl. E2.2a	General requirements (a) A building must comply with <u>(b)</u>, <u>(c)</u>, <u>(d)</u> and— (i) <u>Table E2.2a</u> as applicable to Class 2 to 9 buildings such that each separate part complies with the relevant provisions for the classification; and (ii) <u>Table E2.2b</u> as applicable to Class 6 and 9b buildings such that each separate part complies with the relevant provisions for the classification.	Existing smoke detection is provided by battery operated smoke alarms We recommend:- AS 3786 hardwired smoke alarms with battery back up is provided - within the hall ways near to the bedrooms.

- (b) An air-handling system which does not form part of a smoke hazard management system in accordance with Table E2.2a or Table E2.2b and which recycles air from one fire compartment to another fire compartment or operates in a manner that may unduly contribute to the spread of smoke from one fire compartment to another fire compartment must—
- (i) be designed and installed to operate as a smoke control system in accordance with AS/NZS 1668.1; or
 - (ii)
 - (A) incorporate smoke dampers where the air-handling ducts penetrate any elements separating the fire compartments served; and
 - (B) be arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke detectors complying with clause 4.10 of AS/NZS 1668.1; and

for the purposes of this provision, each sole-occupancy unit in a Class 2 or 3 building is treated as a separate fire compartment.
- (c) Miscellaneous air-handling systems covered by Sections 5 and 11 of AS/NZS 1668.1 serving more than one fire compartment (other than a carpark ventilation system) and not forming part of a smoke hazard management system must comply with that Section of the Standard.
- (d) A smoke detection system must be installed in accordance with Clause 5 of Specification E2.2a to operate AS/NZS 1668.1 systems that are provided for zone smoke control and automatic air pressurisation for fire-isolated exits.

CLASS 2 AND 3 BUILDINGS AND CLASS 4 PART OF A BUILDING

A Class 2 and 3 building or part of a building and Class 4 part of a building must be provided with an automatic smoke detection and alarm system complying with Specification E2.2a Class 6, 7b, 8 or 9b building (other than a school) or part of a building having a rise in storeys of more than 2 a zone smoke control system in accordance with AS/NZS 1668.1, if the

- Within the stair landings

Stair landing detection must be positioned in accordance with AS 1670 system complying with clauses 3 and 7 of Specification E2.2

	building has more than one <u>fire compartment</u> ; or an <u>automatic</u> smoke detection and alarm system complying with <u>Specification E2.2a</u> ; or a sprinkler system complying with <u>Specification E1.5</u>	
Cl. E4.2 Cl. E4.4	AS 2293.1 compliant emergency lighting must be provided throughout the residential common areas and stairwells of the building.	We recommend providing AS 2293.1 compliant Emergency Lighting at each stair landing and at the ground floor Exit door
Cl. E4.5 Cl. E4.8	AS 2293.1 compliant Exit Signage is required above each Exit (door or stair) A concession applies within the Sole Occupancy Units	We recommend providing an AS 2293.1 compliant Exit sign at the ground floor Exit door

Author:



Kieran Tobin
Senior Consultant
Grad Dip Building Surveying UWS.

5.0 SUMMARY OF RECOMMENDED WORKS

BCA reference	Required Works
Spec. C1.1 – fire resisting construction C3.16 – construction joints	The plaster ceilings within Level 2 does not currently comply and a fire separating wall does not exist within the roof space. In regard to separation within Level 2 and the roof space recommend the following works Either a) Provide a ceiling with a resistance to the incipient spread of fire for 60 minutes to the second floor; The ceiling system should be an AS 1530 tested and certified system installed in exact accordance with the product specification. OR b) Extend the existing fire separating wall within the first floor from ceiling level to the underside of the roof covering. Note This method will require removal or alteration to structural roof timbers to ensure that non compliant penetrations do not exist post construction and in this regard would require advice from a structural engineer in regard to structural roof support. Or c) An Alternate system may be employed through the implementation of smoke/heat detectors within the roof space and within each room of each unit - where the detectors will be spaced in accordance with AS1670 and BCA Spec E2.2a. Sounders are to be located such that a sound pressure level of not less than 85 dB(A) is provided at the door of each sole occupancy unit. Reason: - to assist in the containment of fire to the room of origin and to comply with the requirements of Specification C1.1 of the Building Code of Australia and to provide occupants with early warning so that the building can be evacuated in the event of a fire.
C2.13 – electricity supply system	The Main Switch Board enclosure below the stairs at Level 1 requires a -/120/30 self closing Fire Door and a Fire rated frame (to 120 minutes)
C3.11 – bounding construction: Class 2, 3, 4 and 9 buildings	The Unit doors are not currently compliant:- The unit doors must be substituted with -/60/30 self closing fire doors and fire rated frames complying with AS 1905.

	In addition deadlocks must be removed -or substituted with deadlocking devices that do not interfere with the self-closing action of the doors.
C3.15 – openings for service installations	Service Penetrations Plumbing service penetrations were identified as follows: - Garage sanitary plumbing traps - Riser in kitchen - Riser in WC - Riser in linen cupboard - Water service pipes in linen cupboard These services are metal and do not require fire collars but do require a tight fit at the penetration point. We recommend providing a fire rated mortar to fill and reduce the gaps at these points. A section of PVC pipe has been installed within the garage – we recommend providing a fire rated enclosure to the PVC section to achieve an FRL of -/90/- Exhaust fans were identified within Level 2 which penetrate the ceiling. The penetration must be either a) Removed and ducting directed to exhaust out the external wall; or b) A Fire Tested enclosure and a fire damper are to be provided c) The products must be an AS 1530 fire tested product to achieve an FRL of -/60/- Lighting cables penetrating the ceiling within Level 2 must be provided with a fire rated mastic fire tested to achieve an FRL of -/60/-
D2.16 – balustrades	The balustrade to the internal stair at each Level 2 is less than the required 1000mm height - We recommend increasing the height of the balustrades to each stair to 1000mm above floor level.
D2.17 – handrails	The handrail to the internal stair achieves a height of less than the required 865mm above stair nosing's We recommend increasing each stair handrail to the compliant height.
E1.6 – portable fire extinguishers	We recommend providing a 2.5kg, type ABE smoke alarm at the common foyers in Levels 1 and 2
E2.2a – Smoke Detection and Alarm System	We recommend:- AS 3786 hardwired smoke alarms with battery back up is provided - within the hall ways near to the bedrooms. - Within the stair landings Stair landing detection must be positioned in accordance with AS 1670 system complying with clauses 3 and 7 of Specification E2.2
E4.2 – emergency lighting	We recommend providing AS 2293.1 compliant
E4.4 – design and operation of emergency lighting	Emergency Lighting at each stair landing and at the ground floor Exit door
E4.5 – exit signs	We recommend providing an AS 2293.1 compliant Exit
E4.8 – design and operation of exit signs	sign at the ground floor Exit door

6.0 FIRE SAFETY SCHEDULE

*Prepared in accordance with Part 9, Divisions 1 and 2 of the Environmental Planning & Assessment Regulation, 2000
to accompany the subject Construction Certificate.*

Property Address: 3 Birdwood Ave, Collaroy

Purpose of Schedule: Strata Subdivision to Existing Unit Building

Fire Safety & Other Measures	Existing Measure	Modify Measure	Proposed Measure	Minimum Standards of Performance
Portable Fire Extinguishers	✓			BCA Clause E1.6 AS 2444 2001
Emergency Lighting	✓			BCA Clause E4.2 & E4.4 AS 2293.1-1998
Exit Signs	✓			BCA Clause E4.5, E4.6 & E4.8 AS 2293.1-1998
Fire Seals Protecting openings in Fire-resisting Components (existing tight fitting Galvanised pipe)	✓			BCA Clause C3.15 AS1530.4-2005
Smoke alarms And Heat Detectors		✓		BCA Clause E2.2a AS 3786-2014 AS 1670.1 – 2018
Lightweight fire rated systems			✓	BCA Clause C1.1 AS 1530
Fire Doors			✓	BCA Clause C3.11 AS 1905