DESIGN CONFIDENCE

Byron Bay Council c/o BKA Architecture

BCA Design Assessment Report

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

CONTENTS

Project: Byron Bay Community Hub
Document Type: BCA Design Assessment Report
Report Number: P221_011-1 (BCA) JR

The following report register documents the development and issue of this and each subsequent report(s) undertaken by Design Confidence (Sydney) Pty Ltd.

Revision History:

OUR REFERENCE	REMARKS	ISSUE DATE
P221_011-1 (BCA) JR	Draft report issued (for comment and review)	18 June 2021

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	RESPONSIBILTY
1.	Architectural drawings are to be updated to include the following essential fire safety measures – i. If required, fire brigade booster assembly (Clause E1.3) ii. Fire Hose reel enclosures / cabinets serving the class 9b parts (Clause E1.4)	Project Architect / Hydraulic Engineer
2.	Further information is required on the proposed number of occupants. Based off our assessment under clause D1.13 of the BCA population numbers affect the following – i. Egress width (Clause D1.6), ii. Sanitary facilities (Clause F2.3). Hence, written clarification from the client is required to confirm population numbers as real numbers may be significantly lower. Alternatively, compliance can be achieved either by a slight change in the proposed design configuration.	Owner / Project Architect
3.	Further information is required from the landscaping / project architect confirming if there are additional exits and discharge paths from educational tenancy 1 available to the nearby streets and laneway (Clause D1.4, D1.6 & D1.10)	Landscaping / Project Architect
4.	The lobby desk is proposed to have a pinch point that is less than the permitted 1m egress width, being 900mm (Clause D1.6), plans are to be amended to ensure 1m free egress is achieved, alternatively if 900mm is required due to security, there is potential to address deficiency via a BCA performance solution.	Project Architect
5.	The fire compartment size which comprises of an education facility exceeds 2,000m2 which prompts the need for either a smoke hazard management system or sprinkler system. (Clause E2.2). If this is not proposed an alternative may be to fire separate building into two fire compartments.	Project Architect
6.	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 (Clause F1.1)	Project Architect / Façade Engineer

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

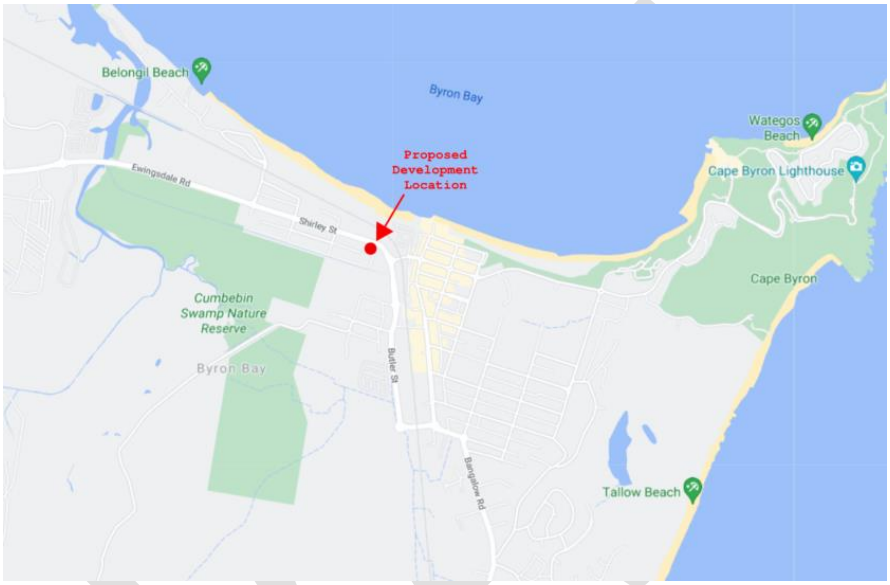

Figure 1 – Locational context

The site is irregular in shape and comprises of a single allotment of land with an area of 5,307m^2 and where the development will occur, a total floor area of ~2,153m^2. 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 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.

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:

(i) The proposed kitchen is considered as private use and is ancillary the business parts of the building; and

(ii) 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

(iii) All areas of the building have been treated as a part of the same tenancy and will have access to the sanitary facilities; and

(iv) The carparking bays on Wordsworth Street is considered as a road for the purpose of this BCA assessment; and

(v) Tenancy 10 comprising of 10a, 10b, 10 c, 10D, 10E, 10F, 10G, 10H, 10J considered a single tenancy.

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
PART B1 – STRUCTURAL PROVISIONS				
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
PART C1 – FIRE RESISTING CONSTRUCTION				
C1.1	Fire resisting construction			✓
C1.8	Structural tests for lightweight construction			✓
C1.10	Fire hazard properties			✓
PART C2 – COMPARTMENTATION & SEPERATION				
C2.2	General floor area and volume limitations	✓		
C2.12	Separation of equipment			✓
C2.13	Electricity supply system			✓
PART C3 – PROTECTION OF OPENINGS				
C3.2	Protection of openings in external walls	✓		
C3.4	Acceptable methods of protection			✓
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
PART D1 – PROVSIONS FOR ESCAPE				
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			✓
D1.12	Non-required stairways, ramps or escalators			✓
D1.13	Number of persons accommodated			✓
PART D2 – CONSTRUCTION OF EXITS				
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
PART E1 – FIRE FIGHTING EQUIPMENT				
E1.3	Fire hydrants			✓
E1.4	Fire hose reels			✓
E1.6	Portable fire extinguishers			✓
PART E2 – SMOKE HAZARD MANAGEMENT				
E2.2	General provisions			✓
PART E4 – VISABILITY IN AN EMERGENCY, EXIT SIGNS & WARNING SYSTEMS				
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
PART F1 – DAMP & WEATHERPROOFING				
F1.0	Weatherproofing of external walls			✓
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			✓
F1.13	Glazed assemblies			✓
PART F2 – SANITARY & OTHER FACILITIES				
F2.3	Facilities in class 3 to 9 buildings		✓	
F2.5	Construction of sanitary compartments			✓
PART F3 – ROOM HEIGHTS				
F3.1	Heights of rooms and other spaces			✓
PART F4 – LIGHT & VENTILATION				
F4.1	Provision of natural light			✓
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 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.

B1.2 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).

B1.4 The structural resistance of materials and forms of construction shall be determined in accordance with the following:

i. Masonry - AS3700-2018

ii. Concrete construction - AS3600-2018

iii. Footings and slabs – AS2870-2011

iv. Steel construction - AS4100-1998 or AS/NZS 4600-2005

v. Termite Risk Management - AS3660.1-2014

vi. Piling - AS2159-2009

vii. Glazed assemblies - AS2047-2014-amendments 1 & 2 (external), and/or AS1288-2006 (internal)

4.3 Section C – Fire Resistance

C1.1 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. – Refer

It should be notes that part of the development is located within 3m from the side boundary (fire source feature). Hence fire rating to the structure is required to comply with the FRL requirements contained within **Appendix A2** below

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

C1.1 Cont'd

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

(a) 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.

Type C Fire Resisting Construction

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

ii. External walls need only achieve an FRL from the outside; and

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

C1.8

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.

C1.10

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

C2.2

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

Table C2.2 – Fire compartment limitation

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

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 meet.

C2.12

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

(i) Emergency generators used to sustain emergency equipment operating in the emergency mode; or

(ii) Central smoke control plant; or

(iii) Boilers; or

(iv) 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.

C2.13	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. (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.
C3.2	Openings in external walls that require an FRL within 3m of the bloundary require protection in accordance with C3.4. 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	Where protection is required, doorways, windows and other openings must be protected as follows: (i) External wall-wetting sprinklers used with windows that are automatically closing or permanently fixed in the closed position; or (ii) Fire windows having an FRL -/60/- that are automatically closing or permanently fixed in the closed position; or (iii) External wall-wetting sprinklers used with doors that are self-closing or automatic closing; or (iv) Self-closing fire door having an FRL of --/60/30; or (v) Fire shutter achieving an FRL of --/60/--; Alternatively pursue a BCA Performance Solution report justifying the subject design complies with the relevant Performance Requirements of the BCA.
C3.15	Any openings for service installations (electrical, mechanical, plumbing, etc.) that penetrates a building element which is required to be of fire resisting construction is required to be protected (i.e. fire seals).
C3.16	Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation are required to be protected in a manner identical with a prototype tested in accordance with AS1530.4-2014 to achieve the required FRL.

C3.17	Where a column is protected by lightweight construction to achieve the required FRL defined by C1.1 passes through a building element that is also required to have an FRL it is required to be installed using a method and materials identical with the prototype assembly of the construction which has achieved the required FRL.

4.4 Section D – Access and Egress

D1.2	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.
D1.4	Travel distances are required to comply with the following DtS provisions: • 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 • 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 Travel distances have been assessed as capable of complying with the above provisions, however to facilitate compliant distances to road/ open space from Tenancy 1 confirmation is required that egress to the nearby streets/ laneway can be achieved through the landscape.

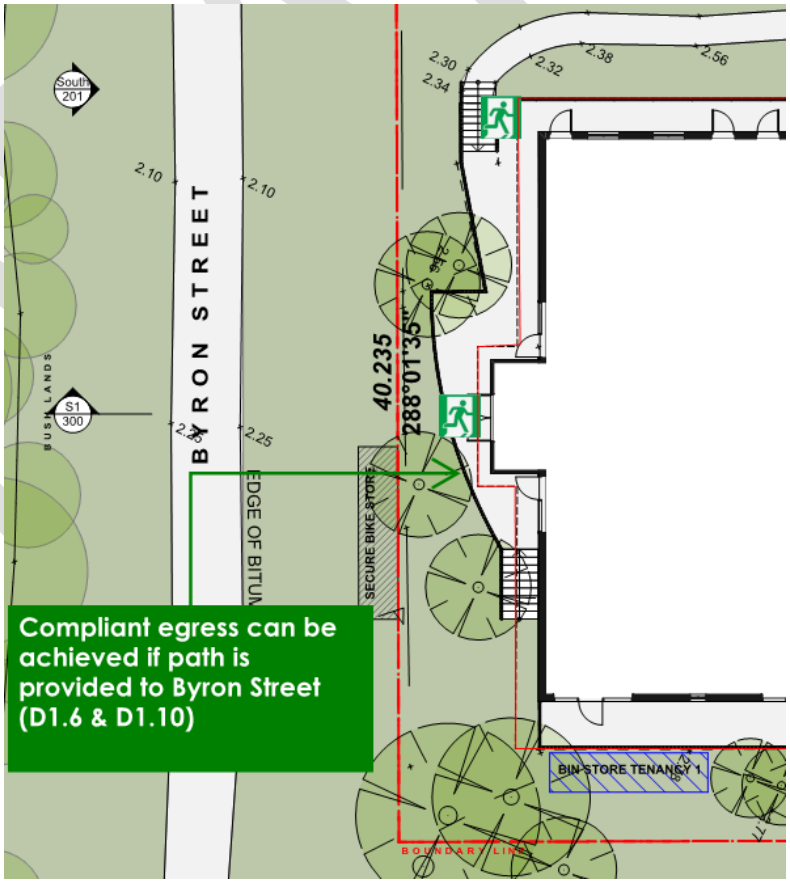

Figure 1 Recommended discharge to Byron Street

D1.5 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 The proposed number of occupants to utilise the proposed spaces have not been provided to Design Confidence for consideration. In providing these details a thorough assessment can be undertaken to determine the number of sanitary facilities required as well as the required egress width from each portion of the building.

Notwithstanding, the occupant load of tenancy 1 is approximately 923 occupants when calculated in accordance with clause D1.13. When a storey accommodates more 923 people an aggregate unobstructed width of 7m must be available. Currently, only an unobstructed width of 3m has been provided from this area.

It should be noted that tenancy's 3, 4, 5, 6, 7, 8, 10 and the cafe areas have dedicated exits which provides direct egress from their respected sole occupancy units, which complies with the requirements of this clause. Whereas educational tenancy 1 is not permitted to pass through other sole occupancy units

Table 2 below shows the assessment of the proposed occupant load when calculated in accordance with D1.13

Table D1.6 – Egress Population Assessment

Location		Number of Occupants	Egress Width
Whole Development	Educational Part @ 3m available	Tenancy 1 @ 923 People	**Does Not Complies (7m is required)**
	Business Parts @ 1m or 2m available	Café @ 98 People	**Complies**
		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	

In addition to the above, the lobby desk appears to have a pinch point that is less than the permitted 1m egress width, being 900mm. Compliance is readily achievable with a slight re-design of the proposed configuration.

To address tenancy 1 egress non-compliance, the following options are available for resolution.

i. Provide written correspondence confirming the maximum proposed population of the educational tenancy 1 is no greater than 500 occupants: or

D1.6 *Cont'd*

ii. Re-configure the proposed design and provide an additional 4m exit and a discharge path to the road in accordance with D1:10 or ; or

iii. Seek are fire engineered performance solution to justify reduced egress width from tenancy 1

Notwithstanding, 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).

D1.10

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).

D2.7

(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:

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

(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 (amendment 1).

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 (amendment 1).

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 Balustrades are required to be constructed as follows:

(i) To a height not less than 865mm above the nosings 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;

D2.17 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 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 A doorway serving as a required exit or forming part of a required exit –

(i) Must not be fitted with a revolving door;

(ii) Must not be fitted with a roller shutter or tilt-up door unless –

a) It serves the Class 6 part with a floor area not more than 200m^2; and

b) The doorway is the only required exit from the building or part; and

c) It is held in the open position while the building part is lawfully occupied; and

(iii) Must not be fitted with a sliding door unless –

a) It leads directly to a road or open space; and

b) The door is able to be opened manually under a force of not more than 110N; and

(iv) If fitted with a door which is power-operated –

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 Doors forming part of a required exit are required to swing in the direction of egress from all areas. Generally external doors nominated as exits are shown as swinging in the direction of egress.

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;

D2.21
Cont'd

(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.

The above requirements do not apply within the Calss 9b portion as it is has been assessed there will be more than 100 occupants. In this case doors mnust 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

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 the fire hydrant outlet;

(ii) Additional hydrants can be installed in appropriate locations, where additional coverage is required;

(iii) The fire brigade booster assembly is required to be at the boundary of the site, be within sight of the main entrance of the building, adjacent to the principal vehicular access to the site and be located 10m from the external of any building served or within the external wall of the building (if not sprinkler protected); and

(iv) In a non-sprinkler protected building, the fire brigade booster assembly if located within the external wall of the building is required to be separated from building by construction having an FRL of 90/90/90 for a distance of not less than 2m each side of and 3m above the upper hose connections in the booster assembly.

Hydraulic consultant to advise of system requirements and confirm compliance.

E1.4

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.

Hydraulic consultant to advise of system requirements and confirm compliance

Please note that the proposed hose reels are not required in the class 5 parts

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.

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.

E2.2 (NSW)	Clause E2.2 outlines the provisions required for smoke hazard management system when an assembly has a floor area exceeding 2,000m^2. It should be noted that the building has been considered as a single fire compartment having a combined floor area of 2,153m^2. A fire compartment having a floor area between 2000m^2 – 5000m^2 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^2; 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.
E3.1	The electric passenger lift installation or an electrohydraulic passenger lift installation are required to comply with Specification E3.1.
E3.3	Warning signage shall be displayed near every call button for the passenger lifts.
E3.5	The circulation space at the lift well landings is noted as achieving a circulation space of 1.5m x 1.5m. Hence meeting the requirements of this BCA clause.
E4.2	Emergency lighting complying with AS2293.1-2018 is required to be installed throughout.
E4.5	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.
E4.6	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.

4.6 Section F – Health & Amenity

F1.0 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..

F1.1 Stormwater drainage must comply with AS/NZS3500.3-2018.

F1.4 Waterproofing membranes for external above ground use (i.e. balconies and roof) are required to comply with AS4654-2012.

F1.5 Metal roof sheeting must comply with AS1562.1-2018.

F1.6 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.

F1.7 Building elements in wet areas must be water-resistant or waterproof in accordance with Table F1.7 and comply AS 3740-2010.

F1.9 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.

F1.10 A floor laid directly onto ground or fill must be provided with a vapour barrier complying with AS2870-2011.

F1.13 The glazed assemblies in an external wall must comply with AS2047-2014 (amendments 1 and 2) for resistance to water penetration.

F2.3 The proposed number of occupants to utilise the proposed spaces have not been provided to Design Confidence for consideration. In providing these details a thorough assessment can be undertaken to determine the number of sanitary facilities required as well as the required egress width from each portion of the building.

Notwithstanding, based off the proposed population when calculated in accordance with D1.13, this development will not provide the required sanitary facilities – Refer to table F2.3 below.

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	3	8	4*	4	3
		Female	462	7	5*	N/A		4	3
		Unisex Accessible	-	1	1	N/A		1	1
Office & Ancillary (Class 5)	215	Male	108	6	0	4	0	4	0
		Female	108	8	0	N/A		4	0
		Unisex Accessible	-	0	0	N/A		-	-
TOTAL		**Male**	**-**	**9**	**3**	**12**	**4***	**8**	**3**
		Female	**-**	**15**	**5***	**N/A**		**8**	**3**
		Unisex Accessible	**-**	**1**	**1**	**N/A**		**1**	**1**

Notes:

F2.3 *Cont'd*

1. *Excludes indoor sport courts centre*
2. *A common unisex accessible facility may be counted once for both male and female facilities in accordance with Clause F2.2(c) of the BCA**
3. *Staff and patrons are permitted to share the same facilities in accordance with Clause F2.3(d) of the BCA;*
4. *A WC is able to be used in place of a urinal.*

To address the above non-compliance, the following options are available for resolution:

(i) Re-configure the proposed layout so that an additional WC is available for female occupants; or

(ii) Provide confirmation that the development will have a proposed population less than 500 occupants.

F2.5

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.

F3.1

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.

F4.1

Natural light must be provided to all habitable rooms.

Methods of providing natural right 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

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 sanitary compartments, bathrooms, laundries, stairways and the like, artificial lighting complying with AS/NZS1680.0-2009 is required.
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).

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 1

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

DRAWING NUMBER	DESCRIPTION	REVISION	DATE
002	Demolition Plan	B-WIP	07/06/2021
100	Proposed DA	B-WIP	07/06/2021
101	Proposed Roof Plan	B-WIP	07/06/2021
200	Elevations	B-WIP	07/06/2021
210	Elevations 1	B-WIP	07/06/2021
211	Elevations 1	B-WIP	07/06/2021
300	Section	B-WIP	07/06/2021

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
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—				
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	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN not incorporated in an *external wall*, where the distance from any *fire-source feature* 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	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS—	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
INTERNAL WALLS-				
Bounding *public corridors*, public lobbies and the like—	60 / 60/ 60	–/–/–	–/–/–	–/–/–
Between or bounding *sole-occupancy units*—	60/ 60/ 60	–/–/–	–/–/–	–/–/–
Bounding a stair if *required* to be rated—	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
ROOFS	–/–/–	–/–/–	–/–/–	–/–/–

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	In addition to achieving the group number above they too must comply with the following – ▪ 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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