



DESIGN CONFIDENCE

Byron Bay Council c/o BKA Architecture

BCA Design Assessment Report

Byron Bay Community Hub  
10-12 Shirley Street, Byron Bay

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Project: Byron Bay Community Hub  
 Document Type: BCA Design Assessment Report  
 Report Number: P221\_011-3 (BCA) JR

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#### Revision History:

OUR REFERENCE	REMARKS	ISSUE DATE
P221_011-1 (BCA) JR	Draft report issued – For comment and review.	18 June 2021
P221_011-2 (BCA) JR	Final report issued – For DA Submission (updated to include revised architectural drawings)	01 July 2021
P221_011-3 (BCA) JR	Final report issued – For CC documentation	15 February 2023

## EXECUTIVE SUMMARY

This BCA Design Assessment report has been prepared by Design Confidence at the request of BKA Architecture on behalf of Byron Bay City Council.

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.

With respect to the assessment undertaken the following areas in particular need further review as the project develops –

NO.	ITEMS FOR FURTHER CONSIDERATION	RESPONSIBILITY
1.	<b>Additional Details Required</b> i. (Stair / Ramp Details) Further design detail of all stairways to be provided to Design Confidence for further assessment. Concerns are raised where concrete stairways are reliant on timber decking as top treads / landings	Project Architect
2.	<b>Discharge Path (Bollards)</b> Additional design detail is required confirming the use of bollards or other appropriate barrier which will prevent vehicles blocking the buildings exits.	Civil Engineer / Traffic Consultant
3.	<b>Goings &amp; Risers</b> An assessment stairway section (04) shows that the bottom riser of the stairway has a difference of more than 10mm. Update design detail is required demonstrating compliance.	Project Architect
4.	<b>Landings</b> An assessment stairway section (04) shows that the bottom landing appears to have a gradient steeper than 1 in 50. Updated details are required demonstrating compliance	Project Architect
5.	<b>Door Swing</b> Generally external doors nominated as exits are shown as swinging in the direction of egress. However, it has been identified that tenancy 3 external doorway is serving as a required exit and therefore must swing in the direction of egress.	Project Architect
6.	<b>Design Certification</b> As the design progress into construction certification stage all consultants including the project architect and service engineers will be required to provide design certification / specification stating BCA compliance.	All

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 (DtS) 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
<b>NON-FIRE SAFETY</b>			
1.	Weatherproofing performance solution report to be prepared by an appropriate consultant (i.e. façade engineer) demonstrating compliance with performance requirements FP1.4 and FV1	F1.0	FP1.4 & FV1

# INTRODUCTION

## 1.0 General

This BCA Design Assessment report has been prepared at the request of BKA Architecture on behalf of Byron Bay City Council and relates to the proposed community hub development located at 10-12 Shirley Street, Byron Bay.

The site is located in the suburb of Byron Bay, within the Byron Shire Local Government Area (LGA) and situated on the corner of Wordsworth Street and Shirley Street. – Refer to **Figure 1** below for locational context



**Figure 1** – Locational context

The site is irregular in shape and comprises of a single allotment of land with an area of 5,307m<sup>2</sup> and where the development will occur, a total floor area of ~2,153m<sup>2</sup>. The site currently owned by Byron Bay City Council and is legally described as Lot 1 DP847910. The site bounded by residential lots to the west, Shirley Street to the north, Wordsworth Street to the east and Byron Street to the south.

Specifically, the works that are proposed for the DA includes external and internal alterations to an existing hospital precinct for new use as a business and educational facility. Such works comprises of –

- One (1) new educational facility (assembly building); and
- Eight (8) new business tenancies which includes a private use kitchen and an ancillary café area; and
- Four (4) new off-street car parking bays; and
- Landscaping associated works



## 1.1 Purpose of Report

The purpose of this report is to identify the extent to which the architectural design documentation complies with the relevant prescriptive provisions 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.

## 1.2 Documentation Provided for Assessment

This assessment is based upon the Architectural documentation prepared by BKA Architecture and listed within **Appendix 1**.

## 1.3 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) Work 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 (Access to Premises - Buildings) Standards 2010;
- (vi) The Disability Discrimination Act (DDA) 1992; and
- (vii) The relevant Accessibility and Energy Efficiency Provisions as contained within the BCA.

## 1.4 Legislative Framework

### i. New Work

Subclause 19(1)(c) of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulations 2021 requires that all new works comply with the current requirements of the BCA. This means that all works proposed in the plans are required to comply but that existing features of an existing building need not comply with the BCA unless specified under different parts of the legislation.

### ii. Upgrade Existing Buildings (No Change of Use)

Clause 14(3) of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulations 2021 prevents a certifying authority from issuing a construction certificate that involves the alteration, enlargement or extension of an existing building in which no change of use occurs unless on completion of the building work, the fire protection and structural capacity of the building will not be reduced.

## 2.0 DEVELOPMENT DESCRIPTION

### 2.1 General

In accordance with the BCA, the assessment undertaken relates to the proposed community hub development located at 10 - 12 Shirley Street, Byron Bay.

For the purpose of the BCA the subject development may be described as contained below in **Table 2**.

### 2.2 Building Description

**Table 2** – Building Characteristics

DESCRIPTION OR REQUIREMENT		
Building Classification	(Educational) Assembly Building	9b
	Business	5
Rise in Storeys	One (1)	
Construction Type	Type C	
Effective Height	Nil	
Climate Zone:	Climate Zone 2	

### 2.3 BCA Assessment – Interpretation Notes

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

- (a) The proposed kitchen is considered as private use and is ancillary the business parts of the building; and
- (b) Loose furniture such as tables and chairs are not considered to be permanently fixed and not intervening in the path of travel to an exit; and
- (c) All areas of the building have been treated as a part of the same tenancy and will have access to the sanitary facilities; and
- (d) The carparking bays on Wordsworth Street is considered as a road for the purpose of this BCA assessment; and
- (e) Tenancy 10 comprising of 10a, 10b, 10 c, 10D, 10E, 10F, 10G, 10H, 10J considered a single tenancy.
- (f) The internal fit-out of the proposed café has not been included within this assessment; and

## 3.0 BCA ASSESSMENT SUMMARY – CLASS 2-9 BUILDINGS

### 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	DESIGN CERTIFICATION
<b>PART B1 – STRUCTURAL PROVISIONS</b>				
B1.1 Resistance to actions				✓
B1.2 Determination of individual actions				✓
B1.4 Determination of structural resistance of materials and forms of construction				✓

### 3.3 Section C - Fire Resistance

BCA CLAUSE	COMPLIES	DOES NOT COMPLY	DESIGN DETAIL	DESIGN CERTIFICATION
<b>PART C1 – FIRE RESISTING CONSTRUCTION</b>				
C1.1 Fire resisting construction				✓
C1.8 Structural tests for lightweight construction				✓
C1.10 Fire hazard properties				✓
<b>PART C2 – COMPARTMENTATION &amp; SEPERATION</b>				
C2.2 General floor area and volume limitations	✓			
C2.12 Separation of equipment				✓
C2.13 Electricity supply system				✓
<b>PART C3 – PROTECTION OF OPENINGS</b>				
C3.2 Protection of openings in external walls	✓			
C3.4 Acceptable methods of protection				✓
C3.15 Opening for Services				✓
C3.16 Construction joints				✓
C3.17 Columns protected with lightweight construction to achieve an FRL				✓



### 3.4 Section D - Access and Egress

BCA CLAUSE		COMPLIES	DOES NOT COMPLY	DESIGN DETAIL	DESIGN CERTIFICATION
<b>PART D1 – PROVISIONS FOR ESCAPE</b>					
D1.2	Number exits required	✓			
D1.4	Exit travel distances	✓			
D1.5	Distance between alternative exits	✓			
D1.6	Dimensions of exits and paths of travel to exits	✓			
D1.10	Discharge from exits			✓	
D1.13	Number of persons accommodated	Note			
<b>PART D2 – CONSTRUCTION OF EXITS</b>					
D2.7	Installations in exits and paths of travel				✓
D2.13	Goings and risers		✓		
D2.14	Landings		✓		
D2.15	Thresholds	✓			✓
D2.16	Barrier to prevent falls			✓	
D2.17	Handrails			✓	
D2.19	Doorways and doors	✓			
D2.20	Swinging doors			✓	
D2.21	Operation of latch				✓

### 3.5 Section E - Services and Equipment

BCA CLAUSE		COMPLIES	DOES NOT COMPLY	DESIGN DETAIL	DESIGN CERTIFICATION
<b>PART E1 – FIRE FIGHTING EQUIPMENT</b>					
E1.3	Fire hydrants				✓
E1.4	Fire hose reels				✓
E1.6	Portable fire extinguishers				✓
<b>PART E2 – SMOKE HAZARD MANAGEMENT</b>					
E2.2	General provisions				✓
<b>PART E4 – VISABILITY IN AN EMERGENCY, EXIT SIGNS &amp; WARNING SYSTEMS</b>					
E4.2	Emergency lighting requirements				✓
E4.5	Exit signs				✓
E4.6	Direction signs				✓

### 3.6 Section F - Health & Amenity

BCA CLAUSE		COMPLIES	DOES NOT COMPLY	DESIGN DETAIL	DESIGN CERTIFICATION
<b>PART F1 – DAMP &amp; WEATHERPROOFING</b>					
F1.0	Weatherproofing of external walls			✓	
F1.1	Stormwater drainage				✓
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				✓
F1.13	Glazed assemblies				✓
<b>PART F2 – SANITARY &amp; OTHER FACILITIES</b>					
F2.3	Facilities in class 3 to 9 buildings	✓			
F2.5	Construction of sanitary compartments				✓
<b>PART F3 – ROOM HEIGHTS</b>					
F3.1	Heights of rooms and other spaces	✓			
<b>PART F4 – LIGHT &amp; VENTILATION</b>					
F4.4	Artificial lighting				✓
F4.5	Ventilation of rooms				✓
F4.8	Restriction of position of water closets and urinals	✓			

## 4.0 BCA DETAILED ASSESSMENT – CLASS 2-9 BUILDINGS

### 4.1 General

With reference to the 'BCA Assessment Summary' contained within Part 3.1 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 Section B – Structure

B1.1	<p><b>Resistance to Actions</b></p> <p>The resistance of a building or structure shall be greater than the most critical action effect determined by B1.2 of the BCA, AS/NZS 1170.0-2002 and B1.4 of the BCA.</p> <p><i>Design Certification – Compliance with the requirements of this BCA clause is subject to design certification from a qualified structural engineer.</i></p>
B1.2	<p><b>Determination of Individual Actions</b></p> <p>The structural design of the building are required to be determined in accordance with the varying "actions" considerations contained within this clause (i.e. permanent actions, imposed actions, wind / snow / earthquake actions).</p> <p><i>Design Certification – Compliance with the requirements of this BCA clause is subject to design certification from a qualified structural engineer.</i></p>
B1.4	<p><b>Determination of Structural Resistance of Materials and Forms of Construction</b></p> <p>The structural resistance of materials and forms of construction shall be determined in accordance with the following:</p> <ul style="list-style-type: none"> <li>(a) Masonry - AS3700-2018</li> <li>(b) Concrete construction - AS3600-2018</li> <li>(c) Footings and slabs – AS2870-2011</li> <li>(d) Steel construction - AS4100-1998 or AS/NZS 4600-2005</li> <li>(e) Termite Risk Management - AS3660.1-2014</li> <li>(f) Piling - AS2159-2009</li> <li>(g) Glazed assemblies - AS2047-2014-amendments 1 &amp; 2 (external), and/or AS1288-2006 (internal)</li> </ul> <p><i>Design Certification – Compliance with the requirements of this BCA clause is subject to design certification from a qualified structural engineer.</i></p>

## 4.3 Section C – Fire Resistance

### C1.1 Type of Construction Required (Type C)

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 of this report.

In addition to the FRLs contained within the Appendix A2 the following information details the construction methodology and concessions available to the subject building –

(a) Exposure to Fire Source Features (FSF)

A part of the building is exposed to a FSF if any of the horizontal straight lines between that part and a FSF, 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.

(b) 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 specification C1.1. 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.

(c) 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.

The proposed development achieves a 9b (educational – assembly building and 5 (business premises) BCA classification. With a rise in storey of Hence, the building is considered as Type 'C' construction in accordance with specifications C1.1 of the BCA.

Building elements which are required to have an FRL in accordance with Appendix A2 includes beams and columns within; and

(d) External walls need only achieve an FRL from the outside; and

(e) Fire walls and internal walls requiring an FRL is required to comply with specification C1.8 if lightweight construction is used.

It should be noted that part of the development is located within 3m from the side boundary (fire source feature).

### C1.8 Lightweight Construction

Details of the proposed systems to be installed must be in accordance with a tested prototype. 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.

**C1.8** *Design Certification – Project architect to provide details of the proposed systems to be installed in accordance with a tested prototype and specification C1.8.*

**C1.10 Fire Hazard Properties**

Compliance is assumed and will require verification test data for all timber and other combustible linings and materials, including –

- (a) Carpets
- (b) Vinyl's (walling and flooring)
- (c) Timber flooring and wall linings
- (d) Veneered wall panelling
- (e) Spray-on insulation material
- (f) 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 –

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

*Design Certification – Fire hazard properties for materials proposed to be provided have been summarised within Appendix 3.*

**C2.2 General Floor Area & Volume Limitations**

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

CLASSIFICATION		TYPE C CONSTRUCTION		
		REQUIRED	PROVIDED	STATUS
Class 5 & 9b	Max floor area (m <sup>2</sup> )	3,000	~2,153	<b>Complies</b>
	Max volume (m <sup>3</sup> )	18,000	~13,008	

*Complies - As shown in table C2.2 above, the proposed development is within the maximum floor area and volume limitations for a fire compartment. Hence, the requirements of this clause have been met.*

**C2.12 Separation of Equipment**

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

- (a) Emergency generators used to sustain emergency equipment operating in the emergency mode; or
- (b) Central smoke control plant; or
- (c) Boilers; or

- C2.12 Cont'd (d) a battery system installed in the building that has a total voltage of 12 volts or more and a storage capacity of 200kWh or more.

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.

Any on-site fire pumps are required to be separated in accordance with AS2419.1-2005, which requires nil FRL if the building part is sprinklered.

### C2.13 Electricity Supply System

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

For the purposes of the above, emergency equipment includes:

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

### C3.2 Protection of Openings in External Walls

Openings in external walls that require an FRL within 3m of the boundary require protection in accordance with C3.4.

*Complies - A review of the plans indicate walls there are no external walls requiring an FRL as all are more than 1.5m of the boundaries considered to be fire source features.*

### C3.4 Acceptable Method of Protection

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

- (a) Doorways –
- i. internal or external wall-wetting sprinklers as appropriate used with doors that are self-closing or automatic closing; or
  - ii. --/60/30 fire doors that are self-closing or automatic closing.
- (b) Windows –
- i. internal or external wall-wetting sprinklers as appropriate used with windows that are automatic closing or permanently fixed in the closed position; or



C3.4 Cont'd	<ul style="list-style-type: none"> <li>ii. –/60/– fire windows that are automatic closing or permanently fixed in the closed position; or</li> <li>iii. –/60/– automatic closing fire shutters.</li> </ul> <p>(c) Other openings –</p> <ul style="list-style-type: none"> <li>i. excluding voids — internal or external wall-wetting sprinklers, as appropriate; or</li> <li>ii. construction having an FRL not less than –/60/–.</li> <li>iii. Fire doors, fire windows and fire shutters must comply with Specification C3.4.</li> </ul>
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C3.15	<p><b>Openings for Service Installation</b></p> <p>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.</p> <p><i>Design Certification - Specifications of the methods of fire sealing need to be provided.</i></p>
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C3.16	<p><b>Construction Joints</b></p> <p>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.</p> <p><i>Design Certification - Specifications of the methods of fire sealing need to be provided.</i></p>
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C3.17	<p><b>Columns protected with Lightweight Construction to Achieve an FRL</b></p> <p>Columns which are required to be protected, must be installed accordance with the identical tested prototype.</p> <p><i>Design Certification - Specifications of the methods of fire sealing need to be provided.</i></p>
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#### 4.4 Section D – Access and Egress

D1.2	<p><b>Number of Exits Required</b></p> <p><i>Complies - An assessment of the proposed floor layout shows that at least one (1) exit is available from the class 5 part and at least two (2) for the class 9b parts of the development.</i></p>
D1.4	<p><b>Exit Travel Distances</b></p> <p>Travel distances are required to comply with the following DfS provisions:</p> <ul style="list-style-type: none"> <li>(a) 20m to an exit, or a point in which two exits is available, in which case the maximum distance to one of those exits is 40m; and</li> <li>(b) In the Class 5 office areas, the distance to a single exit serving a storey at the level of egress to a road or open space may be increased to 30m</li> </ul>

D1.4  
Cont'd

*Complies - An assessment of the proposed layout demonstrates compliance with the requirements of this clause*

#### D1.5 Distance Between Alternative Exits

*Complies - An assessment of the floor plans shows that alternate exit have been provided to all required areas and that they are no further than 60m apart and no less than 9m.*

#### D1.6 Dimensions of Exits and Paths of Travel to Exits

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 accessible).

*Complies - The required egress width for the proposed development achieves compliance when calculated in accordance with clause D1.13*

**Table 2 – Egress Population Assessment**

Location		Number of Occupants	Egress Width
Whole Development	Educational Part @ 3m available	Tenancy 1 @ 923 People	<b>Complies</b>
	Business Parts @ 1m or 2m available	Café @ 98 People	<b>Complies</b>
		Tenancy 3 @ 9 People	
		Tenancy 4 @ 9 People	
		Tenancy 5 @ 9 People	
		Tenancy 6 @ 9 People	
		Tenancy 7 @ 9 People	
		Tenancy 8 @ 9 People*	
		Communal Kitchen @ 8 People	
		Tenancy 10 @ 42 People	
		Tenancy 11 @ 12 People	
		Storage @ 1 Person	

#### D1.10 Discharge from exits

The discharge points of the exits are required to have an unobstructed width of 1m (including gates) and be via a stairway, ramp or other incline having a gradient of no steeper than 1:8 or complying with AS1428.1-2009- amendment 2 (where required to be accessible for people with a disability).

*Design Detail - Additional design detail is required confirming the use of bollards or other appropriate barrier which will prevents vehicles blocking the buildings exits. An assessment shows that a barrier will be required to the following area*

D1.10

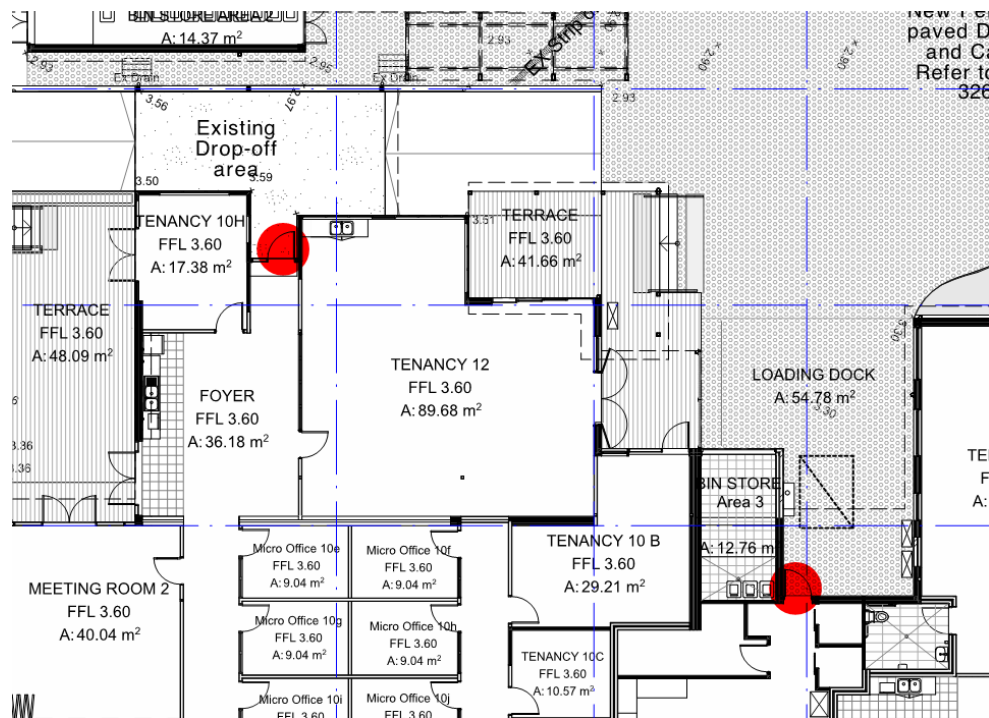


Figure D1.10- Bollards or other suitable barrier to prevent vehicles from blocking exits

D2.7

## Installations in Exits and Paths of Travel

- (a) Gas or other fuel services shall not be installed within the required exits; and
- (b) 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.

*Design Certification – Design certification and specifications to be provided from a qualified electrical engineer at construction certification stage.*

D2.13

## Going and Risers

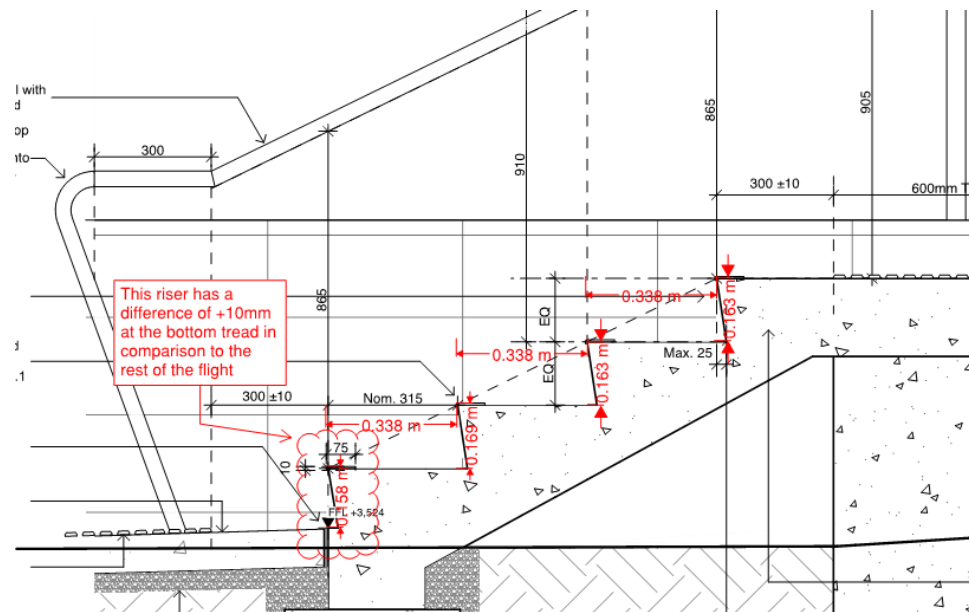
The going, riser and steepness dimension of the stairways are required to be designed within the following range:

Stairway location	Riser (R)	Going (G)	Quantity (2R + G)
Public	Max: 190mm Min: 115mm	Max: 355mm Min: 250mm	Max: 700mm Min: 550mm

- (a) 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
- (b) 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 (amendment 1).

*Does not comply – An assessment stairway section (04) shows that the bottom riser of the stairway has a difference of more than 10mm. Update design detail is required demonstrating compliance.*

## D2.13 Cont'd



**Figure D2.13 – Inconsistent Risers (Stair Details)**

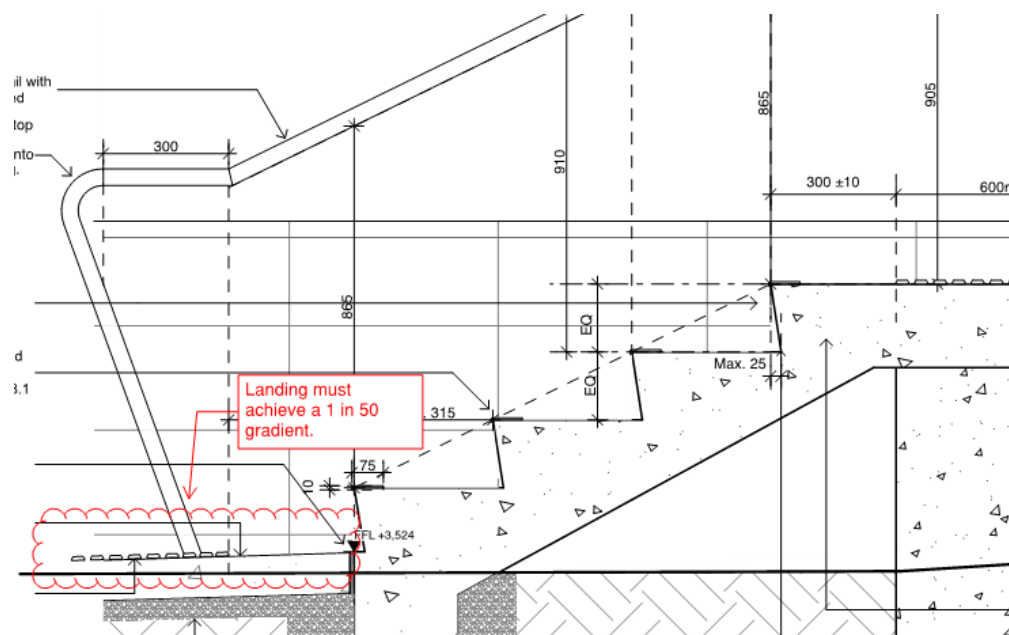
*Design Detail – Further design detail of all stairways to be provided to Design Confidence for further assessment. Concerns are raised where concrete stairways are reliant on timber decking as top treads / landings*

## D2.14 Landings

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 (amendment 1).

*Design Detail – An assessment stairway section (04) shows that the bottom landing appears to have a gradient steeper than 1 in 50. Updated details are required demonstrating compliance*



**Figure D2.14 – Sloped Stair Landing (Stair Details)**

*Design Certification – Design certification and material specifications (which demonstrates the required slip rating) to be provided at construction certification stage.*

#### D2.15 **Thresholds**

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:

- (a) In a building required to be accessible, is provided with a threshold or step ramp in accordance with AS1428.1-2009; or
- (b) In all other cases, the door sill is not more than 190mm above the finished surface of the ground.

*Complies – An assessment of the building RL's shows that there are no steps / ramps located at any doorways.*

#### D2.16 **Barriers to Prevent Falls**

Balustrades are required to be constructed as follows:

- (a) To a height not less than 865mm above the nosings of the stair treads or the floor of a ramp;
- (b) 1000mm above the floor of any access path, balcony, landing or the like;
- (c) Any opening does not permit a 125mm sphere to pass through it and for stairs, the space is measured above the nosings;

*Design Detail – Further details are required showing that all areas above 1m (when measured from the ground below) are provided with a 1m barrier with gaps less than 125mm.*

#### D2.17 **Handrails**

Handrails are required along one (1) side of each stairway flight and ramp, unless required to assist people with a disability.

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 **Doorways and doors**

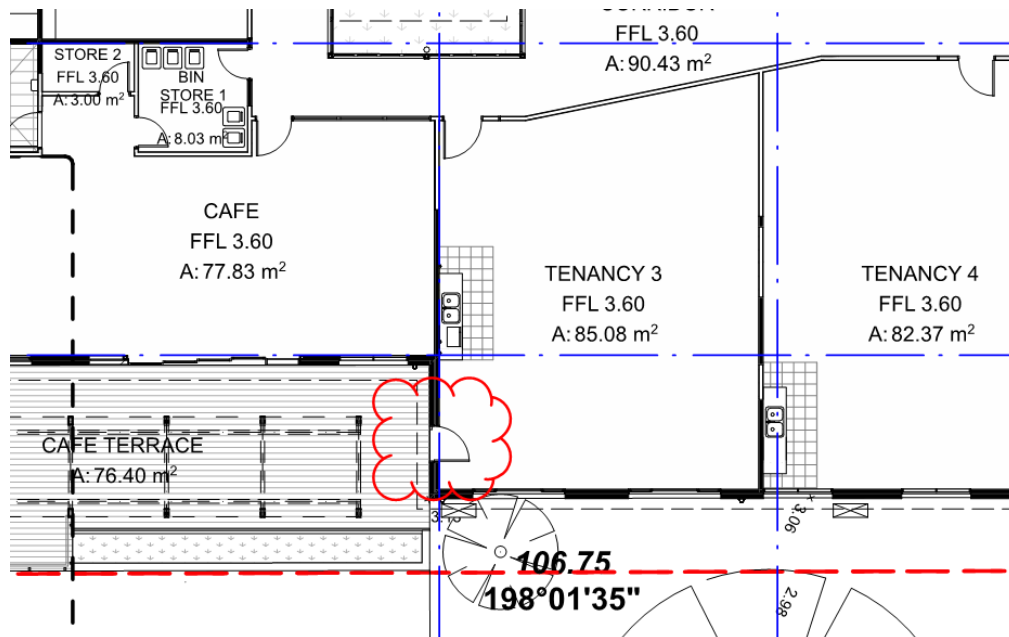
Additional Information Required - A doorway serving as a required exit If fitted with a door which is power-operated must comply with the following –

- (a) It must 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
- (b) 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 Swinging Doorways

Doors forming part of a required exit are required to swing in the direction of egress from all areas.

*Design Detail - Generally external doors nominated as exits are shown as swinging in the direction of egress. However, it has been identified that tenancy 3 external doorway is serving as a required exit and therefore must swing in the direction of egress.*



**Figure D.20** – Tenancy 3 doorway serving as a required exit and must swing in the direction of egress

## D2.21 Operation of Latch

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;
  - (a) Be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and
  - (b) 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
  - (c) A single hand pushing action on a single device which is located between 900mm and 1.2m above the floor.
- (ii) Where the latch operation device referred to above is not located on the door leaf itself –
  - (a) Manual controls to power-operated doors must be at least 25mm wide, proud of the surrounding surface and located
  - (b) Not less than 500mm from an internal corner; and



- (c) For a hinged door, between 1m and 2m from the door leaf in any position; and
- (d) For a sliding door, within 2m of the doorway and clear of a surface mounted door in the open position
- (e) Braille and tactile signage complying with Clause 2 and 6 of Specification D3.6 must identify the latch operation.

Fitted with a fail-safe device which automatically unlocks the door upon the activation of any sprinkler system or detection system deemed suitable in accordance with AS1670.1-2018 installed throughout the building.

*Design Certification – Design certification and material specifications to be provided at construction certification stage.*

*Complies - The above requirements do not apply within the Class 9b portion as it is has been assessed there will be more than 100 occupants. In this case doors must be readily openable –*

- (i) Without a key from the side that faces a person seeking egress; and
- (ii) By a single hand pushing action on a single device such as a panic bar located between 900mm and 1.2m from the floor; and
- (iii) Where a two-leaf door is fitted, the provisions of (i) and (ii) need only apply to one door leaf if appropriate requirements of D1.6 are satisfied by the opening of that one leaf.

## 4.5 Section E – Services & Equipment

### E1.3 Fire Hydrants

A fire hydrant must be provided to serve a building having a total floor area greater than 500m<sup>2</sup> and where a fire brigade station is not more than 50km from the building (and equipped with equipment capable of utilising a fire hydrant). The fire hydrant system must be installed in accordance with AS2419.1-2005,

*Note - An assessment of the proposed development shows that the total floor area of the proposed development exceeds 500m<sup>2</sup> and is within 50km of the nearest FRNSW station. It is understood that the nearest Fire Station will have suitable pumping appliances for utilising on-site fire hydrants.*

*Design Certification - A hydrant system must be installed throughout the development in accordance with the requirements of this BCA clause and AS2419.1-2005. As the project progresses into construction certification stage, design certification / documentation is to be provided from the projects hydraulic engineer*

### E1.4 Fire hose reels

A hose reel system complying with AS2441-2005 is required to serve the building, including:

- (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.

*Design Certification - Except for class 5 areas, fire hose reel protection in accordance with AS2441 – 2005 must be provided to all areas of the development,*

#### **E1.6 Portable Fire Extinguishers**

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.

Portable fire extinguishers complying with AS2444-2001 are required as follows:

- (i) To cover Class B (if more than 50L excluding vehicle fuel tanks is stored); and
- (ii) To cover Class AE or E fire risks associated with emergency service switchboards; and
- (iii) To cover Class F fire risks involving cooking oils and fats in kitchens.

*Design Certification - As the project progresses into construction certification stage, design documentation prepared by the projects hydraulic engineer demonstrating portable fire extinguisher coverage.*

#### **E2.2 (NSW)**

#### **Smoke Hazard Management**

Clause E2.2 outlines the provisions required for smoke hazard management system when an assembly has a floor area exceeding 2,000m<sup>2</sup>.

It should be noted that the building has been considered as a single fire compartment having a combined floor area of 2,153m<sup>2</sup>. A fire compartment having a floor area between 2000m<sup>2</sup> – 5000m<sup>2</sup> and having a rise in storey of not more than 2 (two). Thereby, requiring the installation of an automatic smoke detection and alarm system, or sprinkler system to be installed throughout.

Where any ducted air handling system is provided that does not form part of the smoke hazard management and has a capacity greater than 1000L/s, the system must be provided with automatic shutdown. The automatic shutdown must be activated by smoke detectors complying with Clause 6 of Specification E2.2a, and any other installed fire detection and alarm system, including a sprinkler system complying with Specification E1.5.

With respect to the above DtS compliance departure, the following resolutions are available;

#### Compliance with E2.2 (Option 1)

- (i) Provide a smoke detection and alarm system throughout complying with specification E2.2a; or
- (ii) Provide a sprinkler system (other than a FPAA101D or FPAA101H system complying with specifications E1.5.

#### Fire Wall (Option 2)

- (i) Provide confirmation that the existing building is separated into different fire compartments (with no compartment greater than 2,000 m<sup>2</sup>; and
- (ii) Further details/ drawings from the structural engineer confirming that the fire compartments are separated via a 90/90/90 fire wall in accordance with C2.7 above
- (iii) All openings within the fire wall/s and all opposing external walls are protected in accordance with C3.3, C3.4 and C3.5 above.

#### **E4.2 Emergency Lighting**

Emergency lighting complying with AS2293.1-2018 is required to be installed throughout.

*Design Certification - As the project progresses into construction certification stage, design documentation prepared by the projects electrical demonstrating compliance with the requirements of this BCA clause to be provided.*

#### **E4.5 Exit Signs**

Exit signage complying with AS2293.1-2018 are required installed above or adjacent to any doorways serving as required exits from the building and final doors from stairways.

*Design Certification - As the project progresses into construction certification stage, design documentation prepared by the projects electrical demonstrating compliance with the requirements of this BCA clause to be provided.*

#### **E4.6 Direction Signs**

If an exit is not readily apparent to persons occupying or visiting either the building, then exit signs complying with AS2293.1-2018 are required to be installed in appropriate positions in corridors, hallways, lobbies and the like, indicating the direction to a required exit.

*Design Certification - As the project progresses into construction certification stage, design documentation prepared by the projects electrical demonstrating compliance with the requirements of this BCA clause to be provided.*

### 4.6 Section F – Health & Amenity

#### **F1.0 Weatherproofing**

Weatherproofing of external wall(s) are required to comply with Verification Method FV1 (i.e. certificate of conformity). There are no Deemed-to-Satisfy Provisions for this Performance Requirement in respect of external walls.

*Performance Solution - As the project progresses into construction certification stage, a performance solution addressing performance requirements FP1.4 and FV1 is required for the weatherproofing of external walls and roof (including openings).*

#### **F1.1 Stormwater drainage**

Stormwater drainage must comply with AS/NZS3500.3-2018.

	<p><i>Design Certification - As the project progresses into construction certification stage, design documentation prepared by the project's stormwater / civil engineer demonstrating compliance with the requirements of this BCA clause to be provided.</i></p>
<b>F1.5</b>	<p><b>Roof Coverings</b></p> <p>Metal roof sheeting must comply with AS1562.1-2018.</p> <p><i>Design Certification - As the project progresses into construction certification stage, design documentation prepared by the project's stormwater / civil engineer demonstrating compliance with the requirements of this BCA clause to be provided.</i></p>
<b>F1.6</b>	<p><b>Sarking</b></p> <p>Any sarking-type materials used for weatherproofing of roofs and walls are required to comply with AS/NZS4200.1-2017 and AS4200.2- 2017 incorporating amendment 1.</p> <p><i>Design Certification - As the project progresses into construction certification stage, design documentation prepared by the project's waterproofing consultant demonstrating compliance with the requirements of this BCA clause to be provided.</i></p>
<b>F1.7</b>	<p><b>Waterproofing of Wet-Areas</b></p> <p>Building elements in wet areas must be water-resistant or waterproof in accordance with Table F1.7 and comply AS 3740-2010.</p> <p><i>Design Certification - As the project progresses into construction certification stage, design documentation prepared by the project's waterproofing consultant demonstrating compliance with the requirements of this BCA clause to be provided.</i></p>
<b>F1.9</b>	<p><b>Damp-proofing</b></p> <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> <p><i>Design Certification - As the project progresses into construction certification stage, design documentation prepared by the project's waterproofing consultant demonstrating compliance with the requirements of this BCA clause to be provided.</i></p>
<b>F1.10</b>	<p><b>Damp-proofing of floor on the ground</b></p> <p>A floor laid directly onto ground or fill must be provided with a vapour barrier complying with AS2870-2011.</p> <p><i>Design Certification - As the project progresses into construction certification stage, design documentation prepared by the project's waterproofing consultant demonstrating compliance with the requirements of this BCA clause to be provided.</i></p>
<b>F1.13</b>	<p><b>Floor Waste</b></p> <p>The glazed assemblies in an external wall must comply with AS2047-2014 (amendments 1 and 2) for resistance to water penetration.</p>

*Design Certification - As the project progresses into construction certification stage, design documentation prepared by the project's waterproofing consultant demonstrating compliance with the requirements of this BCA clause to be provided.*

### F2.3 Sanitary Facilities

*Complies - the remainder of the building will be provided achieved sufficient number of sanitary facilities – Refer to table F2.3 below. It is noted that sanitary facilities will be provide as part of the fit out works to the educational space*

**Table F2.3 – Required Sanitary Facilities Calculation**

Location	Occupant Numbers			WC Required/ Provided		Urinal Required/ Provided		Basin Required/ Provided	
	Total	Use	#						
Educational Facility (Class 9b)	923	Male	462	3	TBC	8	TBC	4	TBC
		Female	462	7	TBC	N/A		4	TBC
		Unisex Accessible	-	0	TBC	N/A		0	TBC
Office & Ancillary (Excluding Café)	96	Male	48	3	3	2	3	2	3
		Female	48	4	4	N/A		2	3
		Unisex Accessible	-	1	1	N/A		1	1

### F2.5 Construction of sanitary compartments

Notwithstanding the above, the door to a full enclosed sanitary compartment is required to:

- (i) Open outwards;
- (ii) Slide; or
- (iii) Be readily removable from the outside of the sanitary compartment (i.e. lift-off hinges).

Unless there is a clear space of at least 1.2m between the closest pan within the sanitary compartment and the hinge side edge of the doorway.

*Design Certification - As the project progresses into construction certification stage, design documentation prepared by the project's architect demonstrating compliance with the requirements of this BCA clause to be provided.*

### F3.1 Heights of rooms and other spaces

Unobstructed ceiling heights are required as follows:

- (i) A bathroom, sanitary facilities, tea preparation room, store-room, car parking areas or the like – 2.1m;
- (ii) A commercial kitchen – 2.4m;
- (iii) A corridor, passageway or the like – 2.1m; and
- (iv) Above a stairway, ramp, landing or the like – 2m;
- (v) Except as allowed above – 2.4m.

*Complies - An assessment shows that compliant ceiling heights are achieved throughout.*

#### F4.4 **Artificial lighting**

Where compliant natural lighting is not provided to sanitary compartments, bathrooms, laundries, stairways and the like, artificial lighting complying with AS/NZS1680.0-2009 is required.

*Design Certification - As the project progresses into construction certification stage, design documentation prepared by the projects electrical demonstrating compliance with the requirements of this BCA clause to be provided.*

#### 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 (i.e. opening(s) having an openable area of 5% of the room being served) complying with F4.6; or
- (ii) Mechanical ventilation complying with AS1668.2-2012 (amendment 2).

*As the project progresses into construction certification stage, design documentation prepared by the project's mechanical demonstrating compliance with the requirements of this BCA clause to be provided.*

*Design Certification -As the project progresses into construction certification stage, design documentation prepared by the projects mechanical demonstrating compliance with the requirements of this BCA clause.*

#### F4.8 **Restriction of position of water closets and urinals**

*Complies - An assessment of the building shows that there are no sanitary opening directly into a non-permitted room for the purpose of sufficient ventilation, thereby complying with the requirements of this clause*



## 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



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

Verified By



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

## APPENDIX 1

The BCA Design Assessment was based upon the architectural documentation prepared by BKA Architects, namely:

DRAWING	REV	TITLE	DATE
A000	04	Cover Page	25.01.2023
A001	04	Performance Specification	25.01.2023
A003	04	Site Plan / External Works	25.01.2023
A100	03	External Demolition Plan	25.01.2023
A101	05	Detailed Demolition Plan	25.01.2023
A120	07	Ground Floor Plan	25.01.2023
A121	04	Roof Plan	25.01.2023
A130	08	Ground Floor Plan – Building A+B	25.01.2023
A131	08	Roof Plan – Building A+B	25.01.2023
A150	03	Floor Finishes – Building A+B	25.01.2023
A160	07	Plans – Building C (Tenancy 11)	25.01.2023
A161	03	Elevations & Sections Building C (Tenancy 11)	25.01.2023
A200	04	Overall Elevations	25.01.2023
A201	03	Elevations	25.01.2023
A300	04	Overall Sections	25.01.2023
A301	04	Overall Sections	25.01.2023
A650	05	Wet Areas 01	25.01.2023
A651	05	Wet Areas 02	25.01.2023
A670	04	Ramp Details	25.01.2023
A671	04	Stair and Handrail Details	25.01.2023
A700	04	Statutory Signage Plan 01	25.01.2023
A701	04	Statutory Signage Plan 02	25.01.2023
A702	04	Signage – Typical Set Outs	25.01.2023
A703	04	Statutory Signage Details	25.01.2023
A800	06	Door Schedule	25.01.2023
A801	04	Window Schedule	25.01.2023

## APPENDIX 2

The Table below represents the Fire Resistance Levels (FRLs) required in accordance with BCA 2019:

### TYPE C CONSTRUCTION: FRL OF BUILDING ELEMENTS

Building element	Class of building—FRL: (in minutes)			
	2/Integrity/Insulation			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
<b>EXTERNAL WALL</b> (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—				
Less than 1.5 m	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
1.5 to less than 3 m	—/—/—	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
3 m or more	—/—/—	—/—/—	—/—/—	—/—/—
<b>EXTERNAL COLUMN</b> not incorporated in an <i>external wall</i> , where the distance from any <i>fire-source feature</i> to which it is exposed is—				
Less than 1.5 m	90/—/—	90/—/—	90/—/—	90/—/—
1.5 to less than 3 m	—/—/—	60/—/—	60/—/—	60/—/—
3 m or more	—/—/—	—/—/—	—/—/—	—/—/—
<b>COMMON WALLS and FIRE WALLS—</b>	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
<b>INTERNAL WALLS-</b>				
Bounding <i>public corridors</i> , public lobbies and the like—	60 / 60/ 60	—/—/—	—/—/—	—/—/—
Between or bounding <i>sole-occupancy units</i> —	60/ 60/ 60	—/—/—	—/—/—	—/—/—
Bounding a stair if <i>required</i> to be rated—	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
<b>ROOFS</b>	—/—/—	—/—/—	—/—/—	—/—/—

## APPENDIX 3

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"> <li>a smoke growth rate index not more than 100; or</li> <li>an average specific extinction area less than 250m<sup>2</sup>/kg</li> </ul>
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)

**Design Confidence (Sydney) Pty Limited**

Shop 2, 35 Buckingham Street, Surry Hills NSW 2010  
ABN: 72 896 582 485

T: 2 8399 3707  
E: [sydney@designconfidence.com](mailto:sydney@designconfidence.com)  
W: [www.designconfidence.com](http://www.designconfidence.com)

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