



DESIGN CONFIDENCE

BCA Design Assessment Report

MHNDUNION

19 Sydney Road, Manly

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Project: 19 Sydney Road, Manly
 Document Type: BCA Design Assessment Report
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Revision History:

OUR REFERENCE	REMARKS	ISSUE DATE
P221-387 (BCA) JR	Draft report issued – for review & comment	20 October 2021

EXECUTIVE SUMMARY

This BCA Design Assessment report has been prepared by Design Confidence at the request of MHDUNION. Based upon our detailed review of the proposed architectural drawings, it is the opinion of this office that the subject development is capable of complying with the performance provisions of the BCA.

Compliance would be achieved via a mixture of adopting a performance-based approach as well as complying with the relevant deemed-to-satisfy requirements as outlined within the BCA, compliance via the performance-based approach could occur without significant changes to the proposed design. With respect to the assessment undertaken the following areas need further review as the project develops –

NO.	ITEMS FOR FURTHER CONSIDERATION	RESPONSIBILITY
1.	Non-Combustible Building Elements (C1.9 & C1.14) The following building elements and their components must be non-combustible – <ul style="list-style-type: none"> ▪ External walls and common walls, including all components incorporated in them, including the façade covering, framing and insulation; and ▪ The flooring and floor framing of lift pits; and ▪ 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-load bearing; and ▪ Non-loadbearing internal walls where they are required to be fire-resisting. ▪ Proposed and updated awning structures 	Project Architect
2.	Spiral Stairway (D2.13) Further details showing the proposed spiral staircase with dimensions for further assessment. Note - Spiral staircases which are not serving as required exits nor within the path of travel are permitted.	Project Architect
3.	Sprinkler System Required (E1.5) As this building contains a rise in storeys of 4 or more and an effective height of less than 25m, a required automatic fire sprinkler system must be installed in accordance with Specification E1.5 and Specification E1.5a of the BCA and must comply with one of the following systems: <ul style="list-style-type: none"> ▪ AS2118.1-2017 ▪ AS2118.4-2017 (Low Rise Accommodation); or ▪ AS2118.6-2017 (Combined System); or ▪ FPAA101D (Drinking Water Supply System) or ▪ FPAA101H (Hydrant Supply System) If an AS2118.1-2017 system is utilised a number of concessions will be afforded, which is detailed within this report.	Project Architect / Wet Fire Services Engineer
4.	Fire Safety Equipment (E1.3, E1.4 & E1.6) Further details showing confirming the proposed location of the following wet fire services – <ul style="list-style-type: none"> ▪ Internal Hydrants ▪ Hose Reels (Subject to Performance Solution 'item 7' below) ▪ Portable fire extinguishers 	Wet Fire Services Engineer
5.	Weatherproofing (F1.1) A test report from a Registered Testing Authority must be provided to certify that the façade / external walls achieve compliance with BCA FP1.4 and FV1.	Project Architect

NO.	ITEMS FOR FURTHER CONSIDERATION	RESPONSIBILITY
6.	Fire Isolated Stairway Configuration (D2.17 & F3.1) Further details of the fire stairs demonstrating the following – <ul style="list-style-type: none"> Based on where the fire stair flight terminates on the ground floor, it appears that the occupants will be required to travel back underneath the mid-landing which would be less than 2m; and Proposed fire isolated stairways shall be provided with an offset tread so that handrails can be provided at a consistent height. 	Project Architect
7.	Separation of Vertical Openings (C2.6) Further elevations of the western and eastern facade are required for further assessment of vertical openings.	Project Architect
8.	Wet Areas (F1.7) Consideration shall be given to the proposed windows in the shower area of Level 3 two bedroom apartment, as it currently appears to be proposed at a height ~760mm above the finished floor level. Walls in shower areas as required to be water resistant to not less than 1800mm in accordance with Table F1.7 of the BCA, hence consider either the provision of windows located a minimum 1800mm height or a performance-based approach.	Project Architect

In addition to undertaking a detailed assessment of the design against the perspective requirements of the BCA a preliminary performance-based assessment has also been undertaken.

The purpose of the assessment was to look at the incorporation of a performance-based design may add value in-lieu of complying with the prescriptive (DfS) provisions. The table below lists scenarios where we believe the adoption of a performance design may add value to development –

NO.	DESIGN EFFICIENCIES	DTS CLAUSE	PERFORMANCE REQUIREMENTS
1.	Justify the reduction of FRL of retail portions to 90 minutes in lieu of 180 minutes	C1.1 & Spec C1.1	CP1, CP2
2.	Justify a roof light within 3m of the boundary	C1.1 & Spec C1.1	CP2
3.	Justify multiple exposed vertical openings in the external walls	C2.6	CP2
4.	Justify exposed openings that are exposed to fire source features	C3.2	CP2
5.	Justify a single exit within the basement in lieu of the required two.	D1.2	DP4 & EP2.2
6.	<ul style="list-style-type: none"> Justify the booster assembly being located – <ul style="list-style-type: none"> (i) Located within 10m of the building and not protected in accordance with subclause 7.3(c)(ii) of AS2419.1-2005; and (ii) Provided as an 'I' Pattern Justify the basement pumphoom not opening directly into open space or a fire isolated exit. 	E1.3	EP1.3
7.	Omission of fire hose reels within the commercial area	E1.4	EP1.1

1.0 INTRODUCTION

1.1 General

This BCA Design Assessment report has been prepared by Design Confidence at the request of MHNDUNION and relates to the proposed mixed used development located at 19 Sydney Road, Manly.

1.2 Purpose of Report

The purpose of this report is to identify the extent to which the architectural design documentation complies with the relevant prescriptive provision of the Building Code of Australia (BCA) Volume 1, edition 2019 Amendment 1.

This report is based upon, and limited to, the information depicted in the documentation provided for assessment, and does not make any assumptions regarding 'design intention' or the like.

1.3 Documentation Provided for Assessment

This assessment is based upon the architectural documentation prepared by MHNDUNION Architects and listed within Appendix 1.

1.4 Report Exclusions

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

- (i) Occupational Health & Safety Act and Regulations;
- (ii) WorkCover Authority requirements;
- (iii) Structural and Services Design Documentation;
- (iv) The individual requirements of service authorities (i.e. Telecommunication Carriers, Sydney Water, Energy Australia);
- (v) The Disability Discrimination Act (DDA) 1992;
- (vi) The relevant energy efficiency provisions of the BCA 2019, as are principally contained within Section J of the code; and
- (vii) The relevant accessibility provisions of BCA 2019, as are principally contained within Part D3, F2.4 & E3.6.

2.0 DEVELOPMENT DESCRIPTION

2.1 General

In accordance with the Building Code of Australia, the assessment undertaken herein relates to the proposed mixed used development located at 19 Sydney Road, Manly. The proposed development involves the construction of a new five (5) storey residential development which includes (but not limited to) –

- Basement – Basement Commercial Tenancy (part of), Commercial Garage, Residential Garage, Residential Bike Storage and a Pumproom
- Ground Floor – Waste Holding Room, Commercial 01 (part of) and Commercial 02
- Level 1 – 4 x Residential Units
- Level 2 – 4 x Residential Units
- Level 3 – 3 x Residential Units

For the purpose of the Building Code of Australia (BCA) the subject building may be described as contained below.



Figure 2.1 – Street Perspective of the Existing (Source: MHNDUNION)

2.2 Building Description

Table 2 – Building Characteristics

DESCRIPTION OR REQUIREMENTS		
Building Classification	Residential	2
	Commercial	6
Rise in Storeys	Four (4)	
Storeys contained	Five (5)	
Construction Type	Type A	
Effective Height	Less than 12m	(Ground Floor RL + 5.360 – Third Floor RL + 15.760)
Max Fire Compartment Size	(5,000m ² /30,000m ³)	Within Limitation
Climate Zone:	Climate Zone 5	

2.3 BCA Interpretation Notes

To provide the reader with additional context, the following information regarding the assessment used in this assessment is provided below –

- (i) Cabinets and loose furniture are not considered to be permanently fixed and not intervening in the path of travel; and
- (ii) Sydney Road and Market Place have not been considered as fire source features having the far boundary greater than 6m from the building; and
- (iii) Based off information provided to Design Confidence, the building will be fitted with a sprinkler system
- (iv) This BCA is subject to base building works and does not consider future fit outs of the ground floor and basement commercial spaces; and
- (v) Total floor area of storage within the basement area is less than 10% and therefore has been considered as ancillary for the purpose of this BCA assessment.

3.0 BCA ASSESSMENT SUMMARY

3.1 General

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

Although, it should be recognised that instances exist where 'Prescriptive non-compliance' occurs, or 'Additional design input' is required.

Such instances should not necessarily be considered BCA deficiencies; but matters which need to be considered by the design team and any assessment authority at relevant stages of design and/or assessment.

For those instances of either 'prescriptive non-compliance' or 'additional design input', a detailed analysis and commentary is provided within Part 4 of this report.

3.2 Section B: Structure

BCA CLAUSE	COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
Part B1 – Structural Provisions			
B1.1 Resistance to actions			✓
B1.2 Determination of individual actions			✓
B1.4 Materials and form of construction			✓
B1.6 Construction of buildings in flood hazard areas			✓

3.3 Section C: Fire Resistance

BCA CLAUSE	COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
Part C1 – Fire Resistance and Stability			
C1.1 Fire resisting construction		✓	
C1.8 Lightweight construction			✓
C1.9 Non-combustible building elements			✓
C1.10 Fire hazard properties			✓
C1.14 Ancillary elements			✓
Part C2 – Compartmentation and Separation			
C2.2 General Floor Area and Volume Limitations	✓		
C2.6 Vertical separation		✓	
C2.7 Separation by fire walls			✓
C2.8 Separation of classifications in the same storey			✓
C2.9 Separation of classifications in different storey			✓
C2.10 Separation of lift shafts			✓
C2.12 Separation of equipment			✓
C2.13 Electricity supply system			✓
C2.14 Public corridors in class 2 and 3 buildings	✓		

BCA CLAUSE	COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
Part C3 – Protection of Openings			
C3.2 Protection of openings in external wall		✓	
C3.4 Acceptable methods of protection			✓
C3.5 Doorways in fire walls			✓
C3.10 Openings in fire-isolated lift shafts			✓
C3.11 Bounding construction: class 2 and 3 buildings and class 4 parts.			✓
C3.12 Openings in floors and ceilings for services			✓
C3.13 Openings in shafts			✓
C3.15 Openings for service installations			✓
C3.16 Construction joints			✓
C3.17 Columns protected with lightweight construction to achieve an FRL			✓

3.4 Section D: Access & Egress

BCA CLAUSE	COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
Part D1 – Provisions for Escape			
D1.2 Number of exits 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	✓		
D1.9 Travel via non-fire-isolated exits	✓		
D1.10 Discharge of exits	✓		
D1.17 Access to lift pits	✓		
Part D2 – Construction of Exits			
D2.2 Fire-isolated stairways and ramps			✓
D2.3 Non-fire-isolated stairways and ramps			✓
D2.7 Installation in exits and paths of travel			✓
D2.13 Goings and risers			✓
D2.14 Landings			✓
D2.15 Thresholds			✓
D2.16 Balustrades and other barriers			✓
D2.17 Handrails		✓	
D2.19 Doorways and doors			✓
D2.20 Swinging doors			✓
D2.21 Operation of latch			✓
D2.24 Protection of openable windows			✓

3.5 Section E: Services & Equipment

BCA CLAUSE		COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
Part E1 – Fire Fighting Equipment				
E1.3	Fire hydrants		✓	
E1.4	Fire hose Reels			✓
E1.5	Sprinklers			✓
E1.6	Portable fire extinguishers			✓
Part E2 – Smoke Hazard Management				
E2.2	Smoke hazard management			✓
Part E3 – Lift Installations				
E3.1	Lift installations			✓
E3.2	Stretchers facility in lifts			✓
E3.3	Warning against use of lifts in fire			✓
Part E4 – Visibility in an Emergency, Exit Signs and Warning Systems				
E4.2	Emergency lighting			✓
E4.5	Exit signs			✓
E4.6	Direction signs			✓

3.6 Section F: Health & Amenity

BCA CLAUSE		COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
Part F1 – Damp and Weatherproofing				
F1.0	External weatherproofing			✓
F1.1	Stormwater drainage			✓
F1.4	External above ground membranes			✓
F1.5	Roof coverings			✓
F1.6	Sarking			✓
F1.7	Waterproofing of wet areas in buildings			✓
F1.9	Damp-proofing			✓
F1.10	Damp-proofing of floors on the ground			✓
F1.11	Provision of floor waste			✓
F1.13	Glazed assemblies			✓
Part F2 – Sanitary and Other Facilities				
F2.1	Facilities in residential buildings			✓
F2.3	Facilities and in class 3 to 9 buildings			✓
F2.5	Construction of sanitary compartments			✓
Part F3 – Room Height				
F3.1	Heights of rooms and other spaces		✓	
Part F4 – Light and Ventilation				
F4.1	Provision of natural light			✓
F4.2	Methods and extent of natural light			✓
F4.4	Artificial lighting			✓
F4.5	Ventilation of rooms			✓
F4.8	Restriction on location of sanitary compartments			✓

BCA CLAUSE	COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
Part F5 – Sound Transmission and Insulation			
F5.4 Sound insulation rating of floors			✓
F5.5 Sound insulation rating of walls			✓
F5.6 Sound insulation rating of internal services			✓
F5.7 Sound isolation of pumps			✓
Part F5 – Condensation management			
F6.2 Pliable building membrane			✓
F6.3 Flow rate and discharge of exhaust system			✓
F6.4 Ventilation of roof spaces			✓

3.7 Section G – Ancillary Provisions

BCA CLAUSE	COMPLIES	DOES NOT COMPLY	DESIGN DETAIL
Part G1 – Minor Structures and Components (NSW Variation)			
G1.101 Provision for cleaning windows			✓

4.0 BCA DETAILED ASSESSMENT

4.1 General

With reference to the 'BCA Assessment Summary' contained within Part 3 of this report, 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.

4.2 BCA Section B – Structural Provisions

- | | |
|------|--|
| B1.1 | The resistance of a building or structure must be greater than the most critical action effect from different combinations of actions determined pursuant to BCA clause B1.2 & AS/NZS 1170.0 & BCA clause B1.4. |
| B1.2 | The structural design of the building must be determined in accordance with the individual "actions" considerations contained within this clause (i.e. permanent actions, imposed actions, wind / snow / earthquake and other actions). |
| B1.4 | <p>The structural resistance of materials and forms of construction must be determined in accordance with the following:</p> <ul style="list-style-type: none"> (i) Masonry - AS3700-2011 (ii) Concrete construction - AS3600-2009 (iii) Steel construction - AS4100-1998 or AS/NZS4600-2005 (iv) Timber construction - AS1720.1-2010 and/or AS1684 -2010 (v) Termite Risk Management - AS3660.1-2000 or AS3660.1-2014 (vi) Piling - AS2159-2009 (vii) Glazed assemblies - AS2047-2014 (external) and/or AS1288-2006 (internal) (viii) Metal roof sheeting – AS1562.1-1992 |
| B1.6 | A class 2 building in a flood hazard area must comply with the ABCB Standard for Construction of Buildings in Flood Hazard Areas. |

4.3 BCA Section C – Fire Resistance

C1.1

It has been noted that the subject building contains five (5) storeys and has an effective height of 10.4m. Having both a class 2 and a class 6 BCA classification, the building will have a rise in storey of four (4) and therefore must achieve 'Type A' construction.

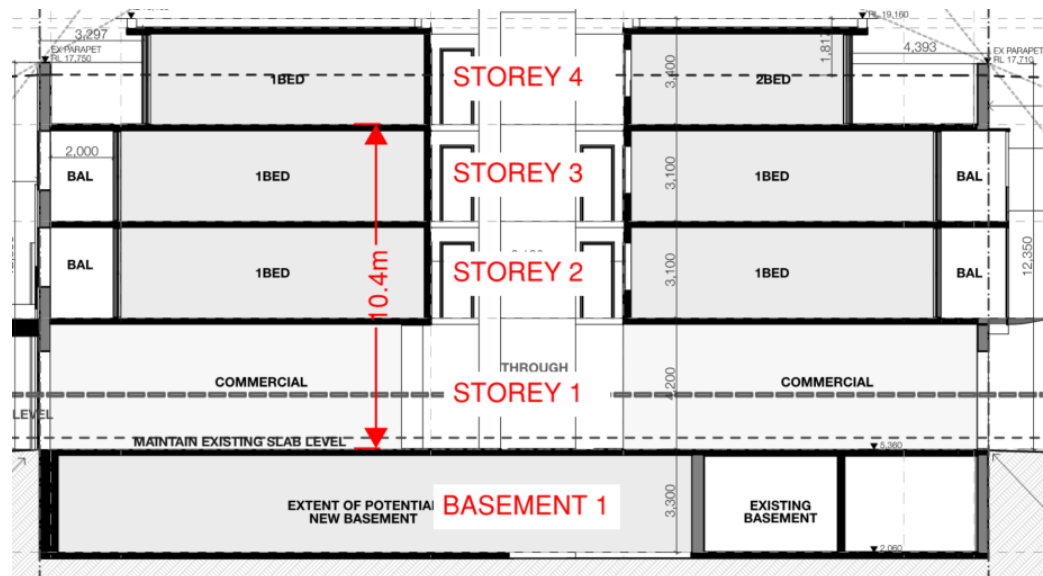


Figure C1.1 (a) – Effective Height and Rise in Storeys of the Building

It is identified that the subject building is required to be equipped with a sprinkler system. The building is required to be provided with a sprinkler system complying with Spec. E1.5 & E1.5a of the BCA.

Notwithstanding the above, the building elements are required to achieve the nominated FRLs as nominated within BCA Spec C1.1 as applicable, these FRLs have been summarised within Table A2.1 as contained within Appendix A2. In addition to the FRLs contained within the Appendix A2 the following information details the construction methodology and concessions available to the subject building.

General Requirements

■ Exposure to Fire Source Features

A part of the building is exposed to a fire source feature if any of the horizontal straight lines between that part and a fire source feature, or vertical projection of that feature, is not obstructed by another part of the building that has an FRL of not less than 30/--/-- and is neither translucent nor transparent.

A part of a building element is not exposed to a fire source if the fire source feature is an external wall of another building that stands on the allotment and the part concerned is more than 15m above the highest part of that external wall. Also, a building element is not exposed if the fire source feature is a side or rear boundary of the allotment and the part concerned is below the level of the finished ground at every part of the boundary concerned.

Should various distances apply to a building element, that entire building element must achieve the relevant FRL or each part of the element must achieve the applicable FRL.

C1.1 (Cont'd)

Fire source feature means

- (i) The far boundary of a road, river, lake, or the like adjoining the allotment; or
- (ii) A side or rear boundary of the allotment; or
- (iii) An external wall of another building on the allotment which is not a class 10 building

- Fire protection for a support of another part

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 have an FRL not less than that required by other provisions of this Specification; and if located within the same fire compartment as the part it supports have an FRL in respect of structural adequacy the greater of that required for the supporting part itself and for the part it supports.

- Concession: Structures on Roofs

A non-combustible structure situated on a roof need not comply with the other provisions of the specification if it only contains –

- (i) Lift motor equipment; or
- (ii) Hot water or other water tanks, ventilation equipment, air-conditioning chillers, window cleaning equipment, and other equipment (except flammable or combustible liquids or gases).

- Method of attachment not to reduce the fire-resistance of building elements

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

- Lintels

A lintel must have the FRL required for the part of the building in which it is situated, unless it does not contribute to the support of a fire door /window /shutter and spans a non-load bearing wall of a class 2 building. Also, it need not apply within masonry walls not more than 150mm thick.

- Enclosure of Shafts

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 the top of a shaft extending being the roof covering, other than an enclosing a fire isolated stairway and ramp or non-combustible floor which is laid directly on natural ground.

Type A Requirements

- Fire Resistance of Building Elements

In a Type A building a building element listed in Appendix A2 and any beam or column incorporated in it, must have an FRL not less than that listed in the table for class 2. In addition, an external wall that is required to have an FRL need only be tested from the outside to satisfy the requirements.

C1.1 (Cont'd)

Internal walls required to have an FRL must extend –

- (i) To the underside the floor next above; or
- (ii) To the underside of a roof complying with Appendix A2; or
- (iii) To the underside of a roof covering if it is non-combustible and must not be crossed by timber or other combustible building elements, except for roof battens with dimensions of 75mm x 50mm or less or sarking-type material; 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; and

Any loadbearing internal wall and a loadbearing fire wall (including shafts) is required to be of concrete or masonry or fire-protected timber

▪ Roof lights

An assessment of the drawings shows that there are two skylights located within 3m of a fire source feature, being the side boundary. Therefore, the following design options are available to achieve compliance with the BCA –

- (i) Option 1 – Reconfigure the existing layout and relocate the roof lights so that they are not located within a 3m proximity to the side boundary; or
- (ii) Option 2 – Justify exposed skylights within 3m of a side boundary under a performance-based design.

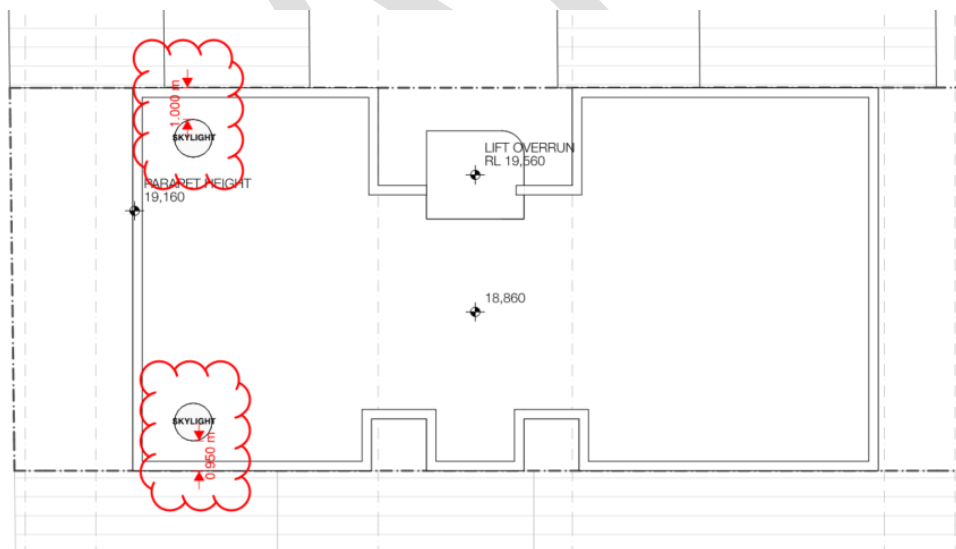


Figure C1.1(b) - Skylights within 3m Range of the Side Boundary

▪ Concession: Floors

A floor need not have an FRL if it is laid directly on the ground.

▪ Concession: Roof

The roof need not have an FRL if it is non-combustible.

▪ Concession: Internal Walls and Columns

In the storey immediately below the roof, the FRL of internal walls (excluding shafts) and internal columns maybe reduced to 60/60/60.

C1.8 Any lightweight construction to internal walls required to achieve an FRL or protection to steel columns required achieve an FRL are required to be tested for resistance in accordance with this clause.

C1.9 As design progresses it is requested that testing certificates be provided confirming the proposed cladding material has been tested in accordance with AS1530.1 and AS1530.3 and referenced within the next report update.

The following building elements and their components are required to be non-combustible –

- External walls and common walls, including all components in them including the facade covering, framing and insulation;
- The flooring and floor framing of lift pits;
- Non-loadbearing internal walls where they are required to be fire-resisting;
- A shaft, being a lift, ventilating, pipe, garbage, or similar shaft that is not for the discharge of hot products of combustion, that is non-loadbearing;
- A loadbearing internal wall and a loadbearing fire wall, including those that are part of a loadbearing shaft.

C1.10 Determining compliance will require verification test data for all timber and other combustible linings and materials, including –

- Carpets
- Vinyl's (walling and flooring)
- Timber flooring and wall linings
- Veneered wall panelling
- Spray-on insulation material
- Other combustible finishes

The fire hazard properties of floor linings and coverings, wall linings and ceiling linings must comply with Specification C1.10 and NSW Specification C1.10. Test reports to be provided certifying that –

- The floor linings achieve a critical radiant flux 1.2
- The wall and ceiling linings achieve a group 1, 2 or 3 rating

Fire hazard properties for materials proposed to be provided have been summarised within Table A3.1 as contained within Appendix 3.

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 elements permitted under this clause.

C2.2

The building is subject to maximum floor area and volume limits under Type 'A' construction of:

CLASSIFICATION	MAX PERMITTED	FLOOR AREA & VOLUME MAX PROPOSED	STATUS
Class 6	5,000m ²	Basement - 344m ² Ground Floor - 424m ² Total - 768m²	Within Size Limitation
	30,000m ³	Basement - 1,135m ² Ground Floor - 1,780m ² Total - 2,915m²	

Table C2.2 – Compartment Size Requirements

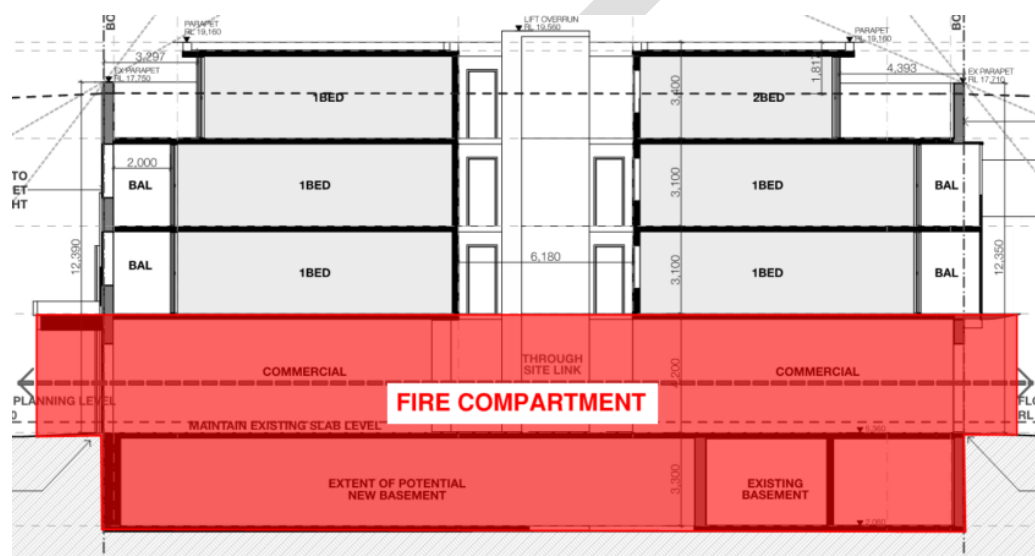


Figure C2.2 – Proposed fire compartment within the building

The Class 2 portions of the building are not subject to any floor area and volume limitations of C2.2 of the BCA. Table 3 of Specification C1.1 and C3.11 of the BCA regulate compartmentalisation and separation provisions applicable to Class 2 buildings or building portions.

C2.6

In a building which is of Type A construction that is not sprinkler protected (other than a FPAA101D or FPAA101H system), vertical separation of openings must be achieved. Openings in external walls (including external walls not having an FRL of 60/60/60) above another opening in the storey next below are required to contain vertical separation via either of the following means:

- The provision of spandrels within the external walls not less than 900mm in height and extend not less than 600mm above the finished floor level. The spandrels are required to be non-combustible and have an FRL being not less than 60/60/60; or
- The provision of horizontal aprons/projections that project outwards from the external face of the wall not less than 1100mm beyond the affected openings and extend not less than 450mm (taken as being the most forward projecting openings). The horizontal projections are required to be non-combustible and have an FRL being not less than 60/60/60).

C2.6
Cont'd

An assessment of the proposed development shows that separation is not achieve to the following areas –

Southern Façade

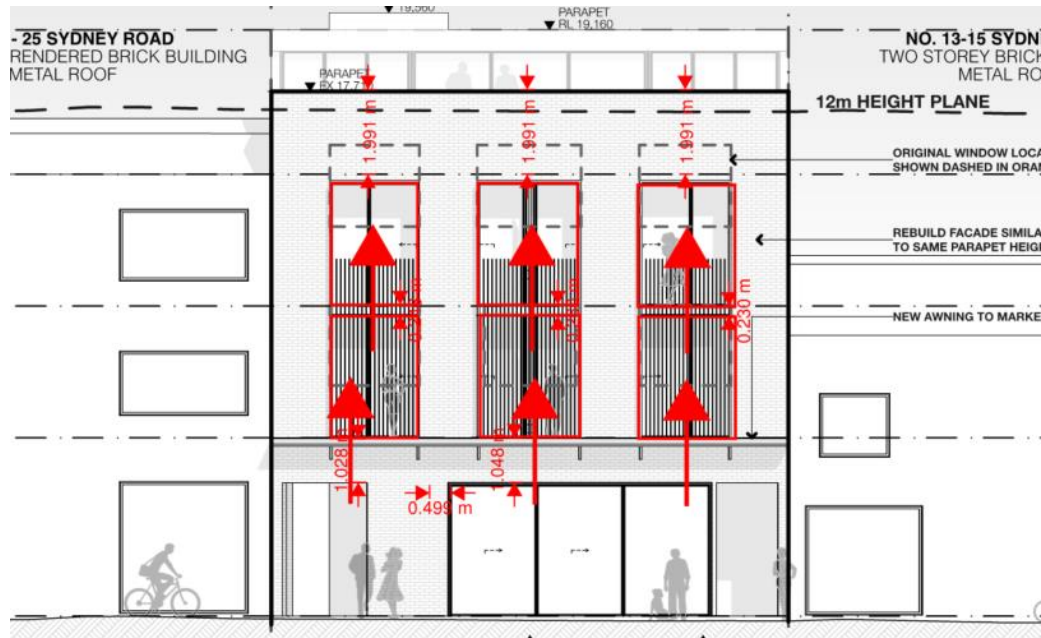


Figure C2.6 – Southern Elevation Perspective

In addition to the above, further details are required confirming that separation of vertical openings to the eastern and western façade.

C2.7

A fire wall must be constructed in accordance with the following:

- (i) The fire wall has the relevant FRL prescribed by Specification C1.1 for each of the adjoining parts and if these are different, the greater FRL, except where Tables 3.9, 4.2 and 5.2 of Specification C1.1 permit a lower FRL on the carpark side; and
- (ii) Any openings in a fire wall must not reduce the FRL required by Specification C1.1 for the fire wall, except where permitted by the Deemed-to-Satisfy Provisions of Part C3.
- (iii) Building elements, other than roof battens with dimensions of 75mm x 50mm or less or sarking-type material, must not pass through or cross the fire wall unless the required fire-resisting performance of the fire wall is maintained.

It should be noted that bounding construction between apartments is required under the requirements of Part C.

C2.9

As shown in the figure below, the building comprises class 2 and class 6 parts. Required separation of different storeys is noted as follows –

- Class 2 parts must be separated from other class 2 parts below via an FRL of at least 90/90/90; and
- Class 2 parts must be separated from class 6 parts below via an FRL of at least 180/180/180 (Subject to performance solution)

C2.9
Cont'd

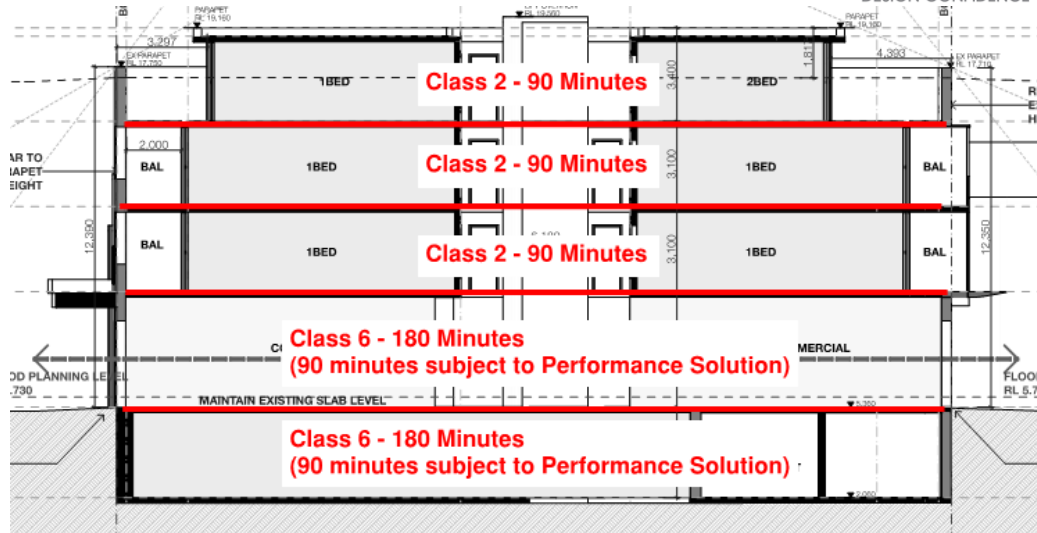


Figure C2.9 – Separation of class 6 from the class 2 parts on the separate storey

C2.10

The passenger lift must be separated from the remainder of the building with walls having the following FRLs –

- (i) Level 1 achieve an FRL of 180/180/180;
- (ii) Level 2, 3, 4 & 5 achieve an FRL of 90/90/90;

C2.11

A stairway and lift must not be in the same shaft if either the stairway or the lift is required to be in a fire-resisting shaft. Based on the current configuration, the stairway connecting three storeys have been assessed as being a required non-fire isolated stairway. Therefore, lift and stairway separation need not apply.

C2.12

The following equipment must be separated from the remainder of the building:

- (i) If the lift motor and lift control panel which are not contained within the lift shaft; or
- (ii) Emergency generators used to sustain emergency equipment operating in the emergency mode; or
- (iii) Central smoke control plant; or
- (iv) Boilers; or battery system installed in the building that has a total voltage of 12 volts or more and a storage capacity of 200kWh or more.

The above equipment is required to be separated with construction achieving an FRL of 120/120/120 and any access doorway is required to be protected with a self-closing fire door having an FRL of --/120/30. When separating a lift shaft and lift motor room, an FRL of not less than 120/--/--.

Clause 6.4.2 of AS 2419.1-2005 requires that an internal pumproom located within the building shall have the following:

- (i) A door opening to a road or open space, or a door opening to fire-isolated passage or stair which leads to a road or open space; and
- (ii) Except where the building is sprinkler protected in accordance with AS 2118.1, enclosing walls with an FRL not less than that prescribed by the BCA for a firewall for the particular building classifications served by the fire hydrant system.

- C2.13
- (i) If the main electrical switchboard is to sustain any emergency equipment, then the switchboard is required to be separated with construction achieving an FRL of 120/120/120 and have any access doorway protected with a self-closing fire door having an FRL of --/120/30; and
 - (ii) 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.

For the purposes of the above, emergency equipment includes:

- (i) Fire hydrant booster pumps;
- (ii) Air handling systems designed to exhaust and control the spread of fire and smoke; and
- (iii) Control and indicating equipment.

C2.14 An assessment of the public corridors shows that that corridors will generally comply with the requirements of this clause, being less than 40m in length.

C3.2 If the distance between the opening and the fire source feature to which it is exposed is less than 3m from a side or rear boundary of an allotment, it must be protected in accordance with C3.4 and if wall wetting sprinklers are used , they are located externally.

Based off our assessment, numerous openings are located within range of fire source features. These openings will require protection in accordance with C3.4, or there may be scope to assess under the performance provisions of the BCA via a fire engineered performance solution.

An assessment of the buildings fire source features includes the following –

- (i) Openings within 3m of the side / rear boundary; and
 - East Elevation – Multiple openings are located within 3m
 - West Elevation – Multiple openings are located within 3m
- (ii) Openings within 6m of the far boundary of the road; and
 - Sydney Road – Greater than 6m
 - Market Place – Greater than 6m

C3.2 (Cont'd)

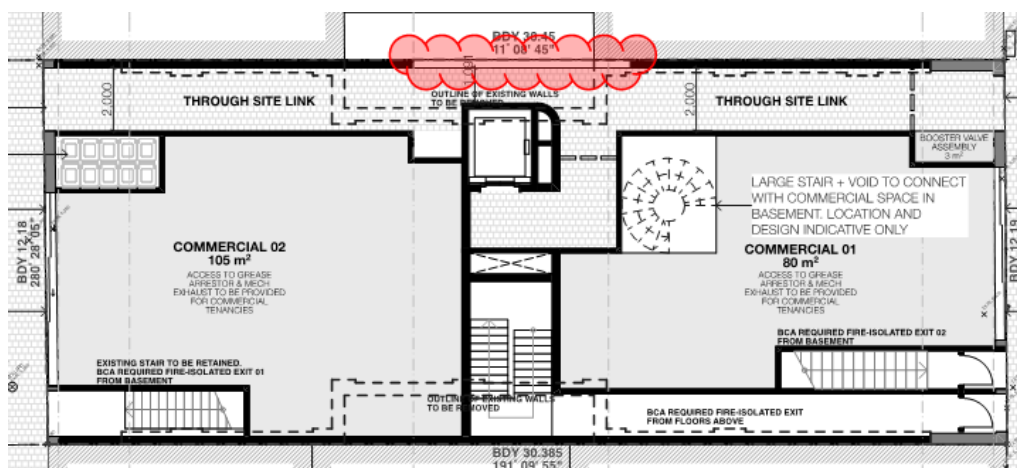


Figure C3.2(a) – Ground level exposed openings

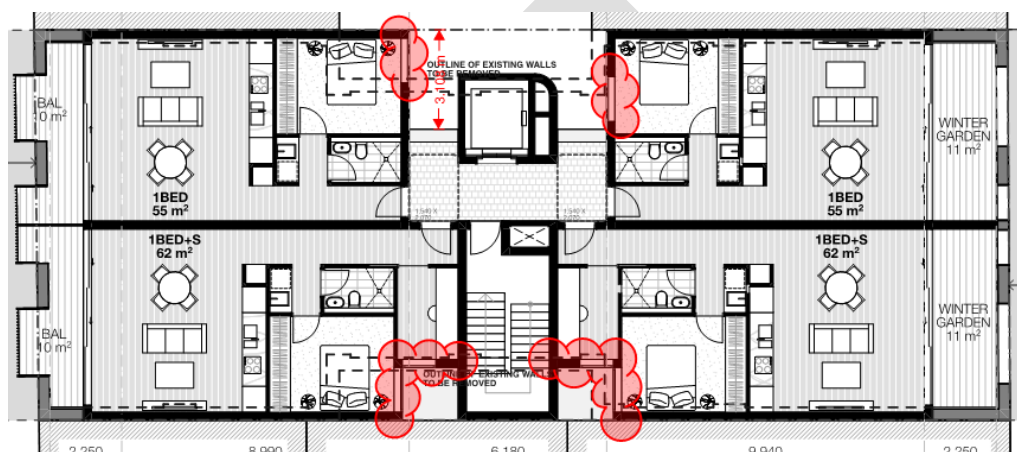


Figure C3.2(b) – Levels 1 & 3 exposed openings

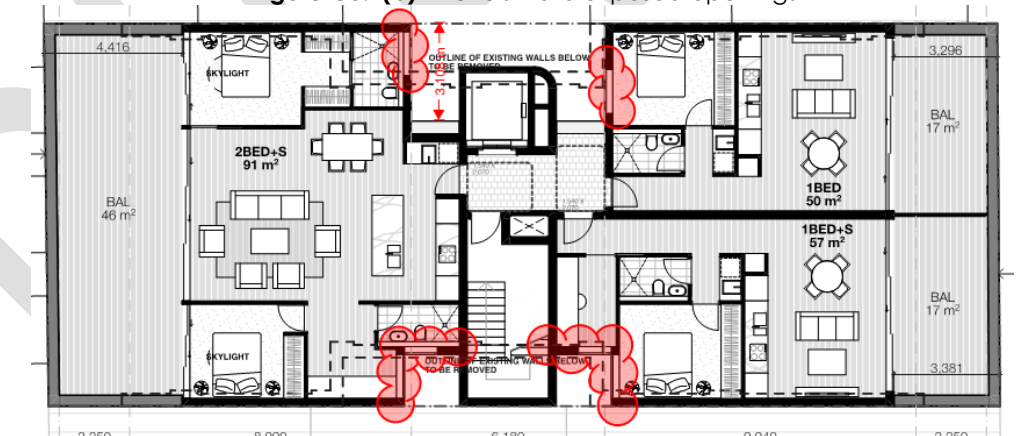


Figure C3.2(c) – First floor exposed openings

C3.5

Where fire walls are provided, doorways in a fire wall must be protected with an FRL not less than that required by the fire wall, except that each door must have insulation level of at least 30 (i.e. for a fire wall in a Class 6 part, the doorways must have an FRL 180/180/30).

- C3.10** (i) The doorways providing access to the lift shaft(s) shall be protected by --/60/- fire doors complying with AS1735.111986 and remain closed except when discharging or receiving passengers or goods; and
- (ii) Any lift call button, indicator panel or other panel located within the wall of the fire-isolated lift shaft must be backed by construction having an FRL of --/60/60 if it exceeds 35,000mm² in area.
- C3.11** Doorways providing access from the sole occupancy units to the public corridor or the like must be protected with self-closing --/60/30 fire doors.
- C3.12** Where a service passes through a floor/ceiling required to achieve an FRL, that service is required to be protected by either a shaft which has been construction in accordance with BCA Spec C1.1 (listed above) or in accordance with C3.15 (see below).
- C3.13** Any opening in a wall providing access to a ventilating, pipe, garbage or other service shaft are required to be protected as follows:
- (i) Sanitary compartment – Non-combustible door or panel assembly or an FRL of --/30/30;
- (ii) --/60/30 fire door or hopper that is self-closing;
- (iii) Access panel with an FRL of --/60/30; or
- (iv) Garbage shaft – A door or hopper of non-combustible construction.
- C3.15** Any proposed service penetrations (electrical, mechanical, plumbing, etc) that penetrates a building element which is required to be of fire resisting construction is required to be protected.
- C3.16** Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation must be protected in a manner identical with a prototype tested in accordance with AS1530.4 to achieve the required FRL.

4.4 BCA Section D – Access and Egress

- D1.2** An assessment of the floor plans shows that parts of the basement storey will not have access to two exit where egress does not necessitate passing through another sole occupancy unit. It is recommended that the proposed layout is reviewed and justified under a performance-based design from the projects fire engineer.

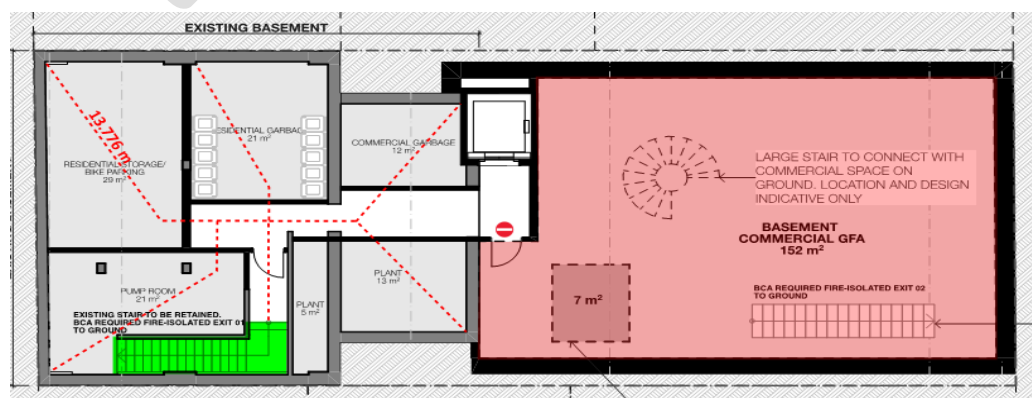


Figure D1.2 – Egress within the basement storey

- D1.3 In a class 2 building, a stairway which serves as a required exit must be fire isolated unless it connects, passes through, or passes by not more than 3 consecutive storeys. The proposed required stairway connects level 3 to ground floor has been proposed as fire isolated. Whereas the other stairs are non-fire isolated.

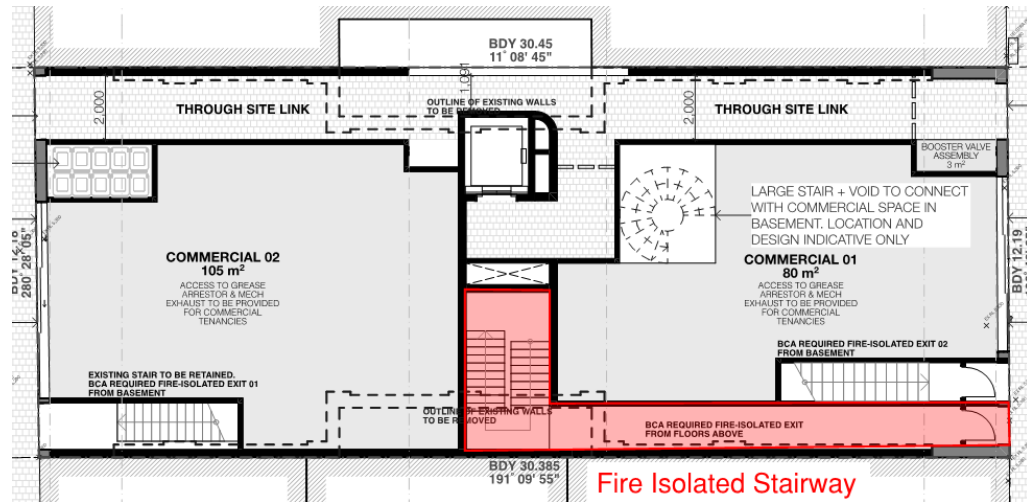


Figure D1.3 – Required fire isolated stairway

- D1.4 An assessment of the subject building shows that complaint travel distance within the building is achieved

- D1.5 Distance between alternate exits has been assessed as being no further than 60m and no closer than 9m. Thereby, complying with the requirements of this BCA clause.

- D1.6 The path of travel to an exit and any required exit is to have an unobstructed height throughout of not less than 2m (except a doorway, which can be 1980mm) and 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).

As assessment of the floor layout shows that there is an egress shortfall caused by the proposed accessible lift to the basement. With a slight re-adjustment to the design, compliance can be readily achieved.

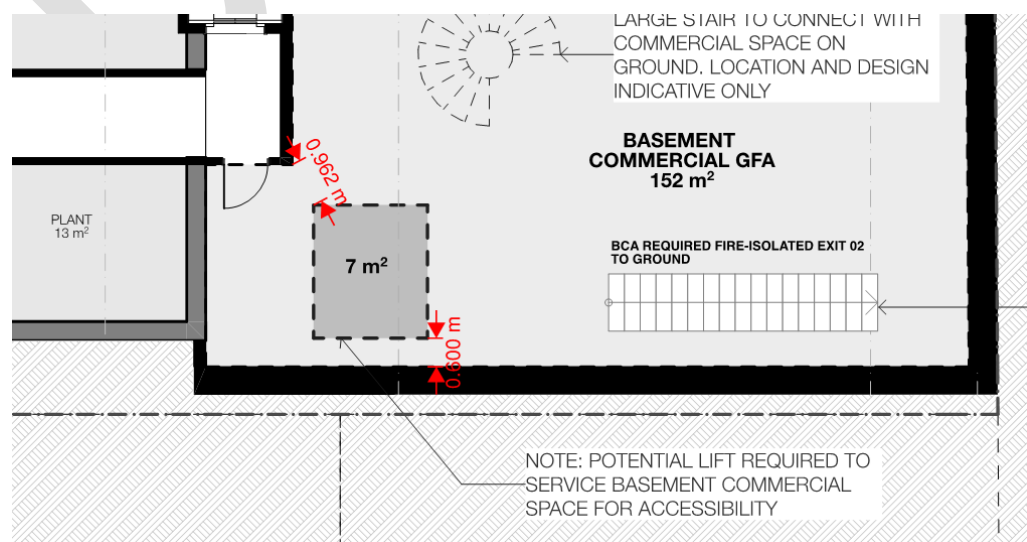


Figure D1.6 – Reduced egress width caused by accessible lift

D1.7	An assessment of travel distance via the required fire isolated stairway shows compliance in accordance with the requirements of this BCA clause.
D1.9	An assessment of travel distance via the required non fire isolated stairways shows compliance in accordance with the requirements of this BCA clause.
D1.10	The discharge points of the exits shall 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	<p>Access to the lift pit must be through the lowest landing doors, where the pit depth is not more than 3m.</p> <p>Where the lift pit is more than 3m, access must be provided through an access doorway complying with the requirements of this clause.</p>
D2.2	<p>Stairways within fire-resisting shaft(s) are required to be constructed:</p> <ul style="list-style-type: none"> (i) Of non-combustible construction (i.e. reinforced or prestressed concrete or steel); and (ii) So that if there is local failure it will not cause structural damage to, or impair the fire-resistance of, the shaft.
D2.3	<p>The required non-fire isolated stairway (including landings and any supporting building elements) must be constructed in accordance with D2.2, or only of –</p> <ul style="list-style-type: none"> (i) Reinforced or prestressed concrete; or (ii) Steel in no part less than 6mm thick; or (iii) Timber that – <ul style="list-style-type: none"> ▪ Has a finished thickness of not less than 44mm; ▪ Has an average density of not less than 800 kg/m³ at a moisture content of 12%; and (iv) 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	<ul style="list-style-type: none"> (i) Gas or other fuel services shall not be installed within the required exits; and (ii) Any services or equipment (being electrical meters, distribution boards or the like) installed within the hallway are required to 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 going, riser and steepness dimension of the stairways are required to be designed within the following range:

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

- (i) The risers and goings are required 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
- (ii) The stair treads are required to 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 Stair landings are required to be a minimum of 750mm long with a gradient not steeper than 1:50 and have a slip-resistance surface or strip.

The surface or strip is required to achieve a slip-resistance classification of P3 or R10 in dry or P4 or R11 in wet tested in accordance with AS4586-2013.

D2.15 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.

That is unless the doorway opens to a road or open space 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 Further details showing that the balustrade serving the third storey balconies will achieve a 1m clearance. It is believed that compliance is readily achievable with reliance on the privacy screens. However, it is difficult to determine if the privacy screens extends the full length of the terrace area.

Balustrades are required to be constructed as follows:

- (i) To a height not less than 865mm above the nosing's of the stair treads or the floor of a ramp;
- (ii) 1000mm above the floor of any access path, balcony, landing or the like;
- (iii) Any opening does not permit a 125mm sphere to pass through it and for stairs, the space is measured above the nosings; and
- (iv) 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 required along one (1) side of each stairway flight and ramp, unless required to assist people with a disability in accordance with Clause D3.3.

The handrails are required to be fixed at a height of not less than 865mm measured above the nosings of the stair treads or ramp and be continuous such that no obstruction on or above them will tend to break a hand hold.

D2.19 The main entry door on the ground floor must –

- (i) Be able to be opened manually under a force of not more than 110N if there is a malfunction or failure of the power source; and
- (ii) If it leads directly to a road or open space it must open automatically if there is a power failure to the door or on the activation of a fire or smoke alarm anywhere in the fire compartment served by the door.

D2.20 Doorways serving as exits has been assessed as swinging in the direction of egress. Therefore complying with the requirements of this clause.

D2.21 Any door in a required exit, forming part of a required exit or in the path of travel to a required exit are required to be readily operable without a key from the side that faces a person seeking egress and:

- (i) By a single hand pushing or downward action on a single device located between 900mm and 1100mm from the floor;
 - Be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and
 - 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
 - A single hand pushing action on a single device which is located between 900mm and 1.2m above the floor.
- (ii) By operating a fail-safe control switch, not contained within a protective enclosure, to actuate a device to unlock the door;
- (iii) Is fitted with a fail-safe device which automatically unlocks the door upon activation of any smoke or any other detector deemed suitable in accordance with AS1670.1-2015.

D2.24 Window openings to bedrooms require protection, if the floor below the window is 2m above the surface beneath.

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

- (i) Protection can be in the form of the following:
 - The openable portion of the window must be protected with a device to restrict the window opening or a screen with secure fittings;
 - The device or screen must not permit a sphere greater than 125mm is permitted to pass through;
 - Resist the outward horizontal action of 250N against the window or screen;
 - Have a child resistant release mechanism is able to be removed, unlocked or overridden; and

D2.24
Cont'd

- (ii) A barrier with a height of not less than 865mm above the floor is required to an openable window:
- In addition, to window protection as per (i) above;
 - Where the floor below the window is 4m or more above the floor or if the window is not covered above; and
 - Any horizontal or near horizontal elements between 150mm and 760mm must not facilitate climbing and have no gaps greater than 125mm.

4.5 BCA Section E – Services & Equipment

E1.3

A fire hydrant system complying with AS2419.1-2005 is required to serve the building, including –

- (i) All points on a floor are required to be within reach of a 10 m hose stream issuing from a nozzle at the end of a –
- 30 m length of hose laid on floor, connected to an internal attack fire hydrant outlet
 - 60m length of a hose laid on the floor, connected to an external fire hydrant outlet.
- (ii) Additional hydrants can be installed in appropriate locations, where additional coverage is required;

Where a fire brigade booster system is located within, or affixed to the external wall of the building and has a sprinkler installed in accordance with AS2118.1, AS2118.4, AS2118.6, FPAA101H or FPAA101D, the fire hydrant booster protection requirements of clause 7.3(c)(ii) and 7.3(d)(iii) of AS2419.1-2005 do not apply.

Internal pumprooms that are located within a building shall have—

- (i) A door opening to a road or open space, or a door opening to fire-isolated passage or stair which leads to a road or open space; and
- (ii) Except where the building is sprinklered in accordance with AS 2118.1, enclosing walls with an FRL not less than that prescribed by the BCA for a firewall for the particular building classification served by the fire hydrant system.

An assessment shows that the booster assembly and pumproom will be located within areas of the building which may impede on brigade invention. It is recommended that the projects fire engineer reviews and justifies the following under a performance based design –

Booster Assembly

- Located within 10m of the building and not protected in accordance with subclause 7.3(c)(ii) of AS2419.1-2005; and
- Provided as an 'I' Pattern

E1.3 Cont'd

Pumproom

Justify the basement pumproom not opening directly into open space or a fire isolated exit.

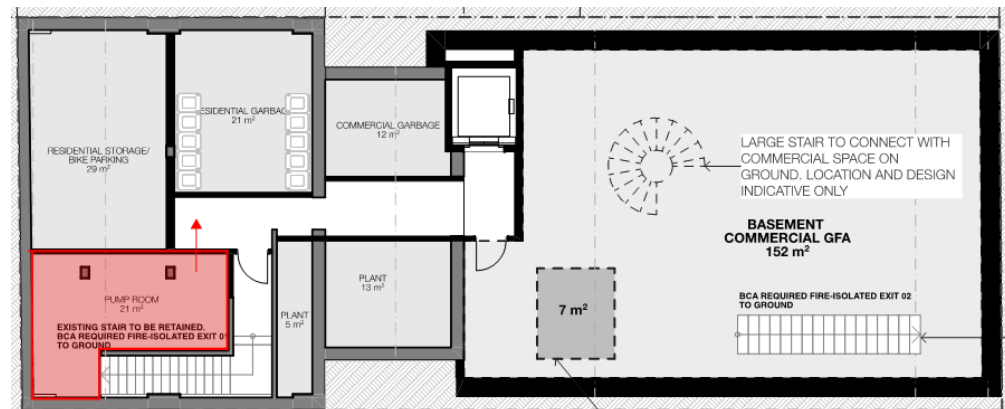


Figure E1.3(a) – Pumproom doorway does not open directly into an exit

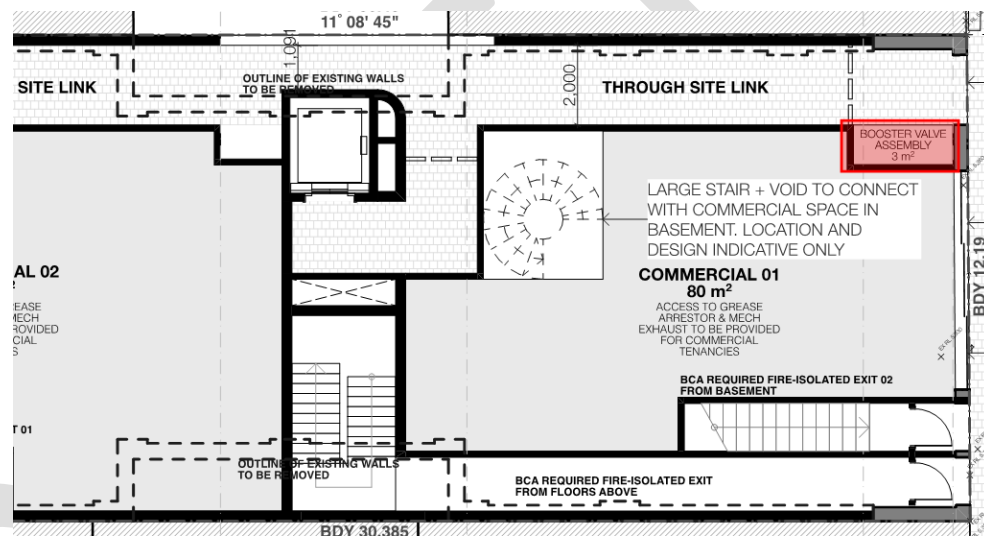


Figure E1.3(b) – Hydrant booster is not permitted to be located within the building

E1.4

A hose reel system complying with AS2441-2005 is required to serve the carpark and retail part, where one or more internal fire hydrants are installed.

A fire hose reel system must be provided in accordance with the following –

- (i) Hose reels are required to be located within 4m of an exit; and
- (ii) All points on a floor are required to be in reach of a 4m hose stream at the end of a 36m hose length laid on the floor;
- (iii) Additional hose reels can be installed along the path of travel where additional coverage is required.

Note - Hose reel coverage is not required to the Class 2 parts of the building.

E1.5 An assessment shows that the building will require a sprinkler system to be installed throughout. Based on the proposed configuration, the following sprinkler systems are available

- (i) AS2118.1
- (ii) AS2118.4
- (iii) FPAA101D
- (iv) FPAA101H

Hence, further details from the hydraulic consultant / project architect confirming the proposed sprinkler system.

E1.6 Portable extinguishers must be provided in accordance with Table E1.6 to cover risk classes within the basement level and throughout the whole building where internal fire hydrants are provided.

Where internal hydrants are provided, portable fire extinguishers complying with AS2444-2001 are required as follows:

- (i) 2.5kg ABE type portable fire extinguishers are required to the residential part of the building where one (1) or more internal hydrants are installed. The travel distance to an extinguisher must not exceed 10m from the entrance doorway of each sole-occupancy unit; and
- (ii) To cover Class B (if more than 50L excluding vehicle fuel tanks is stored); and
- (iii) Class AE or E fire risks associated with emergency service switchboards.

E2.2 The building must be provided with the following smoke hazard management system -

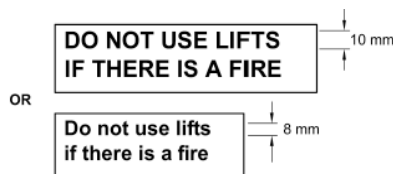
- (i) Each sole-occupancy unit is required to be provided with a smoke alarm complying with Clause 3 of Specification E2.2a of the BCA & AS3786-2014;
- (ii) The smoke alarm(s) are to be located in the hallway serving all bedroom(s), and in egress paths for any storey not containing bedrooms;
- (iii) Public corridors and other areas outside the bedrooms are required to be provided with smoke alarms located in accordance with the requirements of AS1670.1-2015 and complying with Clause 3 of Spec. E2.2a of the BCA;
- (iv) The smoke alarms in public corridors and other internal public spaces are required to activate a building occupant warning system to achieve a sound pressure level of 85dB, measured at the doorway providing access to the bedrooms.

E3.1 The electric passenger lift installation or an electrohydraulic passenger lift installation are required to comply with Specification E3.1.

E3.2 A stretcher facility must be provided within the Southern lift as it serves a storey above 12m effective height.

A stretcher facility must accommodate a raised stretcher with a patient lying on it horizontally by providing a clear space of not less than 600mm wide x 2000mm long x 1400mm high above the floor level.

- E3.3 A warning sign must be displayed where it can be readily seen near every call button for a passenger lift and comply with the details and dimensions of Figure E3.3 of the BCA.



- E4.2 Emergency lighting complying with AS2293.1-2005 must be installed within the common areas, i.e. in every passageway, corridor or the like that is part of the path of travel to an exit.

- E4.5 Exit signs complying with AS2293.1-2005 are required to be installed above or adjacent to any doorways serving as required exits from the enclosed stairways or passageway, at the level of discharge to the road or open space.

- E4.6 If an exit is not readily apparent to persons occupying or visiting either the building, then exit signs complying with AS2293.1-2005 are required to be installed in appropriate positions in corridors, hallways, lobbies and the like, indicating the direction to a required exit.

4.6 BCA Section F – Health & Amenity

- F1.0 Weatherproofing of external wall(s) are required to comply with Verification Method FV1 (i.e. certificate of conformity).

- F1.1 Stormwater drainage must comply with AS/NZS3500.3.

- F1.4 Waterproofing membranes for above ground use (i.e. balconies above ground) must comply with AS4654 parts 1 & 2.

- F1.5 The roof must be covered with –
- (i) Concrete roof tiles complying with AS2049-2002 and fixed, except in cyclonic areas in accordance with AS2050-2002, as appropriate; or
 - (ii) Terracotta roof tiles complying with AS2049-2002 and fixed, except in cyclonic areas in accordance with AS2050-2002, as appropriate; or
 - (iii) Cellulose cement corrugated sheeting complying with AS/NZS 2908.1-2000 and installed in accordance with AS/NZS 1562.2-1992; or
 - (iv) Metal sheet roofing complying with AS1562.1-1992; or
 - (v) Plastic sheet roofing designed and installed in accordance with AS/NZS4256-1994 Parts 1, 2, 3, AS/NZS 4256-1996 Part 5 and AS/NZS 1562.3-1996; or
 - (vi) Asphalt shingles complying with ASTM D3018-90-1994, Class A.

- F1.6 Any sarking-type materials used for weatherproofing of roofs and walls must comply with AS/NZS4200 parts 1 and 2.

F1.7	<p>Building elements in wet areas must be water-resistant or waterproof in accordance with Table F1.7 and AS3740.</p> <p>In this instance, it has been identified that the window proposed in the shower area of Level 3 two bedroom apartment appears to be located ~760mm above the proposed finished floor level, thus causing a compliance departure in regards the requirements of Table F1.7.</p> <p>In the shower area, the walls are required to be water resistant to not less than 1800mm above the finished floor level. Thereby, any windows are required to be located at a minimum 1800mm height.</p> <p>Alternatively, a performance-based approach may be employed to justify the proposed design.</p>
F1.9	<p>Where a damp-proof course is provided, it must consist of a material that complies with AS/NZS2904 or impervious sheet material in accordance with AS3660.1.</p>
F1.10	<p>A floor laid directly onto ground or fill must be provided with a vapour barrier complying with AS2870-2011.</p>
F1.11	<p>A bathroom or laundry located at any level above a sole occupancy unit or public space must have a floor waste and the floor graded to the floor waste to permit drainage of water.</p>
F1.13	<p>Glazed assemblies in an external wall must comply with AS2047 requirements for resistance to water penetration.</p>
F2.1	<p>Facilities must include the following for every 10 residents where private facilities are not provided –</p> <ul style="list-style-type: none"> (i) A bath or shower; and (ii) A closet pan; and (iii) A washbasin. <p>Facilities for employees in Class 2 buildings must be provided in accordance with Clause F2.3.</p> <p>For the class 6 café, employees and the public may share the same facilities provided the number of facilities provided is not less than the total number of facilities required for employees plus those required of the public</p>
F2.3	<p>The sanitary facilities are assessed as generally being capable of complying subject to the use of the retail tenancies.</p>
F2.5	<p>The door to a fully enclosed sanitary compartment must –</p> <ul style="list-style-type: none"> (i) open outwards; or (ii) slide; or (iii) be readily removable from the outside of the sanitary compartment unless there is a clear space of 1.2m between the closet pan and the doorway (i.e. lift off hinges).

F3.1 Unobstructed ceiling heights are required as follows:

- (i) Habitable rooms excluding kitchens and the like – 2.4m;
- (ii) Above a stairway, ramp, landing or the like – 2m; and
- (iii) Public corridors, sanitary facilities, kitchens, laundries, carparking area, storerooms and the like – 2.1m.

Concerns are raised that the proposed fire stairway configuration will incur head height concerns. Hence, it is requested that further architectural documentation is provided demonstrating compliance.

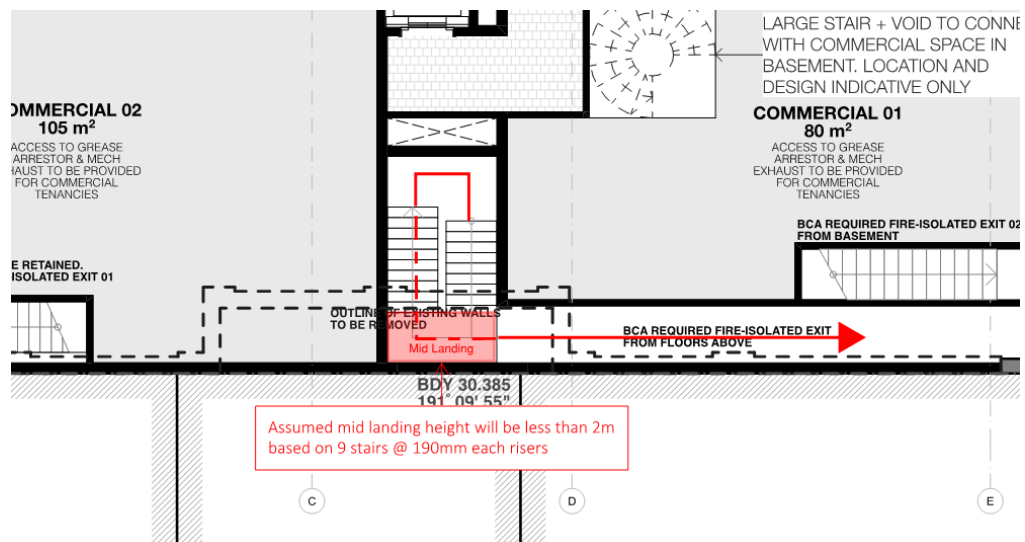


Figure F3.1 – Head height concerns within the fire stairway

F4.1 Natural light must be provided to all habitable rooms.

Methods of providing natural light is to be in accordance with Clause F4.2.

F4.2 All habitable rooms are required to have natural lighting provided by either –

- (i) Window(s) having a light transmitting area of not less than 10% of the floor area of the room, which 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
- (ii) Roof light(s) having a light transmitting area of not less than 3% of the floor area of the room and open to the sky.

F4.4 Where compliant natural lighting is not provided to non-habitable rooms, artificial lighting complying with AS/NZS1680.0-2009 is required to be installed.

F4.5 Any habitable room, sanitary compartment, bathroom, laundry and any other room occupied by a person for any purpose must have either;

- (i) Natural ventilation via permanent openings, windows or doors having an openable area of not less than 5% of the floor area of the room (refer F4.6 & F4.6); or
- (ii) Mechanical ventilation complying with AS1668.2.

F5.4 A floor must have an $R_w + C_{tr}$ (airborne) of not less than 50 and an $L_{n,w} + C_1$ (impact) not more than 62 where it separates:

- (i) Sole-occupancy units; or
- (ii) A sole-occupancy unit from a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification.

F5.5 Internal walls are required to be constructed as follows:

- (i) The walls that separate sole-occupancy units must have an $R_w + C_{tr}$ (airborne) of not less than 50;
- (ii) The walls that separate sole-occupancy units from public corridors, internal exit stairways, lifts, other rooms or the like and different classifications require an R_w (airborne) of not less than 50;
- (iii) Be of discontinuous construction if the wall separates a bathroom, sanitary compartment, laundry or kitchen in a sole-occupancy unit from a habitable room (other than a kitchen in an adjoining unit) or lift shaft;
- (iv) Doorways providing access to sole-occupancy units from public corridors and internal non-fire isolated stairways (i.e. stairwells) must have an R_w of not less than 30; and
- (v) A wall required to have a sound insulation must be constructed such that the wall continues to the underside of:
 - The floor above;
 - A ceiling having the same sound insulation required for the wall; and
 - The underside of the roof above.
- (vi) Services must not be chased into concrete or masonry elements

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

- (i) 40 if the adjacent room is a habitable room (other than a kitchen); or
- (ii) 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 Where a pliable building membrane is installed in an external wall, it must comply with the requirements of this clause.

Where a pliable membrane is not installed in an external wall, the primary water control layer must be separated from water sensitive materials by a drained cavity, except for single skin masonry and single skin concrete.

F6.3 An exhaust system installed in a kitchen, bathroom, sanitary compartment or laundry must be installed to comply with the requirements of this clause.

F6.4 Where an exhaust system is installed in a kitchen, bathroom, sanitary compartment or laundry and discharges directly or via a shaft or duct into a roof space, the roof space must be ventilated to outdoor air through evenly distributed openings in accordance with the requirements of this clause.

4.7 BCA Section G – Ancillary Provisions

G1.101 The windows located three (3) or more storeys above the street level shall 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.

5.0 CONCLUSION

Based upon our detailed review of the proposed architectural drawings, it is the opinion of this office that the subject development is capable of complying with the performance provisions of the BCA. Compliance would be achieved with the relevant deemed-to-satisfy requirements as outlined within the BCA.

Report By

Verified By

DRAFT

DRAFT

Jake Robson
Building Regulations Consultant
For Design Confidence (Sydney) Pty Ltd

Lindsay Beard
Associate | Building Regulations
For Design Confidence (Sydney) Pty Ltd

APPENDIX A1

The BCA Design Assessment report was based upon the architectural documentation prepared by MHNDUNION, namely –

TITLE	DRAWING	REV	DATE
Basement Plan	DA 2000	P4	10/08/2021
Ground Floor Plan	DA 2001	P4	10/08/2021
Level 1-2 Typical Floor Plan	DA 2002	P4	10/08/2021
Level 3 Floor Plan	DA 2004	P4	10/08/2021
Roof Plan	DA 2005	P4	10/08/2021
Elevation – North	DA 3000	P4	10/08/2021
Elevation – South	DA 3001	P4	10/08/2021
Sections	DA3100	P4	10/08/2021

APPENDIX A2

The Table below represents the Fire Resistance Levels (FRLs) relevant to the subject development.

BUILDING ELEMENT	CLASS OF BUILDING – FRL (IN MINUTES) STRUCTURAL ADEQUACY / INTEGRITY / INSULATION	
	Class 2	Class 6
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 1.5 m	90/90/90	180/180/180
1.5 to less than 3m	90/60/60	180/180/120
3m to less than 9m	90/60/30	180/120/90
For non-loadbearing parts		
less than 1.5 m	--/90/90	--/180/180
1.5 to less than 3m	--/60/60	--/180/120
3m or more	--/--/--	--/--/--
EXTERNAL COLUMN not incorporated in an external wall –		
For loadbearing columns		
	90/--/--	180/--/--
For non-loadbearing columns		
	--/--/--	--/--/--
COMMON WALLS and FIRE WALLS –		
	90/90/90	180/180/180
INTERNAL WALLS –		
Fire-resisting lift and stair shafts –		
loadbearing	90/90/90	180/120/120
non-loadbearing	--/90/90	--/120/120
Bounding public corridors, public lobbies and the like –		
loadbearing	90/90/90	180/--/--
non-loadbearing	--/60/60	--/--/--
Between or bounding sole-occupancy units –		
loadbearing	90/90/90	180/--/--
non-loadbearing	--/60/60	--/--/--
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion –		
loadbearing	90/90/90	180/120/120
non-loadbearing	--/90/90	--/120/120
OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES and		
COLUMNS –	90/--/--	180/--/--
FLOORS	90/90/90	180/180/180
ROOFS	--/--/--	--/--/--

APPENDIX A3

The table below represents the fire hazard properties for building materials applicable to this development.

FLOOR LININGS AND FLOOR COVERINGS CRITICAL RADIANT FLUX (CRF IN KW/M2)	
Non-Sprinkler Protected Areas	2.2
Sprinkler Protected Areas	1.2
Fire-Isolated Exits & Fire Control Rooms	1.2
Lift Cars	2.2
WALL LININGS AND CEILING LININGS TESTED TO AS5637.1	
Fire-Isolated Exits & Fire Control Rooms	Group 1
Public Corridors – Walls	Group 1 or 2
Public Corridors – Ceilings	Group 1 or 2
Specific Areas – Walls	Group 1, 2 or 3
Specific Areas – Ceilings	Group 1, 2 or 3
Other Areas – Walls	Group 1, 2 or 3
Other Areas – Ceilings	Group 1, 2 or 3
Lift Cars	Group 1 or 2
NOTE	<p>In addition to achieving the group number above they too must comply with the following –</p> <ul style="list-style-type: none"> a smoke growth rate index not more than 100; or an average specific extinction area less than 250m²/kg
OTHER MATERIALS OR ASSEMBLIES	
Fire-Isolated Exits & Fire Control Rooms	Spread-of Flame Index 0 Smoke-Developed Index 2
Non-fire-isolated stairs & escalators and auditorium fixed seating	Spread-of Flame Index 0 Smoke-Developed Index 5
Sarking-type material	Flammability Index 0 (fire control rooms) Flammability Index 5 (other areas)
Other materials	Spread-of Flame Index 9 Smoke-Developed Index 8 (if the Spread-of Flame Index is more than 5)

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Design Confidence (Sydney) Pty Limited

Shop 2, 35 Buckingham Street, Surry Hills

T: (02) 8399 3707
E: sydney@designconfidence.com
W: www.designconfidence.com

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