RACING NSW

BCA ASSESSMENT REPORT

Muswellbrook Race Club Function Centre

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Jensen Hughes Australia

Providing building regulations, fire engineering, accessibility, and energy consulting services to NSW for over 25 years

Our story begins in 1997 with the founding of BCA Logic to fulfill the demand of a consultancy company whose expertise expanded across the entire life cycle of a building, from consulting on the initial planning through to construction and occupation.

BCA Logic, SGA Fire and BCA Energy joined Jensen Hughes in 2021, a leading global, multi-disciplinary engineering, consulting and technology firm focused on safety, security and resiliency. We continue to be at the forefront of our industry and work thoroughly to preserve our position by ensuring the successful delivery of projects.

Jensen Hughes was launched in 2014 through the historic merger of Hughes Associates and Rolf Jensen & Associates (RJA), two of the most experienced and respected fire protection engineering companies at the time. Since then, we have gained market leadership in nuclear risk consulting and established commanding positions in areas like forensic engineering, security risk consulting and emergency management. Over the past 22 years, our integration of more than 30 privately held engineering and consulting firms has dramatically expanded our global footprint, giving us a powerful market presence ten times larger than our nearest competitor in some of our markets and extending our historical lineage back to 1939.

With more than 90 offices and 1500 employees worldwide supporting clients globally across all markets, we utilise our geographic reach to help better serve the needs of our local, regional, and multinational clients. In every market, our teams are deeply entrenched in local communities, which is important to establishing trust and delivering on our promises.

Table of Contents

Executive summary

This document provides an assessment of the architectural design drawings for the proposed function centre development at Muswellbrook Race Club Function Centre, against the Deemed-to-Satisfy provisions of the Building Code of Australia (BCA) 2022.

Part 4 of this report outlines the identified BCA compliance issues that require further information or consideration and/or assessment as Performance Solutions.

Any Performance Solution will need to be detailed in a separate report and must clearly indicate methodologies for achieving compliance with the relevant BCA Performance Requirements.

Item	Description	BCA Provision
Performance Solutions required		
1.	To reduce the 7b FRL's down from 240 minutes to align with the surrounding parts of the Ground Floor.	Clause C2D2 Specification 5
2.	To demonstrate that the construction of external walls is such that they will prevent the penetration of water that could cause unhealthy or dangerous conditions or loss of amenity to occupants and undue dampness or deterioration of building elements.	F3D5
Building Code of Australia compliance matters to be addressed		
1.	Suitable vertical and/or horizontal spandrel separation between the openings in the external walls on different storeys	C3D7
2.	Swinging doors provided for egress are required to swing in the direction of egress.	D3D25
3.	Ceiling heights beneath non-fire isolated stairways are to be provided with barriers.	F5D2
4.	Accessible sanitary facility directly opens into the Proposed Open Undercroft, an airlock is required to be provided.	F6D9

NCC Clause Numbering

BCA2022 uses a new structure and clause referencing system to create better consistency across all volumes of the NCC. While the new Section-Part-Type-Clause system makes the NCC look different at first, it's intended to improve user experience and make it more web accessible.

The new structure results in a reorganisation of specifications and parts, some of which are contained in the table below.

The NCC uses a uniform clause numbering system across each of its three volumes. This system is called Section-Part-Type-Clause (SPTC). In each clause number-

+ The first letter indicates which NCC section or prat it sits within;
+ The first number indicates the number of the Part within a section or the number of a Specification.
+ The second letter indicates the clause type. It will be either G, O, F, P, V, D, or C. and these are explained below.

- The second number is the clause number within each Part of Specification.
- The clause Types used in the NCC are as follows:
- G = Governing requirements (mandatory)
- O = Objective (guidance)
- F = Functional Statement (guidance)
- P = Performance Requirement (mandatory)V = Verification Method (optional)
- D = Deemed-to-Satisfy Provision (optional)
- C = Clause in a Specification (can be mandatory or optional depending on how the Specification is called up by the NCC).

1.0 Basis of Assessment

1.1 LOCATION AND DESCRIPTION

The function centre building development, the subject of this report, is located at Muswellbrook Race Club. Consists of an existing function centre with a proposed renovation to the existing building and a proposed extension to the function centre.

1.2 PURPOSE

The purpose of this report is to assess the current design proposal against the Deemed-to-Satisfy Provisions of the BCA, and to clearly outline those areas (if any) where compliance is not achieved, where areas may warrant redesign to achieve strict BCA compliance or where areas may be able to be assessed against the relevant performance criteria of BCA 2022. Such assessment against relevant performance criteria will need to be addressed by means of a separate Performance Based Fire Safety Engineered Assessment Report to be prepared under separate cover.

1.3 BUILDING CODE OF AUSTRALIA

The National Construction Code (**NCC**) is Australia's primary set of technical design and construction provisions for buildings.

As a performance-based code, it sets the minimum required level for the safety, health, amenity, accessibility and sustainability of certain buildings. The Australian Building Codes Board, on behalf of the Australian Government and each State and Territory government, produces and maintains the National Construction Code.

The NCC has three (3) volumes being:

+ Volume One - containing technical design and construction requirements for all Class 2 to 9 buildings
+ Volume Two - containing technical design and construction requirements for certain residential (class 1) and non-habitable buildings and structures (Class 10).

+ Volume Three - Containing technical requirements for the design and construction for plumbing and drainage systems in new and existing buildings

This report is based on the Deemed-to-Satisfy Provisions of the National Construction Code (**NCC**) Series Volume One – Building Code of Australia, 2022 Edition (**BCA**), incorporating the State variations where applicable. Please note that the version of the BCA applicable to new building works is the version applicable at the time of the lodgement of the Construction Certificate application to the Accredited Certifying Authority. The BCA is currently updated on a three-yearly cycle.

A reference to the BCA in this report is a reference to **BCA2022**, being volume 1 of the NCC.

1.4 LIMITATIONS

This report does not include nor imply any detailed assessment for design, compliance or upgrading for:

1. the structural adequacy or design of the building;
2. the inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and
3. the design basis and/or operating capabilities of any proposed electrical, mechanical or hydraulic services.

This report does not include, or imply compliance with:

1. the National Construction Code – Plumbing Code of Australia Volume 3
2. the Disability Discrimination Act 1992 including the Disability ((Access to Premises – Buildings) Standards 2010 – unless specifically referred to), (Note: The provision of disabled access to the subject development has been assessed against the deemed to satisfy provision of Part D4 and F4D5 of BCA2022 only);
3. Demolition Standards not referred to by the BCA;
4. Work Health and Safety Act 2011;
5. Requirements of Australian Standards unless specifically referred to;
6. Requirements of other Regulatory Authorities including, but not limited to, Telstra, Telecommunications Supply Authority, Water Supply Authority, Electricity Supply Authority, Work Cover, Roads and Maritime Services (RMS), Local Council, ARTC, Department of Planning and the like; and
7. Conditions of Development Consent issued by the Local Consent Authority.

1.5 DESIGN DOCUMENTATION

This report has been based on the Design plans and Specifications listed in Annexure A of this Report.

2.0 Building Description

For the purposes of the Building Code of Australia (BCA), the development may be described as follows.

2.1 RISE IN STOREYS (CLAUSE C2D3)

The building has a rise in storeys of four (4).

2.2 CLASSIFICATION (CLAUSE A6G1)

The new building works have been classified as follows.

Table 1: Building Classification

Class	Level	Description
Class 5	Ground Floor	Office and Change Rooms
Class 9b	First Floor	Function Centre
Class 7b	Tower Access	Storage

2.3 EFFECTIVE HEIGHT (CLAUSE A1G4)

The building has an *effective height* of less than 12 metres.

2.4 TYPE OF CONSTRUCTION REQUIRED (TABLE C2D2)

The building is required to be of Type A Construction.

2.5 FLOOR AREA AND VOLUME LIMITATIONS (TABLE C3D3)

The building is subject to maximum floor area and volume limits of:-

Class 9b	Maximum Floor Area	5,500m^2
	Maximum Volume	33,000m^3
Class 7b	Maximum Floor Area	3,500m^2
	Maximum Volume	21,000m^3

2.6 FIRE COMPARTMENTS

The following *fire compartments* have been assumed:

1. The entire building is one fire compartment.

2.7 EXITS

The following points in the building have been considered as the exits::

1. Existing Foyer non-fire isolated stairway.

2. Existing Tower Access non-fire isolated stairway.
3. Non-fire isolated stairway on the north-west side.
4. Fire-isolated stairway on the eastern side.

2.8 CLIMATE ZONE

The building is located within Climate Zone 6.

2.9 LOCATION OF FIRE-SOURCE FEATURES

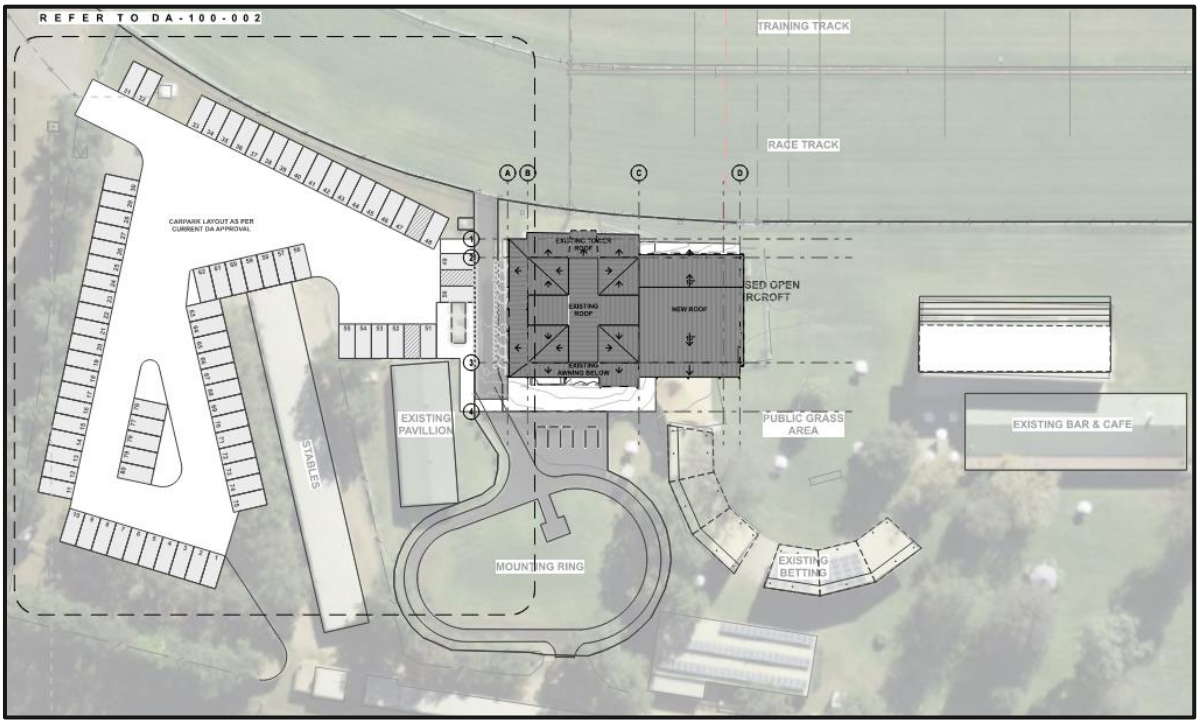
The fire source features for the subject development are:

North: The far side boundary of the allotment

South: The far side boundary of the allotment

East: The external wall of Existing Bar and Café

West: The external wall of Existing Pavilion



In accordance with Clause S5C2 of Specification 5, a part of a building element is exposed to a *fire-source feature* if any of the horizontal straight lines between that part and the fire-source feature, or vertical projection of the feature, is not obstructed by another part of the building that–

a. has an FRL of not less than 30/–/–; and

b. is neither transparent nor translucent.

3.0 BCA Assessment

3.1 INTRODUCTION

The assessment undertaken is in relation to the plans prepared for the development consent application. The technical details required for a development consent are far less than that required for a construction certificate and as such, this assessment is designed to address a higher level assessment of the building against the provisions of the BCA.

The main purpose of this report is to address any major design changes required to the building, services required to be installed, and the fundamentals of design required by sections C, D, E, F, G and H (where applicable) of the BCA. This report does not address the design requirements for the structure of the building (Section B), or for the detailed design of services (Section E).

The summary below is to be read in conjunction with the BCA specification contained in Annexure E of the report.

3.2 FIRE RESISTANCE AND STABILITY – PART C2 & SPECIFICATION 5

The required fire resistance levels for the building elements are outlined in Annexure C of this report. Fire Engineering may be sought to reduce the Class 7b FRL's down to 120 minutes to avoid having to construct these parts with 240-minute FRL's and be in line with the remainder of the storey. It is noted that existing portions of the building are being maintained and should be subject to Engineering Certification to confirm the FRLs maintained.

The external walls and all components of the wall, in a building of Type A construction, are required to be non-combustible. The plans do not indicate the materials of the external wall and further details will be required to be submitted at CC stage for assessment, however compliance is readily achievable by a number of common wall types.

All newly constructed ancillary attachments (i.e privacy screens etc) shall be constructed of non-combustible materials, further details will be required at CC stage to confirm compliance with Clause C2D14.

Linings, materials and assemblies are required to maintain the required fire hazard properties in accordance with BCA Clause C2D11 and Specification 7. Documentation shall be provided as part of the Construction Certificate package to detail compliance being maintained.

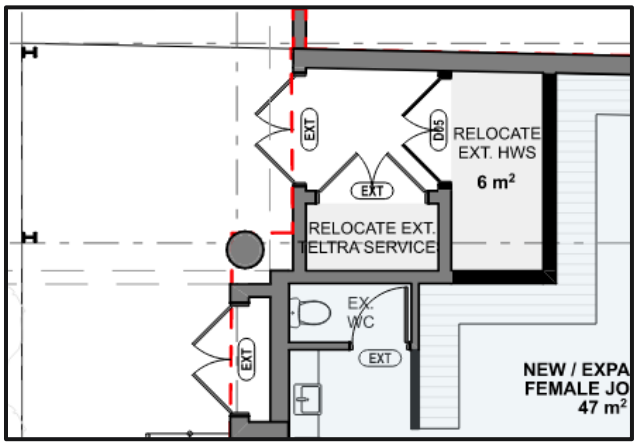
Subject to the required FRL's being provided, the proposed building is capable of complying with the requirements of the BCA with respect to fire resistance.

3.3 COMPARTMENTATION AND SEPARATION – PART C3

The class 7b and 9 portions of the building have been accessed and the floor area and volume of these compartments is less than that permitted by Clause C3D3 of the BCA. As such compliance with the provisions of the BCA for compartmentation is readily achieved.

Clause C3D7 of the BCA requires suitable vertical and/or horizontal spandrel separation between the openings in the external walls on different storeys. The plans detail that full height glazing is being proposed and would not comply with the requirements of this Clause where they are located above an opening. As the detailed design continues it would be required to maintain vertical spandrels or review feasibility for Fire Engineering to rationalise the separation.

The main switchboard is located in the north-west side of the building. If the switchboard is required service emergency equipment required to operate in an emergency, the switch room is to have an FRL of 120/120/120. The design of the switch room is such that compliance can be readily achieved.



Compliance with Part C3 of the BCA can be readily achieved by the proposal.

3.4 PROTECTION OF OPENINGS – PART C4

3.4.1 Openings in external walls

The external walls are proposed to be non-loadbearing and are located more than 3m from any boundary. As such there is no requirement to protect any openings within the external walls.

3.4.2 Bounding Construction

The walls to the stair way considered to be a fire stair require a 120/120/120 FRL and the doors to have a -/60/30 fire rating. The lift shaft is only connecting two storey and will not require separation.

3.4.3 Openings in Floors for Services and Service Installations

Where electrical, plumbing, mechanical or other services pass through an element of construction that is required to achieve a fire resistance level (FRL), the service installation shall not compromise the fire resistance level of the element. A such, the service installation must be fire sealed with a compliant system such as fire collar on PVC pipes or fire rated mastic on electrical cables.

3.5 OCCUPANT ACCESS AND EGRESS – SECTION D

3.5.1 Egress from the building

Egress from the function centre is required in sufficient numbers and location to ensure that no point on the floor is more than 20m from an exit, or a point of choice of two exits, in which case the distance to one of those exits is not more than 40m, as required by clause D2D5 of the BCA.

The distance between alternative exits is required by clause D2D7-D2D11 of the BCA to be no closer than 9m and no further apart than 60m when measured through the point of choice. The travel distances and distances between exits comply with the above requirements.

The building has no more than 3 storeys connected by a stairway, and therefore under the provisions of clause D2D4 of the BCA, the building is permitted to have non fire isolated stairways. It is noted that one of the fire stairs has been constructed as a fire stair.

The egress from the stairways are generally considered acceptable in accordance with the requirements of the BCA, however it is noted that the existing tower lift will be existing and will require egress from the foyer stairway. This is an existing configuration and no subject to any new works.

Dimensioned details of all exit paths including the fire stairs will be required at CC stage to confirm that a minimum egress width of at least 1 metre (measured clear of any obstructions or handrails) is maintained throughout the entirety of the exit as required by Clause D2D8. The first floor is noted to have access to three exits and will therefore accommodate up to 320 people which would be sufficient.

Where the egress discharges to open space on the property, a continuous pathway from the point of discharge to the street is required. The plans do indicate such a pathway and as such the provisions of Clause D2D15 of the BCA are readily satisfied.

Details of treads and risers, landings, thresholds, balustrades and handrails have not been provided however compliance is readily achievable. The design of these elements can be assessed at the CC stage. It is noted that the existing stairways are not provided with an offset riser but are no subject to reconfiguring. If new handrails are to be provided they will not achieve compliance and may require a Performance Solution to be sought at CC stage.

Electrical distribution cupboards are to be provided with smoke separation to satisfy the requirements of BCA D3D8. The doors are to be lined internally with fire grade plasterboard or metal backing sheets and smoke seals provided to all four sides, including drop down seals on the bottom. All penetrations from the enclosure are to be suitable sealed against smoke spread by sealing with fire mastic.

Barriers are required have a minimum height of 1m above the floor in accordance with BCA D3D18 and must not allow a 125mm sphere pass through its openings in accordance with BCA D3D19. No specific details of the barriers have been provided to allow assessment however compliance is readily achievable, details are to be provided at CC stage.

Final discharge doors are required to swing in the direction of egress in accordance with Clause D3D25. Where the doorways are the only exit it may remain but will need to be fitted with a hold open device in accordance with this Clause. There are several doors on the Ground Floor which will need to be provided with such a device, the office where two doors are provided only one of the doors will be considered the exit and therefore may be provided with a hold open device in accordance with this Clause. No exit sign shall be provided to the other doorway.

3.6 SERVICES AND EQUIPMENT- PARTS E1, E2 AND E4

The building is required to be provided with the services and equipment set out in Annexure B of this report. The annexure also outlines the standard of performance to be achieved by the services and equipment.

Due to the Class 9b use, consideration will need to be given to the air handling system being maintained and whether an automatic shutdown will need to be maintained.

3.7 LIFT INSTALLATIONS – PART E3

Lifts are provided to the building and are located in their own shaft and are serviced by a common lobby. The lifts do not require a stretcher facility as the building is under 12m in effective height and the dimensions of the shaft are sufficient to allow compliance.

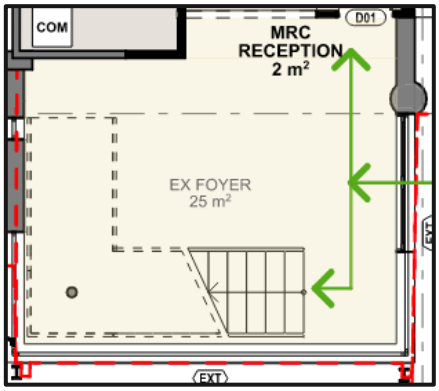
3.8 FACILITIES IN CLASS 3 TO 9 BUILDINGS – PART F4

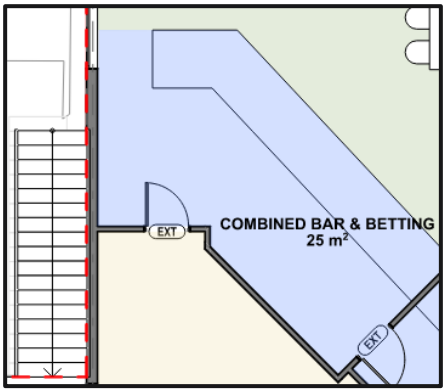
In accordance with BCA Clause F4D5(c), at least one sanitary compartment suitable for a person with an ambulant disability in accordance with AS1428.1 must be provided to the male and female toilets. Currently there are no existing ambulant sanitary compartments provided in the building.

3.9 ROOM HEIGHTS – PART F5

The ceiling heights have been assessed in accordance with Part F5 of the BCA which has indicated that compliance is readily achievable within all habitable spaces, corridors and the like.

The ceiling height requirements for Class 9b buildings for an assembly building (function centre) and the corridors that accommodates more than 100 persons are required to be 2.7m or 2.4m if accommodating for les than 100 persons. Both non-fire isolated stairways on the southern and western elevations have areas beneath the stairway where the head heights are under 2.4m and therefore are non-compliant in accordance with BCA F5D2. Barriers are to be proposed to both non-fire isolated stairways to prevent occupants from walking beneath the stairway.

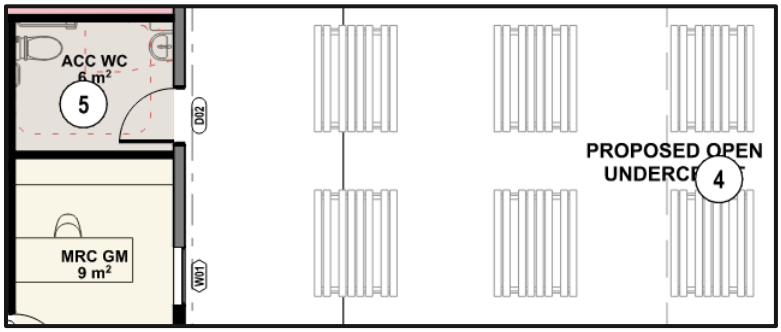




3.10 LIGHT AND VENTILATION – PART F6

For the building artificial lighting and mechanical ventilation are required and these systems can be readily installed in the building.

The doorway of a sanitary facility must not directly open room used for public assemble in accordance with BCA F6D9. The Ground Floor Accessible Sanitary Facility directly opens into the Proposed Undercroft which is non-compliant. Adequate screening is to be provided to the accessible sanitary facility in accordance with BCA F6D10.



4.0 Statement of Compliance

The plans assessed were developed to a standard suitable for submission as a development application and do not contain all the details necessary to allow a CC to be issued. As such, this assessment was limited to the major items of the BCA with the view of identifying any items that may result in a modified development consent being required, or additional key items that need to be included in the design.

The architectural design documentation as referred to in report has been assessed against the applicable provisions of the Building Code of Australia, (BCA) and it is considered that such documentation complies or is capable of complying with that Code.

Annexures

Annexure A - Design Documentation

This report has been based on the following design documentation.

Table 2: Architectural Plans

Architectural Plans Prepared by CKDS			
Drawing Number	**Revision**	**Date**	**Title**
DA-000-001	C	07/12/23	Cover Sheet
DA-000-002	B	07/12/23	Site Location
DA-000-004	B	07/12/23	Existing Conditions
DA-100-001	C	07/12/23	Site / Carpark Plan
DA-100-002	C	07/12/23	Carpark Plans
DA-110-001	C	07/12/23	Ground Floor
DA-110-002	C	07/12/23	First Floor
DA-110-003	B	07/12/23	Tower Access Plan
DA-110-004	C	07/12/23	Roof Plan
DA-210-001	C	07/12/23	East & North Elevation
DA-210-002	C	07/12/23	West & South Elevation
DA-310-001	B	07/12/23	Section A & B
DA-310-002	B	07/12/23	Sections C & D
DA-310-003	B	07/12/23	Section E

Annexure B - Essential Services

The following fire safety measures are required to be installed in the building. The following table may be required to be updated as the design develops and options for compliance are confirmed.

This section provides information for the design team, including service designers, and may need to be updated upon receipt of final designs and performance solutions at the construction approval stage.

Table 3: Essential Fire Safety Measures

Item	Essential Fire and Other Safety Measures	Standard of Performance
Fire Resistance (Floors – Walls – Doors – Shafts)		
1.	Access Panels & doors/hoppers (fire rated)	**BCA2022 C4D14** (Openings in Shafts) **BCA2022 Specification 12** AS 1905.1:2015 (Fire Resistant Doorsets)
2.	Fire doors	**BCA2022 C3D14** (Electricity Supply Systems) **BCA2022 C4D9 (**Openings in Fire Isolated Exits) **BCA2022 C4D14** (Opening in Shafts) Specification 12 AS1905.1: 2015
3.	Fire seals protecting openings in fire resisting components of the building	**BCA2022 C4D15** (Openings for service installations) **BCA2022 C4D16** (Construction joints) **BCA2022 Specification 13** AS1530.4:2014 & AS4072.1-2005
4.	Lightweight construction	**BCA2022 C2D2, Specification 5** **BCA2022 C2D9, Specification 6** AS1530.4:2014
General		
5.	Portable fire extinguishers	**BCA2022 E1D14** AS 2444–2001
6.	Operation of Door latches	**D3D26** (Operation of Latch)
7.	Required Automatic Doors	**D3D24** (Doorways and Doors)
8.	Swing of Exit Doors	**D3D24** (Swinging Doors)
9.	Warning & operational signs	**BCA2022 D3D28** (Signs on Fire Doors)

Item	Essential Fire and Other Safety Measures	Standard of Performance
		BCA2022 D4D7 (Braille Exit Signs) (Note: E4D5 (Exit Signs)) **BCA2022 E3D4** (Lift Signs)
Lifts		
10.	Access to Lift Pits + Located at lowest level or if >3m provided through an access door	**BCA2022 D2D22** (Access to Lift Pits) 'DANGER LIFT WELL – ENTRY OF UNAUTHORISED PERSONS PROHIBITED – KEEP CLEAR AT ALL TIMES'
Electrical Services		
11.	Automatic fire detection & alarm: + Clause 4 – AS 1670.1 (Amdt 1) system throughout the building/part connected to a BOWS @ 100dB(A)	**BCA2022 E2** **Spec 20** **BCA2022 S20C4** (Smoke detection system) **BCA2022 S20C7** (BOWS) AS 1670.1 (Amdt 1) (Fire) – Section 4 and 5 (Detectors)
12.	Emergency lighting	**BCA2022 E4D2, E4D4** AS/NZS 2293.1:2018
13.	Exit signs	**BCA2022 E4D55** (Exit Signs) **BCA2022 E4D6** (Direction Signs) **BCA2022 E4D8** (Design and Operation - Exits) AS/NZS 2293.1:2018
14.	Smoke detectors & heat detectors + (NSW Table E2.2b) - Any system in a Class 9b assembly building which does not form part of a smoke hazard management system, other than: ▪ non-ducted individual room units with a capacity of not more than 1000 L/s; or ▪ miscellaneous exhaust are systems installed as per Section 5 and 6 of AS/NZS 1668.1:2015.	**BCA2022 E2D3, Specification 20** AS 1668.1:2015
Hydraulic Services		
15.	Fire hydrant systems + NSW Storz Couplings	**BCA2022 E1D2** AS 2419.1:2021 FRNSW Technical Sheet D15/45534.V9 issued 10.01.19, 'Compatible Hose Connections'

Item	Essential Fire and Other Safety Measures	Standard of Performance
16.	Hose reel systems	**BCA2022 E1D3** AS 2441:2005
Mechanical Services		
17.	1. Mechanical air handling systems (NSW Part E2) - Any system in a Class 9b assembly building which does not form part of a smoke hazard management system, other than: + non-ducted individual room units with a capacity of not more than 1000 L/s; or + miscellaneous exhaust are systems installed as per Section 5 and 6 of AS 1668.1:2015.	**BCA2022 E2,** **Specification 20, Specification 21** AS 1668.1:2015 (Amdt 1)

Annexure C - Fire Resistance Levels

The following fire resistance levels (FRL's) are required for the various building elements, with a fire source feature being the far boundary of a road adjoining the allotment, a side or rear boundary or an external wall of another building on the allotment except a Class 10 structure.

Type A Construction

Table 4: Type A Construction

Table S5C11a: Type A construction: FRL of loadbearing parts of external walls

Distance from a fire-source feature	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	-	Class 5 or 9	-	Class 7b
Less than 1.5 m	-	120/120/120	-	240/240/240
1.5 to less than 3 m		120/90/90		240/240/180
3m, or more	-	120/60/30	-	240/180/90

Table S5C11b: Type A construction: FRL of non-loadbearing parts of external walls

Distance from a fire-source feature	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	-	Class 5 or 9	-	Class 7b
Less than 1.5 m	-	-/120/120	-	-/240/240
1.5 to less than 3 m		-/90/90		-/240/180
3m, or more	-	-/-/-	-	-/-/-

Table S5C11c: Type A construction: FRL of external columns not incorporated in an external wall

Column Type	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	-	Class 5 or 9	-	Class 7b
Loadbearing	-	120/-/-	-	240/-/-
Non-loadbearing		-/-/-		-/-/-

Table S5C11d: Type A construction: FRL of common walls and fire walls

Wall Type	FRL (in minutes): Structural adequacy / Integrity / Insulation

	-	Class 5 or 9	-	Class 7b
Loadbearing or non-bearing	-	120/120/120	-	240/240/240

Table S5C11e: Type A construction: FRL of loadbearing internal walls

Location	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	-	Class 5 or 9	-	Class 7b
Fire-resisting lift and stair shafts	-	120/120/120	-	240/120/120
Bounding public corridors, public lobbies and the like		120/-/-		240/-/-
Between or bounding sole-occupancy unit	-	120/-/-	-	240/-/-
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion		120/90/90		240/120/120

Table S5C11f: Type A construction: FRL of non-loadbearing internal walls

Location	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	-	Class 5 or 9	-	Class 7b
Fire-resisting lift and stair shafts	-	-/120/120	-	-/120/120
Bounding public corridors, public lobbies and the like		-/-/-		-/-/-
Between or bounding sole-occupancy unit	-	-/-/-	-	-/-/-
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion		-/90/90		-/120/120

Table S5C11g: Table A construction: FRL of other building elements not covered by Tables S5C11a to S5C11f

Building Element	FRL (in minutes): Structural adequacy / Integrity / Insulation

	-	Class 5 or 9	-	Class 7b
Other loadbearing internal walls, internal beams, trusses and columns	-	120/-/-	-	240/-/-
Floors		120/120/120		240/240/240
Roofs	-	120/60/30	-	240/90/60

Annexure D Definitions

Average specific extinction area

Average specific extinction area means the average specific extinction area for smoke as determined by AS 5637.1:2015.

Critical radiant flux

Critical radiant flux (CRF) means the critical heat flux at extinguishment (CHF in kW/m^2) as determined by AS ISO 9239.1:2003.

Designated bushfire prone area

Designated bushfire prone area means land which has been designated under a power of legislation as being subject, or likely to be subject, to bushfires.

Effective height

Effective height means the vertical distance between the floor of the lowest storey included in a determination of rise in storeys and the floor of the topmost storey (excluding the topmost storey if it contains only heating, ventilating, lift or other equipment, water tanks or similar service units).

Envelope

Envelope, for the purposes of Section J in Volume One, means the parts of a building's fabric that separate a conditioned space or habitable room from—

1. the exterior of the building; or
2. a non-conditioned space including—
    a. the floor of a rooftop plant room, lift-machine room or the like; and
    b. the floor above a carpark or warehouse; and
    c. the common wall with a carpark, warehouse or the like.

Exit

Exit means –

1. Any, or any combination of the following if they provide egress to a road or open space—
    a. An internal or external stairway.
    b. A ramp.
    c. A fire-isolated passageway.
    d. A doorway opening to a road or open space.
    e. A horizontal exit or a fire-isolated passageway leading to a horizontal exit.

Fire compartment

Fire compartment means –

1. the total space of a building; or

2. when referred to in—

    a. the Performance Requirements — any part of a building separated from the remainder by barriers to fire such as walls and/or floors having an appropriate resistance to the spread of fire with any openings adequately protected; or

    b. the Deemed-to-Satisfy Provisions — any part of a building separated from the remainder by walls and/or floors each having an FRL not less than that required for a fire wall for that type of construction and where all openings in the separating construction are protected in accordance with the Deemed-to-Satisfy Provisions of the relevant Part.

Fire-resistance level (FRL)

Fire-resistance level (FRL) means the grading periods in minutes determined in accordance with Specification A2.3, for the following criteria—

1. structural adequacy; and
2. integrity; and
3. insulation,

and expressed in that order.

Note: A dash means that there is no requirement for that criterion. For example, 90/–/– means there is no requirement for an FRL for integrity and insulation, and –/–/– means there is no requirement for an FRL.

Fire-source feature

1. the far boundary of a road, river, lake or the like adjoining the allotment; or
2. a side or rear boundary of the allotment; or
3. an external wall of another building on the allotment which is not a Class 10 building

Fire wall

Fire wall means a wall with an appropriate resistance to the spread of fire that divides a storey or building into fire compartments.

Flammability index

Flammability Index means the index number as determined by AS 1530.2:1993.

Group number

Group number means the number of one of 4 groups of materials used in the regulation of fire hazard properties and applied to materials used as a finish, surface, lining, or attachment to a wall or ceiling.

Loadbearing

Intended to resist vertical forces additional to those due to its own weight.

Non-combustible

Non-combustible means—

1. applied to a material — not deemed combustible as determined by AS 1530.1:1994 — Combustibility Tests for Materials; and
2. applied to construction or part of a building — constructed wholly of materials that are not deemed combustible

Occupiable outdoor area

Occupiable outdoor area means a space on a roof, balcony or similar part of a building–

1. that is open to the sky; and
2. to which access is provided, other than access only for maintenance; and
3. that is not open space or directly connected with open space.

Open space

Open space means a space on the allotment, or a roof or similar part of a building adequately protected from fire, open to the sky and connected directly with a public road.

Performance Requirement

Performance Requirement means a requirement which states the level of performance which a Performance Solution or Deemed-to-Satisfy Solution must meet.

Performance Solution

Performance Solution means a method of complying with the Performance Requirements other than by a Deemed-to-Satisfy Solution.

Sarking-type material

Sarking-type material means a material such as a reflective insulation or other flexible membrane of a type normally used for a purpose such as waterproofing, vapour management or thermal reflectance.

Smoke developed index

Smoke developed index means the index number for smoke as determined by AS/NZS 1530.3.

Smoke development rate

Smoke development rate means the development rate for smoke as determined by testing flooring materials in accordance with AS ISO 9239.1.

Smoke growth rate index

Smoke growth rate index (SMOGRA RC) means the index number for smoke used in the regulation of fire hazard properties and applied to materials used as a finish, surface, lining or attachment to a wall or ceiling.

Sole-occupancy unit

Sole-occupancy unit means a room or other part of a building for occupation by one or joint owner, lessee, tenant, or other occupier to the exclusion of any other owner, lessee, tenant, or other occupier and includes—

1. a dwelling; or
2. a room or suite of rooms in a Class 3 building which includes sleeping facilities; or
3. a room or suite of associated rooms in a Class 5, 6, 7, 8 or 9 building; or
4. a room or suite of associated rooms in a Class 9c building, which includes sleeping facilities and any area for the exclusive use of a resident.

Annexure E - BCA Compliance Specification

The following BCA matters are to be addressed by specific BCA Design Certificate to be issued by the relevant architectural, services and engineering consultants at the Construction Certificate Stage. This schedule should be forwarded to all consultants to obtain verification that these items have and will be included in the design documentation / specifications:

Architectural Design Certification

1. The FRL's of building elements for the proposed works have been designed in accordance with S5C21 of Specification 5 of BCA2022 for a building of Type B Construction.
2. Lightweight construction used to achieve required fire resistance levels will comply with Specification 6 of BCA2022.
3. Building elements, including external walls and their components in buildings of Type B Construction, must be non-combustible in accordance with C2D10 of BCA2022.
4. Materials, floor and wall linings/coverings, surface finishes and air-handling ductwork used in the works will comply with the fire hazard properties of Clause C2D11 and Specification 7 of BCA2022.
5. Any ancillary elements fixed, installed or attached to the internal parts or external face of an external wall that is required to be non-combustible will comply with Clause C2D14 of BCA2022.
6. Vertical separation will be provided to the new openings in the external walls in accordance with Clause C3D7 of BCA2022. It is noted that no spandrel separation is required in the stairway or to a void.
7. The parts of different classifications located alongside one another in the same storey will be separated in accordance with Clause C3D9 and Specification 5 of BCA2022.
8. Any main switch room sustaining emergency equipment required to operate in emergency mode, will be separated from the remaining building with construction having an FRL 120/120/120 and provided with self-closing -/120/130 fire doors in accordance with Clause C3D14 of BCA2022.
9. Doors in a fire-isolated exit will be self-closing or automatic closing fire doors with an FRL of not less than -/60/30 in accordance with Clause C4D9 of BCA2022.
10. Fire-isolated stairways will not be penetrated by services other than those permitted by Clause C4D10 of BCA2022.
11. Services penetrating elements required to possess an FRL including the floor slabs, walls, shafts, etc. will be protected in accordance with Clause C4D13, C4D14 and C4D15 and Specification 13 of BCA2022.
12. Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation will be protected in accordance with BCA Clause C4D16.
13. Columns protected by light weight construction will achieve an FRL not less than the FRL for the element it is penetrating, in accordance with Clause C4D17 of BCA2022.
14. A lintel will have the FRL required for the part of the building in which it is situated, unless it does not contribute to the support of a fire door, fire window or fire shutter, and it spans an opening in masonry which is not more than 150 mm thick and is not more than 3m wide if the masonry is non- loadbearing; or not more than 1.8m wide if the masonry is loadbearing and part of a solid wall or one of the leaves of a cavity wall, or it spans an opening in a non-loadbearing wall of the Class 2 or 3 building, in accordance with Specification 5 Clause S5C4 BCA2022.

15. The top and bottom of the riser shafts will achieve an FRL not less than the FRL required for the walls of the shaft in accordance with Clause S5C8 of Specification 5 of BCA2022.
16. Fire doors will comply with AS 1905.1:2015 and Specification C4D5 of BCA2022.
17. The required exits will be fire-isolated in accordance with Clause D2D4 of BCA2022.
18. Travel distances to exits will be in accordance with Clause D2D5 of BCA2022.
19. The alternative exits will be distributed uniformly around the storey and will not be less than 9m apart, and not more that 60m, in accordance with Clause D2D6 of BCA2022.
20. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D2D7 to D2D11 of BCA2022.
21. The fire-isolated exits will be in accordance with Clause D2D12 of BCA2022.
22. Discharge from exits will be in accordance with Clause D2D15 of BCA2022.
23. The ladder from the plant, lift machine rooms, and electricity network substation in lieu of a stairway will be in accordance with Clause D2D21 of BCA2022.
24. Access to the lift pit will be in accordance with Clause D2D22 of BCA2022.
25. The stairway or ramp within the fire-isolated shaft is to be non-combustible, and if there is a local failure not cause structural damage or impair the fire resistance of the shaft, in accordance with Clause D3D3 of BCA2022.
26. The non-fire isolated stairs will be constructed in accordance with Clause D3D4 of BCA2022.
27. Stair geometry to the new stairways will be in accordance with Clause D3D14 of BCA2022. Stair treads are to have a surface with a slip-resistance classification complying with Table D3D15 when tested in accordance with AS 4586:2013.
28. Landings and door thresholds throughout the development will be provided in accordance with Clause D3D15 and D3D16 of BCA2022. Landings to have either a surface with a slip-resistance classification complying with Table D3D15 when tested in accordance with AS 4586:2013 or a strip at the edge of the landing with a slip-resistance classification complying with Table D3D15 when tested in accordance with AS 4586:2013 where the edge ledge to a flight below.
29. The handrails and balustrades to all stairs and throughout the building will be in accordance with Clause D3D17 to D3D21, and D3D22 of BCA2022.
30. The fixed platform, walkway, stairway and ladder and any associated going and riser, landing handrail, balustrade, located within the machinery room, boiler house, lift-machine room, plant-room, or non-habitable attic/storeroom within the sole occupancy unit will comply with AS 1657:2013 or Part D3 of BCA2022.
31. The doorways and doors will be in accordance with Clause D3D24 and D3D25 of BCA2022.
32. Door latching mechanisms will be in accordance with Clause D3D26 of BCA2022.
33. Signage will be provided on fire and smoke doors in accordance with Clause D3D28 of BCA2022.
34. Fire precautions whilst the building is under construction fire precautions will be in accordance with Clause E1D16 of BCA2022.
35. External above ground waterproofing membranes will comply with Clause F1D5 of BCA2022 and AS 4654 Parts 1 & 2:2012.
36. The new roof covering will be in accordance with Clause F3D2 of BCA2022.

37. Any sarking proposed will be installed in accordance with Clause F3D3 of BCA2022.
38. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F2D2 and F2D3 of BCA2022 and AS 3740:2010.
39. Damp proofing of the proposed structure will be carried out in accordance with Clause F1D6 and F1D7 of BCA2022.
40. Floor wastes will be installed to bathrooms and laundries above sole occupancy units or public space in accordance with Clause F2D4 of BCA2022.
41. All new glazing to be installed throughout the development will be in accordance with Clause F3D4 of BCA2022 and AS 1288:2006 / AS 2047:2014.
42. Sanitary facilities will be provided in the building in accordance with Clause F4D2, Table F4D2, Clause F4D4 and Table F4D4 of BCA2022.
43. The construction of the sanitary facilities will be in accordance with Clause F4D8 of BCA2022.
44. Ceiling heights to the new areas will be in accordance with Clause F5D2 of BCA2022.
45. Natural ventilation will be provided in accordance with Clause F6D6, F6D7 and F6D8 of BCA2022.
46. Water closets and urinals will be located in accordance with Clause F6D9 of BCA2022.
47. The sanitary compartments will be either be provided with mechanical exhaust ventilation or an airlock in accordance with Clause F6D10 of BCA2022.
48. A safe manner for cleaning of windows located 3 or more storeys above ground level will be provided in accordance with the Work Health & Safety Act 2011 and regulations made under that Act in accordance with NSW G1D5 of BCA2022.
49. The stoves, heaters or similar appliances installed in the building will be in accordance with AS/NZS 2918:2018 and Clause G2D2 of BCA2022.
50. The building is within a bushfire prone area therefore will be in accordance with Part G5 of BCA2022. (Note: See NSW G5D3 Variation below)
51. Essential fire or other safety measures must be maintained and certified on an ongoing basis, in accordance with the provisions of the Environmental Planning and Assessment Regulation, 2021.
52. Building Fabric and Thermal Construction will be in accordance with Part J4 of BCA2022.
53. Glazing will be in accordance with Part J4 of BCA2022.
54. Building sealing will be in accordance with Part J5 of BCA2022.
55. Facilities for Energy Monitoring will be provided in accordance with Clause J9D3 of BCA2022.

Electrical Services Design Certification:

56. A smoke detection and alarm system will be installed throughout the building in accordance with E2D4 to E2D13, and Specification 20 of BCA2022.
57. Emergency lighting will be installed throughout the development in accordance with Clause E4D2, E4D4 of BCA2022 and AS/NZS 2293.1:2018.
58. Exit signage will be installed in accordance with Clause E4D5, E4D7, and E4D8 of BCA2022 and AS/NZS 2293.1:2018.
59. Artificial lighting will be installed throughout the development in accordance Clause F6D5 of BCA2022 and AS/NZS 1680.0:2009.

60. Lighting power and controls will be installed in accordance with Part J7 of BCA2022.
61. Electrical conductors located within the building that supply a main switchboard that sustains emergency equipment will comply with Clause C3D14 of BCA2022.

Hydraulic Services Design Certification:

62. Storm water drainage will be provided in accordance with Clause F1D3 of BCA2022 and AS/NZS 3500.3:2018
63. Fire hydrant system will be installed in accordance with Clause E1D2 of BCA2022 and AS 2419.1:2005 as required.
64. Fire hose reels will be installed in accordance with Clause E1D3 of BCA2022 and AS 2441:2005.
65. Portable fire extinguishers will be installed in accordance with Clause E1D14 of BCA2022 and AS 2444:2001.
66. The heated water supply systems will be designed and installed to NCC Volume 3 – Plumbing code and Clause J8D2 of BCA2022.

Mechanical Services Design Certification:

67. An air-handling system which does not form part of a smoke hazard management system will be installed in accordance with Clause E2D3 of BCA2022, and AS 1668.1:2015.
68. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F6D6 of BCA2022 and AS 1668.2:2012.
69. The commercial kitchen will be provided with a kitchen exhaust hood in accordance with Clause F6D12 of BCA2022, and AS 1668.1:2015 and AS 1668.2:2012.
70. Exhaust systems installed in a kitchen, bathroom, sanitary compartment or laundry of a Class 2 or 4 sole-occupancy unit will have a minimum flow rate and discharge location in accordance with Clause F8D4 of BCA2022.
71. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J6 of BCA2022
72. Rigid and flexible ductwork will comply with the fire hazard properties set out in AS 4254 Parts 1 and 2.

Structural Engineers Design Certification:

73. The material and forms of construction for the proposed works will be in accordance with Clause B1D3, B1D4 and B1D6 of BCA2022 as follows:
    a. Dead and Live Loads – AS/NZS 1170.1:2002
    b. Wind Loads – AS/NZS 1170.2:2011
    c. Earthquake actions – AS 1170.4:2007
    d. Masonry – AS 3700:2018
    e. Concrete Construction – AS 3600:2018
    f. Steel Construction AS 4100:1998
    g. Aluminium Construction – AS/NZS 1664.1 or 2:1997
    h. Timber Construction – AS 1720.1:2010

i. ABCB Standard for Construction of Buildings in Flood Hazard Areas.

74. The FRL's of the structural elements for the proposed works have been designed in accordance with Specification 5 of BCA2022, including S5C11 for a building of Type A Construction.

75. Lightweight construction used to achieve required fire resistance levels will comply with Specification 6 of BCA2022.

76. The construction joints to the structure will be in accordance with Clause C4D16 of BCA2022 to reinstate the FRL of the element concerned.

77. Upon completion of the works, a structural engineer will be able to certify that local failure will be in accordance with Clause D3D3 of BCA2022 for the fire isolated stairs.

Lift Services Design Certification:

78. Warning signage in accordance with Clause E3D4 of BCA2022 will be provided to the lifts to advise not to use the lifts in a fire.

79. Access and egress to the lift well landings will comply with the Deemed-to-Satisfy Provisions of D4 of the BCA2022 and will be suitable to accommodate disabled persons.

80. The type of lifts will also be suitable to accommodate persons with a disability in accordance with Clause E3D7 and E3D8 and will also have accessible features in accordance with E3D7 and E3D8 of BCA2022.

81. The lifts will comply with AS 1735.12:1999 in accordance with Clause E3D7 and E3D8 of BCA2022.

82. All electric passenger lifts and electrohydraulic passenger lifts shall comply with Specification 24 of BCA2022.

NSW Specification Design Certificate:

83. The building will be mechanically ventilated in accordance with Clause F6D6, NSW F6D6 of BCA2022 and AS 1668.2:2012.