



Building Code of Australia 2019 Amendment 1

BCA ASSESSMENT REPORT



New Primary School at Gregory Hills
28 Wallarah Circuit, Gregory Hills NSW 2557

Prepared for: SINSW | Issue date: 5 October 22

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Authorisation

Revision	Comment / Reason for Issue	Issue Date	Prepared by	Reviewed by
06	Revised Report for SSDA Issue	05 Oct 22		
			Annika Green	Joel Lewis

Revision History

Revision	Comment / Reason for Issue	Issue Date	Prepared By
01	Draft Concept Report	31 May 22	Annika Green
02	Final Concept Report	02 June 22	Annika Green
03	Revised Concept Report	02 Sep 22	Annika Green
04	Schematic Report	16 Sep 22	Angus Peters
05	BCA Report for SSDA Issue	29 Sep 22	Annika Green
06	Revised Report for SSDA Issue	05 Oct 22	Annika Green

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1 Executive Summary

MBC Group as the appointed BCA Consultant for the proposed development, have reviewed architectural design documents prepared by Bennett and Trimble (refer appendix A) for compliance with the National Construction Code - Building Code of Australia Volume One 2019 Amendment 1.

1.1 Performance Solutions - Fire & Life Safety

The assessment of the design documentation has revealed that the following areas are required to be assessed against the relevant Performance Requirements of the BCA in accordance with Clause 25 of the Building and Development Certifiers Regulation 2020. The submission for a Construction Certificate will need to include verification from a Certifier – Fire Safety, where determined permissible under A2.1 of the BCA, for the following aspects: -

DTS Clause	Description of Non-Compliance	Performance Requirement
C1.1 / Spec C1.1	Type of Construction required / Fire resisting construction Hybrid and CLT System <ul style="list-style-type: none"> Where CLT is proposed as part of the floor system, it is anticipated that this will unlikely achieve the required 120 min FRLs specified under Table 3 and rationalised FRLs are to be justified under a fire engineered performance solution Lift shafts are required to achieve a FRL of 120/120/120 where load bearing and -/120/120 where non-loadbearing. It is anticipated as part of the modular system that these FRLs may not be achieved 	CP1, CP2
C1.9	Non-combustible building elements In a building required to be of Type A construction, all external walls including all components incorporated within them including façade covering and insulation are to be non-combustible Hybrid and CLT System It is anticipated that the CLT floors will at some junctions form part of the external wall. It is unlikely, the CLT can be considered non-combustible to AS1530.1, or comply with the bonded lamina	CP1, CP2, CP4

DTS Clause	Description of Non-Compliance	Performance Requirement
	requirements of C1.9(vii) and therefore will need to be addressed via a fire engineered performance solution by the Certifier – Life Safety	
C1.13	Fire-protected timber: Concession Hybrid and CLT System It is noted that CLT is to be used as part of the structure of the a type A building which is required to have non combustible elements within the external wall. It is proposed that non fire protected timber be used throughout the building floor slabs and will need to be addressed by the Certifier – Life Safety	CP1, CP2
C1.14	Ancillary Elements An ancillary element must not be fixed, installed or attached to the internal parts or external face of an external wall that is required to be non combustible unless it is one of the following: (a) an ancillary element that is non-combustible (b) a gutter, downpipe or other plumbing fixture or fitting (c) a flashing (d) A grate or grille not more than 2m ² in area associated with a building service (e) an electrical switch, socket-outlet, cover plate or the like (f) a light fitting (g) a required sign (h) a sign other than one provided under (a) or (g) that - (i) achieves a group number of 1 or 2 (ii) does not extend beyond one fire compartment; and (iv) is separated vertically from other signs permitted under (h) by at least 2 storeys (i) an awning, sunshade, canopy, blind or shading hood other than one provided under (a) that - (i) meets the relevant requirements of Table 4 Specification C1.10 as for an internal element; and (ii) serves a storey (A) at ground level; or (B) immediately above a storey at ground level; and (iii) does not serve an exit, where it would render the exits unusable in a fire	CP1, CP2, CP4

DTS Clause	Description of Non-Compliance	Performance Requirement
	<p>(j) a part of a security system, intercom or announcement system</p> <p>(k) wiring</p> <p>(l) a paint, lacquer or a similar finish</p> <p>(m) a gasket, caulking, sealant or adhesive directly associated with (a) to (k)</p> <p>Hybrid and CLT System</p> <p>It is anticipated that the proposed CLT timber slabs will form a junction and create an attachment to the external wall which will not achieve the non-combustibility requirements of AS1530.1 and will likely be justified as a fire engineered performance solution by the Certifier – Life Safety</p>	
Spec C1.1 Clause 2.2	<p>Fire Protection for a support of another part</p> <p>(a) where a part of a building required to have an FRL depends upon direct vertical or lateral support from another part to maintain its FRL, that supporting part, subject to (b), must -</p> <p>(i) have an FRL not less than that required by other provisions of this Specification; and</p> <p>(ii) if located within the same fire compartment as the part it supports have an FRL in respect of structural adequacy the greater of that required -</p> <p>(A) for the supporting part itself; and</p> <p>(B) for the part it supports; and</p> <p>(iii) be non-combustible -</p> <p>(A) if required by other provisions of this Specification; or</p> <p>(B) if the part it supports is required to be non-combustible</p> <p>Hybrid and CLT System</p> <p>Further discussion and clarification surrounding how the steel members will achieve the nominated FRLS for Type A construction, noting that it is anticipated that justification of the use of an intumescent paint is likely to justify or rationalise the required FRLS for structural steel members within a component required to have a FRL by the Certifier – Life Safety.</p>	CP1, CP2

DTS Clause	Description of Non-Compliance	Performance Requirement
	Furthermore, It is anticipated that some elements may incorporate CLT and will not achieve the required FRL which will need to be addressed via a fire engineered performance solution	
Spec C1.1 Clause 2.7	<p>Fire resisting construction</p> <p>Shafts required to have an FRL must be enclosed at the top and bottom by construction having an FRL not less than that required for the walls of a non-loadbearing shaft in the same building</p> <p>Hybrid and CLT System</p> <p>Further details are required as to whether the lift shaft extends beyond the roof covering. Where the lift does not extend beyond the roof covering, it is likely that the shaft enclosure will not achieve the nominated FRL or be constructed from concrete or masonry due to the material of construction utilised as part of the kit in parts design and may require to be addressed via a fire engineered performance solution by the Certifier – Life Safety</p>	CP1, CP2
Spec C1.1 Clause 3.1	<p>Fire resisting construction</p> <p>Shafts required to have an FRL must be enclosed at the top and bottom by construction having an FRL not less than that required for the walls of a non-loadbearing shaft in the same building</p> <p>Hybrid and CLT System</p> <p>It is anticipated that load bearing shafts will not be wholly constructed from concrete or masonry but a hybrid system consisting of steel columns and this is anticipated to be addressed via fire engineered performance solution by the Certifier – Life Safety</p>	CP1

DTS Clause	Description of Non-Compliance	Performance Requirement
C2.2	<p>General floor area and volume limitations</p> <p>The size of any fire compartment in a class 5, 9b building shall not exceed the relevant maximum floor area specified under Table C2.2</p> <p>Hybrid and CLT System</p> <p>It is anticipated that there is not a suitable tested system to adequately fire stop / seal the junction between the floor slab and the wall and it is likely a fire engineered performance solution by the Certifier – Life Safety will be required to justify smoke sealing in lieu of fire sealing / stopping.</p>	CP1, CP2, CP4
E1.3	<p>Fire Hydrants</p> <p>The fire hydrant booster may not be located within sight of the main entrance to the new buildings as required by AS2419.1-2005.</p> <p>A Performance Solution should be provided by a Fire Safety Engineer.</p>	EP1.3
E1.4	<p>Fire hose reels</p> <p>Fire hose reels are required to be provided to the hall building and library</p> <p>It is anticipated due to the function and characteristics of building occupants typically housed within these areas that fire hose reels are to be omitted from this building. This is to be addressed via a fire engineered performance solution by the Certifier – Life Safety</p>	EP1.1

Any Performance Solution relating to category 2 items (CP9, EP1.3, EP1.4, EP1.6, EP2.2, EP3.2) will be subject to consultation and approval by Fire and Rescue NSW as part of the Crown Work Certificate process.

1.2 Performance Solutions – Other

The assessment of the design documentation has revealed that the following areas are required to be assessed against the relevant Performance Requirements of the BCA in accordance with Clause 25 of the Building and Development Certifiers Regulation 2020. The submission for a Construction Certificate will need to include verification from the qualified Architect / Façade Engineer, where determined permissible under A2.1 of the BCA, for the following aspects: -

DTS Clause	Description of Non-Compliance	Performance Requirement
-	<p>A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause –</p> <ul style="list-style-type: none">(a) Unhealthy or dangerous conditions, or loss of amenity for occupants; and(b) Undue dampness or deterioration of building elements <p>There are not Deemed-to-Satisfy Provisions for Performance Requirement FP1.4 (The prevention of the penetration of water through external walls) This must be addressed by way of Performance Solution</p> <p>Architect / Façade Engineer to note and provide further details demonstrating compliance with performance requirement FP1.4 prior to the issue of the relevant building approval.</p> <p>SINSW to note the above mentioned pathway – there is no DtS pathway under the provisions the BCA 2019 Amd 1.</p>	FP1.4

1.3 Performance Solutions - Accessibility

The assessment of the design documentation has revealed that the following areas are required to be assessed against the relevant Performance Requirements of the BCA in accordance with Clause 25 of the Building and Development Certifiers Regulation 2020.

Refer to the Accessibility SSDA Issue Report by MBC Group for further information surrounding the accessibility requirements of the site.

1.4 Design Details Required

The assessment of the design documentation has revealed that the following areas require further details to demonstrate compliance with the prescriptive provisions of the BCA

DTS Clause	Description
D2.16 / D2.17	Balustrades and handrails <p>A continuous barrier must be provided where there is any drop below the ground greater than 1m. Furthermore, there shall be no climbable elements between 150 – 760mm from the finished floor along the barrier</p> <p>Note that primary schools are required to be fitted with a double handrail in accordance with Clause D2.17(a)(iii) whereby the second rail is installed between 665 – 750mm which is within the climbable zone.</p> <p>Architect to note and where this may apply, ensure that the barrier extends greater than 1m. This needs to be reflected and noted on the architectural plans</p>
D2.21	Operation of latch <p>A door in a required exit, forming part of a required exit or in the path of travel of a required exit must be readily openable without a key from the side that faces a person seeking egress, by –</p> <ul style="list-style-type: none">(i) A single downward action on a single device which is located between 900mm and 1.1 from the floor and if serving an area required to be accessible by Part D3 –<ul style="list-style-type: none">(A) Be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and(B) Have a clearance between the handle and the back plate or door face(C) Be at the centre grip section of the handle of not less than 35mm and not more than 45mm <p>Further details of the proposed door hardware to the GLS room sliding doors is required as the design develops towards the issue of the CWC. Clarification on the locking and unlocking mechanisms is required as they form the path of travel to an exit. This detail is not required to be provided for the purposes of obtaining the DA.</p>
E1.3	Fire Hydrants <p>Fire hydrant booster assemblies are to be within sight of the main entrance to the building</p>

DTS Clause	Description
	Location of the hydrant booster to be determined, however where there are multiple building entrances it is likely a fire engineered performance solution by the Certifier – Life Safety will be required to locate the booster assembly within sight of one entrance
Part G3	Atrium provisions <p>Further clarification from SINSW as to what type of fuel load will be provided to this breezeway at ground floor between the two buildings</p> <p>As this are can be considered not to be an atrium, restriction of school materials, storage of materials etc should be maintained at all times</p>

The documentation will need further detailing such as door hardware, construction specifications, services design and manufacturer's details as the design progresses towards Building Approval.

The application for Crown Works Certificate shall be assessed under the relevant provisions of the Environmental Planning & Assessment Act 1979 (As Amended) and the Environmental Planning & Assessment Regulation 2021.

2 Introduction

Modern Building Certifiers (MBC) have been engaged as the appointed BCA Consultant for the development subject of this report by SINSW. This report is based upon a desktop review of architectural details (as listed in Appendix A), presently Final Design report Issue, against the applicable provisions of the National Construction Code - Building Code of Australia Volume One 2019 Amendment 1.

2.1 Purpose

The purpose of this report is to assess the current design proposal against the Deemed-to-Satisfy (DtS) provisions of the BCA.

2.2 Methodology

The methodology applied in undertaking this assessment has included: -

- A desktop review of architectural plans, as listed in Appendix A
- Assessment of Sections C, D, E, F, G, H and J (as applicable / relevant) of the BCA
- Assessment of the proposed Modern Methods of Construction and Kit of Parts Assembly
- Discussions with the design development team to gain an understanding of the development proposed.

2.3 Limitations

This report does not include or imply any detailed assessment for design, compliance or upgrading for:

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

This report does not include, or imply compliance with:

- the National Construction Code – Plumbing Code of Australia Volume 3
- the Disability Discrimination Act 1992 including the Disability ((Access to Premises – Buildings) Standards 2010 – unless specifically referred to)
- The deemed to satisfy provisions of Part D3 and F2.4 of BCA 2019 Amendment 1
- The deemed to satisfy provisions of Section J of BCA 2019 Amendment 1
- Demolition Standards not referred to by the BCA;
- Work Healthy and Safety Act 2011;

- An out of cycle change to the Building Code of Australia.
- 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), Roads and Transport Authority, Local Council, ARTC, Department of Planning and the like; and
- Conditions of Development Consent issued by the Local Consent Authority.

This report has been prepared by MBC Group in the capacity as the appointed BCA Consultant for the proposed development. This report is an assessment of the proposed development against the DtS provisions of the applicable BCA.

2.4 Current Legislation

The applicable legislation governing the design of buildings in NSW is the Environmental Planning and Assessment Act 1979.

Applicable Building Code of Australia (BCA)

The proposed development will be subject to compliance with the relevant requirements of the BCA as in force as at –

- (a) The date of the invitation for tenders to carry out the Crown Building Work; or
- (b) In the absence of tenders, the date on which the Crown Building Work commences

In this regard, it is assumed that the Crown Works Certificate, and the basis of this report is based upon the Deemed-to-Satisfy provisions of BCA 2019 Amendment 1

Should an *out of cycle* change occur to the Building Code of Australia, then this report is required to be updated to reflect any applicable changes made and now required by the BCA.

3 Development Description & Assessment Information

3.1 Introduction

This DDA Report accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), in support of a State Significant Development Application (SSDA) for the construction and operation of a new primary school at Gregory Hills (SSD-41306367).

This report addresses the Secretary's Environmental Assessment Requirements (SEARs) issued for the project, notably :

SEARs Requirement	Response
4. Built Form and Urban Design <ul style="list-style-type: none"> Demonstrate how design quality will be achieved in accordance with the Education SEPP Design Quality Principles and the Design Guide for Schools, including: <ul style="list-style-type: none"> how the proposed built form (layout, height, bulk, scale, separation, setbacks, interface and articulation) addresses and responds to the context, site characteristics, streetscape and existing and future character of the locality. how the building design will deliver a high-quality development, including consideration of façade design, articulation, roof design, materials, finishes, colours, any signage, integration of services, and the principles of Crime Prevention through Environmental Design. Assess how the development complies with the relevant accessibility requirements. 	Addressed in the BCA Design Compliance Report and DDA compliance Report Ref. GHPS SSDA_4.5_DDA Design Compliance Report_October 2022

3.2 Proposal

The proposal is for a new primary school at Gregory Hills that generally comprises the following:

- 44 General Learning Spaces.
- 4 Support Learning Spaces.
- Administration, staff hub, amenity and building service areas.
- Library, communal hall and canteen.
- Outside School Hours Care (OSHC) services.
- Sport courts, outdoor play space, a Covered Outdoor Learning Area (COLA) and site landscaping.
- Dedicated bicycle and scooter parking.
- Three (3) kiss and drop spaces for Supported Learning Students (SLS) located on Wallarah Circuit.
- On-site car parking.
- Signage.
- Footpath widening on Wallarah Circuit.



Figure 1: Site plan (source Bennett and Trimble)

3.3 Site Description and Location

The site is located in Dharawal Country at 28 Wallarah Circuit, Gregory Hills NSW 2557, and is legally described as Lot 3257 DP1243285.

The site is located within the Camden Local Government Area and is within the Turner Road Precinct of the South-West Growth Centre.

The site has an area of approximately 2.926ha (by Deposited Plan). This will be reduced to 2.907ha under approved DA2022/742/1 once Long Reef Circuit has been widened.

Topography is minimal with a fall from the south-east corner (RL116.5) to the north- west corner (RL113).

The site has three (3) street frontages:

- Wallarah Circuit (southern boundary)
- Gregory Hills Drive (northern boundary)
- Long Reef Circuit (eastern Boundary)

The site is primarily vacant land, with the exception of an existing group of trees in the southwest corner of the site that pre-date the subdivision and development of the precinct. There is also an existing electrical substation located on the south-eastern boundary.

There are easements of varying widths located to the northern boundary identified for drainage.



Figure 2: Locality Map (Six Maps)



Figure 3: Site Aerial Map, (Source Bennett and Trimble)

3.4 Surrounding Development

To the north, east and south of the site is emerging and recently completed residential development.

To the east of the residential area fronting Long Reef Circuit are high voltage power lines within an easement which include pedestrian paths and cycleways.

To the west of the site, beyond Sykes Creek and Howard Park, is the Gregory Hills town centre. A pedestrian bridge links Wallarah Circuit with the town centre across Sykes Creek.



Figure 4: Surrounding Development (Nearmap)

3.5 BCA Classification (Clause A3.2)

The proposed development shall contain the following classifications: -

- Class 5: being an office building or part (administration block)
- Class 6: being a retail building or part (canteen)
- Class 7b: being storage (ancillary storage to the hall building)
- Class 9b: being a public assembly building or the like (public hall and library)

3.6 Rise in Storeys (Clause C1.2)

The current design proposed under this report proposes three predominant buildings on the site known as Block A, B and C. Blocks A and B are connected via a link bridge on Levels 1 and 2, whilst Block C is separate from the administration and general learning spaces block.



Figure 5 - Second Floor Plan

This inherently results in two separate buildings on the site as shown below. Based on this configuration, the rise in storeys for this development is as follows:

- Hall / Library building – rise in storeys of one (1)
- GLS / Admin Building – rise in storeys of three (3)

3.7 Effective Height (Clause A1.1)

The proposed development has been assessed to have the following *effective heights* (noting that Blocks A and B are separated from Block C):

- GLS / Admin Building – Effective height of approx. 7.35m (measured from floor level Ground (116.1) to floor level 2 (123.45))
- Hall / Library Building – Effective height of 0m



Figure 6 – Elevations

Please note the definition of effective height of a building was changed 1 May 2016. The BCA now defines effective height as: -

“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).”

3.8 Type of Construction Required (Clause C1.1 / Table C1.1)

The proposed development is required to be of the following types of construction:

- Hall / Library Building – Single storey Type C Construction
- GLS / Admin Building – Three (3) storey Type A Construction

Specification C1.1 outlines the fire resistance required by certain building elements. This has also been provided in Appendix B.

3.9 Floor Area and Volume Limitations (Clause C2.2 / Table C2.2)

The development is limited to the following floor area and volume compartment limitations: -

Class		Type A	Type B	Type C
5, 9b or 9c	Max floor area -	8,000m ²	5,500m ²	3,000m ²
	Max volume -	48,000m ³	33,000m ³	18,000m ³
6, 7, 8 or 9a	Max floor area -	5,000m ²	3,500m ²	2,000m ²
	Max volume -	30,000m ³	21,000m ³	12,000m ³

As the proposed design incorporates a clear separation between Blocks A/B and C, the following break down will be applicable.

- Block C - Library / Hall Building – Type C Construction (3,000m² / 18,000m³)
- Block A - GLS / Admin Building – Type A Construction (8,000m² / 48,000m³).

This shall be further detailed as the design progresses.

3.10 Building Data Summary

The below building data summary is based on the current configuration being two separate buildings.

Hall / Library Building (Block C)

Part of Development	Use	Class	Floor Area (approx.) m ²	Population (using D1.13)
Ground Floor	Library, hall and associated store, Canteen	6, 7b and 9b	1,300m ²	TBA

Administration / School Building

Part of Development	Use	Class	Floor Area (approx.) m ²	Population (using D1.13)
Ground Floor	GLS, Staff rooms	5, 9b	2,100m ²	TBA
Level 1	GLS	9b	2,041m ²	TBA
Level 2	GLS	9b	2,039m ²	TBA

Notes:

- Population numbers to be further determined by allocation of classroom numbers (staff and students)

- The floor areas will be adjusted to account for ancillary areas such as sanitary facilities, corridors, shelving and / or racking layouts in storage areas by a factor of 0.8.

Summary of Construction and Building – Hall / Library Building	
Use(s)	Canteen, storage, library, hall and ancillary
Classification(s)	6, 7b, 9b
Number of Storeys contained	One (1)
Rise in Storeys	One (1)
Type of Construction	C
Effective Height	0m
Largest compartment	1,300m ²
Large Isolated Building	No
Importance Level	TBA <i>(written verification required from relevant stakeholders)</i>
Climate Zone	Zone 6

Summary of Construction and Building – GLS / Admin Building	
Use(s)	Office, classrooms and ancillary
Classification(s)	5, 9b
Number of Storeys contained	Three (3)
Rise in Storeys	Three (3)
Type of Construction	A*
Effective Height	7.35m
Largest Compartment	2,100m ²
Large Isolated building	No

Importance Level	TBA <i>(written verification required from relevant stakeholders)</i>
Climate Zone	Zone 6

3.11 Sprinkler Protection

A Deemed-to-Satisfy class 9b school building with a rise in storeys of three (3) is not required to be provided with a sprinkler protection system. If CLT or a hybrid structure system is to be adopted then the fire protection requirements will not be Deemed-to-Satisfy and a sprinkler protection system is likely to be required as part of a fire engineering Performance Solution.

Providing sprinkler protection to the building also provides the following concessions:

- BCA D1.8 – the egress stairs would not be required to be stairs in lieu of fire isolated stairs if sprinkler protection is provided. The stairs become non-fire-isolated and can serve three storeys and protection to the stair under BCA D1.8 is not required.
- BCA C2.6 – spandrel protection is not required in a Type A building if sprinkler protection is provided throughout.

Please note – As the proposed current design shows clear separation between the hall/library building (Block C) and the GLS / Admin Building (Blocks A and B), then Block C is considered as a separate Type C building to the three storey building where sprinkler protection would not be required to that building irrespective of how the building is constructed eg. Full CLT, no sprinklers required as the building structure can be combustible and no fire rating is required.

3.12 Entertainment Venue

The hall building is currently labelled as a communal space and it has been highlighted previously that this are will be leased out to the community. Further clarification on the use of the communal building has been provided by SINSW as to the proposed use of this area in relation to whether the building is to be defined as an Entertainment Venue, under the defined term as prescribed by the Environmental Planning and Assessment Regulations 2021 (*Note Entertainment Venue is defined as “a building used as a cinema, theatre or concert hall or an indoor sports stadium”*). Where this is the case, the provisions of BCA NSW H101 will apply.

Clarification has been provided by SINSW as to the proposed use of the Hall building will not be used for the purposes of an entertainment venue – refer to Appendix C for further information.

3.13 Bushfire Hazard

It is noted that the proposed primary school is located on a lot contained within the bushfire buffer area as noted in the below figure. As such the provisions of BCA NSW G5.1 and NSW G5.2 will apply to the proposed building.



Figure 7 – Bushfire buffer area ref. GHPSS SSDA_22.0_Bushfire Hazard Assessment Report_October 2022

Note the requirements of NSW G5.1 and NSW G5.2 below:

NSW G5.1 Application of Part

The Deemed-to-Satisfy Provisions of this part apply to –

- (a) A Class 2 or 3 building; or
 - (b) A Class 4 part of a building; or
 - (c) A Class 9 building that is a special fire protection purpose; or
 - (d) A Class 10a building or deck associated with a building or a part referred to in (a), (b) or (c),
- Located in a designated bushfire prone area

Note the definition of special fire protection purpose (as per Section 100B(6) of the Rural Fires Act 1997) means any of the following purposes:

- (a) A school
- (b) A childcare centre
- (c) A hospital (including a hospital for the mentally ill or mentally disordered)
- (d) A hotel, motel or other tourist accommodation
- (e) A building wholly or principally used as a home or other establishment for mentally incapacitated persons,
- (f) Seniors housing within the meaning of State Environmental Planning Policy No 9 – Group Homes
- (g) A retirement village

(h) Any other purpose prescribed by the regulation (Rural Fires regulation 2013)

NSW G5.2 Protection

In a designated bushfire prone area, a Class 2 building, a Class 3 building, a Class 4 part of a building or a Class 9 building that is a special fire protection purpose or a Class 10a building or deck associated with such a building or part, must comply with the following –

- (a) AS3959 except –
- (i) As amended by Planning for Bush Fire Protection; and
- (j) For Section 9 Construction for Bush Fire Attack Level FZ (BAL-FZ). Buildings subject to BAL-FZ must comply with the specific conditions of development consent for construction at this level

It is noted that the Bushfire Hazard Assessment Report Ref. GHPS SSDA_22.0_Bushfire Hazard Assessment Report_October 2022 by BlackAsh Bush Fire Consulting has noted that the proposed design is capable of complying with the requirements of AS3959. This shall be further detailed as the design progresses with further specific bushfire design requirements integrated into the design.

3.14 Structural Engineering Options

It has been noted that a hybrid and CLT system is proposed as part of the Concept Design Phase of the school, with Modern Method of Construction and Kit of Parts Assembly the primary focus of consideration as part of the design. It is assumed that the hybrid and CLT system will comprise of steel framed columns, beams and cross-bracing with CLT floor panels.

The following structural methodologies require further clarification as to the design methodologies implored when compared to the Deemed-to-Satisfy provisions of the BCA, notably Part C. These are detailed below.

Hybrid and CLT system		
BCA Clause	Summary	Performance Requirement
Clause C1.1 / Spec C1.1	Type of Construction required / Fire resisting construction <ul style="list-style-type: none"> Where CLT is proposed as part of the floor system, it is anticipated that this will unlikely achieve the required 120 min FRLs specified under Table 3 and rationalised FRLs are to be justified under a fire engineered performance solution Lift shafts are required to achieve a FRL of 120/120/120 where load bearing and -/120/120 where non-loadbearing. It is anticipated as part of the modular system that these FRLs may not be achieved 	CP1, CP2

Hybrid and CLT system		
BCA Clause	Summary	Performance Requirement
Clause C1.9	<p>Non-combustible building elements</p> <p>In a building required to be of Type A construction, all external walls including all components incorporated within them including façade covering and insulation are to be non-combustible</p> <p>It is anticipated that the CLT floors will at some junctions form part of the external wall. It is unlikely, the CLT can be considered non-combustible to AS1530.1, or comply with the bonded lamina requirements of C1.9(vii) and therefore will need to be addressed via a fire engineered performance solution by the Certifier – Life Safety</p>	CP1, CP2, CP4
Clause C1.13	<p>Fire-protected timber: Concession</p> <p>It is noted that CLT is to be used as part of the structure of the a type A building which is required to have non combustible elements within the external wall. It is proposed that non fire protected timber be used throughout the building floor slabs and will need to be addressed by the Certifier – Life Safety</p>	CP1, CP2
Clause C1.14	<p>Ancillary elements</p> <p>An ancillary element may not be fixed, installed or attached to the internal parts or external face of an external wall that is required to be non-combustible</p> <p>It is anticipated that the proposed CLT timber slabs will form a junction and create an attachment to the external wall which will not achieve the non-combustibility requirements of AS1530.1 and will likely be justified as a fire engineered performance solution by the Certifier – Life Safety</p>	CP1, CP2, CP4
Spec C1.1 Clause 2.2	<p>Fire Protection for a support of another part</p> <p>(a) where a part of a building required to have an FRL depends upon direct vertical or lateral support from another part to maintain its FRL, that supporting part, subject to (b), must -</p> <p>(i) have an FRL not less than that required by other provisions of this Specification; and</p> <p>(ii) if located within the same fire compartment as the part it supports have an FRL in respect of structural</p>	CP1

Hybrid and CLT system		
BCA Clause	Summary	Performance Requirement
	<p>adequacy the greater of that required -</p> <p>(A) for the supporting part itself; and</p> <p>(B) for the part it supports; and</p> <p>(iii) be non-combustible -</p> <p>(A) if required by other provisions of this Specification; or</p> <p>(B) if the part it supports is required to be non-combustible</p> <p>Further discussion and clarification surrounding how the steel members will achieve the nominated FRLS for Type A construction, noting that it is anticipated that justification of the use of an intumescent paint is likely to justify or rationalise the required FRLS for structural steel members within a component required to have a FRL by the Certifier – Life Safety.</p> <p>Furthermore, It is anticipated that some elements may incorporate CLT and will not achieve the required FRL which will need to be addressed via a fire engineered performance solution</p>	
Spec C1.1 Clause 2.7	<p>Fire resisting construction</p> <p>Shafts required to have an FRL must be enclosed at the top and bottom by construction having an FRL not less than that required for the walls of a non-loadbearing shaft in the same building</p> <p>Further details are required as to whether the lift shaft extends beyond the roof covering. Where the lift does not extend beyond the roof covering, it is likely that the shaft enclosure will not achieve the nominated FRL or be constructed from concrete or masonry due to the material of construction utilised as part of the kit in parts design and may require to be addressed via a fire engineered performance solution by the Certifier – Life Safety</p>	CP1, CP2
Spec C1.1 Clause 3.1	<p>Fire resisting construction</p> <p>Shafts required to have an FRL must be enclosed at the top and bottom by construction having an FRL not less than that required for the walls of a non-loadbearing shaft in the same building</p>	CP1

Hybrid and CLT system		
BCA Clause	Summary	Performance Requirement
	It is anticipated that load bearing shafts will not be wholly constructed from concrete or masonry but a hybrid system consisting of steel columns and this is anticipated to be addressed via fire engineered performance solution by the Certifier – Life Safety	
C2.2	<p>General floor area and volume limitations</p> <p>The size of any fire compartment in a class 5, 9b building shall not exceed the relevant maximum floor area specified under Table C2.2</p> <p>It is anticipated that there is not a suitable tested system to adequately fire stop / seal the junction between the floor slab and the wall and it is likely a fire engineered performance solution by the Certifier – Life Safety will be required to justify smoke sealing in lieu of fire sealing / stopping.</p>	CP1, CP2, CP4

4 Appendix A – Architectural Plans Reviewed

The following documentation, prepared by Bennett and Trimble was used in the assessment and preparation of this report: -

Drawing No.	Title	Date	Drawn By	Revision
SSDA.01	COVER	05/10/2022	BENNETT AND TRIMBLE	C
SSDA.02	EXISTING SITE PLAN	05/10/2022	BENNETT AND TRIMBLE	C
SSDA.03	SITE PLAN – GF	05/10/2022	BENNETT AND TRIMBLE	D
SSDA.04	SITE PLAN – L1	05/10/2022	BENNETT AND TRIMBLE	C
SSDA.05	SITE PLAN – L2	05/10/2022	BENNETT AND TRIMBLE	C
SSDA.06	SITE PLAN – ROOF	05/10/2022	BENNETT AND TRIMBLE	C
SSDA.07	GA – GROUND LEVEL	05/10/2022	BENNETT AND TRIMBLE	C
SSDA.08	GA – LEVEL 1	05/10/2022	BENNETT AND TRIMBLE	C
SSDA.09	GA – LEVEL 2	05/10/2022	BENNETT AND TRIMBLE	C
SSDA.10	GA – ROOF	05/10/2022	BENNETT AND TRIMBLE	C
SSDA.11	ELEVATIONS	05/10/2022	BENNETT AND TRIMBLE	C
SSDA.12	ELEVATIONS	05/10/2022	BENNETT AND TRIMBLE	C
SSDA.13	SITE SECTIONS	05/10/2022	BENNETT AND TRIMBLE	C

SSDA.14	SIGNAGE	05/10/2022	BENNETT AND TRIMBLE	C
SSDA.15	MATERIAL SCHEDULE	05/10/2022	BENNETT AND TRIMBLE	C
SSDA.16	SHADOW DIAGRAMS	05/10/2022	BENNETT AND TRIMBLE	C

5 Appendix B – Table 3 of Specification C1.1

Below is an abridged version of Table 3 of Specification C1.1. These are the Deemed to Satisfy requirements and do not take into consideration any reduction in FRL's sought via a performance-based solution or any concessions afforded by Part 3 of Specification C1.1

Building element	Class of building – FRL: (in minutes)			
	Structural adequacy/Integrity/Insulation			
	2, 3 or 4 part	5 / 7a / 9b	6	7b
EXTERNAL WALL (including any column and other building element incorporated within it) or other external building element, where the distance from any fire-source feature to which it is exposed is–				
For loadbearing parts–				
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
For non-loadbearing parts–				
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	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN not incorporated in an external wall–				
For loadbearing columns	90/–/–	120/–/–	180/–/–	240/–/–
For non-loadbearing columns	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS–				
All	90/90/90	120/120/120	180/180/180	240/240/240
INTERNAL WALLS–				
Fire-resisting lift and stair shafts–				
Loadbearing	90/90/90	120/120/120	180/120/120	240/120/120
Non-loadbearing	–/90/90	–/120/120	–/120/120	–/120/120
Bounding public corridors, public lobbies and the like–				
Loadbearing	90/90/90	120/–/–	180/–/–	240/–/–
Non-loadbearing	–/60/60	–/–/–	–/–/–	–/–/–
Between or bounding sole-occupancy units–				
Loadbearing	90/90/90	120/–/–	180/–/–	240/–/–
Non-loadbearing	–/60/60	–/–/–	–/–/–	–/–/–























Building element	Class of building – FRL: (in minutes)			
	Structural adequacy/Integrity/Insulation			
	2, 3 or 4 part	5 / 7a / 9b	6	7b
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion–				
Loadbearing	90/90/90	120/ 90/ 90	180/120/120	240/120/120
Non-loadbearing	–/90/90	–/ 90/ 90	–/120/120	–/120/120
OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES and COLUMNS–				
All	90/–/–	120/–/–	180/–/–	240/–/–
FLOORS				
Any	90/90/90	120/120/120	180/180/180	240/240/240
ROOFS				
Any	90/90/30	120/60/30	180/60/30	240/90/60

6 Table 5 Type C construction; FRL of building elements

Building element	Class of building – FRL: (in minutes)			
	Structural adequacy/Integrity/Insulation			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated within it) or other external building element, where the distance from any fire-source feature to which it is exposed is–				
less than 1.5 m	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
1.5 to less than 3 m	–/–/–	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN				
Less than 1.5 m	90/–/–	90/–/–	90/–/–	90/–/–
1.5 to less than 3 m	–/–/–	60/–/–	60/–/–	60/–/–
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS–				
All	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
INTERNAL WALLS–				
Bounding public corridors, public lobbies and the like–				
All	60/ 60/ 60	–/–/–	–/–/–	–/–/–
Between or bounding sole-occupancy units–				
All	60/ 60/ 60	–/–/–	–/–/–	–/–/–
Bounding a stair if required to be rated–				
All	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
OTHER LOADBEARING INTERNAL WALLS and COLUMNS–				
ROOFS				
Any	–/–/–	–/–/–	–/–/–	–/–/–

7 Appendix C – Use of Hall Building (Entertainment Venue)

RE: SINSW - GH - Design Coordination Meeting and Concept Design Reports FINAL

 Meg Thornton (Meg Thornton) <Meg.Thornton3@det.nsw.edu.au>
 To:  Sidoti, Marisa;  Marcus Trimble;  Matthew Haddrick (matthew.h@bennettandtrimble.com);  Nicholas La Porta (n.laporta@ndy.com);  redwards;  Rhys Baynham (r.baynham@ndy.com);  Laberibe, Laurent;  Nichol
 Seb Howe;  Cameron Walbran (c.walbran@ndy.com)
 Cc:  Michael Ashe;  Jarred Statham;  OPPS.GHPS;  Burdon-Jones, Alastair;  Madders, Brendan;  Shay Bergin (Shay Bergin);  Laukik Rane;  Bill Kabbout (Bill);  Matthew Marks;  Seb Howe;  Sarah Kelly (Sarah Kelly)
 Follow up. Start by Monday, 30 May 2022. Due by Monday, 30 May 2022.

External Communication

Marisa

On advice to SI from BM+G to clarify EV application to a school hall generally:

Primary School Community Halls and High School Gymnasiums are not designed to be an Entertainment Venue (EV).

- Specific Place of Public Entertainment provisions (NSW Part H101) do not apply to non EV's.
- Further that this does not limit any activities in the Hall by the school as part of general school operation.
- Entertainment Venue means a building used as a cinema, theatre or concert hall or an indoor sports stadium, under the EP+A Regulation 2000 Reg 3 definitions.

Permitted uses of the Community Hall under non-EV

- Any activities by the school and part of general school operations
- On the basis that no spectator seating is proposed (thereby not considered an indoor sports stadium), all sporting activities would be permitted (whether as part of the school or outside the school).
- Public meetings and assemblies.
- Lectures, seminars, corporate events (that do not include any entertainment).
- Functions that do not include any entertainment.

Could the project BCA consultant, MBB also provide their advice on application of EV provisions to the Community Hall in this project.

Kind regards

Meg Thornton NSW Registered Architect 4773
 Senior Design Officer | Technical Services | Business Enablement
 M 0417 687 964 | E Meg.Thornton3@det.nsw.edu.au | schoolinfrastructure.nsw.gov.au

8 Appendix D - Draft Fire Safety Schedule

The following is a draft Fire Safety Schedule for the proposed building, listing the likely measures and standards of performance required, this schedule shall be subject of further development and review as part of the Performance Solutions assessment: -

Fire Safety Schedule

Section 78, 79 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021

Premises: Hall / Library Building
Address:

The following essential fire safety measures shall be implemented in the whole of the building premises and each of the fire safety measures must satisfy the standard of performance listed in the schedule which, for the purposes of Clause 168 of the Environmental Planning and Assessment Regulation 2000, is deemed to be the current fire safety schedule for the building.

SCHEDULE – Base Building BCA Year 2019-Amendment 1

Type of Construction = A

Effective height = 7.35m

	Measure	Status	Existing Performance Standard
1.	Self-closing, automatic closing and latching mechanisms		BCA 2019 Amd. 1 Clause C3.4, C3.5, C3.6, C3.7, C3.8, C3.11, Spec C3.4
2.	Automatic fail-safe devices		BCA 2019 Amd. 1 Clause D2.19, D2.21, D2.22, Clause C3.6, Spec C3.4, AS 2118.1-2017, AS 1670.1-2018
3.	Automatic fire detection and alarm system		BCA 2019 Amd. 1 Clause E2.2a, Spec. E2.2a AS 1670.1-2018
4.	Automatic fire suppression system		BCA 2019 Amd. 1 Clause E1.5, Spec. E1.5, Spec E1.5a Likely to be required by fire engineering report

	Measure	Status	Existing Performance Standard
5.	Emergency lighting		BCA 2019 Amd. 1 Clause E4.2, E4.3 E4.4, AS 2293.1-2018
6.	Exit and directional signage		BCA 2019 Amd. 1 Clause E4.5, NSW E4.6 & E4.8, Spec E4.8 AS 2293.1-2018
7.	Fire alarm monitoring system		BCA 2019 Amd. 1 Spec E2.2a Clause 8, AS 1670.3-2018
8.	Fire control centres and rooms		BCA 2019 Amd. 1 Clause E1.8, Spec E1.8
9.	Fire & Smoke dampers		BCA 2019 Amd. 1 Clause E2.2, C2.5, C3.12, C3.15, Spec E1.8, Spec E2.2, Spec C2.5, Spec G3.8 AS/NZS 1668.1-2015, AS 1682.1-2015, AS 1682.2-2015, Manufacturer's specifications
10.	Fire doors		BCA 2019 Amd. 1 Clause C2.12, C2.13, C3.4, C3.6, C3.8, C3.11, Spec C3.4, AS 1905.1-2015
11.	Fire hose reel systems		BCA 2019 Amd. 1 Clause E1.4, AS 2441-2005
12.	Fire hydrant systems		BCA 2019 Amd. 1 Clause E1.3, AS 2419.1-2005,
13.	Fire seals (protecting openings and service penetrations in fire resisting components of the building)		BCA 2019 Amd. 1 Clause C3.15, Spec C3.15, AS 4072.1-2005, AS 1530.4-2014, Manufacturer's specifications

	Measure	Status	Existing Performance Standard
14.	Mechanical air handling systems		BCA 2019 Amd. 1 Clause C2.3, E2.2, Spec. E1.8, Spec E2.2a AS/NZS 1668.1-2015, AS 1668.2-2012
15.	Openings in fire-isolated lift shafts		BCA 2019 Amd. 1 Clause C3.10, AS 1735.11-1986
16.	Occupant warning system		BCA 2019 Amd. 1 Clause E2.2, Spec. E2.2a Clause 7, AS 1670.1-2018
17.	Portable fire extinguishers		BCA 2019 Amd. 1 Clause E1.6, AS 2444-2001
18.	Warning and operational signs		BCA 2019 Amd. 1 Clause C3.6, D2.23, E3.3, Spec E1.8, Clause 183 of the Environmental Planning and Assessment Regulation 2000
19.	Performance Solution Report XXXXX, prepared by XXXX dated XXXX		Performance Solution Report XXXXX, prepared by XXXX dated XXXX

Notes

* Indicate whether the measure is new (N), existing (E) or Modified (M)

Fire Safety Schedule

Section 78, 79 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021

Premises: Hall / Library Building
Address:

The following essential fire safety measures shall be implemented in the whole of the building premises and each of the fire safety measures must satisfy the standard of performance listed in the schedule which, for the purposes of Clause 168 of the Environmental Planning and Assessment Regulation 2000, is deemed to be the current fire safety schedule for the building.

SCHEDULE – Base Building BCA Year 2019-Amendment 1

Type of Construction = C

Effective height = 0m

	Measure	Status	Existing Performance Standard
20.	Self-closing, automatic closing and latching mechanisms		BCA 2019 Amd. 1 Clause C3.4, C3.5, C3.6, C3.7, C3.8, C3.11, Spec C3.4
21.	Automatic fail-safe devices		BCA 2019 Amd. 1 Clause D2.19, D2.21, D2.22, Clause C3.6, Spec C3.4, AS 2118.1-2017, AS 1670.1-2018
22.	Emergency lighting		BCA 2019 Amd. 1 Clause E4.2, E4.3 E4.4, AS 2293.1-2018
23.	Exit and directional signage		BCA 2019 Amd. 1 Clause E4.5, NSW E4.6 & E4.8, Spec E4.8 AS 2293.1-2018
24.	Fire doors		BCA 2019 Amd. 1 Clause C2.12, C2.13, C3.4, C3.6, C3.8, C3.11, Spec C3.4, AS 1905.1-2015
25.	Fire hose reel systems		BCA 2019 Amd. 1 Clause E1.4, AS 2441-2005

	Measure	Status	Existing Performance Standard
26.	Fire hydrant systems		BCA 2019 Amd. 1 Clause E1.3, AS 2419.1-2005,
27.	Fire seals (protecting openings and service penetrations in fire resisting components of the building)		BCA 2019 Amd. 1 Clause C3.15, Spec C3.15, AS 4072.1-2005, AS 1530.4-2014, Manufacturer's specifications
28.	Mechanical air handling systems		BCA 2019 Amd. 1 Clause C2.3, E2.2, Spec. E1.8, Spec E2.2a AS/NZS 1668.1-2015, AS 1668.2-2012
29.	Portable fire extinguishers		BCA 2019 Amd. 1 Clause E1.6, AS 2444-2001
30.	Performance Solution Report XXXXX, prepared by XXXX dated XXXX		Performance Solution Report XXXXX, prepared by XXXX dated XXXX

Notes

* Indicate whether the measure is new (N), existing (E) or Modified (M)



Building Code of Australia 2019 Amendment 1
BCA DESIGN COMPLIANCE REPORT