GROUPDLA

Building Code of Australia 2022 Report

Report for BCA Compliance

PROJECT NAME: Richmond River High Campus
PROJECT NUMBER: **GDL240132.1**
DATE: **15/07/2025 (Rev F)**

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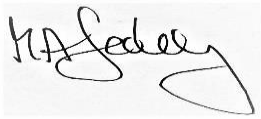
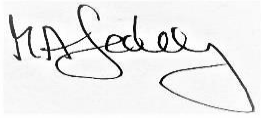
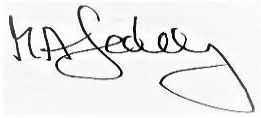
REVISION HISTORY

Revision	Date	Details	Authorised	
			Name/Position	Signature
A	11/06/2024	Concept Design	Prepared: Mike Gooley Associate	
			Reviewed: Justin Jones-Gardiner Director	
B	25/06/2024	Concept Design – 100%	Prepared: Mike Gooley Associate	
			Reviewed: Justin Jones-Gardiner Director	
C	15/11/2024	Schematic Design (50%)	Prepared: Mike Gooley Associate	
			Reviewed: Justin Jones-Gardiner Director	

Revision	Date	Details	Authorised	
			Name/Position	Signature
D	20/12/2024	Schematic Design – 90%	Prepared: Mike Gooley Associate	
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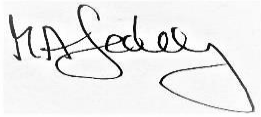
E	02/07/2025	REF	Prepared: Mike Gooley Associate	
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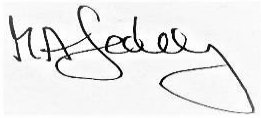
F	15/07/2025	REF - Amended	Prepared: Mike Gooley Associate	
			Reviewed: Justin Jones-Gardiner Director	

Table 1 – Revision History

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1.0 EXECUTIVE SUMMARY

This BCA Assessment Report has been prepared to support a Review of Environmental Factors (REF) for the rebuild of Richmond River High Campus (the activity) (RRHC). The REF has been prepared to support an approval for the RRHC development under Section 68 of the NSW Reconstruction Authority Act 2022 (RA Act).

The activity will be carried out at Dunoon Road, North Lismore, also known as 163 and 170 Alexandra Parade, North Lismore (the site).

The purpose of this report is for the assessment of the Richmond River High Campus to assess compliance with the National Construction Code, Volume 1, Class 2-9 Buildings, Building Code of Australia 2022 ("BCA").

Compliance with the BCA will be achieved by a combination of Deemed to Satisfy and Performance Solutions and will be assessed further as the design progresses towards the crown certification of building works. Refer to Section 5 and 6 of this report which details departures from the DTS to be addressed by performance solutions.

The information submitted at this stage of the design is not considered to be detailed to the extent where the development of a comprehensive BCA report is achievable and therefore this report is preliminary only.

2.0 INTRODUCTION

The subject BCA review has been limited to an assessment of the REF - architectural drawings which at this stage, do not detail sufficient information to allow a full BCA report to be produced. The design is yet to be developed to the extent that a complete BCA assessment can be concluded and therefore this report is preliminary only.

The report is prepared based on a review of the documentation listed in Table 6 and the information provided by the client and is intended for their use only.

2.1 Reporting Team

The information contained within this report was prepared by Mike Gooley, Registered Certifier – Unrestricted (BDC0143) and reviewed by Justin Jones - Gardiner, Registered Certifier - Unrestricted (BDC0204) from Group DLA.

2.2 Current Legislation

The applicable legislation governing the BCA version for buildings is the Environmental Planning and Assessment Act 1979.

Whilst we await final confirmation on the building approval mechanism, it is understood at this stage that the project will follow a Crown Approval pathway (State Government Project). The provisions of Section 6.28 of the Environmental Planning and Assessment Act (Crown Building Work), require that the building work be carried out in accordance with the Building Code of Australia (BCA). The application of compliance with the particular version of the BCA is the date on which tenders were issued for the building works.

The BCA is now updated every three (3) years, the next updated will be BCA 2025 which is anticipated to come into force on the 1st of May 2025.

2.3 Fire Brigade

As per BCA 2022 Clause A2G2(4) all Performance Solutions are required to undertake a Performance Based Design Brief (PBDB) process, NSW Fire Brigades have advised (https://www.fire.nsw.gov.au/page.php?id=9154) that they will only provide their stakeholder input via a Fire Engineering Brief Questionnaire (FEBQ) process prepared and lodged by the engaged Fire Safety Engineer. This applies to all projects irrespective of the approval process, Crown, REF, CDC or Construction Certificate projects, if there are any Performance Solutions affecting fire safety all need to undertake this stakeholder engagement with NSW Fire Brigade which the Fire Safety Engineering will lodge.

Section 27 of the EP&A 2021 Regs defines which fire engineering reports need to be referred, and generally relates to Category 2 Fire Safety Provisions (defined in the Act) and/or for cladding performance solutions[1], and the floor area of a fire compartment in general terms exceeds 2000 m^2 or the floor area of the building exceeds 6000 m^2, the Section 27 referral to the FRNSW is to be assessed and lodged by the engaged Registered Certifier assessing the Construction Certificate**.**

[1]***Category 2 fire safety provision means the following provisions of the Building Code of Australia, namely, CP9, EP1.3, EP1.4, EP1.6, EP2.2 and EP3.2 in Volume One of that Code.***

It is common practice to adopt this Construction Certificate process on Crown projects under a voluntary submission; however this is up to the discretion of the Crown Authority if this subsequent Fire Engineer Report referral and Inspection of Fire Brigades will be adopted on a project by project. (Note: there is no option for the FEBQ process, but voluntary for the Report lodgement and request for inspection on completion which can only be made if the report is lodged initially.)

Under recent changes to the legislation and Fire brigade advice, for Section 27 referrals of the Fire Engineering Report the fire brigade is required to respond within 10 days advising whether or not they will be proceeding with a review and providing the Initial Fire Safety Report. If so, they have not more than 28 days from the initial lodgement to provide their report or the Certifier can choose to invoke the provisions of Clause 144(6A)(c) and issue the Construction Certificate after 28 days of officially lodging the Clause 144 application; further consultation is required on this issue with the engaged Certifier as in almost all cases the Certifier will await comments and adopt any recommendations made by NSW Fire & Rescue which may have programme implications to be planned for.

2.4 Limitations

This report does not constitute or include, nor imply or audit any assessment of the following;

- This assessment is limited to the developed documentation at the date of this report and as referenced within the “Documentation Assessed” section of the Report.
- Preparation of performance provisions of the BCA are excluded.
- This report does not include assessment of the documentation against the provisions of the Disability Discrimination Act 1992 or (Access to Premises Buildings) Standards 2010.
- Any roof top plant or the like has been assessed (assumed) as open to the sky. Covered areas to roof tops may constitute an extra storey thus BCA requirement for the entire building may change.
- Travel distances have been assessed on an open plan basis with an allowance made for travel around pending fixed structures. No consideration has been given to any future fixed structures and accordingly, further assessment will be required in the event of floor plan or fixture amendments if and when these are provided formally.
- This report excludes any form of Certification Work as defined in the regulations and is for BCA Compliance purposes only.
- Generally, the assessment does not include a detailed assessment of Australian Standards.
- 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, Liquor Licensing Act 1997 and the like; and
- Demolition Standards not referred to by the BCA.
- Work Healthy and Safety Act 2011 (Safety in Design).
- The National Construction Code – Plumbing Code of Australia Volume 3.
- BCA Report lists Clauses and Specifications are based on the Draft version of BCA 2022, should changes occur in the issued/adopted version then any changes are excluded and the actual clause in the BCA will supersede anything listed in the Report.
- The capacity of design of any Electrical, Fire, Hydraulic or Mechanical Services.
- Structural and services drawings have not been reviewed, nor any consideration given to the structural capacity (or inherent FRL’s) of the building.

3.0 BUILDING DESCRIPTION

3.1 Site Description

The site is located at Dunoon Road, North Lismore, also known as 163 and 170 Alexandra Parade, North Lismore. The site comprises of 3 separate lots, located to the north of Alexandra Parade, with Dunoon Road running parallel to the eastern boundary of the site.

The site is legally described as:

- Lot 1 DP 539012
- Lot 2 DP 539012
- Lot 1 DP 376007

The site area is approximately 33.53 hectares. The proposed activity will be undertaken mainly within the south-eastern portion of the site. The site is outlined in Figure 1.

Figure 1 - Aerial image of site (Source: Nearmap)

3.2 Proposed Activity Description

The proposed activity comprises the relocation and rebuild of the Richmond River High Campus from its existing temporary location alongside The Rivers Secondary College Lismore High Campus at East Lismore to the site at 163 and 170 Alexandra Parade, North Lismore.

The school will be delivered in one stage. A detailed description of the proposal is as follows:

1. Demolition of existing features including existing buildings, cattle drinking well, cattle sheds, and wire fencing, and removal of trees to accommodate school development.
2. Construction of new 3-storey buildings on the south-eastern portion of the site for the proposed public secondary school including:
    a. General and Specialist Learning Spaces, and Workshops.
    b. Administration, and Staff facilities.
    c. Library, Hall, and Movement Studio.

d. Construction, Hospitality, and Agricultural Learning Facilities.

e. Amenity, Plant, Circulation, and Storage areas.

f. Outdoor Learning Spaces and play spaces.

3. Landscaping including tree planting.
4. Public domain works comprising:
   - Access road off Dunoon Road, comprising a separate shared bicycle/pedestrian pathway, and internal access roundabout.
   - Kiss and ride drop-off and pick up zones.
   - Bus transport arrangements with a separate bus zone.
5. Outdoor spaces including assembly zones, agricultural spaces, sports fields, games courts, dancing circles, yarning and dancing circles, seating and shade structures.
6. On-site carparking, including accessible spaces and provision for EV charging spaces.

Figure 2 below shows the scope of works.

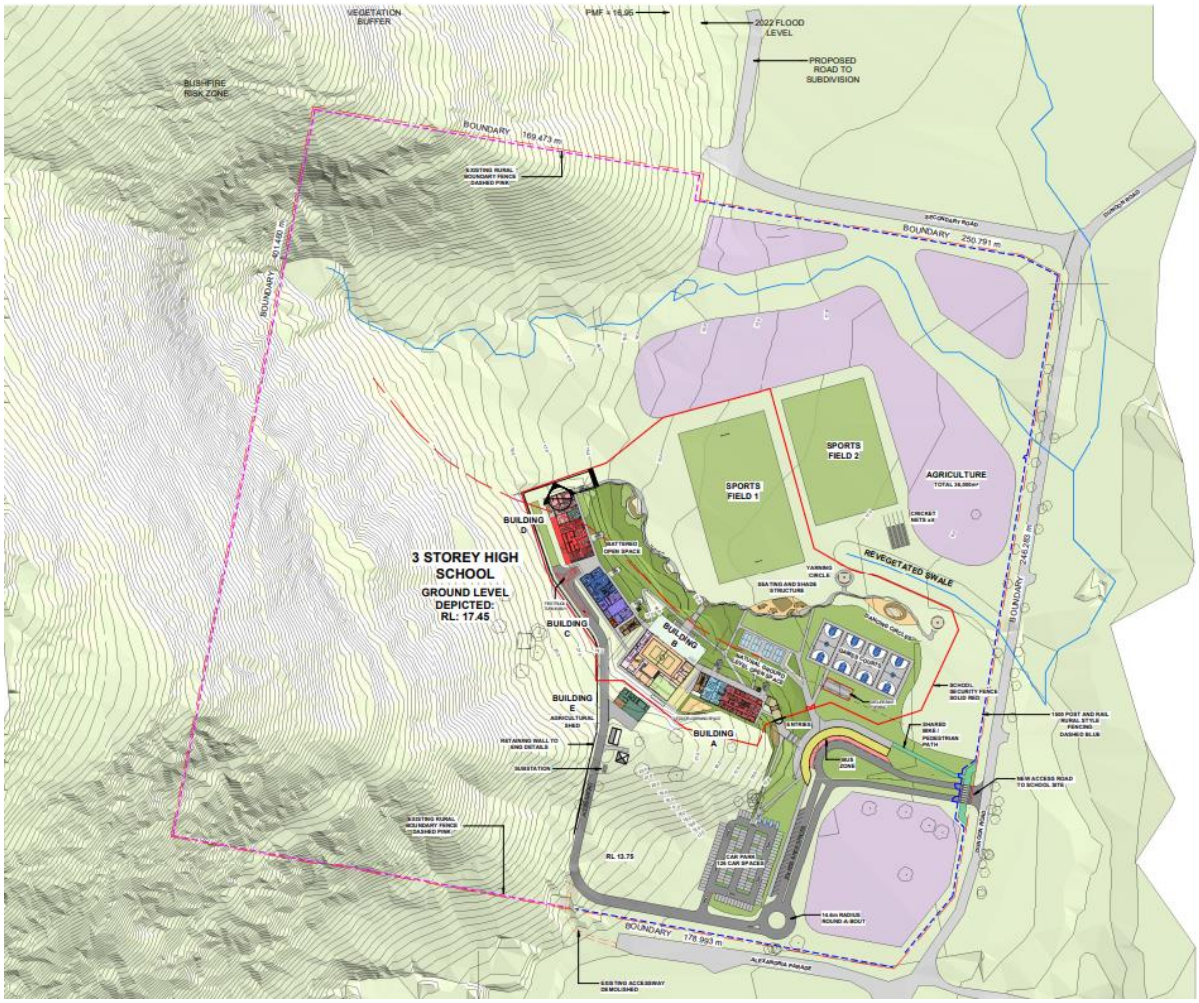

Figure 2 - Overall Site Context Plan (Source: EJE Architecture)

3.3 Building Description

BCA Class	Level	Description/Use Proposed
Class 5	Ground Level – Building A	Offices (school administration)
Class 9b	Ground Level & Level 1 and 2	Educational purposes (classrooms)
Class 9b	Ground Level – Building B	Multi-purpose Hall, Theatre and COLA
Class 9b	Level 2 – Zone A	School Library
Class 7b	Access Road	Agricultural Shed
Class 10a	Ground Level	Covered Walkways

Table 5 – Building Class (or part)

Characteristic	Building A (Admin, Classrooms, Library)	Building B Theatre, Hall & COLA	Building C & D (Classrooms)	Building E - Ag Shed
BCA Classifications:	Class 5 & 9b	Class 9b	Class 9b	Class 7b
Type of Construction:	Type A	Type C	Type A	Type C
Floor Area of Whole Building:	3,600m^2	2,300m^2	7,200m^2	352m^2
Volume of Whole Building:	9,720m^{3*}	< 18,000m^3	<20,000m^3	< 2,000m^3
Max Fire Compartment Size (Floor Area):	8,000m^2	3,000m^2	8,000m^2	3,000m^2
Max Fire Compartment Size (Volume):	48,000m^{3*}	18,000m^3	48,000m^3	18,000m^3
Fire Compartments:	Single FC	Single FC	Single FC	Single FC
Rise in Storeys:	3	1	3 (#)	1
Levels Contained:	3	1	3	1
BCA Effective Height:	< 25m	< 25m	<25m	< 25m
Climate Zone:	2	2	2	2
Importance Level (BCA Table B1D3a):	3	3	3	N/A

Table 6 – Building Characteristic

#	A storey is defined as a space within a building which is situated between one floor level and the floor level next above, or if there is no floor above, the ceiling or roof above, but not a space that contains only- ➢ A lift shaft, stairway or meter room. The undercroft area of Building A has not been assessed as a storey for the purpose of calculating the rise in storey of the building. Should this area be enclosed and used as a storey in the future then the building will need to be re-assessed as a 4 storey building which may require the building to be upgraded to comply with the version of the NCC at this particular time.
*	The ceiling height has been assessed as 2.7m to calculate the volume of the Buildings A, C & D.

The buildings to the school campus are connected and united with roof overhangs. May need to consider as a combined building of Type A Construction. The alternative may include a fire engineering - performance solution so can assess as 3 separate buildings rather than a large, combined building. The advantage is that Building B (Multi-purpose Hall) being single storey can be designed as Type C construction with each building being assessed as a separate fire compartment.

Note: "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)."

3.4 Documentation Assessed

The architectural plans are still under development to the extent that a complete BCA assessment can be concluded and therefore this report is preliminary only for information. This report is based on the following REF – architectural drawings prepared by EJE.

Description	Drawing No.	Revision	Date
Overall Site Context Plan	A-DA0010	J	04/07/2025
Ground Floor - Zone A	A-DA00101	H	04/07/2025
Ground Floor - Zone B	A-DA00102	H	04/07/2025
Level 1 – Zone A	A-DA00103	H	04/07/2025
Level 1 – Zone B	A-DA0104	H	04/07/2025
Level 2 – Zone A	A-DA0105	H	04/07/2025
Level 2 – Zone B	A-DA0106	H	04/07/2025
Undercroft – Zone B	A-DA0100	H	04/07/2025
Overall Site Context Plan	A-DA0010	J	04/07/2025
Overall Ground Floor Plan	A-DA0011	S	04/07/2025
Overall Level 1 & Level 2 Plan	A-DA0012	P	04/07/2025
Overall Roof Plan	A-DA0013	K	04/07/2025
Coversheet	A-DA1000	H	04/07/2025
Building A – Undercroft	A-DA1100	E	04/07/2025
Building A – Ground Floor Plan	A-DA1101	K	04/07/2025
Building A – Level 1	A-DA1102	J	04/07/2025
Building A – Level 2	A-DA1103	J	04/07/2025
Building A – Roof	A-DA1104	J	04/07/2025
Building A – Elevations Sheet 1	A-DA1200	J	04/07/2025
Building A – Elevations Sheet 2	A-DA1201	J	04/07/2025
Building A – Elevations Sheet 3	A-DA1202	E	04/07/2025
Building A – Section Sheet 1	A-DA1300	J	04/07/2025
Building B – Coversheet	A-DA2000	G	04/07/2025

Description	Drawing No.	Revision	Date
Building B – Ground Floor Plan	A-DA2100	F	04/07/2025
Building B – Roof Plan	A-DA2101	J	04/07/2025
Building B – Elevations Sheet 1	A-DA2200	H	04/07/2025
Building B – Elevations Sheet 2	A-DA2201	H	04/07/2025
Building B – Section – Sheet 1	A-DA2201	H	04/07/2025
Building C – Coversheet	A-DA3000	F	04/07/2025
Building C – Ground Floor Plan	A-DA3100	J	04/07/2025
Building C – Level 1 Plan	A-DA3101	J	04/07/2025
Building C – Level 2 Plan	A-DA3102	J	04/07/2025
Building C – Roof	A-DA3103	J	04/07/2025
Building C – Elevations Sheet 1	A-DA3200	J	04/07/2025
Building C – Elevations Sheet 2	A-DA3201	J	04/07/2025
Building C – Sections – Sheet 1	A-DA3202	J	04/07/2025
Building D – Coversheet	A-DA4000	H	04/07/2025
Building D – Ground Floor Plan	A-DA4100	J	04/07/2025
Building D – Level 1	A-DA4101	J	04/07/2025
Building D – Level 2 Plan	A-DA4102	J	04/07/2025
Building D – Roof Plan	A-DA4103	J	04/07/2025
Building B – Elevations – Sheet 1	A-DA4200	J	04/07/2025
Building B – Elevations – Sheet 2	A-DA4201	J	04/07/2025
Building B – Sections – Sheet 1	A-DA4300	K	04/07/2025
Building E – Coversheet	A-DA5000	H	04/07/2025
Building E – Ground Floor Plan	A-DA5100	J	04/07/2025
Building E – Roof Plan	A-DA5101	G	04/07/2025
Building E – Elevations – Sheet 1	A-DA5200	H	04/07/2025

Description	Drawing No.	Revision	Date
Building E – Elevations – Sheet 2	A-DA5201	H	04/07/2025
Building E – Sections – Sheet 1	A-DA5200	J	04/07/2025

Table 6 – Documentation Assessed

3.5 Assumptions

Assumptions made in the preparation of the report are identified below;

1. A total population of up to 660 students with 64 staff is proposed throughout the school campus.
2. Importance Level: Guide to the BCA indicates importance level 3 apply to buildings and facilities with a primary school, a secondary school or day care facilities with a capacity greater than 250.
3. The external balconies and walkways are open circulation areas with sterile finishes. Consequently, the use of these areas does not contribute to the fire load for the purposes of assessment under Part C3 of the BCA.
4. Disabled Access, Section J energy Efficiency are excluded from this report, and details relating to these elements are located in others reports/documentation.
5. The undercroft area of Building E has not been assessed as a storey for the purpose of calculating the rise in storey of the building. Should this area be enclosed and used as a storey in the future then the building will need to be re-assessed as a 4 storey building which may require the building to be upgraded to comply with the version of the NCC.

4.0 BCA COMPLIANCE DISCUSSION & DESIGN CONSIDERATIONS

The following assessment will provide an overview of the compliance with the BCA and identify items that will be assessed further as the design progresses towards the crown certification of building works.

Section B – Structure

- Structural Engineer to review and provide compliant design in accordance with Part B, Part C and Clauses D3D4 of BCA 2022, and all listed / referenced Australian Standards.

- Structural Engineer is to outline and provide to the Consultant Team (Façade designer, Architect and Services Consultants) the calculated expected Earthquake actions and expected forces expected on non-structural components to be designed for, from Section 8 of AS 1170.4-2007 as referenced in BCA 2022.

- Services Consultants to provide confirmation of compliance of non-structural elements in accordance with Sections 8 of AS1170.4-2007 or alternatively Structural Engineer to provide specific design statement referencing non-structural elements as outlined in Section 8 of AS1170.4-2007 Note: This may require input from Structural engineer as per Item 2 above.

- Architect to provide confirmation of compliance of non-structural elements in accordance with Sections 8 of AS1170.4-2007 or alternatively Structural Engineer to provide specific design statement referencing non-structural elements as outlined in Section 8 of AS1170.4-2007. Note: This may require input from Structural engineer as per Item 2 above.

Section C – Fire Resistance

- Structural Engineer and Architect to review and provide compliant design with respect to required FRL's for a Type A and Type C - 9b structure, including all loadbearing structures which provide direct vertical or lateral support to those elements with a required FRL.

- The architectural drawings indicate there are three (3) distinct buildings which are connected via the roof structure to form a single combined building. May need to consider as a combined building of Type A Construction. The alternative may include a fire engineering - performance solution so can assess as 3 separate buildings rather than a large, combined building. The advantage is that the single storey buildings can be designed as Type C construction with each building being assessed as a separate fire compartment.

- The maximum size of fire compartments for a Class 5 and 9b building of Type A construction is 8,000m^2 with volume up to 48,000m^2. Whilst a Class 9b building of Type C construction being 3,000m^2 with a volume up to 18,000m^3. The overall floor area and volume of the building being established to determine the appropriate location of firewalls to provide fire separation in accordance with Table C3D3 of the BCA.

- The buildings with a rise in storey of 3 must be designed to comply with Type A construction. The windows between storeys must be suitably fire-separated by spandrel which achieve compliance with Clause C3D7 of the BCA. The architectural design drawings being suitable detailed to satisfy these requirements.

- Lift Shaft – should the lift shaft/s be designed to be non-loadbearing; the Structural engineer is to provide the required Earthquake information to the consultant designing the lift shafts to meet the requirements of Section 8 of AS 1170.4-2007 as referenced in BCA 2022.

- Architect / Façade Consultant is to provide a Detailed statement outlining each part/element contained in the makeup of the external wall system and any other elements required to be non-combustible in accordance with C2D10 (external walls) & C2D14 (Ancillary Elements). Current fire test reports required to be provided in accordance with AS1530.1 for each element required to be non-combustible in accordance with C2D10 & C2D14.

- The proposed buildings is situated across the 3 allotments which creates multiple technical non-compliances with the BCA:
  (a) External walls situated within 3.0m to the allotment boundary is required to achieve an FRL;

(b) Window and doorway openings within 3.0m to the allotment boundary is required to be protected.

These departures from the DtS provisions can be readily address via a performance solution from a fire engineer to comply with the performance requirements of BCA 2022.

The consolidation of the 3 allotment into a single allotment will mean this performance solution will no longer be required. Verification of the consolidation to a single allotment being address at the crown certificate stage.

(1) In a building *required* to be of **Type A** construction—

(a) each building element listed in Tables S5C11a to S5C11g and any beam or column incorporated in it, must have an FRL not less than that listed in those Tables for the particular Class of building concerned; and

(b) any *internal wall required* to have an FRL with respect to *integrity* and *insulation* must extend to—

(i) the underside of the floor next above; or

(ii) the underside of a roof complying with Tables S5C11a to S5C11g; or

(iii) if under S5C15 the roof is not *required* to comply with Tables S5C11a to S5C11g, the underside of the *non-combustible* roof covering and, except for roof battens with dimensions of 75 mm x 50 mm or less or *sarking-type material*, must not be crossed by timber or other *combustible* building elements; or

(iv) a ceiling that is immediately below the roof and has a *resistance to the incipient spread of fire* to the roof space between the ceiling and the roof of not less than 60 minutes; and

(c) a *loadbearing internal wall* and a *loadbearing fire wall* (including those that are part of a *loadbearing shaft*) must be constructed from—

(i) concrete; or

(ii) masonry: or

(iii) Subject to (2), *fire-protected timber*; or

(iv) any combination of (i) to (iii); and

(d) the FRLs specified in Tables S5C11a to S5C11g for an external column apply also to those parts of an internal column that face and are within 1.5 m of a window and are exposed through that window to a fire-source feature

(2) For the purposes of (1)(c)(iii), fire-protected timber may be used, provided that—

(a) the building is—

(i) a separate building; or

(ii) a part of a building—

(A) which only occupies part of a *storey*, and is separated from the remaining part by a *fire wall*; or

(B) which is located above or below a part not containing *fire-protected timber* and the floor between the adjoining parts is provided with an FRL not less than that prescribed for a *fire wall* for the lower *storey*; and

(b) the building has an *effective height* of not more than 25 m; and

(c) the building has a sprinkler system (other than a FPAA101D or FPAA101H system) throughout complying with Specification 17; and

(d) any insulation installed in the cavity of the timber building element *required* to have an FRL is *non-combustible*; and

(e) cavity barriers are provided in accordance with Specification 9

(3) For the purposes of Table S5C11a and Table S5C11b, includes any column and other building element incorporated within it or other external building element

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 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Less than 1.5m	90/90/90	120/120/120	180/180/180	240/240/240
1.5 to less than 3m	90/60/60	120/90/90	180/180/120	240/240/180
3m or more	90/60/30	120/60/30	180/120/90	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 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Less than 1.5m	–/90/90	–/120/120	–/180/180	–/240/240
1.5 to less than 3m	–/60/60	–/90/90	–/180/120	–/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 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8

Loadbearing	90/–/–	120/–/–	180/–/–	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 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 S5C11e: Type A construction: FRL of loadbearing internal walls

Distance from a *fire-source feature*	FRL (in minutes): Structural adequacy/ Integrity / Insulation			
	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 S5C11f: Type A construction: FRL of non-loadbearing internal walls

Location	FRL (in minutes): Structural adequacy/ Integrity / Insulation			
	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 S5C11g: Type A construction: FRL of other building elements not covered by Tables S5C11a to S5C11f

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

Roof: Concession

A roof need not comply with Tables S5C11a to S5C11g if its covering is *non-combustible* and the building—

(a) has a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification 17 installed throughout; or

(b) **has a *rise in storeys* of 3 or less**; or

(c) is of Class 2 or 3; or

(d) has an *effective height* of not more than 25 m and the ceiling immediately below the roof has a *resistance to the incipient spread of fire* to the roof space of not less than 60 minutes

General Floor area and Volume limitations (BCA Clause C3D3):

(1) The size of any *fire compartment* or *atrium* in a Class 5, 6, 7, 8 or 9 building must not exceed the relevant maximum *floor area* nor the relevant maximum *volume* set out in Table C3D3 and C3D6 except as permitted in C3D4.

(2) A part of a building which contains only heating, ventilating, or lift equipment, water tanks, or similar service units is not counted in the *floor area* or *volume* of a *fire compartment* or *atrium* if it is situated at the top of the building.

(3) In a building containing an *atrium*, the part of the *atrium* well bounded by the perimeter of the openings in the floors and extending from the level of the first floor above the *atrium* floor to the roof covering is not counted in the *volume* of the *atrium* for the purposes of this clause.

Table C3D3: maximum size of fire compartments or atria:

Classification	Type A construction	Type B construction	Type C construction
5, 9b or 9c	Max *floor area* - 8 000 m^2	Max *floor area* - 5 500 m^2	Max *floor area* - 3 000 m^2
	Max volume - 48 000 m^3	Max volume - 33 000 m^3	Max volume – 18 000 m^3
6, 7, 8 or 9a (except for patient care areas)	Max *floor area* - 5 000 m^2	Max *floor area* - 3 500 m^2	Max *floor area* - 2 000 m^2
	Max volume - 30 000 m^3	Max volume - 21 000 m^3	Max volume - 12 000 m^3

The buildings to the school campus are connected and united with roof overhangs. May need to consider as a combined building of Type A Construction. The alternative may include a fire engineering - performance solution so can assess as 3 separate buildings rather than a large, combined building. The advantage is that the single storey buildings can be designed as Type C construction with each building being assessed as a separate fire compartment.

Section D – Access & Egress

- Number of Exits Required:
  - The BCA prescribes that not less than 2 require exits must be provided from each storey in a Class 9b Compliance will be achieved with these provisions of the BCA.
- Travel Distance to Exits and between Alternative Exits:
  - Travel distances on the floor must be more than 20m to an exit or a point in which travel in different directions to 2 exits is available, in which case, the maximum distance to 1 exit cannot exceed 40m; and
  - Travel distances between alternative exits must be at least 9.0m apart and not exceed a distance of 60m in all other classes, uniformly distributed with access to 2 exits if required and not converge so they become less than 6m apart.

Initial review of the architectural drawings has identified extended travel distances to required exits will be suitable address via the performance solutions from a fire engineer at the crown certificate stage.

Widths of exits and path of travel to exits (BCA Clause D2D8):

D2D8	**Width of exits and paths of travel to exits**
	If the *storey*, *mezzanine* or *open spectator stand* accommodates more than 200 persons, the aggregate unobstructed width of each *required exit* or path of travel to an *exit*, except for doorways, must be not less than— (a) 2 m plus 500 mm for every 60 persons (or part) in excess of 200 persons if egress involves a change in floor level by a stairway or ramp with a gradient steeper than 1 in 12; or (b) in any other case, 2 m plus 500 mm for every 75 persons (or part) in excess of 200. In an *open spectator stand* which accommodates more than 2000 persons, the aggregate unobstructed width of each *required exit* or path of travel to an *exit*, except for doorways, must be not less than 17 m plus a width (in metres) equal to the number in excess of 2000 divided by 600 In a *required exit* or path of travel to an *exit*, **the unobstructed width of a doorway** must be not less than— (i) where the doorway referred to in (i) is fitted with two leaves and one leaf is secured in the closed position in accordance with D3D26(3)(e), the other leaf must permit an unobstructed opening not less than 800 mm wide; or **(ii)** the unobstructed width of each *exit* provided to comply with D2D8(1), (2), (3) or (4), **minus 250 mm;**

Building	Level	Population	Aggregate Exit Widths Required	Aggregate Exit Widths (Design)	Compliance Comments (Y/N)
Building A	Level 1 & 2	400 persons per storey	4.0m	4.2m	Y
Building B (Multi-purpose Hall/Theatre)	Ground Floor	689 persons	5.50m	5.7m	Y
Building C	Level 1 & 2	400 persons per storey	4.0m	4.2m	Y
Building D	Level 1 & 2	400 persons per storey	4.0m	4.2m	Y
Building E (AG Shed)	Ground Level	10 persons	2.0m	2.0m	Y
The unobstructed width of a required exit must not diminish in the direction of travel to a road or open space.					

- External stairway in lieu of fire-isolated exits:
  - An external stairway may serve as a required exit in lieu of a fire-isolated exit serving a storey below an effective height of 25m, if the stairway is non-combustible throughout and protected in accordance with Clause D2D13 if it is within 6m of and exposed to any part of the external wall of the building it serves.
  - Bounding walls of external stairway or the external wall of the building situated within 6.0m of the external wall of the building to achieve an FRL 60/60/60 with glazed doorways and windows protected by wall-wetting drenchers.

    Please note: Doorway or window openings are not permitted within 3.0m to the external stairways.
  - Initial review indicates the lift shaft will be situated within 3.0m to the external stairways. This will create a non-compliance as the lift landing doors will be within 3.0m to the external stairway.

The external stairway incorporates part of the external balcony as the communal thoroughfare for occupants exiting via the external stair and is therefore considered part of the external exit. As the width of the stairway is approximately 2.3m wide, the landings at each level are assessed as part of the stairway and the 6.0m setback being measured to this circulation zone.

A fire engineering - performance solution will be documented to evaluate the location of the external stairways in lieu of fire-isolated stairway to ensure the safe evacuation of occupants.

Installations in exits and paths of travel (BCA Clause D3D8):

(1) Services or equipment enclosed in accordance with these provisions may be installed in a *required exit*, or in any corridor, hallway, lobby or the like leading to a *required exit*, where that service or equipment comprises— (a) electricity meters, distribution boards or ducts; or (b) central telecommunications distribution boards or equipment; or (c) electrical motors or other motors serving equipment in the building. (2) An enclosure for the purposes of (1) must be— (a) *non-combustible* construction; or (b) a *fire-protective covering* with doorways or openings suitably sealed against smoke spreading from the enclosure.	EDB cupboards along the path of travel to required exits being suitable enclosed to comply with these provisions. Architectural drawings to detail compliance with these provisions.

1. Enclosure of space under stairs and ramps (BCA Clause D3D9):

(1) Fire-isolated stairways and ramps — If the space below a *required fire-isolated stairway* or *fire-isolated ramp* is within the fire-isolated *shaft*, it must not be enclosed to form a cupboard or similar enclosed space. (2) Non fire-isolated stairways and ramps — The space below a *required* non *fire-isolated stairway* (including an external stairway) or non *fire-isolated ramp* must not be enclosed to form a cupboard or other enclosed space unless— (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.	Architectural drawings to detail the fire separation of storerooms/enclosures underneath the required exit stairways to comply with these provisions.

Egress Paths to the Public Roadway:
The path of travel to the public road after egress from the stairway must be via the same allotment of land. The proposed buildings is situated across the 3 allotments which creates a technical non-compliance as egress to the public roadway is not located on the same allotment.

This departures from the DtS provisions can be readily address via a performance solution from a fire engineer to comply with the performance requirements of BCA 2022.

The consolidation of the 3 allotments into a single allotment will mean this performance solution will no longer be required. Verification of the consolidation to a single allotment being address at the crown certificate stage.

Access for People with Disabilities (Part D4 of BCA):

Buildings and parts of buildings must be accessible as required by this clause, unless exempted by D4D5.	Refer to Access Consultants Report in regard to compliance with this part of the BCA.

Section E –Services & Equipment

- Fire Services and Mechanical Consultants to provide compliant design in accordance with Part E, for the purposes of the building design at this stage the following fire services are anticipated/expected:

  - Fire Hydrant system to BCA Clause E1D2 and AS 2419.1-2021;

    A fire hydrant booster assembly is required to be within sight of the pedestrian entrance to the building and adjacent to the property boundary and the vehicle access for the fire brigade. The fire hydrant system for the new building being designed to comply with the requirements of AS 2419.1-2021.

    The FH booster assembly is proposed to be located at the main vehicular entry along the secondary street front rather than the principal street address (Dunoon Road). The location is not in sight of each principal entry to the respective school buildings. The location of the FH booster assembly will be assessed as a performance solution from the fire engineer.

    The proposed new buildings due to the allotments have not been amalgamated into the one-parent allotment, therefore, a performance solution by a fire engineer is required to permit shared fire hydrant services over allotments.

  - Fire Hose Reels is not required to serve a class 9b – classrooms or class 5 offices. Fire Hose Reels are required to serve the Multi-purpose Hall and Library areas. The location being within 4.0m to required exits (i.e. Stair 2 & 4). Consideration may be given to the deletion of FHR's subject to a performance solution from a fire engineer.

  - Portable Extinguishers to BCA Clause E1D14 and AS 2444-2001.

Section E2 – Smoke Hazard Management

Smoke Detection and Alarm System:

- The BCA prescribes a smoke detection and alarm system must serve a class 5 and 9b building with a rise in storey greater than 3. As the rise in storeys do not exceed 3 storeys a Smoke Detection and Alarm system to AS 1670.1-2018 and BCA E2D9 is not required by BCA 2022. Notwithstanding these provisions, it is considered to be beneficial for the school campus to be served by a smoke detection and alarm system connected to a centrally located Fire Indicator Panel (F.I.P).

- Smoke detection system that is provided to satisfy the requirements for automatic shutdown of air-handling system in accordance with NSW E2D16 and S20C6 of the BCA;

- NSWE2D19 smoke exhaust required where the fire compartment exceed 2000sqm (classrooms are

exempt so this applies to library only). Consideration being given to a performance solution from a fire engineer to omit smoke exhaust system to the library based upon internal floor area less than 2,000sqm and open balcony area will be sterile area without furniture and combustibles

Mechanical Ventilation System – Auto Shut Down:

- Mechanical Ventilation System - Auto Shut Down of any air-handling system as per BCA Clause E2D16 (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 Section 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 in accordance with S20C6.

Smoke-and-Heat Vents/Smoke Exhaust System to Multi-purpose Hall:

- Multi-purpose Hall has a stage area greater than 50sqm. The stage area is required to be served by automatic smoke and heat vents complying with NSW 14D59, in a single storey building or top storey of two storey building. Consideration may be given to the omission of smoke-and-heat vents which can be assessed further as part of a fire engineering – performance solution.

Section E4 – Emergency Lighting, exit signs and Intercom Systems

- Exit Signs and Emergency Lighting to BCA Part E4 and AS 2293.1-2005.

- An emergency warning and intercom system complying, where applicable with AS 1670.4 must be installed in a Class 9b building used as a theatre, public hall, or the like, having a floor area more than 1,000m^2 or a rise in storeys of more than 2.

Section F – Health and Amenity

- **Damp and Weatherproofing**

There are new requirements that a roof, balcony, podium or similar horizontal surface part of a building must be provided with a waterproofing membrane in accordance with AS 4654.1 and AS 4651.2.

This is a new requirement coming into effect as of 1 May 2022 and careful design consideration will need to be applied in the areas of the balconies and the like in this development.

There may be conflict with the accessible provisions of Part D4 of the BCA which will need to be comment on further by the access consultant, as this Standard may require hobs at the thresholds to the rooftop, see Figure 4 below. There is relief available as the Standard does allow for a gutter system at the threshold of the door sill, which is to be fitted with an AS1428.1-2009 approved grate, in lieu of a hob (Ref: AS 4654.2). However, such detail should only be determined in accordance with the hydraulic engineer and the access consultant. Note that the accessible Standard contains restrictions on heights differences between abutting surfaces, such as the flooring and door sill, and a review of Section 7 of AS 1428.1-2009 (note the designer will need to review the 2021 version of this standard as this will be applicable at the time of the Construction Certificate) should be considered as part of the threshold designs.

Figure 4 below also illustrates the membrane termination heights which are given in Table A1 of Appendix of the Waterproofing Standard. Note that the heights are related to the determined wind class from AS 4055-2012 and should only be determined by the appropriate project engineer, i.e., structural, hydraulic or façade engineer.

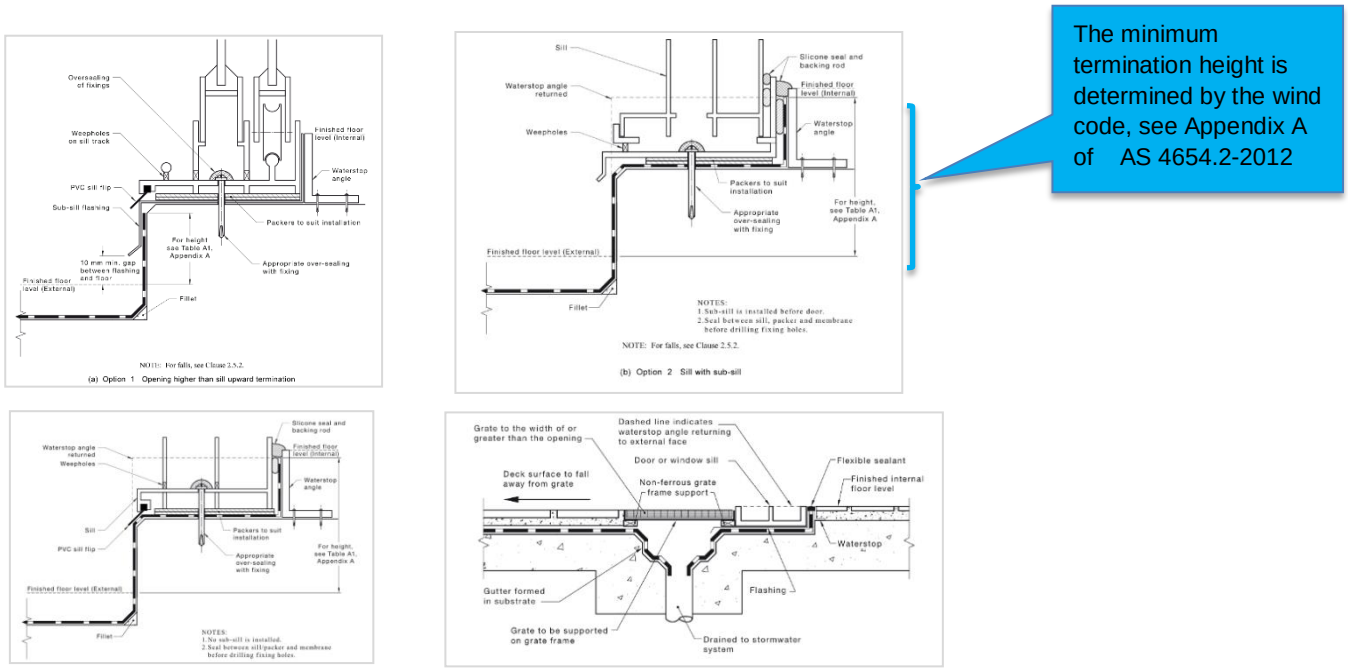

Figure 4 - Various waterproofing options at threshold and outlets.

Doors and windows onto external waterproof areas are required to comply with either of the 4 options above. Consideration must be given to access for people with disabilities which requires 5mm tolerance in difference with floor levels at door thresholds. Therefore – Clause 2.8.3 from AS 4654.2 requires grates to be provided as per figure 2.9 in front of doorways along the balconies within each storey. The architectural and Hydraulic details will be further developed to achieve compliance with these provisions of the BCA.

- **<u>Occupant Numbers and Assessment of Sanitary Facilities:</u>**

  A total population of up to 600 students with 64 staff is proposed throughout the school campus. Based on this population the below minimum number of sanitary facilities will be required:

Stage 1 and 2 – Sanitary Facilities required based upon Design Occupancy

Student – Sanitary Facilities

	Population	Pans	Urinals	Washbasins
Male	300	5	4	6
Female	300			6
	Unisex Accessible		1 per bank of toilets	

Staff – Sanitary Facilities

	Population	Pans	Urinals	Washbasins
Male	32	2	2	2
Female	32	3	N/A	2
	Unisex Accessible		1 per bank of toilets	

Notes:

1. Each urinal for males can be substituted with a water closet.
2. An accessible unisex facility required for people with a disability may be counted once for each sex. This concession means that for each wash basin and closet pan counted above, you may deduct for each accessible unisex facility provided.
3. Ambulant facilities must be provided with the block of sanitary facilities in accordance with BCA and AS 2419.1-2009.

Provision of Natural Light to Classrooms:

Natural light must be provided in a Class 9b building – to all general purpose classrooms in a secondary schools. Method and extent of natural lights must be provided by windows that comply with the following:

- Have an aggregate light transmitting area measured exclusive of framing members, glazed bars or other obstructions of not less than 10% of the floor area of the room; and
- Are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like.

Section G – Ancillary Provisions

- The Deemed-to-Satisfy provisions apply in a designated bushfire prone area to a building located in an area subject to a Bushfire Attack Level (BAL) not exceeding BAL – 12.5, determined with AS 3959 that is a Class 9b – primary or secondary school.

- Bushfire Hazard Assessment prepared by GeoLink dated 30 June 2025 has established that the site is partly mapped as bushfire prone land with the north-west corner of the site containing Category 1 Vegetation, Category 2 Vegetation and Vegetation Buffer. The central and eastern portions of the site are not mapped as bushfire prone land.

- It is our opinion, based upon the new buildings being located outside the mapped area then Part G5 will not be applicable for the development. Whilst this is our opinion, this must be reviewed/confirmed by the project PCA/Crown Certifier for concurrence.

Section J – Energy Efficiency

- Refer to ESD Report prepared by LCI to review project and provide compliance statement/report for Section J of the BCA.

  Note: this is expected to include a review of the detailed design sections and detail of external walls for thermal break and make-up of the façade elements in the review, and not a high-level report outlining the required values only, this is due to the detailed assessment nature for Section J of external walls and roofs in BCA 2022.

5.0 PERFORMANCE SOLUTIONS

Consideration may be given to the following Performance Solutions as a result of our assessment of the listed documentation:

Fire Safety Performance Solution

Item	Query or DTS Non- Compliance	Suggested Resolution	BCA Clause	BCA Performance Requirements
1.	United Building: The architectural drawings indicate there are five (5) distinct buildings which are connected or overlap via the roof structure to form a single combined building. Based upon the connections between building, may need to consider as a combined building of Type A Construction.	fire engineering - performance solution so can assess as 3 separate buildings rather than a large combined building. The advantage is that the single storey buildings can be designed as Type C construction with each of the 3 storey buildings being designed as Type A Construction.	C2D2, C2D5, C3D3, C3D8, Spec 5	C1P2
2.	Unamalgamated Lot Boundaries: The school campus is located across 3 separate allotment boundaries. The proposed new buildings is situated across the 3 allotments which creates multiple technical non-compliances with the BCA: ➢ FRL Requirements as the building is within 3.0m from the boundary; ➢ Egress routes require occupants to cross lot boundaries to reach the public roadway; ➢ Shared Services for fire hydrant system across lot boundaries.	Consideration being given to the consolidation of the land into a single allotment or the documentation of a performance solution to assess the school campus across the inter-allotment boundaries.	C2D2, C4D3, Spec. 5, D2D3, D2D15, E1D2	C1P1, C1P2, D1P4, E2P2, E1P3.

Item	Query or DTS Non- Compliance	Suggested Resolution	BCA Clause	BCA Performance Requirements
3.	Fire Compartments: The maximum size of fire compartments for a Class 5 and 9b building of Type A construction is 8,000m^2 with volume up to 48,000m^2. Whilst a Class 9b building of Type C construction being 3,000m^2 with a volume up to 18,000m^3.	The overall floor area and volume of the building being established to determine the appropriate location of firewalls to provide fire separation in accordance with Table C3D3 of the BCA. A firewall is required to extend to the perimeter of walkway and balconies. This may require a 2 hour wall and doors across the balconies. Consideration may be given to a fire engineering - performance solution to delete the fire separation across the walkways or balconies.	C3D3, C3D8, Spec 5	C1P2
4.	External stairway in lieu of fire-isolated exits: An external stairway may serve as a required exit in lieu of a fire-isolated exit, if the stairway is non-combustible throughout and protected in accordance with Clause D2D13 if it is within 6m of and exposed to any part of the external wall of the building it serves. The path of travel along the balconies when descending the stairways are regarded as forming part of the external stairway. Based upon the current design the external walls within 6.0m of the external stairway must be designed to achieve an FRL of 60/60/60 with any glazing protected by wall-wetting drenchers.	Consideration may be given to a fire engineering - performance solution to evaluate the safe evacuation of occupants.	D2D13	C1P2, D1P5, E2P2
5.	Travel Distance exceed the DtS provisions: Our assessment has identified extended travel distances to required exits as summaries within Appendix A.	Consideration being given to the documentation of a performance solution from a fire engineer to address the extended travel distances to required exits.	D2D5 & D2D6	D1P4, E2P2
6.	Hall – Smoke-and-Heat Vents/Smoke Exhaust System: Multi-purpose Hall (Building C) and Theatre (Building C) has a stage area greater than 50sqm and less than	Consideration may be given to the rationalise the smoke hazard management system based upon a fire engineering – performance solution.	NSW 14D59	E2P2

Item	Query or DTS Non- Compliance	Suggested Resolution	BCA Clause	BCA Performance Requirements
	150sqm. The stage area is required to be served by automatic smoke and heat vents complying with NSW 14D59, in a single storey building or top storey of two storey building. The alternative, is to provide automatic smoke exhaust system above the stage area.			
7.	NSWE2D19 smoke exhaust required where the fire compartment exceed 2000sqm (classrooms are exempt so this applies to library only).	Consideration being given to a performance solution from a fire engineer to omit smoke exhaust system to the library based upon internal floor area less than 2,000sqm and open balcony area will be sterile area without furniture and combustibles	NSWE2D19	E2P2
8.	<u>Fire Hose Reels:</u> Fire Hose Reels are required to serve the Multi-purpose Hall and Library areas. The location being within 4.0m to required exits (i.e. Stair 2 & 4). The location being within 4.0m to required exits (i.e. Stair 2 & 4).	The location of FHR along the external balconies/walkway may be problematic. Consideration may be given to the deletion of FHR's subject to a performance solution from a fire engineer.	E1D3	E1P1
9.	<u>Location of FH Booster Assembly:</u> The FH booster assembly is proposed to be located at the main vehicular entry along the secondary street front rather than the principal street address (Dunoon Road). The location is not in sight of each principal entry to the respective school buildings.	The location of the FH Booster assembly being address via a performance solution from a fire engineer in consultant with NSW Fire & Rescue.	E1D2	E1P3

Table 7 – DtS Non-compliances Summary

Disabled Access Performance Solutions

Disabled Access consultant is to advise if any Performance Solutions are proposed for any Disabled Access matters for the building – see separate Access consultant's report for details.

Section J Energy Efficiency

It is expected that a Verification Method approach is proposed for the building based off the design, if that is the case then the Provision of the Section J report will be required to meet the requirements of the relevant Verification Clause of Section J and be provided as part of the Crown Certificate Application to the Certifier.

See Section J Consultants report for requirements relating to the design of the building and services requirements, which may differ from the BCA clauses contained in this report.

Weatherproofing of External Walls

As the materials that can be used as external walls under the DTS provisions (BCA Clause F3D5) are limited, and the proposed design is expected to contain other external wall material/cladding a Performance Solution to BCA Clause F3P1 is to be provided as part of the Crown Certificate Application to the Certifier.

Note: Design team is to establish which consultant will be preparing this Report, and the required PBDB for it as well, this is not as simple as a Design Statement but involves the preparation of a Performance Solution Report.

Important Note to Design Team / Consultants

Should the Architect or any Design Consultants believe that additional items need to be the subject of a Performance Solution or the Deemed to Satisfy provisions of the BCA or referenced Australian Standard is not able to be achieved for the design.

Then please advise Group DLA, Project Manager and Design Team as soon as possible to ensure that the team is informed to ensure captured, and solutions evaluated by the relevant consultant as soon as possible and before the design progresses to completion. Please do not assume elements will be included, if they are not listed in the above section of the Report then they are not and either the design will need to change to ensure compliance, or an additional Performance Solution will need to be discussed and assessed by the relevant consultant preparing the Performance Solution.

5.1 MITIGATION MEASURES

Subject to compliance with the mitigation measures of this report, it is considered that the activity can readily comply with the relevant requirements of the BCA

In order to ensure the design complies with the BCA, the following items listed in Table 7 below are required to be clarified, submitted, illustrated, etc. as the case may be as the design progresses toward the application for crown certification of building works.

Item No.	Mitigation Measures	Reason/Comment	BCA Clause
A.	Fire-rating of Building Elements: Structural steel columns incorporated within the external walls together with external columns to the fire-source feature must achieve the required FRL's.	Architect/structural engineer to detail compliance with the provisions of the BCA.	Spec. 5 of BCA.
B.	External Walls – Non-combustible Construction: The elements that make up an external wall must be tested and certified as non-combustible (i.e., wall assembly, insulation, sarking and attachments).	Architectural design to be development.	C2D10
C.	Spandrel Separation: The two (2) storey primary school building has a floor area greater than 5,500sqm and must be designed to comply with Type A construction. The windows between storeys must be suitable separated by spandrel which achieve compliance with Clause C3D7 of the BCA.	The architectural design drawings being suitable detailed to satisfy these provisions of the BCA.	C3D7.
D.	Swing of Exit Doors: The exit doorways to the administration office (Building A) are required to swing in the direction of egress as the floor area is greater than 200sqm.	Architectural drawings being updated to reflect compliance with the provisions of the BCA.	D3D25
F.	Sanitary Facilities: The doorway to sanitary facilities must be adequately screen from view when opening into a workspace.	Architectural drawings being updated to reflect compliance with the provisions of the BCA.	F6D9 & F6D10
G.	Damp and Weatherproofing: There are new requirements that a roof, balcony, podium or similar horizontal surface part of a	Architectural, hydraulic services and structural design to detail the waterproof membrane in accordance with AS 4654.1 and AS 4651.2	F1D5

Item No.	Mitigation Measures	Reason/Comment	BCA Clause
	building must be provided with a waterproofing membrane in accordance with AS 4654.1.		
H.	Services Design:	Fire Services, Electrical, Mechanical, Hydraulic Engineering design to be developed to achieve compliance with the prescriptive provisions of the BCA.	Part C, D, E, F and J

Table 4 – Mitigation Measures

The list above is not an exhaustive list, however, reflects BCA items to be incorporated into the design as the development progresses into detailed design and application for a crown certificate.

Evaluation of Environmental Impacts

Compliance with the BCA will be achieved by a combination of Deemed to Satisfy and Performance Solutions and will be assessed further as the design progresses towards the crown certification of building works.

Performance solution Reports as identified within this report will be prepared and verified by appropriate qualified persons prior to the preparation and issue of crown certification of building work.

6.0 ESSENTIAL FIRE SAFETY MEASURES (EFSM)

Below is a list of essential fire safety services that are required/expected to be installed / designed for the building, and the relevant standards of performance for each measure to be designed/constructed to. This table may be required to be updated as the design develops.

Richmond River High School Campus:

Fire Safety Measure	Standard of Performance	BCA 2022 Clause/Specification(s)
Access panels, doors & hoppers to fire resisting shafts	AS 1530.4 – 2014	C4D14
Automatic fail-safe devices	--	D3D26, Specification 12
Automatic fire detection & alarm systems	AS 1670.1 – 2018	Part E2, Specification 20
Emergency lighting	AS 2293.1 – 2018	E4D2, E4D4, E4D8
Emergency Warning and Intercom Systems	AS 1670.4 – 2018	E4D9, S31C19
Exit signs	AS 2293.1 – 2018	E4D5, E4D6, NSWWE4D6, E4D8, Spec 25
Fire dampers	AS 1668.1 – 2015 AS 1682.1 & 2-2015	C4D15
Fire doors	AS 1905.1 – 2015	C4D7, Spec 12
Fire Doors – Lift Landing Doors	AS 1735.11-1986	C4D11
Fire hose reel systems#	AS 2441 – 2005	E1D3
Fire hydrant systems#	AS 2419.1 – 2021	E1D2, Spec 18
Fire seals (protecting openings in fire resisting components of the building)	AS 4072.1 – 2005 AS 1530.4 – 2014	C4D15, C4D16, Spec 13
Lightweight construction(#)	-	C2D9, Spec 6
Mechanical air handling systems • Auto shutdown	AS 1668.1 – 2015 AS 1668.2 –2012	E2D16, Spec 17, Spec 22
Portable fire extinguishers	AS 2444 – 2001	E1D14
Fire Blankets	AS 2444-2001	E1D14
Smoke and Heat Vents#	AS 2665-2001	Spec 22, Spec 31
Wall wetting sprinklers & drencher systems (#)	AS 2118.1 – 2017 AS 2118.2	D2D13, Spec 14
Warning and operational signs	-	C4D7, E3D4, D3D28 & Spec 17
(#)	A Performance-Based Design Brief/Fire Engineering Brief has been prepared to provide initial advice in respect to the documentation of performance solution at the crown certificate stage.	

Table 8 – Essential Fire Safety Measures (EFSM)

Appendix A:

Ancillary Information

- Exits location
- Stair Precis Table
- Travel Distances

Travel Distances Assessment:

Location	DTS Travel Distance Requirement	Current Condition	Performance Requirement	Resolution
Building A – Ground Floor Level	• 20m max. to a point of choice. • 40m max. to an exit (where min of Two. provided). • 60m max between alternative exits. • 9m min. apart.	20/40/**65**	D1P1, E2P2	Distance between alternative exits > 60m apart (measured along the covered walkways to open space). considerations to the documentation of a Fire Engineering – Performance Solution.
Building A – Level 1	• 20m max. to a point of choice. • 40m max. to an exit (where min of Two. provided). • 60m max between alternative exits. • 9m min. apart.	**25**/**46**/60	D1P1, E2P2	Architectural drawings being adjusted to achieve compliance with DtS provisions or considerations to the documentation of a Fire Engineering – Performance Solution.
Building A – Level 2	• 20m max. to a point of choice. • 40m max. to an exit (where min of Two. provided). • 60m max. between alternative exits. • 9m min. apart.	**25**/**45**/60	D1P1, E2P2	Architectural drawings being adjusted to achieve compliance with DtS provisions or considerations to the documentation of a Fire Engineering – Performance Solution.
Building B (Hall and COLA)	• 20m max. to a point of choice. • 40m max. to an exit (where min of Two. provided). • 60m max. between alternative exits.	20/**45**/**67**	D1P1, E2P2	Travel distance to required exits (open space) will exceed the DtS provisions and can be address via a performance solution from a fire engineer. The movement studio/theatre is served with a single required exit door. The architectural plans to be amended to nominate an

	• 9m min. apart.			alternative exit doorway based upon occupant numbers 213 persons.
Building C – Ground Floor Level	• 20m max. to a point of choice. • 40m max. to an exit (where min of Two. provided). • 60m max. between alternative exits. • 9m min. apart.	**25**/40/80	D1P1, E2P2	The travel distance to a single exit or POC to alternative exits has been assessed as greater than 20.0 (i.e. up to 24m). Distance between alternative exits > 60m apart (measured along the covered walkways to open space). considerations to the documentation of a Fire Engineering – Performance Solution.
Building C – Level 1 and 2	• 20m max. to a point of choice. • 40m max. to an exit (where min of Two. provided). • 60m max. between alternative exits. • 9m min. apart.	**30**/40/60	D1P1, E2P2	The travel distance from the store/open plant to POC is greater than 20.0m. Has been measured up to 27.0m. Considerations to the documentation of a Fire Engineering – Performance Solution.
Building D – Ground Floor Level	• 20m max. to a point of choice. • 40m max. to an exit (where min of Two. provided). • 60m max. between alternative exits. • 9m min. apart.	**25**/40/**70**	D1P1, E2P2	Architectural drawings being adjusted to achieve compliance with DtS provisions or considerations to the documentation of a Fire Engineering – Performance Solution. Distance between alternative exits > 60m apart (measured along the covered walkways to open space). considerations to the documentation of a Fire Engineering – Performance Solution.
Building D – Level 1 and 2.	• 20m max. to a point of choice. • 40m max. to an exit (where min of Two. provided). • 60m max. between alternative exits. • 9m min. apart.	**25**/**45**/60	D1P1, E2P2	Architectural drawings being adjusted to achieve compliance with DtS provisions or considerations to the documentation of a Fire Engineering – Performance Solution.

Stair / Ramp Precis:

Stairs	Access requirement	Handrails	Balustrade	Slip Resistance	Treads, Risers, Widths, Other	TGSI	Common Issues
FIS & Communication Stairs	**YES**	**YES:** Fully accessible handrails required to both sides as follows • 180 degrees handrail turndown or return to wall, • 30 to 50 mm diameter with a 270 degrees clearance around the top of the handrail, • 50 mm clearance to back of handrail, and to a height of 600 mm above the handrail. • Located between 865 mm and 1 m above nosing line. And must be at consistent height through the stairs and landings. • Continuous rail, no handhold breaks • Clear area for 270 degrees to the top of the handrail. **Ref:** BCA D2.17, D3.3(a)(ii) & Cl 11 & 12 of AS 1428.1-2009.	**YES:** No Less than 865 mm above stair nosing line, no less tanh 1 m above landings. No openings greater than 125 mm. No climbable members between 150 and 760 mm where the floor level is 4 m or more above the surface beneath. **Ref:** BCA D2.16(g)(h)(ii)	**YES:** P3 rated slip resistance and highlighted nosing's to no less than 30% luminance contrast to the background. Nosing widths to be between 50 & 75 mm. Strip may be set back 15 mm from the front edge of the nosing but where it is not set back the luminance contrast must not extend down the riser by more than 10 mm. The lip between the tread and strip must not exceed 3 mm, or 5 mm where the edges are chamfered. **Ref:** BCA D2.13, D2.14, D3.3(a)(iii) & Cl 11, 7.2, 7.3 of AS 1428.1-2009.	**Tread:** 250 to 355 mm. (Public) **Tread:** 240 to 355 mm. (Private) **Riser:** 115 to 190 mm. **Quantity:** Must be between 550 to 700 when applying (2 x Riser + Tread.) **Open Riser:** Not permitted, must be opaque. **Riser Splay Back:** Be vertical or max 25 mm. **Stair Width:** Minimum unobstructed width of 1000 mm, measured clear of handrails. Note: 1000 mm clear width will only allow for 100 persons, occupancy quantity review may be required. **Stair Height:** No less than 2 m. **Ref:** BCA D2.13, D1.6	**YES:** Required to the top and bottom of landings. No requirement for the mid landing. **Ref:** BCA D3.8, AS/NZS 1428.4.1-2009	• Lip of the nosing strip excessive in height. • Outer handrail not continuous due to allowing for fire hydrant equipment. • No site allowance for balustrade tolerances. • If separate handrail and balustrade is not used, this usually causes a conflict with the requirement to have the same heights throughout the landings and stairs. • Tread and riser dimensions not constructed uniform in dimension.
Interconnecting Communication Stairs (between tenancy levels not required as fire egress/exit)	**YES**	**YES:** Fully accessible handrails required to both sides as follows: • 180 degrees handrail turndown or return to wall, • 30 to 50 mm diameter with a 270 degrees clearance around the top of the handrail, • 50 mm clearance to back of handrail, and to a height of 600 mm above the handrail. • Located between 865 mm and 1 m above nosing line. And must be at consistent height through the stairs and landings. • Continuous rail, no handhold breaks. • Clear area for 270o to the top of the handrail. **Ref:** BCA D2.17, D3.3(a)(ii) & Cl 11 & 12 of AS 1428.1-2009.	**YES:** No Less than 865 mm above stair nosing line, no less tanh 1 m above landings. No openings greater than 125 mm. No climbable members between 150 and 760 mm where the floor level is 4 m or more above the surface beneath. **Ref:** BCA D2.16(g)(h)(ii)	**YES:** P3 (dry) and P4 (wet) rated slip resistance and highlighted nosing's to no less than 30% luminance contrast to the background. Nosing widths to be between 50 & 75 mm. Strip may be set back 15 mm from the front edge of the nosing but where it is not set back the luminance contrast must not extend down the riser by more than 10 mm. The lip between the tread and strip must not exceed 3 mm, or 5 mm where the edges are chamfered. **Ref:** BCA D2.13, D2.14, D3.3(a)(iii) & Cl 11, 7.2, 7.3 of AS 1428.1-2009.	**Tread:** 250 to 355 mm. (Public) **Tread:** 240 to 355 mm. (Private) **Riser:** 115 to 190 mm. **Quantity:** Must be between 550 to 700 when applying (2 x Riser + Tread.) **Open Riser:** Not permitted, must be opaque. **Riser Splay Back:** Be vertical or max 25 mm. **Stair Width:** Minimum unobstructed width of 1000 mm, measured clear of handrails. Note: 1000 mm clear width will only allow for 100 persons, occupancy quantity review may be required. **Stair Height:** No less than 2 m. **Ref:** BCA D2.13, D1.6	**YES:** Required to the top and bottom of landings. No requirement for the mid landing. And around base of stair stringer or stair when it can be considered as an overhead obstruction within 2 m from floor level. **Ref:** BCA D3.8, AS/NZS 1428.4.1-2009	• Lip of the nosing strip excessive in height. • No site allowance for balustrade tolerances. • If separate handrail and balustrade is not used, this usually causes a conflict with the requirement to have the same heights throughout the landings and stairs.
Accessible Ramp (1:14 max. gradient)	**YES**	**YES:** Fully accessible handrails required to both sides as follows: • 180 degrees handrail turndown or return to wall, • 30 to 50 mm diameter with a 270 degrees clearance around the top of the handrail,	**YES:** No Less than 865 mm above stair nosing line, no less tanh 1 m above landings. No openings greater than 125 mm. No climbable members between 150 and 760 mm where the	**YES:** P3 (dry) and P4 (wet) rated slip resistance and highlighted nosing's to no less than 30% luminance contrast to the background. Nosing widths to be between 50 & 75 mm. Strip may be set back 15 mm from the front edge of the nosing but where it is not set back the luminance contrast must	**Ramp Width:** Minimum unobstructed width of 1000 mm, measured clear of handrails. Note: 1000 mm clear width will only allow for 100 persons, occupancy quantity review may be required. **Ref:** BCA D2.13, D1.6	**YES:** Required to the top and bottom of landings. No requirement for the mid landing.	• Handrails extension protruding over traverse path or side boundary. Note: TGSI are not required for residential aged care and nursing homes buildings.

Stairs	Access requirement	Handrails	Balustrade	Slip Resistance	Treads, Risers, Widths, Other	TGSI	Common Issues
		• 50 mm clearance to back of handrail, and to a height of 600 mm above the handrail. • Located between 865 mm and 1 m above the surface. And must be at consistent height through the ramp and mid-landings. • Continuous rail, no handhold breaks. • Continuous kerbing on both sides in compliance with AS1428.1 Figures (18 & 19). • Handrails not to protrude into over the traverse path. • Clear area for 270 degrees to the top of the handrail. **Ref:** BCA D2.17, D3.3(a)(i) & Cl 1.3 & 12 of AS 1428.1-2009.	floor level is 4 m or more above the surface beneath. **Ref:** BCA D2.16(g)(h)(ii)	not extend down the riser by more than 10 mm. The lip between the tread and strip must not exceed 3 mm, or 5 mm where the edges are chamfered. **Ref:** BCA D2.13, D2.14, D3.3(a)(iii) & Cl 11, 7.2, 7.3 of AS 1428.1-2009.		**Ref:** BCA D3.8, AS/NZS 1428.4.1-2009	

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