



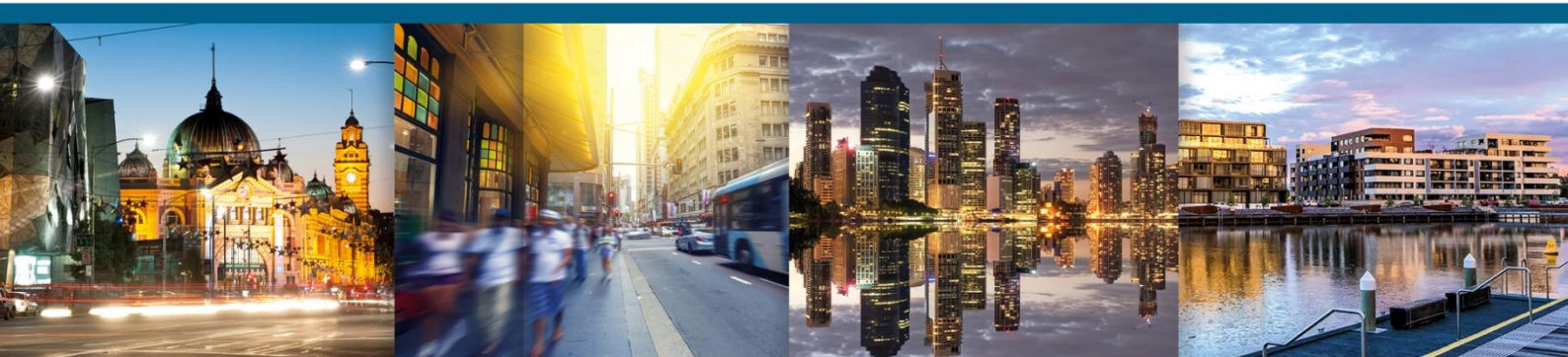
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MacKillop Catholic College

Preliminary BCA Assessment

2023/2204



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Report Revision History

Revision No:	Date:	Revision Details:	Author:	Verifier:
R1.0	Thursday, 4 July 2024	Draft Report	Josh Harvey	Michael Lokic
R1.1	Wednesday, 17 July 2024	Final Report	Josh Harvey	Michael Lokic



Executive Summary

An assessment of the proposed design of the project at MacKillop Catholic College has been undertaken against the Deemed-to-Satisfy (DTS) provisions of the relevant sections of the Building Code of Australia and the applicable Building Regulations.

This report details the non-compliances identified that require either amendments to plans or a Performance Solution to satisfy the Performance Requirements of the BCA.

The purpose of this report is to identify issues and omissions in the audited documentation that are required to be addressed to permit the lodgement and approval of a Development Application for a under Part 4 of the EP&A Act.

Summary of BCA Parameters:

Building Use:	School
Class of Occupancy	Class 9b
Type of Construction Required	Type A
Rise Storeys:	Three (3)
Number of Storeys:	Three (3)
Effective Height:	3.8m (RL176.540 - Level # RL 172.740)

1. Issues Requiring Resolution

1.1. Issues requiring amendments to plans, additional details or documentation.

The following issues either need to be resolved or require further details and/or documentation to be provided to ensure compliance before issuing the Construction Certificate.

Item	DTS Clause	Description	Requirement to Satisfy BCA
1.	BCA Clause D3D8	The space under the no-fire isolated stair is required to be enclosed with fire rated construction	In accordance with BCA Clause D3D8 Stair 2, 5 and 6 must be constructed as follows; a. the enclosing walls and ceilings have an FRL of not less than 60/60/60; and b. any access doorway to the enclosed space is fitted with a self-closing –/60/30 fire door

1.2. Performance solutions required.

It is proposed to satisfy the following non-compliances via performance solutions:

Item	Non-Compliance	DTS Clause	Description
1.	Special Hazards	Clause E1D17 & E2D21	Where solar panels are proposed to be installed the installation will be addressed as an Excessive Hazard via BCA Clause ED13 & E2D21 provisions for special hazards.



2. Introduction

This report presents the findings of a preliminary assessment of the proposed alterations and additions to **Mackillop Catholic College** development of the against the Deemed-to-Satisfy (DtS) provisions of Building Code of Australia (BCA) 2022.

This proposed development pertains to the demolition of existing single storey GLA buildings and construction of 2 new two storey and 1 new 3 storey GLA buildings containing 28 new GLA's, amenities, storerooms, site works, infrastructure and play areas at the above-mentioned address associated with a Secondary School. For the purposes of the NCC the three buildings are collectively considered a single or united building due to the building being connected.

The site is legally defined as Lot 71 DP1258149 and located within the Local Government Area of Central Coast Council.

The report been prepared by building regulations consultants and certifiers Steve Watson and Partners for Stanton Dahl Architects on behalf of Catholic Schools Broken Bay.



Site plan courtesy of Staton Dahl Architects



3. Purpose

The purpose of this report is to identify issues and omissions in the audited documentation that are required to be addressed to permit the lodgement and approval of a Development Application for a under Part 4 of the EP&A Act.

4. Scope and Limitations

4.1. Scope

The scope of this assessment is limited to the design documentation referenced in Appendix A of this report.

4.2. Limitations

The following limitations apply to the assessment:

- The report considers matters of a significant nature only and should not be considered exhaustive.
- The plans are assessed to the extent necessary to issue a construction certificate under Part 6 of The Act. This means the design has been assessed to be capable of complying with the BCA without necessarily having all the detailed design completed at this stage.
- Details in regard to access for people with disabilities have been assessed to the extent of the deemed-to-satisfy provisions of the BCA/Premises Standard only. A detailed assessment against AS 1428 series, AS/NZS 2890.6 - 2009 and AS 4299 - 1995 is outside the scope of this report
- Generally, the assessment does not incorporate a detailed assessment of the requirements of the Australian Standards.
- Structural and services documentation have not been reviewed.
- Appraisals are limited to the provisions of the BCA and the Premises Standards. Other legislative requirements have not been considered. It does not address additional or specific requirements stipulated under other areas such as Safety in Design, Construction Safety, Disability Discrimination, Planning and Environment, Occupational Health and Safety, Health, Dangerous Goods, etc, which may impact on the design and use of the building. It is recommended that appropriate advice from suitably qualified consultants should be obtained for further information on these areas.
- The BCA report and associated compliance advice is not intended or permitted to be relied on by any other party with respect to their obligations to ensure compliance including but not limited to the making of a compliance declaration under the NSW Design and Building Professionals Act.
- This does not include an assessment of the Access parts of BCA 2022 (Part D4) & Disability (Access to Premises – Buildings) Standards 2010 (Premises
- This does not include an assessment of the Energy efficient parts of BCA 2022 (Section J).



5. National Construction Code BCA 2022- Volume 1: Building Code of Australia Class 2 to Class 9 Buildings

The National Construction Code (NCC) is a uniform set of technical provisions for the design and construction of buildings, structures and plumbing/drainage systems which is separated into 3 volumes. Volume 1 of the NCC is the Building Code of Australia (BCA) for Class 2 to 9 buildings which is the document to which the assessment in this report has been undertaken against. The BCA is legislated under The Act and specifies the Performance Requirements for the design and construction of Class 2 to 9 buildings that must be satisfied to achieve compliance. The Performance Requirements can only be satisfied by a Performance Solution, Deemed-to-Satisfy (DTS) solution or a combination of both.

6. Performance Solutions

The BCA is written in a performance format which allows performance based buildings. This has allowed for innovation and variation from the prescriptive deemed-to-satisfy requirements of the BCA, whilst maintaining the principle levels of health, safety and amenity of building occupants.

Performance solutions are generally adopted when a nominated deemed-to-satisfy provision appears inappropriate for the design, or when a proposed design varies from the prescriptive requirements of the BCA. Subsequently, a performance solution supported by Fire Engineering analysis can determine whether a proposed design that varies from prescriptive requirements, will satisfactorily meet the performance provisions of the BCA. Ultimately, it is with the discretion of the relevant building surveyor whether to accept a deviation from the prescriptive code requirements.

Utilising the performance provisions may result in more economical and somewhat safer building, however performance solutions may require additional on-going maintenance. It is in this instance that all parties, such as the building owner, insurance companies, proposed tenants, etc., are aware of this decision making process and are kept informed of any additional requirements needed to maintain the level of safety.

7. Statutory Framework

The following table summarises the key statutory issues relating to fire safety and the BCA in relation to the certification of new building works.

Issue	Legislative reference	Comment
Existing building fire safety	EPAR S64	Council may require upgrading in some circumstances
New Work	EPAR (DCFS) S19	All new works must comply

7.1. New Work

Section 19 of the EPAR (DCFS) requires that all new work 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 required to under other clauses of the legislation.



8. Assessment Data Summary

The following basic assessment data has been drawn from the provisions of the BCA 2022.

8.1. Assumptions

Assumptions made in the preparation of this report are listed below:

1. Building T, V & W are considered a united building.

9. Assessment

The following is a summary of an assessment of the proposed design against the relevant Deemed-to-Satisfy provision of the BCA.

The BCA report and associated compliance advice is not intended or permitted to be relied on by any other party with respect to their obligations to ensure compliance including but not limited to the making of a compliance declaration under the NSW Design and Building Professionals Act.

9.1. Section A: General Provisions

Buildings, T, V and W are connected by elevated bridges and walkways, therefore, Steve Watson and Partners have deemed the buildings as united buildings which function as one building.

9.2. Section B: Structure

The Structural Engineering design of the building will be required to comply with the structural provisions of Part B1 of the BCA.

9.3. Section C: Fire Resistance

The proposed new building is required to be Type A construction as it is a Class 9b building with a rise in storeys of three. Please refer to Appendix D for all fire rating requirements.

As the building is required to be Type A Construction, external walls and common walls, including all components incorporated in them including the facade covering, framing and insulation are required to be non-combustible as per the requirements of BCA Clause C2D10. At Construction Certificate stage, test reports shall be provided for cladding and any attachments to the external wall.

Proposed floor coverings and any proposed wall and ceiling lining materials must comply with the fire hazard properties nominated in Specification C2D11 & specification 7 of the BCA.

The building has a total floor area (compartment size) of less than 8000m² and is within the floor area and volume requirements for Type A Construction in accordance with BCA Clause C3D3.

In accordance with BCA Clause C3D7 vertical separation of openings in external walls any part of a window or other opening in an external wall is above another opening in the storey next below and its vertical projection falls no further than 450 mm outside the lower opening (measured horizontally), the openings must be separated by—

- a. a spandrel which—
 - i. is not less than 900 mm in height; and
 - ii. extends not less than 600 mm above the upper surface of the intervening floor; and
 - (iii) is of non-combustible material having an FRL of not less than 60/60/60; or



- b. a slab or other horizontal construction that—
 - i. projects outwards from the external face of the wall not less than 1100 mm; and
 - ii. extends along the wall not less than 450 mm beyond the openings concerned; and
 - iii. is non-combustible and has an FRL of not less than 60/60/60.

The current building design incorporate both methods and demonstrate compliance with the requirements of BCA Clause C3D7.

As previously discussed, the three buildings are considered one building for the purposes of this assessment, therefore, they are not considered fire sources to one another.

In a Class 9b building with a rise in storeys of three, the floors are required to be provided with an FRL achieving 120min.

As a result of the requirement to have a fire rating, FRL or the like, any penetrations through the floor slab must comply with the requirements of C4D13.

9.4. Section D: Access and Egress

A minimum of two exits have been provided throughout the Ground Floor and Level 1 and level 2 , demonstrating compliance with BCA Clause D2D3.

Travel distance and distance between alternate exits comply with the requirements of D2D5 & D2D6 BCA whereby the following have been achieved;

- 20m point from which travel in different directions where 2 exits are available;
- 40m to the nearest exit where 2 or more exits are available;
- 60m between alternative exits.

Stair 6 and 8, which serves Building T connects or passes by three storeys and therefore is required to be fire isolated. However, the stairs can be designed as an external stair in lieu of a fire isolated stair as per the requirements of BCA Clause D2D12 & D2D13.

For Stairs 6 & 8 the part of the external wall of the building to which the exit is exposed must have—

- i. an FRL of not less than 60/60/60; and
- ii. no openings less than 3 m from the exit (except a doorway serving the exit protected by a –/60/30 fire door in accordance with C4D9(1)); and
- iii. any opening 3 m or more but less than 6 m from the exit, protected in accordance with C4D5 and if wall wetting sprinklers are used, they are located internally.

The stair discharges to an undercover area which is open for 1/3 its perimeter.

Window openings are not permitted within 3m of the path of travel along the external stair unless varied via Fire Engineering Performance Solution.

The current design of stair 6 & 6 demonstrate compliance with the requirement of D2D12 & D2D13



Figure 1- Stair 8

In accordance with Clause D2D7, D2D8 and D2D9 of the BCA, the available exits provided are capable of accommodating the population from each GLA based on number of persons calculated under Clause D2D18 of the BCA. Confirmation from the design team in relation to population number states that there will be no more than 30 persons per GLA and the egress withs for the Ground Floor First Floor Second floor are capable of serving this number.

The requirements of BCA Clause D2D23 are not applicable as the building has a rise in storeys of three and is the only use in the building.

Any new electrical meters, distribution boards (telecommunications or electrical) in the path of travel must be contained within a non-combustible enclosure with the doorways fitted with smoke seals in accordance with Clause D3D8 of the BCA.

In accordance with BCA Clause D3D9 the storerooms under Stair 2, 5 and 6 must be constructed as follows;

- c. the enclosing walls and ceilings have an FRL of not less than 60/60/60; and
- d. any access doorway to the enclosed space is fitted with a self-closing –/60/30 fire door.

The construction of the new stairways including goings, risers and slip resistance classification is to comply with Clause D3D14 of the BCA. Landings at the top and bottom of the stairway is to comply with Clause D3D15 of the BCA.



Balustrades are detailed in locations as required by BCA Clause D3D17 however, further design development is required at Construction Certificate stage to demonstrate compliance with the requirements of BCA Clause D3D18 Height of barriers and D3D19 Openings in barriers.

Handrails are to be provided to the new stairs in accordance with Clause D3D22, D4D4 and Clause 11 and 12 of AS1428.1 – 2009. Sufficient details have not been provided at this stage, however, compliance is readily achievable subject to detailed design development at CC stage.

All doors serving as the required exit are required to swing in the direction of travel in accordance with BCA Clause D3D25.

9.5. Section E: Services and Equipment

The building is required to be served by a fire hydrant system complying with Clause E1D2 of the BCA and AS 2419.1 – 2021. The site is currently served by an existing hydrant system, located adjoining Sparkes Street which is noted as being in accordance with AS2419.1-1994 & AS2419.1-2005.

Technically, Buildings T, V and W are required to be provided with a hydrant system in accordance with AS2419.1-2021 unless a hybrid system can be approved via a Fire Engineering Performance Solution.

Fire Hose reels are not required to be provided to serve the Classrooms of a Class 9b building.

The building will require portable fire extinguishers complying with Clause E1D14 of the BCA and AS 2444 – 2001.

Clause E1D17 & E2D21 Where solar panels are proposed to be installed, the installation will be addressed as an Excessive Hazard via BCA Clause ED13 & E2D21 provisions for special hazards.

The proposed lift will be required to be one of types identified in Clause E3D7 and E3D8, subject to the limitations on use specified in the Table. The lift also is required to incorporate the accessible features in accordance with Table E3.6b of the BCA.

In accordance with NSW E2D16 (A building or part of a building used as an assembly building must be provided with automatic shutdown of any air-handling system (other than non-ducted individual room units with a capacity not more than 1000 L/s and miscellaneous exhaust air systems installed in accordance with Sections 5 and 6 of AS 1668.1) which does not form part of the smoke hazard management system, on the activation of smoke detectors installed complying with S20C6.

Electrical Engineer to provide detailed dry fire service drawings and design certification at CC stage to demonstrate compliance with the requirements of E2D16.

Lift installation to comply with Part E3 of NCC 2022

The building will require emergency lighting in accordance with Clauses E4.2 & E4.4 of the BCA and AS 2293.1 – 2018.

The building will require exit signage in accordance with Clauses E4.5, E4.6 & E4.8 of the BCA and AS 2293.1 – 2018.



9.6. Section F: Health and Amenity

Stormwater drainage must be designed and constructed in accordance with AS/NZS 3500.3.

Internal wet areas and external balconies shall be waterproofed in accordance with AS 3740 and AS 4654.2 respectively.

External wall cladding must comply with the requirements of F3D5 Wall cladding, further details are to be provided at CC stage to demonstrate compliance.

Sanitary facilities are required to be provided on an equal basis and shall be allocated for male and female occupants. Furthermore, separate facilities are required to be provided for students and staff.

SWP have assumed that the sanitary facilities provided throughout the existing school are capable of accommodating the existing number of students and staff. It is therefore proposed that the new building will be capable of accommodating the increased number of staff and students.

Building T, V & W will support an increase in population across the school. It is proposed to have a population increase as follows;

Proposed student and staff numbers to confirm if WCs provided are sufficient:

- **Current Students: 1599 Proposed Students: 1830 Increase: 231**
- **Current Staff: 139: Proposed Staff: 170: Increase of 31**

Male	Female		Male Closet Pan	Male Urinals	Male Washbasins	Female Closet Pan	Female Washbasins
300	300	Schools (Students)	5	4	6	6	6
20	20	Schools (Employees)	1	1	1	2	1

Sufficient sanitary facilities have been provided within the proposed new development to accommodate the increased number of staff and students

It has been determined that each GLA will not accommodate more than 100 persons therefore, a 2.4m floor to ceiling height is acceptable.

As it is feasible that each storey is capable of accommodating more than 100 persons a minimum floor to ceiling height is required to be 2700mm. Based on an assessment of the architectural drawings, compliance has been demonstrated, with a floor to ceiling height of circa 3m being achieved.

In a Class 9b building natural light is required to be provided to all general-purpose classrooms in primary or secondary schools.

Required natural light must be provided by windows or doors that have an aggregate light transmitting area measured exclusive of framing members, glazing bars or other obstructions of not less than 10% of the floor area of the room.



Based on an assessment of the architectural floor plans, elevations and the light and ventilation assessment prepared by Stanton Dahl Architects compliance with natural light and ventilation requirements appear to have been demonstrated.

Architect to provide detailed natural light & ventilation calculations for all general-purpose classrooms and ensure that the area of the rooms incorporate any proposed store areas. Further design development is required at CC stage to demonstrate compliance.

Artificial lighting is required to all rooms that are frequently occupied, all accessible spaces, all corridors and circulation spaces and path of egress in accordance with AS/NZS 1680.0 – 2009.

Ventilation will be required to all rooms occupied by a person for any purpose by means of natural ventilation complying with Clause F6D7 of the BCA or mechanical ventilation/air-conditioning complying with AS 1668.2 –2012

10. Conclusion

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 have been assessed against the applicable provisions of the Building Code of Australia, (BCA) and it is considered that such documentation is capable of complying with that Code subject to the areas contained within this report being addressed during design development.



11. Appendix A – Referenced Documentation

The following documentation was used in the preparation of this report:

Drawing No.	Title	Issue	Date	Drawn By
A0001	Cover Sheet	DA02	11.07.2024	Stanton Dhal Architects
A0101	Existing Campus Plan & Site Analysis	DA02	11.07.2024	Stanton Dhal Architects
A0102	Proposed Campus Plan	DA02	11.07.2024	Stanton Dhal Architects
A0103	Proposed Site Plan & Staging	DA02	11.07.2024	Stanton Dhal Architects
A0201	Block T Ground Floor Plan	DA02	11.07.2024	Stanton Dhal Architects
A0202	Block T First & Second Floor Plans	DA02	11.07.2024	Stanton Dhal Architects
A0203	Block V Floor Plans	DA02	11.07.2024	Stanton Dhal Architects
A0204	Block W Floor Plans	DA02	11.07.2024	Stanton Dhal Architects
A0205	Block T Roof Plan	DA02	11.07.2024	Stanton Dhal Architects
A0206	Block VW Roof Plan	DA02	11.07.2024	Stanton Dhal Architects
A0301	Site Elevations	DA02	11.07.2024	Stanton Dhal Architects
A0321	Site Sections	DA02	11.07.2024	Stanton Dhal Architects



12. Appendix B – Schedule of existing statutory Fire Safety Measures

Fire safety measure	Minimum standard of performance	Date(s) assessed	APFS *
OVERALL SITE			
Fire Hydrant System	Clause E1.3 BCA and AS 2419.1-1994 and AS2419.1-2005	15/12/2023	F015972A
CC/2227/2002 – CHURCH, ADMINISTRATION & STAFF BUILDINGS (Privately Certified)			
Automatic fail-safe devices	Clause D2.21(d) BCA 1996 and Manufacturers approved Design and Installation requirements	15/12/2023	F015972A
Automatic fire detection and alarm systems	AS 1670.1-2005	15/12/2023	F015972A
Emergency lighting	Clause E4.2 and E4.4, BCA 1996 and AS 2293.1-2005	15/12/2023	F015972A
Emergency warning & intercommunication systems	AS 2220 Part 1 and 2	15/12/2023	F015972A
Exit signs	Clause E4.5, E4.6 and E4.8 BCA 1996 and AS 2293.1-1995	15/12/2023	F015972A
Hose reel systems	Clause E1.4 BCA 1996 and AS 2441-1988	15/12/2023	F015972A
Lightweight construction (Church)	Clause C1.8 and Specification C1.8 BCA 1996 and Manufacturers technical information for accredited systems	15/12/2023	F015972A
Portable fire extinguishers	Clause E1.6 BCA 1996 and AS 2444-2001	15/12/2023	F015972A
CC/896/2004 - LIBRARY & CANTEEN BUILDING			
Automatic fail-safe devices (front entry door – library)	Clause D2.21(d) BCA 2004 and Manufacturers approved Design and Installation requirements	15/12/2023	F015972A
Automatic fire detection and alarm systems	AS1670.1-1995	15/12/2023	F015972A
Emergency lighting	Clause E4.2 and E4.4 BCA 2004 and AS 2293.1 - 1998	15/12/2023	F015972A
Exit signs	Clause E4.5 and E4.8 BCA 2004 and AS 2293.1-1998	15/12/2023	F015972A
Hose reel systems	Clause E1.4 BCA 2004 and AS 2441	15/12/2023	F015972A
Portable fire extinguishers	Clause E1.6 BCA 2004 and AS2444-2001	15/12/2023	F015972A
CC/896/2004 - TAS BUILDING			
Automatic fire detection and alarm systems	AS1670.1-1995	15/12/2023	F015972A
Emergency lighting	Clause E4.2 and E4.4 BCA 2004 and AS 2293.1-1998	15/12/2023	F015972A
Exit signs	Clause E4.5 and E4.8 BCA 2004 and AS 2293.1-1998	15/12/2023	F015972A
Portable fire extinguishers	Clause E1.6 BCA and AS 2444-2001	15/12/2023	F015972A
CC/468/2005 – CREATIVE ARTS BLOCK			
Automatic fail-safe devices	Clause D2.21(d) BCA 2005 and Manufacturers approved Design and Installation requirements	TO BE REMOVED FROM SCHEDULE AS PER GRANT KILLEN 11/01/24	
Automatic fire detection and alarm systems	AS1670.1-2004	15/12/2023	F015972A
Emergency lighting	Clause E4.2 and E4.4 BCA 2005 and AS 2293.1-1998	15/12/2023	F015972A
Exit signs	Clause E4.5 and E4.8 BCA 2005 and AS 2293.1-1998	15/12/2023	F015972A
Hose reel systems	Clause E1.4 BCA 2005 and AS 2441-1988	15/12/2023	F015972A
Portable fire extinguishers	Clause E1.6 BCA 2005 and AS 2444-2001	15/12/2023	F015972A
CC/473/2006 – PRIMARY ADMINISTRATION BUILDINGS			
Automatic fire detection & alarm system	AS 1670.1-2004	15/12/2023	F015972A



Emergency lighting	Clause E4.2 and E4.4 BCA 2006 and AS 2293.1-2005	15/12/2023	F015972A
Exit signs	Clause E4.5 and E4.8 BCA 2006 and AS 2293.1-2005	15/12/2023	F015972A
Hose reel systems	Clause E1.4 BCA 2006 and AS 2441-2005	15/12/2023	F015972A
Portable fire extinguishers	Clause E1.6 BCA 2006 and AS 2444-2001	15/12/2023	F015972A
CC/1429/2006 – SCIENCE BUILDINGS			
Automatic fire detection and alarm systems	AS1670.1-2004	15/12/2023	F015972A
Emergency lighting	Clause E4.2 and E4.4 BCA 2006 and AS 2293.1-2005	15/12/2023	F015972A
Exit signs	Clause E4.5 and E4.8 BCA 2006 and AS 2293.1-2005	15/12/2023	F015972A
Hose reel systems	Clause E1.4 BCA 2006 and AS 2441-2005	15/12/2023	F015972A
PRIMARY & KINDERGARTEN CLASSROOMS			
Emergency lighting	Clause E4.2 and E4.4 BCA and AS 2293.1-2005	15/12/2023	F015972A
Portable fire extinguishers	Clause E1.6 BCA and AS 2444-2001	15/12/2023	F015972A
Automatic fire detection and alarm systems	AS1670.1-2004	15/12/2023	F015972A
CC/284/2010 – MULTIPURPOSE HALL – Issued by Essential Services 18/3/2010			
Portable Fire Extinguishers	Clause E1.6 BCA 2009 and AS2444 - 2001	15/12/2023	F015972A
Emergency Lighting	Clause E4.2 and E4.4 BCA 2009 and AS2293.1 – 2005	15/12/2023	F015972A
Exit Signs	Clause E4.5, E4.6 and E4.8 BCA 2009 and AS2293.1 - 2005	15/12/2023	F015972A
Hose Reel Systems	Clause E1.4 BCA 2009 and AS2441 - 2005	15/12/2023	F015972A
CC/903/2010 – HUMANITIES, LANGUAGE AND TRADE BUILDINGS – Issued by Essential Certifiers 26/8/2010			
Portable Fire Extinguishers	Clause E1.6 BCA 2010 and AS2444 - 2001	15/12/2023	F015972A
Emergency Lighting	Clause E4.2 and E4.4 BCA 2010 and AS2293.1 – 2005	15/12/2023	F015972A
Exit Signs	Clause E4.5, E4.6 and E4.8 BCA 2010 and AS2293.1 - 2005	15/12/2023	F015972A
Automatic fire detection and alarm systems	AS1670.1-2004	15/12/2023	F015972A



13. Appendix C – Schedule of proposed statutory Fire Safety Measures

Measure	Standard of Performance
Automatic Fire Detection and Alarm System (Smoke Detection System to Automatically Shut down Air-Handling System)	BCA 2022 S20C6 and AS 1670.1 - 2018
Emergency Lighting	BCA 2022 Clause E4D2, E4D4 and AS/NZS 2293.1 - 2018
Exit Signs	BCA 2022 Clause E4D5, NSW E4D6, E4D7, E4D8 and AS/NZS 2293.1 - 2018
Fire Engineering Performance Solution	Fire Engineering Performance Solution prepared by xxxx, Ref xxxx Date xxxx
Fire Hydrants Systems	BCA 2022 Clause E1D2 and AS2419.1-2021
Fire Seals Protecting Opening in Fire Resisting Components of The Building	BCA 2022 Clause C4D15, Specification 13, AS 1530.4 - 2014, AS 4072.1 - 2005 and installed in accordance with the tested prototype.
Lightweight Construction	BCA 2022 Specification 6, Clause A2G3 and AS 1530.4 - 2014
Mechanical Air Handling System (Automatic Shut Down of Air-Handling System)	BCA 2022 Clause NSW E2D16 and AS 1668.1 - 2015
Portable Fire Extinguishers	BCA 2022 Clause E1D14 and AS 2444 - 2001
Warning And Operational Signs	BCA 2022 Clauses D2D22, NSW D3D24, D3D28 and D4D7.



14. Appendix C2D2 - Fire Rating Requirements

14.1. Type A Construction

Table 1 S5C11a: Type A construction: FRL of loadbearing parts of external walls

Distance from a <i>fire-source feature</i>	FRL (in minutes): <i>Structural adequacy/ Integrity / Insulation</i>			
	Class 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Less than 1.5 m	90/90/90	120/120/120	180/180/180	240/240/240
1.5 to less than 3 m	90/60/60	120/90/90	180/180/120	240/240/180
3 m or more	90/60/30	120/60/30	180/120/90	240/180/90

Table 2 S5C11b: Type A construction: FRL of non-loadbearing parts of external walls

Distance from a <i>fire-source feature</i>	FRL (in minutes): <i>Structural adequacy / Integrity / Insulation</i>			
	Class 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Less than 1.5 m	– /90/90	– /120/120	– /180/180	–/240/240
1.5 to less than 3 m	– /60/60	–/90/90	– /180/120	–/240/180
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–

Table 3 S5C11c: Type A construction: FRL of external columns not incorporated in an external wall

Column type	FRL (in minutes): <i>Structural adequacy / Integrity / Insulation</i>			
	Class 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Loadbearing	90/–/–	120/– /–	180/– /–	240/–/–
Non-loadbearing	–/–/–	–/–/–	–/–/–	–/–/–

Table 4 S5C11d: Type A construction: FRL of common walls and fire walls

Wall type	FRL (in minutes): <i>Structural adequacy / Integrity / Insulation</i>			
	Class 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Loadbearing or non-loadbearing	90/90/90	120/120/120	180/180/180	240/240/240

**Table 5 S5C11e: Type A construction: FRL of loadbearing internal walls**

Location	FRL (in minutes): <i>Structural adequacy / Integrity / Insulation</i>			
	Class 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Fire-resisting lift and stair shafts	90/90/90	120/120/120	180/120/120	240/120/120
Bounding public corridors, public lobbies and the like	90/90/90	120/-/-	180/-/-	240/-/-
Between or bounding sole-occupancy units	90/90/90	120/-/-	180/-/-	240/-/-
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion	90/90/90	120/90/90	180/120/120	240/120/120

Table 6 S5C11f: Type A construction: FRL of non-loadbearing internal walls

Location	FRL (in minutes): <i>Structural adequacy / Integrity / Insulation</i>			
	Class 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Fire-resisting lift and stair shafts	- /90/90	- /120/120	- 120/120	-/120/120
Bounding public corridors, public lobbies and the like	- /60/60	-/-/-	-/-/-	-/-/-
Between or bounding sole-occupancy units	- /60/60	-/-/-	-/-/-	-/-/-
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion	- /90/90	-/90/90	- /120/120	-/120/120

Table 7 S5C11g: Type A construction: FRL of other building elements not covered by Tables S5C11a to S5C11f

Building element	FRL (in minutes): <i>Structural adequacy / Integrity / Insulation</i>			
	Class 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Other loadbearing internal walls, internal beams, trusses and columns	90/-/-	120/-/-	180/-/-	240/-/-
Floors	90/90/90	120/120/120	180/180/180	240/240/240
Roofs	90/60/30	120/60/30	180/60/30	240/90/60



15. Appendix C2D11 - Early Fire Hazard Properties for Materials

Floor materials, floor coverings and wall and ceiling lining materials are required to comply with BCA prescribed fire hazard properties and AS5637.1-2015

Floor Linings and Floor Coverings	
General Non Sprinklered Areas	Minimum 2.2 (or 4.5 for Class 3 areas and 9a patient care areas) kw/m ² critical radiant heat flux and, a maximum smoke development rate of 750 percent minutes.
General Sprinklered Areas	Minimum 1.2 (or 2.2 for Class 3, 9a patient care, and 9c residential use areas) kw/m ² critical radiant heat flux
Fire Isolated Exits and Fire Control Rooms	Minimum 2.2 / (or 4.5 for Class 3, 9a and 9c areas) kw/m ² critical radiant heat flux
Lift Cars	Minimum 2.2 kw/m ² critical radiant heat flux

Wall Linings and Ceiling Linings	
Generally	Variously Group 1, 2, or 3 materials (more restrictive Group number for non-sprinklered areas, public corridors, health care corridors and other prescribed locations) when tested to AS/ISO 9705 or clause 3 of BCA Spec A2.4 and AS/NZ 3837
Fire Isolated Exits	Group 1 material when tested as above
Lift Cars	Group 1 or 2 materials when tested as above

In addition, in non-sprinklered areas, wall and ceiling linings must have a smoke growth rate index not more than 100 or an average specific extinction area less than 250m²/g.

Other than above, construction materials generally need to achieve as1530.3 early fire hazard indices requirements as follows:	
Generally	Spread of flame Index not > 9 Smoke developed index not > 8
Sarking	Flammability Index not > 5
Fire Isolated Exits and Fire Control Rooms	Spread of Flame Index 0 Smoke Developed Index not > 2 Sarking Flammability 0
Non Fire Isolated Stairs & Escalators and Auditorium Fixed Seating	Spread of Flame Index 0 Smoke Developed Index not > 5
Lifts	To AS 1735.2
Air Ducts	To AS4254