

BCA Assessment Report

The New Primary School in Mulgoa Rise



Project:	The New Primary School in Mulgoa Rise
Reference No:	113966B-BCA-MRPS-r7
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Document Control



Revision	Date	Description
113050A-BCA-MRPS-r3	30.03.2021	Preliminary BCA Assessment Report
113050A-BCA-MRPS-r3.1	01.04.2021	Preliminary BCA Assessment Report – re-evaluate stage floor area
113050A-BCA-MRPS-r4	22.04.2021	BCA Assessment Report – Schematic Design
113050A-BCA-MRPS-r5	05.08.2021	BCA Assessment Report – SSDA Application
113050A-BCA-MRPS-r6	11.08.2021	BCA Assessment Report – SSDA Application
113966B-BCA-MRPS-r7	17.08.2021	BCA Assessment Report – Updated with stakeholder comments, update to Performance Solutions and additional EFSG requirements
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Table of Contents

EXECUTIVE SUMMARY	5
1 BASIS OF ASSESSMENT	6
1.1. Location and Description.....	6
1.2. Purpose	6
1.3. Building Code of Australia	6
1.4. Limitations	7
1.5. Design Documentation	7
2 BUILDING DESCRIPTION	8
2.1. Rise in Storeys (Clause C1.2).....	8
2.2. Classification (Clause A6.0)	8
2.3. Effective Height (Clause A1.0)	8
2.4. Type of Construction Required (Table C1.1)	8
2.5. Floor Area and Volume Limitations (Table C2.2).....	8
2.6. Fire Compartments	8
2.7. Exits.....	9
2.8. Climate Zone (Clause A1.0).....	9
2.9. Location of Fire-source features	9
3 MATTERS FOR FURTHER CONSIDERATION	10
3.1. General.....	10
3.2. Dimensions and Tolerances.....	10
3.3. Performance Based Design – Performance Solutions	10
3.4. Façade Construction – Non Combustible	11
3.5. Block C Hall & Stage.....	12
ANNEXURE A DESIGN DOCUMENTATION.....	13
ANNEXURE B ESSENTIAL SERVICES	15
ANNEXURE C FIRE RESISTANCE LEVELS	18
ANNEXURE D DETAILED BCA 2019 ASSESSMENT	23
ANNEXURE E DEFINITIONS.....	78
ANNEXURE F BCA COMPLIANCE SPECIFICATION	82

Tables

Table 1.	Building Classification.....	8
Table 2.	Performance Solutions	10
Table 3.	Essential Fire Safety Measures.....	16
Table 4.	Type B Construction (Taken from Table 4 of Specification C1.1)	19
Table 5.	Type C Construction.....	22
Table 6.	Deemed to Satisfy Clause Assessment	25

EXECUTIVE SUMMARY

This document provides an assessment of the architectural design drawings for the proposed new Primary School at Mulgoa Rise / Glenmore Park, against the Deemed-to-Satisfy provisions of the Building Code of Australia (BCA) 2019, Volume 1 Amendment 1.

Part 3 'Matters for Further Consideration' of this report outlines the identified BCA compliance issues that require further information or consideration and/or assessment as Performance Solutions.

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

Table below also identifies BCA compliance issues that require further information or consideration from within Annexure D assessment table.

Item	Description	BCA Provision
Performance Solutions Required		
1.	Permit Hydrant system to be in accordance with AS 2419.1:2017 in lieu of referenced 2005 version. Permit two external hydrants to be greater than 50m to a hardstand to provide coverage via external hydrants to all buildings.	E1.3 EP1.3
2.	Building A Ground Floor & Level 1: To permit a single unisex ambulant staff toilet on each level. Building A Ground Floor: To permit a single unisex ambulant student toilet in the Sick Bay. Building B2 Ground Floor: To permit student assisted unisex ambulant toilet in the Support Unit.	F2.3 & F2.4 FP2.1
3.	The construction of external walls is such that they will prevent the penetration of water that could cause unhealthy or dangerous conditions or loss of amenity to occupants and undue dampness or deterioration of building elements.	No DtS Provisions – FP1.4 Performance Provisions Only
Building Code of Australia Compliance Matters to be Addressed during Detailed Design		
1.	Fire rating of Building A&B for Type B construction	Spec C1.1 Clause 4 & Annexure C for preliminary assessment
2.	Provide Staff numbers for staff toilet numbers	D1.13, F2.3 – Annexure D
3.	Library tiered seating area design and confirm design of Hall stage steps/seating at the front of stage	H1.4 – Annexure D
4.	Hall: Stage will require amendment to ensure stage floor area no greater than 50m ²	Part 3.5

Annexure D to this report provides a detailed assessment of the proposal against ALL relevant Deemed-to-Satisfy Provisions of the BCA.

1 BASIS OF ASSESSMENT

1.1. Location and Description

The building development, the subject of this report, is for a The New Primary School in Mulgoa Rise located at 1-23 Forestwood Drive, Glenmore Park, NSW. The development is a new primary school precinct on a brownfield site. Proposed development includes two (2) x two-storey school buildings (Building B2 & B3), a two-storey Administration/Library building (Building A) and a single storey Hall (Building C) and associated civil and landscape works including car parking.

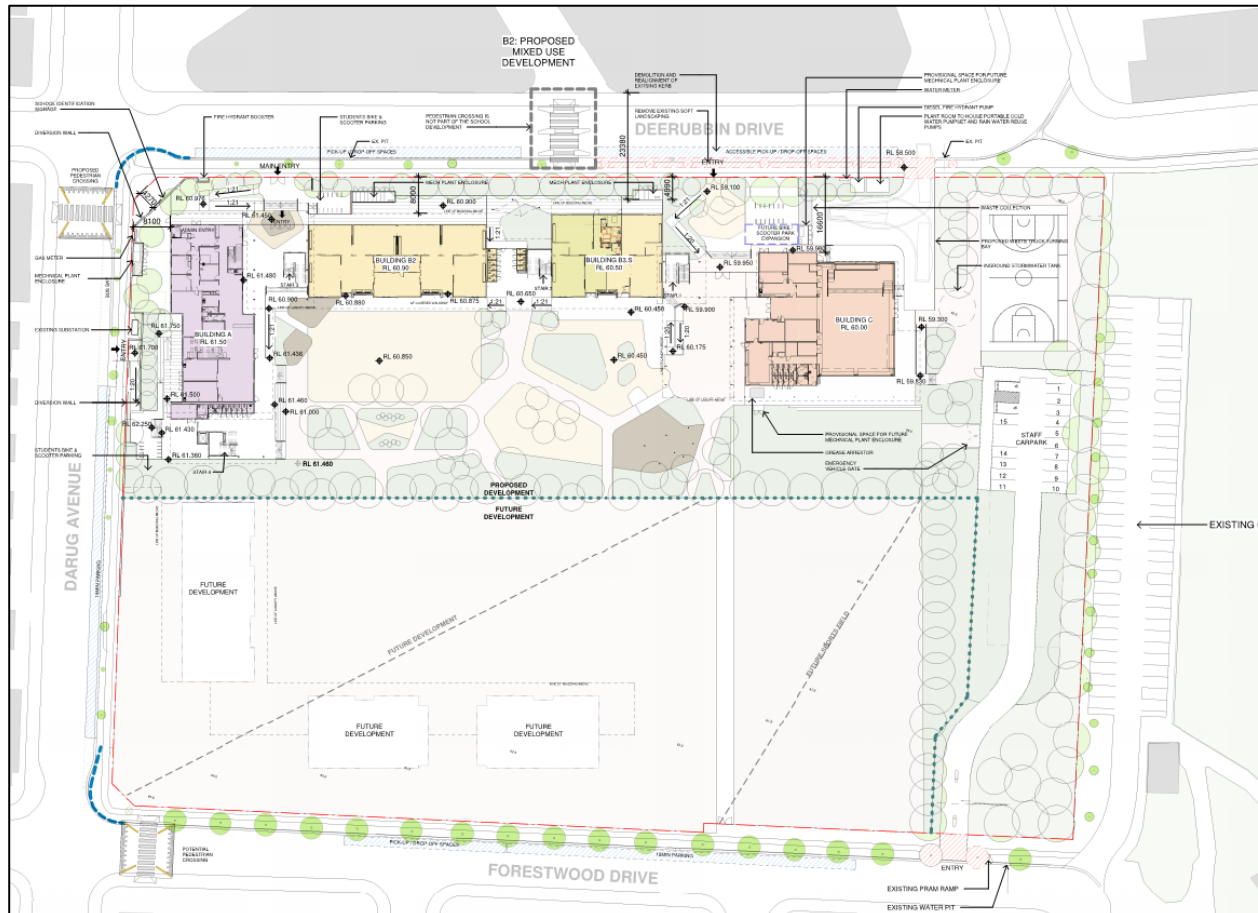


Figure 1: Source is Site Plan - 20415-NBRS-DR-A-SSDA-0110 Rev 8

1.2. Purpose

The purpose of this report is to assess the current design proposal against the Deemed-to-Satisfy Provisions of BCA 2019, and to clearly outline those areas (if any) where compliance is not achieved, where areas may warrant redesign to achieve strict BCA compliance or where areas may be able to be assessed against the relevant performance criteria of BCA 2019. Such assessment against relevant performance criteria will need to be addressed by means of a separate Performance Based Fire Safety Engineered Assessment Report to be prepared under separate cover.

1.3. Building Code of Australia

This report is based on the Deemed-to-Satisfy Provisions of the National Construction Code Series Volume 1 – Building Code of Australia, 2019 Amendment One (BCA2019 herein) incorporating the State variations where applicable. Please note that the version of the BCA applicable to new building works is the version applicable under EP&A Act & Regulation for Crown Development at the time of release for tender. Client has advised BCA2019 Amendment One is applicable.

1.4. Limitations

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

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

This report does not include, or imply compliance with:

- (a) the National Construction Code – Plumbing Code of Australia Volume 3
- (b) the Disability Discrimination Act 1992 including the Disability ((Access to Premises – Buildings) Standards 2010), (Note: Refer to separate Access Report by BCA Logic);
- (c) Demolition Standards not referred to by the BCA;
- (d) Work Health and Safety Act 2011;
- (e) Requirements of Australian Standards unless specifically referred to;
- (f) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Telecommunications Supply Authority, Water Supply Authority, Electricity Supply Authority, Work Cover, Roads and Maritime Services (RMS), Local Council, ARTC, Department of Planning and the like; and
- (g) Conditions of Development Consent issued by the Local Consent Authority.

1.5. Design Documentation

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

2 BUILDING DESCRIPTION

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

2.1. Rise in Storeys (Clause C1.2)

The main building consists of Building A, B1 & B3 as a united building with a rise in storeys of two (2). Building C Hall is a separate building with a rise in storey of one.

2.2. Classification (Clause A6.0)

The building has been classified as follows.

Table 1. Building Classification

Class	Level	Description
5	Building A – Part Ground & Level 1	Admin & Staff Areas
9b	Building A – Part Ground & Level 1 Building B2&B3	Library & School Classrooms
9b	Building C	Hall / Assembly Building
10b	School Site	Covered awnings to walkways

2.3. Effective Height (Clause A1.0)

Main Building A & B2/3 has an *effective height* of less than 12 metres.

2.4. Type of Construction Required (Table C1.1)

The main building (A & B2/3) is required to be of Type B Construction.

Building C Hall is required to be of Type C Construction

2.5. Floor Area and Volume Limitations (Table C2.2)

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

Class 5/9b - Type B	Maximum Floor Area	5,500m ²
	Maximum Volume	33,000m ³
Class 9b – Type C	Maximum Floor Area	3,000m ²
	Maximum Volume	18,000m ³

- United Building A/B2/B3 has a total floor area of fire compartment of approximately 5,400m² which complies for Type B Construction. Building has floor to floor height of approximately 4m so the building volume also complies.

2.6. Fire Compartments

The following *fire compartments* have been assumed:

- (a) Building A/B2/B3 form a united building as a combined fire compartment across both levels. Approximate fire compartment size 5,400m² - this includes all roofed areas and external balcony areas associated with the building which can carry fire load, such as bins, bag storage and the like.
- (b) Building C is a separate fire compartment.

Note: The various buildings on site will have the area between them protected for weather by high-level free standing non-combustible class 10b covered walkways – as these covered walkways are to be constructed of independent self-supporting non-combustible constructed awnings, being class 10b, they are not deemed to be a fire source feature and enable each block to be treated as a separate building located greater than 3.0m and 6.0m apart from the adjacent buildings, to be considered as an independent stand-alone building where appropriate. Note: Building C is a separate building to Building A&B with a high-level free-standing awning/roofed area between the buildings.

2.7. Exits

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

- (a) Building A: Ground Floor: Main entry double door, side door at bottom of stairway, library double doors. Special programs rooms x 2 – can use their own double doors to open space or egress via the Library (to be determined).
- (b) Building B2: Ground Floor: Both double entry doors from Shared PAA rooms.
- (c) Building B3: Ground Floor: Double entry door and single door from Shared PAA rooms.
- (d) Building C: West double entry doors, east two sets x double doors. Canteen door to open space. Store room doors to open space, OSHC office door to open space.
- (e) First Floor: 4 x non-fire isolated stairs. Staff room internal non-fire isolated stair.

2.8. Climate Zone (Clause A1.0)

The building is located within Climate Zone 6.

2.9. Location of Fire-source features

The fire source features for the subject development are:

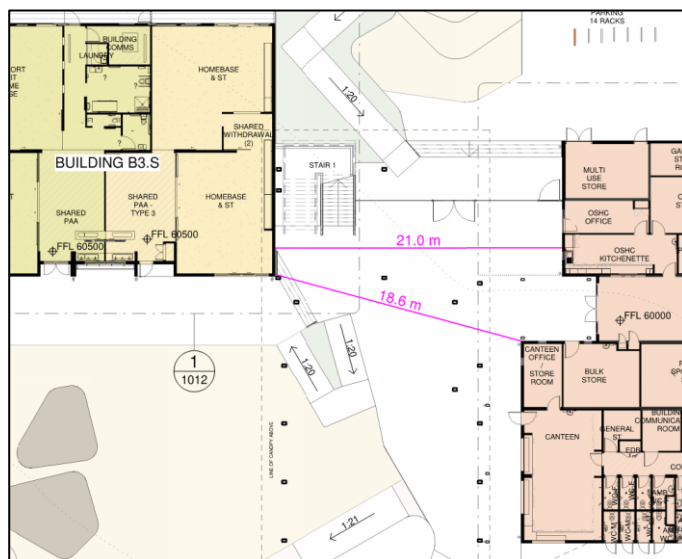
North: The far boundary of Deerubbin Drive – Building B2, B3 & C are >18m to far boundary.

South: The far boundary of Forestwood Drive.

East: The allotment boundary.

West: The far boundary of Darug Avenue – Building A is >18m to far boundary

School Buildings: Building B3 is more than 18m from Building C, measured external wall to external wall.



3 MATTERS FOR FURTHER CONSIDERATION

3.1. General

Assessment of the Architectural design documentation against the Deemed-to Satisfy Provisions of the Building Code of Australia, 2019 (BCA) has revealed the following areas where compliance with the BCA may require further consideration and/or may involve assessment as Performance Based (Fire Engineered) *Performance Solutions*. Any *Performance Solutions* will be required to clearly indicate methodologies for achieving compliance with the relevant *Performance Requirements*.

Annexure D to this report provides a detailed assessment of the proposal against ALL relevant Deemed-to-Satisfy Provisions of the BCA.

Note: It is important that Annexure D is read in conjunction with the items below, as some matters may not have had sufficient information provided to allow a detailed assessment to be undertaken.

3.2. Dimensions and Tolerances

The BCA contains the minimum standards for building construction and safety, and therefore generally stipulates minimum dimensions which must be met. BCA Logic's assessment of the plans and specifications has been undertaken to ensure the minimal dimensions have been met.

The designer and builder should ensure that the minimum dimensions are met onsite and consideration needs to be given to construction tolerances for wall set outs, applied finishes and skirtings to corridors and bathrooms for example, tiling bed thicknesses and the like which can adversely impact on critical matters such as access for people with disabilities, stair and corridor widths and balustrade heights.

3.3. Performance Based Design – Performance Solutions

There are specific areas throughout the development where strict Deemed-to-Satisfy BCA Compliance will not be achieved by the proposed design and site constraints. Item 1 will need to be addressed in a detailed Fire Safety Engineering Report to be prepared for this development under separate cover. Item 2 & 3 will need to be addressed in a detailed Performance Solution Report by an appropriate consultant.

Table 2. Performance Solutions

Item	Description of Performance Solution	DTS Provision	Relevant Performance Requirements
1.	Permit Hydrant system to be in accordance with AS 2419.1:2017 in lieu of referenced 2005 version. Permit two external hydrants to be greater than 50m to a hardstand to provide coverage via external hydrants to all buildings.	E1.3	EP1.3
2.	Building A Ground Floor & Level 1: To permit a single unisex ambulant staff toilet on each level. Building A Ground Floor: To permit a single unisex ambulant student toilet in the Sick Bay. Building B2 Ground Floor: To permit student assisted unisex ambulant toilet in the Support Unit.	F2.3 & F2.4	FP2.1
3.	The construction of the external walls is such that they will prevent the penetration of water that could cause unhealthy or dangerous conditions or loss of amenity to occupants and undue dampness or deterioration of building elements.	No DtS Provisions	FP1.4

3.4. Façade Construction – Non Combustible

Block A&B2/3: As some of the buildings are required to be of Type B Construction, the external façade is required to be *non-combustible* and comply with Clause C1.9 of BCA2019 which states as follows:

- (a) In a building required to be of Type A or B construction, the following building elements and their components must be *non-combustible*:
 - (i) External walls and common walls, including all components incorporated in them including the facade covering, framing and insulation.
 - (ii) The flooring and floor framing of lift pits.
 - (iii) Non-loadbearing internal walls where they are required to be fire-resisting.
- (b) A shaft, being a lift, ventilating, pipe, garbage, or similar shaft that is not for the discharge of hot products of combustion, that is non-loadbearing, must be of *non-combustible* construction in—
 - (i) a building required to be of Type A construction; and
 - (ii) a building required to be of Type B construction, subject to C2.10, in—
 - (A) a Class 2, 3 or 9 building; and
 - (B) a Class 5, 6, 7 or 8 building if the shaft connects more than 2 storeys.
- (c) A loadbearing internal wall and a loadbearing fire wall, including those that are part of a loadbearing shaft, must comply with Specification C1.1.
- (d) The requirements of (a) and (b) do not apply to gaskets, caulking, sealants, termite management systems, Glass including laminated glass, thermal breaks associated with glazing systems and damp-proof courses.
- (e) The following materials, may be used wherever a *non-combustible* material is required:
 - (i) Plasterboard.
 - (ii) Perforated gypsum lath with a normal paper finish
 - (iii) Fibrous-plaster sheet.
 - (iv) Fibre-reinforced cement sheeting.
 - (v) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0.
 - (vi) Sarking-type materials that do not exceed 1 mm in thickness and have a *Flammability Index* not greater than 5.
 - (vii) Bonded laminated materials where—
 - (A) each lamina, including any core, is *non-combustible*; and
 - (B) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and
 - (C) the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectively.

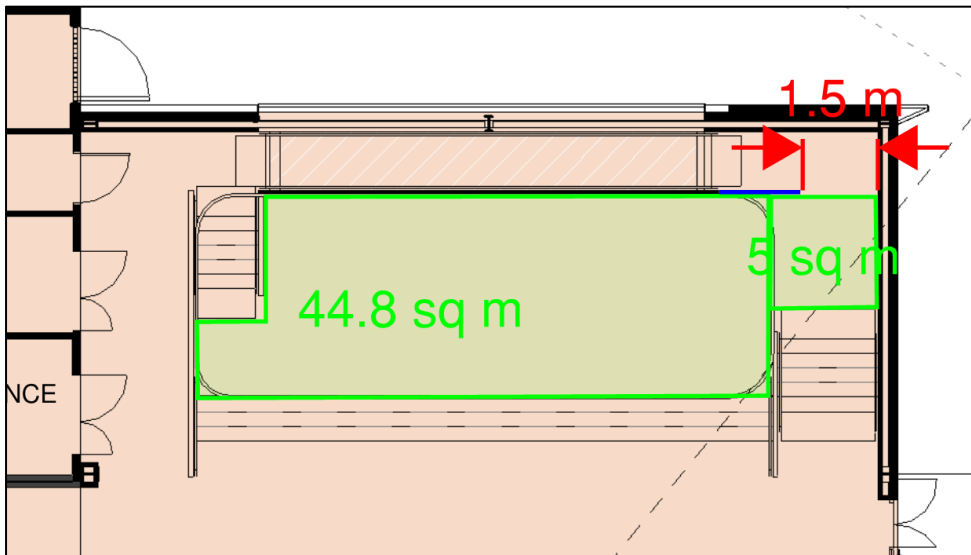
Currently the external façade construction has been assessed as follows:

- > Block A/B2/B3 External Walls – No external wall construction nominated on plans – further assessment required as design progresses to ensure *non-combustible* wall construction complies with above.
- > Block C Hall: As Type C construction compliance with BCA Clause C1.9 is not mandatory. However, under EFSG requirements the external walls will be required to be non-combustible.

It is also noted that this clause also prohibits the use of in situ formwork containing combustible elements including PVC lined formwork products where the PVC lining remains in place for the life of the building where proposed to be used as an external wall element, common walls, the flooring and floor framing of lift pits, services riser shafts or non-loadbearing internal walls required to be fire resisting.

3.5. Block C Hall & Stage

- The stage must be less than 50m² to avoid having smoke-and-heat vents under NSW Table E2.2b. The whole floor area of the stage shall be counted as the BCA definition of floor area, however excluding the landing areas of ramp and stairways with handrail extensions/tactiles. Refer below for a proposed solution to extend the corridor wall to exclude the corridor and turning space landing from the calculation of the stage area, which results in less than 50m² floor area.
- Confirm the seating across the front of the stage are designed to be tiered seating area in accordance with BCA Clause H1.4. The stage already has two stairways which will be accessible with handrails & TGSIs. When tiered seating is designed as per H1.4, handrails and TGSIs are not required. Clause H1.4 tiered seating requires greater heights between seating platforms than a stairway. Alternatively, if the client wants it to be a stairway across the front it will require handrails both sides and TGSIs across the full width top and bottom.



ANNEXURE A DESIGN DOCUMENTATION

Annexure A – Design Documentation

This report has been based on the following design documentation by NBRS Architecture issued for SSDA on 06/08/2021.

NBRS DRAWING LIST SSDA

DRAWING NUMBER	SHEET NAME
20415-NBRS-DR-A-SSDA-0001	COVER
20415-NBRS-DR-A-SSDA-0003	SHADOW DIAGRAMS
20415-NBRS-DR-A-SSDA-0101	SITE SURVEY
20415-NBRS-DR-A-SSDA-0102	SITE ANALYSIS
20415-NBRS-DR-A-SSDA-0110	SITE PLAN
20415-NBRS-DR-A-SSDA-0113	SITE ACCESS AND SECURITY PLAN
20415-NBRS-DR-A-SSDA-0115	SITE SECTIONS
20415-NBRS-DR-A-SSDA-0999	CAR PARK PLAN
20415-NBRS-DR-A-SSDA-1000	OVERALL GROUND FLOOR PLAN
20415-NBRS-DR-A-SSDA-1001	OVERALL L1 PLAN
20415-NBRS-DR-A-SSDA-1002	OVERALL ROOF PLAN
20415-NBRS-DR-A-SSDA-1011	BLOCK A - GF PLAN
20415-NBRS-DR-A-SSDA-1012	BLOCK B3 - GF PLAN
20415-NBRS-DR-A-SSDA-1013	BLOCK B2 - GF PLAN
20415-NBRS-DR-A-SSDA-1014	BLOCK C - GF PLAN
20415-NBRS-DR-A-SSDA-1021	BLOCK A - LEVEL 1 PLAN
20415-NBRS-DR-A-SSDA-1022	BLOCK B3 - LEVEL 1 PLAN
20415-NBRS-DR-A-SSDA-1023	BLOCK B2 - LEVEL 1 PLAN
20415-NBRS-DR-A-SSDA-3010	SITE ELEVATIONS
20415-NBRS-DR-A-SSDA-3011	BUILDING A - ELEVATIONS
20415-NBRS-DR-A-SSDA-3012	BUILDING B3 - ELEVATIONS
20415-NBRS-DR-A-SSDA-3013	BUILDING B2 - ELEVATIONS
20415-NBRS-DR-A-SSDA-3014	BUILDING C - ELEVATIONS
20415-NBRS-DR-A-SSDA-4001	BUILDING A - SECTIONS
20415-NBRS-DR-A-SSDA-4002	BUILDING - SECTIONS
20415-NBRS-DR-A-SSDA-4003	BUILDING - DETAIL SECTIONS
20415-NBRS-DR-A-SSDA-7001	3D IMAGE 1
20415-NBRS-DR-A-SSDA-7002	3D IMAGE 2
20415-NBRS-DR-A-SSDA-7003	3D IMAGE 3
20415-NBRS-DR-A-SSDA-7004	3D IMAGE 4
20415-NBRS-DR-A-SSDA-7010	SIGNAGE
20415-NBRS-DR-A-SSDA-8001	EXTERNAL FINISHES

ANNEXURE B ESSENTIAL SERVICES

Annexure B - Essential Services

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

Table 3. Essential Fire Safety Measures

Item	Essential Fire and Other Safety Measures	Standard of Performance
Fire Resistance (Floors – Walls – Doors – Shafts)		
1.	Fire doors <ul style="list-style-type: none"> > EDB/Comms enclosures 	Spec C3.4 & AS1905.1: 2015 EFSG
2.	Fire seals protecting openings in fire resisting components of the building	BCA2019 C3.15 (Openings for service installations) BCA2019 C3.16 (Construction joints) AS1530.4:2014 & AS4072.1-2005
3.	Lightweight construction <ul style="list-style-type: none"> > Fire Rating of Walls/ceilings located: <ul style="list-style-type: none"> ○ EDB/Comms enclosures FRL 60/60/60. ○ Main switch room FRL 120/120/120 	BCA2019 C1.1, Spec. C1.1 BCA2019 C1.8, Spec C1.8 BCA2019 C2.13 AS1530.4:2014
General		
4.	Portable fire extinguishers	BCA2019 E1.6 AS 2444–2001
5.	Warning & operational signs	BCA2019 D3.6 (Braille Exit Signs) (Note: E4.5 (Exit Signs)) BCA2019 E3.3 (Lift Signs)
Fire Services		
6.	Emergency lighting	BCA2019 E4.2, E4.4 AS/NZS 2293.1:2018
7.	Exit signs	BCA2019 E4.5, E4.6 & E4.8 AS/NZS 2293.1:2018
8.	Fire hydrant systems	BCA2019 E1.3 AS 2419.1:2005
9.	Hose reel systems	BCA2019 E1.4 AS 2441:2005
10.	Mechanical air handling systems <ul style="list-style-type: none"> • Auto-shutdown of Air-handling System. 	BCA2019 E2.2, NSW Table E2.2b AS 1668.1:2015 (Amdt 1) Spec E2.2a Clause 6 & AS1670.1:2018

Item	Essential Fire and Other Safety Measures	Standard of Performance		
	<p>(NSW Table E2.2b) - Any system in a Class 9b assembly building which does not form part of a smoke hazard management system, other than:</p> <ul style="list-style-type: none">> non-ducted individual room units with a capacity of not more than 1000 L/s; or> miscellaneous exhaust are systems installed as per Section 5 and 6 of AS 1668.1:2015.			
11.	<p>Performance Solutions – To be completed Detailed Design Stage</p> <p>*Fire Engineering Report (FER) prepared by XXXX, report no. XXX, issue XXXX, dated XXX.</p> <p>Allowing for:</p> <ol style="list-style-type: none">1. DtS Departure from Clause D1.4			
Performance Solutions – To be completed Detailed Design Stage				
	Description of Performance Solution	DTS Provision	Performance Requirements	Method of meeting performance solutions
12.	<p>Permit Hydrant system to be in accordance with AS 2419.1:2017 in lieu of referenced 2005 version.</p> <p>Permit two external hydrants to be greater than 50m to a hardstand to provide coverage via external hydrants to all buildings.</p>	E1.3	EP1.3	TBC Detailed Design Stage

ANNEXURE C FIRE RESISTANCE LEVELS

Annexure C - Fire Resistance Levels

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

Type B Construction

Table 4. Type B Construction (Taken from Table 4 of Specification C1.1)

Item	Class 5, 9b
Loadbearing External Walls (including column incorporated within external wall)	
- Less than 1.5m to a <i>fire- source feature</i>	120/120/120
- 1.5 – less 3m from <i>fire- source feature</i>	120/90/60
- 3 – less 9m from a <i>fire- source feature</i>	120/30/30
- 9 – less 18m from a <i>fire- source feature</i>	120/30/-
- 18m or more from a <i>fire- source feature</i>	-/-/-
Non-Loadbearing External Walls	
- Less than 1.5m to a <i>fire- source feature</i>	-/120/120
- 1.5 – less 3m from <i>fire- source feature</i>	-/90/60
- 3m or more from a <i>fire- source feature</i>	-/-/-
Loadbearing External Columns	
- Less than 18m	120/-/-
- 18m or more	-/-/-
Non-Loadbearing External Columns	-/-/-
Common Walls & Fire Walls	120/120/120
Stair and Lift Shafts required to be fire-resisting	
- Loadbearing Stair & Lift shaft	120/120/120
- Non-loadbearing Stair shaft only	-/120/120
Internal walls between or bounding sole occupancy units:	
- Loadbearing	120/-/-
- Non-loadbearing	-/-/-
Internal walls bounding public corridors, public lobbies and the like:	
- Loadbearing	120/-/-
- Non-loadbearing	-/-/-
Other loadbearing internal walls and columns	120/-/-
Roofs	-/-/-

Clause 4.1(g): In a Class 5-9 building, in the storey immediately below the roof, internal columns and internal walls other than fire walls or shaft walls, need not comply with Table 4 of Spec C1.1.

Clause 4.1(i): In a Class 2 or 3 building, except where within the one *sole-occupancy unit*, or a Class 9a health-care building or a Class 9b building, a floor separating storeys or above a space for the accommodation of motor vehicles or used for storage or any other ancillary purpose, must—

- i. be constructed so that it is at least of the standard achieved by a floor/ceiling system incorporating a ceiling which has a resistance to the incipient spread of fire to the space above itself of not less than 60 minutes; or

- ii. have an *FRL* of at least 30/30/30; or
- iii. have a fire-protective covering on the underside of the floor, including beams incorporated in it, if the floor is combustible or of metal;

Block A & B2/3 Preliminary Assessment:

The following assessment is provided for Type B Construction applicable to Building A&B:

- Fire-source feature: The far boundary of the roadways adjoining the allotment are more than 18m to the buildings.
- Fire-source feature: Building B3 is more than 18m to Building C (measured external wall to external wall). As such, external wall of Building B3 does not require an FRL. Any loadbearing external column supporting Building B3 which is within 18m of Building C will require FRL 120/-/- or be addressed in a Performance Solution Assessment Report
- Fire-source feature: Building A – the design of the southern part of the building must take into consideration the future construction of more school buildings which will be within 9-18m of Building A.
- Ground Floor: All internal columns and external columns require as a minimum FRL 120/-/-, with columns in an external wall which are 3m-9m to another building require FRL 120/30/30 and which are 9m-18m require FRL 120/30/-.
- Level 1 floor requires FRL 30/30/30 and a concrete slab has been proposed. However, if the Level 1 floor will support loadbearing columns or external walls which require a fire-resistance of 120 mins for structural stability, the Level 1 floor will require FRL 120/30/30.
- Level 1 internal columns immediately below the roof do not require an FRL (Spec C1.1 Clause 4.1(g))
- Level 1 columns in an external wall – where located 18m or more from a fire source feature they do not require an FRL. Where the external wall is between 9m-18m to another building on the allotment (Building C) the column requires FRL 120/30/-.
- External Columns – any external loadbearing column which is supporting a Level 1 floor structure or the roof over Level 1 of the building and is exposed within 18m to Building C will require FRL 120/-/- or be addressed in a Performance Solution Assessment Report.
- Level 1 roof structure does not require an FRL.
- Figure 3 below shows the proposed future buildings on the site when the school has additional buildings built under future expansion. Due to fire compartment size limitations, the future school buildings will likely be considered separate buildings to Building A, therefore Building A shall consider requirement for fire rating of external walls and columns within 18m of a fire-source feature (future buildings). The lift shaft is within 9-18m and will require FRL 120/30/-. External wall of Building A (MSR/Acc WC) will be designed to be greater than 18m therefore no FRL required. External columns which support the Level 1 floor structure or the main roof structure which will be within 18m of future buildings and will require FRL 120/-/-.
- The Overall Roof Plan shows an awning/canopy roof structure built to the south of Building A as part of this SSDA approval – this will be a free-standing non-combustible class 10b structure between the buildings. Alternatively, option to review future school buildings being part of the same fire compartment as a united building in lieu of separate buildings and possibly address Fire Compartment size in a Performance Solution Assessment Report. This would negate the requirement for fire rating Building A and future development.
- Comms Rooms/EDBs/Hall Store Rooms: Under EFSG requirements these rooms require fire rating. NBRs team working on Hawkesbury Centre of Excellence and Richmond High School have nominated these rooms to be fire rated with 60min FRL, whereas the plans show 120min FRL. Client to advise correct FRL required?

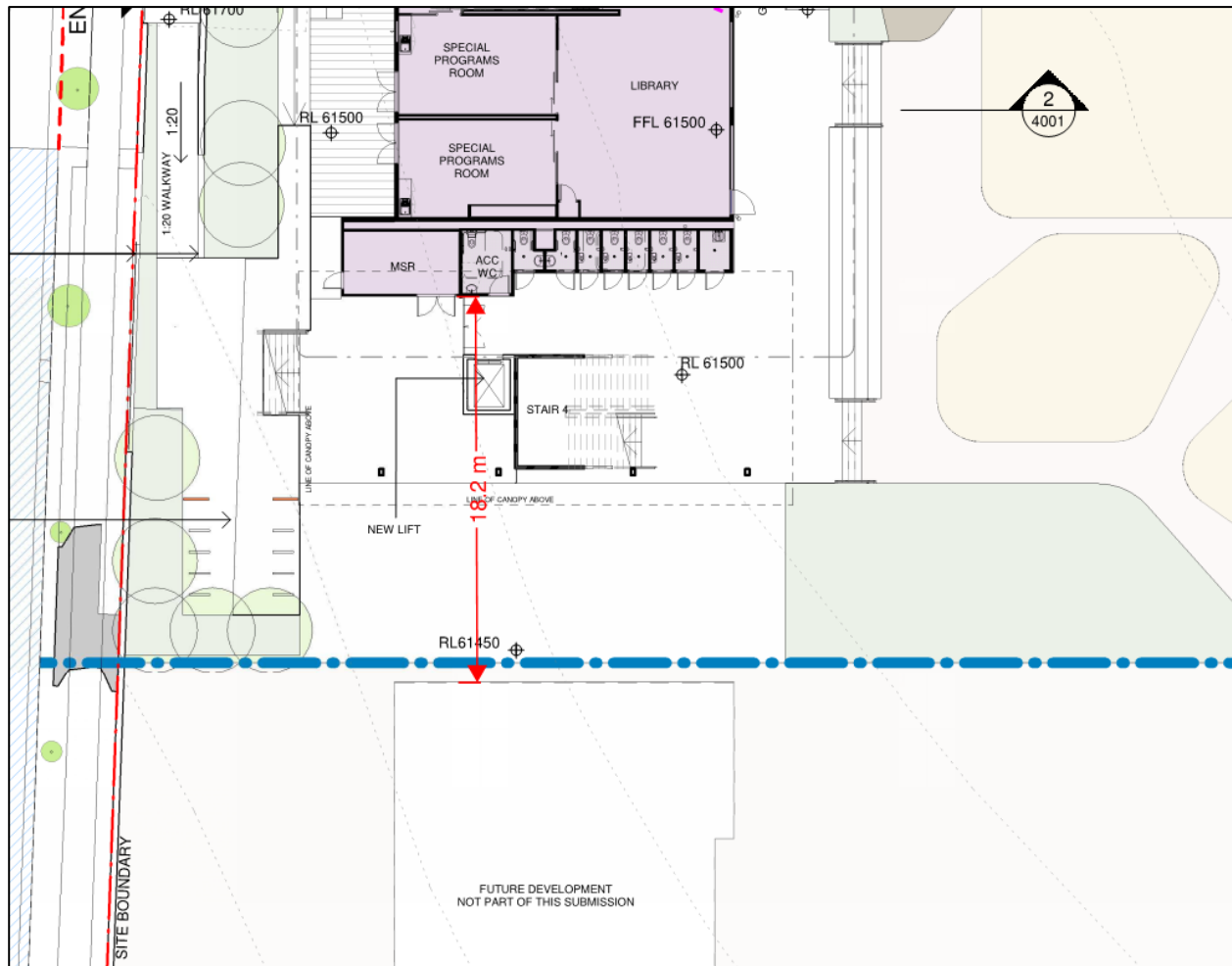


Figure 2: Location of future school buildings in relation to Block A. Due to fire compartment size limitations, the future school buildings will likely be considered separate buildings to Building A, therefore Building A shall consider requirement for fire rating of external walls and columns within 18m of a fire-source feature (future buildings). As shown above, the lift shaft is within 9-18m and will require FRL 120/30/-. External wall of Building A (MSR/Acc WC) will be designed to be greater than 18m therefore no FRL required.

Type C Construction

Table 5. Type C Construction

Building C Hall: As the building is more than 3m to a fire-source feature, the building does not require any FRLs for the superstructure. Certain rooms require fire rating under EFSG requirements.

Item	Class 9b
External Walls	
- Less than 1.5m to a <i>fire- source feature</i>	90/90/90
- 1.5 – less 3m from <i>fire- source feature</i>	60/60/60
- 3m or more from a <i>fire- source feature</i>	-/-/-
External Column not incorporated in an external wall	
- Less than 1.5m to a fire source feature	90/-/-
- 1.5 – less 3m from fire source feature;	60/-/-
- 3m or more from a fire source feature	-/-/-
Common Walls and Fire Walls	90/90/90
Internal walls bounding sole occupancy units	-/-/-
Internal walls bounding public corridors, hallways and the like	-/-/-
Internal walls bounding a stair if required to be fire rated	60/60/60

ANNEXURE D DETAILED BCA 2019 ASSESSMENT

Annexure D – Detailed BCA 2019 Assessment

Outlined below is a detailed assessment of the design under the Deemed-to-Satisfy Provisions of the Building Code of Australia (BCA) including the State variations where applicable.

All Deemed-to-Satisfy clauses that are applicable to the subject building have been referred to below, including a comment adjacent to each clause of the proposal's ability to satisfy each respective clause.

The abbreviations outlined below have been used in the following table.

N/A	Not Applicable. The Deemed-to-Satisfy clause is not applicable to the proposed design.
Complies	The relevant provisions of the Deemed-to-Satisfy clause have been satisfied by the proposed design.
CRA – Refer Annexure F	'COMPLIANCE READILY ACHIEVABLE'. It is considered that there is not enough information included in the documentation to accurately determine strict compliance with the individual clause requirements. However, with further design development, compliance can readily be achievable. This item is to be read in conjunction with the BCA Specification included within Annexure F of this report.
FI	Further Information is necessary to determine the compliance potential of the building design.
PS	Performance Solution with respect to this Deemed-to-Satisfy Provision is necessary to satisfy the relevant Performance Requirements.
DNC	Does Not Comply.
Noted	BCA Clause simply provides a statement not requiring specific design comment or confirmation.

Deemed to Satisfy Clause Assessment

Table 6. Deemed to Satisfy Clause Assessment

Clause	Clause Requirements	Comment	Status
Section B: Structure			
Part B1 – Structural Provisions			
B1.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
B1.1: Resistance to actions	The resistance of the building must be greater than the most critical action effect resulting from different combinations of actions, where the most critical action has been determined in accordance with this Part	Structural Engineer to certify at CC stage.	CRA – Refer Annexure F
B1.2: Determination of individual actions	The magnitude of actions must be determined in accordance with this Clause.	Structural Engineer to certify at CC stage.	CRA – Refer Annexure F
B1.4: Determination of structural resistance of materials and forms of construction	The structural resistance of materials and forms of construction must be determined in accordance with this Clause.	Structural Engineer to certify at CC stage.	CRA – Refer Annexure F
B1.5: Structural software	Structural software used in computer aided design of a building or structure within the geometrical limits of (b) of this Clause must comply with the ABCB Protocol for Structural Software.	Structural Engineer to certify at CC stage.	CRA – Refer Annexure F
B1.6: Construction of buildings in flood hazard areas		Not applicable to Class 9b development	N/A

Section C: Fire Resistance**Part C1 – Fire Resistance and Stability**

C1.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
C1.1: Type of construction required	The building/s are required to be of Type B & C Construction. Refer to Specification C1.1 requirements at the end of this Section.	Building A&B – Type B Construction Building C – Type C Construction. Building C does not require any FRLs under Spec C1.1. However, Comms & EDB Cupboard will be fire rated under EFSG requirements.	CRA – Refer Annexure F
C1.2: Calculation of rise in storeys	Building A&B has a rise in storeys of two (2). Building C has a rise in storeys of one (1).	Building A&B has a rise in storeys of two (2). Building C has a rise in storeys of one (1).	Noted
C1.3: Buildings of multiple classification	Informational	Building A&B – Type B Construction with Class 9b on the top floor.	Noted
C1.8: Lightweight construction	Lightweight construction used in a fire-rated application is to comply with Specification C1.8.	To be reviewed in detailed design stage.	CRA – Refer Annexure F
C1.9: Non-combustible building elements	<p>(a) In a building required to be of Type A or B construction, the following building elements and their components must be <i>non-combustible</i>:</p> <ul style="list-style-type: none"> (i) External walls and common walls, including all components incorporated in them including the facade covering, framing and insulation. (ii) The flooring and floor framing of lift pits. (iii) Non-loadbearing internal walls where they are required to be fire-resisting. <p>(b) A shaft, being a lift, ventilating, pipe, garbage, or similar shaft that is not for the discharge of hot products of combustion, that is non-loadbearing, must be of <i>non-combustible</i> construction in—</p>	<p>Building A & B as Type B Construction require compliance - To be reviewed in detailed design stage.</p> <p>Note: Building C requires compliance with non-combustible construction under EFSG requirements - To be reviewed in detailed design stage.</p>	CRA – Refer Annexure F

Section C: Fire Resistance

- | | | | |
|--|---|--|--|
| | <ul style="list-style-type: none"> (i) a building required to be of Type A construction; and (ii) a building required to be of Type B construction, subject to C2.10, in— <ul style="list-style-type: none"> (A) a Class 2, 3 or 9 building; and (B) Class 5, 6, 7 or 8 building if the shaft connects more than 2 storeys. (c) A loadbearing internal wall and a loadbearing <i>fire wall</i>, including those that are part of a loadbearing shaft, must comply with Specification C1.1. (d) The requirements of (a) and (b) do not apply to gaskets, caulking, sealants, termite management systems, Glass including laminated glass, thermal breaks associated with glazing systems and damp-proof courses. (e) The following materials, may be used wherever a <i>non-combustible</i> material is required: <ul style="list-style-type: none"> (i) Plasterboard. (ii) Perforated gypsum lath with a normal paper finish. (iii) Fibrous-plaster sheet. (iv) Fibre-reinforced cement sheeting. (v) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0. (vi) <i>Sarking-type materials</i> that do not exceed 1 mm in thickness and have a <i>Flammability Index</i> not greater than 5. (vii) Bonded laminated materials where— | | |
|--|---|--|--|

Section C: Fire Resistance

	<ul style="list-style-type: none"> (A) each lamina, including any core, is <i>non-combustible</i>; and (B) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and (C) the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectively. 		
C1.10: Fire hazard properties	Fire hazard properties of internal linings, materials and assemblies must comply with C1.10 of the BCA and Specification C1.10, including floor, wall and ceiling linings, air-handling ductwork, lift cars, insulation, <i>sarking-type materials</i> and attachments, or be considered <i>non-combustible</i> .	To be reviewed in detailed design stage.	CRA – Refer Annexure F
C1.14: Ancillary elements	<p>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 <i>non-combustible</i> unless it is one of the following:</p> <ul style="list-style-type: none"> (a) An ancillary element that is <i>non-combustible</i>. (b) A gutter, downpipe or other plumbing fixture or fitting. (c) A flashing. (d) A grate or grille not more than 2 m² 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. 	Building A&B require compliance - To be reviewed in detailed design stage.	CRA – Refer Annexure F

Section C: Fire Resistance

- (h) A sign other than one provided under (a) or (g) that—
 - (i) achieves a group number of 1 or 2; and
 - (ii) does not extend beyond one storey; and
 - (iii) 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 of 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 *exit* unusable in a fire.
- (j) A part of a security, intercom or announcement system.
- (k) Wiring.
- (l) A paint, lacquer or a similar finish.
- (m) A gasket, caulking, sealant or adhesive directly associated with (a) to (k).

Part C2 – Compartment and Separation

C2.0: Deemed-to-Satisfy Provisions

Informational

Noted

Noted

Section C: Fire Resistance			
C2.2: General floor area and volume limitations	The size of <i>fire compartments</i> in the building must not exceed that specified in Table C2.2.	Building A&B form one fire compartment over both levels – approximate floor area of 5,400m ² Building C complies.	Complies
C2.8: Separation of classifications in the same storey	Where a storey has different classifications located alongside one another: <ul style="list-style-type: none"> > each building element in that storey must have the higher <i>FRL</i> prescribed in Specification C1.1 for that element for the classifications concerned; or > the parts must be separated in that storey by a <i>fire wall</i> having the higher <i>FRL</i> prescribed; 	Building A – Class 5 & 9b have the same 2 hour FRLs so separation is not required.	N/A
C2.10: Separation of lift shafts		Lift does not connect more than 2 storeys	N/A
C2.12: Separation of equipment	Any of the following equipment located in the building must be separated from the remainder of the building: <ul style="list-style-type: none"> > lift motors and lift control panels; or > emergency generators used to sustain emergency equipment operating in the emergency mode; or > central smoke control plant; or > boilers; or > a battery system installed in the building that has a total voltage of 12 volts or more and a storage capacity of 200 kWh or more. Equipment need not be separated in if the equipment comprises: <ul style="list-style-type: none"> > smoke control exhaust fans located in the air stream which are constructed for high temperature operation in accordance with Specification E2.2b; or 	No battery system proposed. To be further reviewed at DD stage for other equipment.	N/A

Section C: Fire Resistance

	<ul style="list-style-type: none"> > stair pressurizing equipment installed in compliance with the relevant provisions of AS 1668.1:2015; or > a lift installation without a machine room; or > equipment otherwise adequately separated from the remainder of the building. <p>Separation must be by construction having an <i>FRL</i> as required by Specification C1.1, but not less than <i>FRL</i> 120/120/120 with openings protected by self-closing fire doors having an <i>FRL</i> of not less than –/120/30.</p>		
C2.13: Electricity supply system	<ul style="list-style-type: none"> > A main switchboard which sustains emergency equipment operating in the emergency mode must be fire separated from any other part of the building by construction having an <i>FRL</i> of not less than 120/120/120 and have the doorway fitted with self-closing fire door having an <i>FRL</i> of not less than –/120/30. > Any electrical conductors located within the building that supply a substation or main switchboard for emergency equipment must comply with BCA clause C2.13. > Emergency equipment switchgear must be separated from non-emergency equipment switchgear by metal partitions designed to minimize the spread of a fault from the non-emergency equipment switchgear. > Emergency equipment includes but is not limited to the following: <ul style="list-style-type: none"> ○ fire hydrant booster pumps; ○ sprinkler pumps; ○ hose reel pumps; 	<p>Main Switchboard room in Building A will require fire separated from the remainder of the building by construction having an <i>FRL</i> of not less than 120/120/120, and a corresponding fire rated ceiling with two-way <i>FRL</i> –/120/120.</p> <p>External doors are not required to be fire rated.</p> <p>Electrical contractor to certify switchboard/gear as per C2.13.</p>	CRA – Refer Annexure F

Section C: Fire Resistance			
	<ul style="list-style-type: none"> ○ air-handling systems designed to exhaust and control the spread of smoke; ○ emergency lifts; ○ control and indicating equipment; and ○ sound systems and intercom systems for emergency purposes. 		
Part C3 – Protection of Openings			
C3.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
C3.1: Application of Part	<p>(a) The Deemed-to-Satisfy Provisions of this Part do not apply to–</p> <ul style="list-style-type: none"> (i) Control joints, weep holes and the like in external walls of masonry construction and joints between panels in external walls of pre-cast concrete panel construction if, in all cases they are not larger than necessary for the purpose; and (ii) Non-combustible ventilators for subfloor or cavity ventilation, if each does not exceed 45 000 mm² in face area and is spaced not less than 2 m from any other ventilator in the same wall; and (iii) Openings in the vertical plane formed between building elements at the construction edge or perimeter of a balcony or verandah, colonnade, terrace, or the like; and (iv) In a carpark– <ul style="list-style-type: none"> (A) Service penetrations through; and (B) Openings formed by a vehicle ramp in, 	To be reviewed in detailed design stage.	Noted

Section C: Fire Resistance

	<p>(aa) A floor other than a floor that separates a part not used as a carpark, providing the connected floors comply as a single fire compartment for the purposes of all other requirements of the Deemed-to-Satisfy Provisions of Sections C, D and E.</p> <p>(b) For the purposes of the Deemed-to-Satisfy Provisions of this Part, openings in building elements required to be fire-resisting include doorways, windows (including any associated fanlight), infill panels and fixed or openable glazed areas that do not have the required FRL.</p> <p>(c) For the purposes of the Deemed-to-Satisfy Provisions of this Part, openings, other than those covered under (a)(iii), between building elements such as columns, beams and the like, in the plane formed at the construction edge or perimeter of the building, are deemed to be openings in an external wall.</p>		
C3.4: Acceptable methods of protection	Fire doors, fire windows and fire shutters must comply with BCA Specification C3.4.	Fire doors shall comply with Specification C3.4.	CRA – Refer Annexure F
C3.12: Openings in floors and ceilings for services	<p>Where services pass through a floor which is required to achieve an <i>FRL</i> or a ceiling required to have a <i>resistance to the incipient spread of fire</i>, the service must be enclosed within a fire resisting shaft or fire protected in accordance with Clause C3.15.</p> <p>Where a service passes through a floor which is required to be protected by a <i>fire-protective</i> covering, the penetration must not reduce the fire performance of the covering.</p>	<p>To be reviewed in detailed design stage.</p> <p>Where a service passes through a floor which is required to be protected by a <i>fire-protective</i> covering, the penetration must not reduce the fire performance of the covering.</p>	CRA – Refer Annexure F

Section C: Fire Resistance			
C3.15: Openings for service installations	Where services pass through an element which is required to achieve an <i>FRL</i> (other than an external wall or roof), the service must be fire protected in accordance with BCA Clause C3.15. Note: contractors should check with PCA to confirm compliance with their proposed fire stopping method.	To be reviewed in detailed design stage.	CRA – Refer Annexure F
C3.16: Construction joints	Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation must be protected in a manner identical with a prototype tested in accordance with AS 1530.4:2014 to achieve the required <i>FRL</i> .	To be reviewed in detailed design stage.	CRA – Refer Annexure F
C3.17: Columns protected with lightweight construction to achieve an <i>FRL</i>	A column protected by lightweight construction to achieve an <i>FRL</i> which passes through a building element that is required to have an <i>FRL</i> or a resistance to the incipient spread of fire, must be installed using a method and materials identical with a prototype assembly of the construction which has achieved the required <i>FRL</i> or resistance to the incipient spread of fire.	To be reviewed in detailed design stage.	CRA – Refer Annexure F
Specification C1.1 – Fire-Resisting Construction			
2.0: General Requirements	Informational	Noted	Noted
2.1: Exposure to fire-source features	A building element is exposed to a <i>fire-source feature</i> if any of the horizontal straight lines between that part and the <i>fire-source feature</i> , or vertical projection of the feature, is not obstructed by another part of the building that– (ii) has an <i>FRL</i> of not less than 30/–/–; and (iii) is neither transparent nor translucent.	Noted	Noted

Section C: Fire Resistance				
2.2:	Fire protection for a support of another part	Where a part of a building required to have an <i>FRL</i> depends upon direct vertical or lateral support from another part to maintain its <i>FRL</i> , that supporting part must have an <i>FRL</i> not less than that required by other provisions of this Specification; and if located within the same <i>fire compartment</i> as the part it supports have an <i>FRL</i> in respect of structural adequacy the greater of that required for the supporting part itself and for the part it supports.	To be reviewed in detailed design stage. Option for possible fire engineering in relation to beams in the ground floor structure having a reduced <i>FRL</i> where they support loadbearing columns in the Ground Floor which have an <i>FRL</i> 120/-, similar to Alex Avenue.	CRA – Refer Annexure F
2.3:	Lintels	A lintel must have the <i>FRL</i> required for the part of the building in which it is situated unless it does not contribute to the support of a fire door, fire window or fire shutter and meets the requirements of Spec C1.1 clause 2.3 (a) & (b).	To be reviewed in detailed design stage.	CRA – Refer Annexure F
2.4:	Attachments not to impair fire-resistance	The method of attaching or installing a finish, lining, ancillary element or service installation to a building element must not reduce the fire-resistance of that element to below that required.	To be reviewed in detailed design stage.	CRA – Refer Annexure F
4.0:	Type B fire-resisting construction	Type B fire-resisting construction is applicable to the development.	Refer to Part 4 clauses below for the relevant Type B Construction requirements applicable to the project.	-
4.1:	Fire-resistance of building elements	<p>The <i>FRL</i>'s of all elements are to be in accordance with the <i>FRL</i>'s detailed in the Table contained within Part 4.0 of this report.</p> <ul style="list-style-type: none"> > if a stair shaft supports any floor or a structural part of it— <ul style="list-style-type: none"> (i) the floor or part must have an <i>FRL</i> of 60/- or more; or (ii) the junction of the stair shaft must be constructed so that the floor or part will be free to sag or fall in a fire without causing structural damage to the shaft; and 	<p>Refer Annexure C of this Report for preliminary assessment of Type B construction.</p> <p>Lift shaft as an external wall is within 9m-18m of proposed Stage 2 buildings therefore will require <i>FRL</i> 120/30/-.</p> <p>To be further assessed at Detailed Design stage.</p>	FI

Section C: Fire Resistance

- > Internal walls required to be fire rated with respect to integrity and insulation must extend to—
 - (i) to the underside of the floor next above if that floor has an *FRL* of at least 30/30/30; or
 - (ii) the underside of a ceiling having a resistance to the incipient spread of fire to the roof space above itself of not less than 60 minutes; or
 - (iii) the underside of the roof covering if it is *non-combustible* 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) 450 mm above the roof covering if it is combustible; and
- > Load bearing internal walls (including those part of a loadbearing shaft) and Load bearing *fire walls* must be of concrete or masonry.
- > in a Class 5, 6, 7, 8 or 9 building, in the storey immediately below the roof, internal columns and internal walls other than *fire walls* and shaft walls, need not comply with Table 4; and
- > in a Class 2 or 3 building, except where within the one *sole-occupancy unit*, or a Class 9a health-care building **or a Class 9b building**, a floor separating storeys or above a space for the accommodation of motor vehicles or used for storage or any other ancillary purpose, must—
 - (i) be constructed so that it is at least of the standard achieved by a floor/ceiling system incorporating a ceiling which has a resistance to the incipient spread of fire to the space above itself of not less than 60 minutes; or
 - (ii) have an *FRL* of at least 30/30/30; or

Section C: Fire Resistance			
	(iii) have a fire-protective covering on the underside of the floor, including beams incorporated in it, if the floor is combustible or of metal.		
5.0: Type C fire-resisting construction	Type C fire-resisting construction is applicable to the development.	-	N/A
5.1: Fire-resistance of building elements	The FRL's of all elements are to be in accordance with the FRL's detailed in the Table contained within Part 4.0 of this report.	<p>Building C is more than 3m to a fire-source feature therefore the building does not require any FRLs under Specification C1.1.</p> <p>However, certain rooms require fire rating in accordance with EFSG requirements:</p> <p>EFSG: EDB cupboards and Comms Rooms will have FRL 60/60/60 enclosures with fire rated ceilings and with fire doors.</p>	N/A
Specification C1.10 – Fire Hazard Properties			
1. Scope	Informational	Noted	-
2. Application	Informational	Noted	Noted
3. Floor linings and floor coverings	<p>A floor lining or floor covering must have–</p> <p>(a) a <i>critical radiant flux</i> not less than that listed in Table 2; and</p> <p>(b) in a building not protected by a sprinkler system complying with Specification E1.5, a maximum smoke development rate of 750 percent-minutes; and</p> <p>(c) a <i>group number</i> complying with Clause 6(b), for any portion of the floor covering that is continued more than 150 mm up a wall.</p>	To be reviewed in detailed design stage.	CRA – Refer Annexure F

Section C: Fire Resistance			
4.	Wall and ceiling linings	<p>(a) A wall or ceiling lining system must comply with the <i>group number</i> specified in Table 3 and for buildings not fitted with a sprinkler system complying with Specification E1.5 have—</p> <p>(i) a <i>smoke growth rate index</i> not more than 100; or</p> <p>(ii) an <i>average specific extinction area</i> less than 250 m²/kg.</p> <p>(b) A <i>group number</i> of a wall or ceiling lining and the <i>smoke growth rate index</i> or <i>average specific extinction area</i> must be determined in accordance with AS 5637.1:2015.</p>	<p>To be reviewed in detailed design stage.</p> <p>CRA – Refer Annexure F</p>
5.	Air-handling ductwork	Rigid and flexible ductwork must comply with the fire hazard properties set out in AS 4254 Parts 1 and 2.	<p>Mechanical contractor to certify.</p> <p>CRA – Refer Annexure F</p>
6.	Lift cars	<p>Materials used as—</p> <p>(a) floor linings and floor coverings must have a <i>critical radiant flux</i> not less than 2.2; and</p> <p>(b) wall and ceiling linings must be a Group 1 material or a Group 2 material in accordance with AS 5637.1:2015.</p>	<p>Lift contractor to certify.</p> <p>CRA – Refer Annexure F</p>
7.	Other materials	Materials and assemblies not included in Clauses 3, 4, 5 or 6 must not exceed the indices set out in Table 4.	<p>To be reviewed in detailed design stage.</p> <p>CRA – Refer Annexure F</p>
Specification C3.4 – Fire Doors, Smoke Doors, Fire Window and Shutters			
1.	Scope	Informational	<p>Noted</p> <p>Noted</p>
2.	Fire doors	Fire doorsets must comply with AS 1905.1:2015 and not fail by radiation through any glazed part during the period specified for integrity in the required <i>FRL</i> .	<p>To be reviewed in detailed design stage.</p> <p>EFSG: EDB cupboards and Comms Rooms will have FRL 60/60/60 enclosures with fire doors.</p> <p>CRA – Refer Annexure F</p>

Section C: Fire Resistance**Specification C3.15 – Penetration of Walls, Floors and Ceilings by Services**

1.	Scope	Informational	Noted	Noted
2.	Application		Compliance with BCA Clause C3.15 will be achieved for service penetrations in fire rated elements.	N/A

Section D: Access and Egress**Part D1 – Provision for Escape**

D1.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
D1.1:	Application of Part	Informational	Not applicable	N/A
D1.2:	Number of exits required	Class 9b school: Each storey shall have two exits. Without passing through another <i>sole-occupancy unit</i> , every occupant of a storey or part of a storey must have access to an <i>exit</i> or at least 2 <i>exits</i> , if 2 or more are required.	Complies	Complies
D1.3:	When fire-isolated stairways and ramps are required		All exit stairs are non-fire isolated as they connect only 2 storeys	Complies
D1.4:	Exit travel distances	<u>Class 2 residential —</u> > The entrance doorway of each <i>sole-occupancy unit</i> must be not more than – <ul style="list-style-type: none"> 6 m from an <i>exit</i> or from a point from which travel in different directions to 2 <i>exits</i> is available; or 	All buildings travel distances comply. Level 1 Building B3 – travel distance has been amended to comply with less than 20m to a point of choice. Note: Egress paths passing under a Class 10b awning between buildings to reach the road is not deemed to contravene open space.	Complies

Section D: Access and Egress

	<ul style="list-style-type: none"> ○ 20 m from a single <i>exit</i> serving the storey at the level of egress to a road or open space; and > No point on the floor of a room which is not in a <i>sole-occupancy unit</i> must be more than 20 m from an <i>exit</i> or from a point at which travel in different directions to 2 <i>exits</i> is available. <p><u>Class 7a carpark—</u></p> <p>No point on a floor must be more than 20 m from an <i>exit</i>, or a point from which travel in different directions to 2 <i>exits</i> is available, in which case the maximum distance to one of those <i>exits</i> must not exceed 40 m.</p> <ul style="list-style-type: none"> > no point on a floor must be more than 20 m from an <i>exit</i>, or a point from which travel in different directions to 2 <i>exits</i> is available, in which case the maximum distance to one of those <i>exits</i> must not exceed 40 m; and > in a Class 5 or 6 building, the distance to a single <i>exit</i> serving a storey at the level of access to a road or open space may be increased to 30 m. 		
D1.5: Distance between alternative exits	<p><i>Exits</i> that are required as alternative means of egress must be—</p> <ul style="list-style-type: none"> (a) distributed as uniformly as practicable within or around the storey served and in positions where unobstructed access to at least 2 <i>exits</i> is readily available from all points on the floor including lift lobby areas; and (b) not less than 9 m apart; and <ul style="list-style-type: none"> (i) not more than 60 m apart; and (c) located so that alternative paths of travel do not converge such that they become less than 6 m apart. 	<p>All buildings comply.</p> <p>Building A/B – Level 1 exit stairs are less than 60m between them.</p>	Complies

Section D: Access and Egress

	Note: the distance between <i>exits</i> must be measured through the point at which travel to two <i>exits</i> is available.		
D1.6: Dimensions of exits and paths of travel to exits	<p>In a required <i>exit</i> or path of travel to an <i>exit</i>–</p> <ul style="list-style-type: none"> > the unobstructed height throughout <i>exits</i> and paths of travel to <i>exits</i> must not be less than 2 m, except the unobstructed height of any doorway may be reduced to not less than 1980 mm; and > the unobstructed width of each <i>exit</i> or path of travel to an <i>exit</i>, except for doorways must be not less than 1m; > the unobstructed width of doorways must be not less than 750 mm, unless providing access for people with disabilities in which case the unobstructed width must be not less than 850 mm. > the required width of a stairway or ramp must be measured clear of all obstructions such as handrails. > the unobstructed width of a required <i>exit</i> must not diminish in the direction of travel to a road or open space. 	<p>Exit doors and stairways can readily comply.</p> <p><u>Assessment of Exit Width:</u></p> <p>Ground Floor:</p> <ul style="list-style-type: none"> • Building A has 3 x exits = complies. • Building B2 has 2 exits (3m exit width) which cater for up to 350 people = complies • Building B3 has 2 exits (2.5m exit width – single door and double door set) which cater for up to 275 people = complies • Building C has 3 exits (3.5m exit width) which cater for up to 425 people = complies <p>Level 1: 5 x exit stairs comply.</p> <ul style="list-style-type: none"> • 10 x homebase = 300 students • Staff room = client advised 27-30 staff • Library: Assume up to 2 x classes in the library which could be from Ground Floor = 60 students • Total = 400 people • Required aggregate exit width: 4m 	CRA – Refer Annexure F
D1.9: Travel by non-fire-isolated stairways or ramps	<ul style="list-style-type: none"> > A non-fire-isolated stairway serving as a required <i>exit</i> must provide a continuous means of travel by its own flights and landings from every storey served to the level at which egress to a road or open space is provided. > In a Class 5, 6, 7, 8 or 9 building, the distance from any point on a floor to a point of egress to a road or 	All non-fire isolated stairs comply.	Complies

Section D: Access and Egress

	<p>open space by way of a required non-fire-isolated stairway or non-fire-isolated ramp must not exceed 80m.</p> <p>> In a Class 5 to 8 or 9b building, a required non-fire-isolated stairway or non-fire-isolated ramp must discharge at a point not more than –</p> <p>(i) 20 m from a doorway providing egress to a road or open space or from a fire-isolated passageway leading to a road or open space; or</p> <p>(ii) 40 m from one of 2 such doorways or passageways if travel to each of them from the non-fire-isolated stairway or non-fire-isolated ramp is in opposite or approximately opposite directions.</p>		
D1.10: Discharge from exits	<p><i>Exits</i> must not be blocked at the point of discharge and where necessary, suitable barriers must be provided to prevent vehicles from blocking the <i>exit</i>.</p> <p>If a required <i>exit</i> leads to open space, the path of travel to the road must have an unobstructed width of not less than 1m, or min 2m width of required <i>exit</i> for stairways.</p> <p>If an <i>exit</i> discharges to open space that is at a different level that the public road to which it is connected, the path of travel to the road must be by a ramp or other incline not steeper than 1:8, or a BCA compliant stairway.</p> <p>The discharge points of alternative <i>exits</i> must be as far apart as practical</p>	<p>Egress path from exits can readily reach the road via BCA compliant stairways and ramps as required.</p> <p>Note: Egress paths passing under a Class 10b awning between buildings to reach the road is not deemed to contravene open space.</p>	CRA – Refer Annexure F
D1.13: Number of persons accommodated	<p>Informational–</p> <p>The number of persons accommodated in a storey, room or mezzanine must be determined within consideration to the purpose for which it is used and the layout of the floor area by–</p>	<p>School population is nominated as 414 students.</p> <p>Staff population – Client advised 27-30 staff.</p>	Noted

Section D: Access and Egress

	<p>(a) calculating the sum of the numbers obtained by dividing the floor area of each part of the storey by the number of square metres per person listed in BCA Table D1.13 according to the use of that part, excluding spaces set aside for—</p> <p>(i) lifts, stairways, ramps and escalators, corridors, hallways, lobbies and the like; and</p> <p>(ii) service ducts and the like, sanitary compartments or other ancillary uses; or</p> <p>(b) reference to the seating capacity in an assembly building or room; or</p> <p>(c) any other suitable means of assessing its capacity.</p>		
D1.14: Measurement of distances	<p>Informational –</p> <p>The nearest part of an <i>exit</i> means in the case of—</p> <p>(a) a fire-isolated stairway, fire-isolated passageway, or fire-isolated ramp, the nearest part of the doorway providing access to them; and</p> <p>(b) a non-fire-isolated stairway, the nearest part of the nearest riser; and</p> <p>(c) a non-fire-isolated ramp, the nearest part of the junction of the floor of the ramp and the floor of the storey; and</p> <p>(d) a doorway opening to a road or open space, the nearest part of the doorway; and</p> <p>(e) a <i>horizontal exit</i>, the nearest part of the doorway.</p>	Noted	Noted
D1.15: Method of Measurement	Informational	Noted	Noted
D1.17: Access to lift pits	Access to the lift pit is assumed to be through the bottom landing doors as the pit is assumed to be less than 3m deep.	Compliance will be achieved	CRA – Refer Annexure F

Section D: Access and Egress**Part D2 – Construction of Exits**

D2.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
D2.3: Non-fire-isolated stairways and ramps		Not applicable to this development – Building A & B are not more than 2 storeys.	N/A
D2.7: Installations in exits and paths of travel	<ul style="list-style-type: none"> > Gas or other fuel services must not be installed in a required <i>exit</i>. > Any electricity meters, distribution boards or ducts, or telecommunications distribution boards or equipment installed in corridors/hallways/lobbies or the like must be enclosed with <i>non-combustible</i> construction or a fire protective covering with doorways suitably sealed against smoke spread. 	<p>To be detailed in detailed design stage.</p> <p>EFSG: EDB cupboards and Comms Rooms will have FRL 60/60/60 enclosures with fire doors.</p>	CRA – Refer Annexure F
D2.8: Enclosure of space under stairs 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 the enclosing walls and ceilings have an FRL of not less than 60/60/60 and the doorway is fitted with a self-closing –/60/30 fire door.	<p>Four external stairs have no rooms under.</p> <p>Internal staff room stair has no room under.</p> <p>Note: Library tiered seating area for lectures is not a 'required' exit, therefore the room under is not applicable to this clause.</p>	N/A
D2.9: Width of stairways and ramps	<p>Informational–</p> <p>A required stairway or ramp that exceeds 2 m in width is counted as having a width of only 2 m unless it is divided by a handrail or barrier continuous between landings and each division has a width of not more than 2 m.</p>	Exit stairways will be assessed as a maximum 2m exit width – therefore central handrails are not required.	Noted
D2.10: Pedestrian ramps	<ul style="list-style-type: none"> > A ramp serving as a required <i>exit</i> must— <ul style="list-style-type: none"> (i) where the ramp is also serving as an accessible ramp under Part D3, be in accordance with AS 1428.1:2009; or 	To be detailed in detailed design stage.	CRA – Refer Annexure F

Section D: Access and Egress			
	<p>(ii) in any other case, have a gradient not steeper than 1:8.</p> <p>> The floor surface of a ramp must have a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013.</p>		
D2.11: Fire-isolated passageways		Not applicable to this development	N/A
D2.12: Roof as open space		Not applicable to this development	N/A
D2.13: Goings and risers	<p>Stairways must comply with the following:</p> <p>> Stairways must have not more than 18 and not less than 2 risers in each flight;</p> <p>> Goings must be between 250 mm and 355 mm;</p> <p>> Risers must be between 115 mm high and 190 mm high;</p> <p>> The slope relationship (2 x riser dimension + going dimension) must be within the range of 550-700;</p> <p>> The goings and risers must be constant (uniform) throughout each flight and the dimensions of goings (G) and risers (R) are considered constant if the variation between—</p> <ul style="list-style-type: none"> ➤ adjacent risers, or between adjacent goings, is no greater than 5 mm; and ➤ the largest and smallest riser within a flight, or the largest and smallest going within a flight, does not exceed 10 mm. <p>> Risers must not contain any openings that would permit a 125 mm sphere to pass through.</p>	<p>To be detailed in detailed design stage.</p> <p>EFSG DG 16.05.02 requires:</p> <ul style="list-style-type: none"> • Minimum 3 risers and maximum 14 risers • Primary School risers 150mm (+/- 10mm) • All schools stair goings 285 (+/- 20mm) <p>16.05.02 Construction Of Exits</p> <p><small>DoE has requirements over and above the minimum standards of the BCA, designed to enhance the functionality and safety of exits. The following are required:</small></p> <ul style="list-style-type: none"> • In buildings of three or more storeys, any balustrade in the third storey and above must not have openings in the first 100mm above the floor, to prevent objects rolling off and falling from the floor • Main student circulation passages are to have an unobstructed width not less than 2100mm • Each flight of stairs must have a minimum of 3 risers and a maximum of 14 risers • Height of stair risers in a primary school is to be 150mm (+/- 10mm) • Height of stair risers in a secondary school is to be 165mm (+/- 10mm) • Stair going dimension for stairs in a primary or secondary school is to be 285mm (+/- 20mm) • Balustrades are to be provided where the difference in level exceeds 300mm. • Balustrades must achieve a height not less than 1000mm above stair nosings, ramp surfaces and all landings. <p><small><i>Refer also to DG / CIRCULATION</i></small></p> <ul style="list-style-type: none"> • Balustrades must not contain openings greater than 100-mm in both the horizontal and vertical directions • All balustrades must not contain a toehold in the zone of 150-760mm above the floor. 	CRA – Refer Annexure F

Section D: Access and Egress

	<ul style="list-style-type: none">> Treads must be of solid construction (not mesh or perforated) if the stairway is more than 10 m high or connects more than 3 storeys.> In a Class 9b building, not more than 36 risers in consecutive flights without a change in direction of at least 30°> In the case of a required stairway, no winders in lieu of a landing> Treads must have a surface or nosing strip with a slip-resistant classification not less than that listed in Table D2.14 when tested in accordance with AS 4586-2013 Slip resistance classification of new pedestrian surface materials.																			
D2.14: Landings	<p>Landings must be not less than 750 mm long and have either a surface with a slip-resistance classification complying with Table D2.14 or a strip at the edge of the landing with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013.</p> <table><tr><th rowspan="2">Application</th><th colspan="2">Surface Condition</th></tr><tr><th>Dry</th><th>Wet</th></tr><tr><td>Ramp steeper than 1:14</td><td>P4 or R11</td><td>P5 or R12</td></tr><tr><td>Ramp steeper than 1:20 but not steeper than 1:14</td><td>P3 or R10</td><td>P4 or R11</td></tr><tr><td>Tread or landing surface</td><td>P3 or R10</td><td>P4 or R11</td></tr><tr><td>Nosing or landing edge strip</td><td>P3</td><td>P4</td></tr></table>	Application	Surface Condition		Dry	Wet	Ramp steeper than 1:14	P4 or R11	P5 or R12	Ramp steeper than 1:20 but not steeper than 1:14	P3 or R10	P4 or R11	Tread or landing surface	P3 or R10	P4 or R11	Nosing or landing edge strip	P3	P4	To be detailed in detailed design stage.	CRA – Refer Annexure F
Application	Surface Condition																			
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Tread or landing surface	P3 or R10	P4 or R11																		
Nosing or landing edge strip	P3	P4																		

Section D: Access and Egress			
D2.15: Thresholds	<p>The threshold of a doorway must not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf unless–</p> <p>(a) in a building required to be accessible, the doorway–</p> <p>(i) opens to a road or open space; and</p> <p>(ii) is provided with a threshold ramp or step ramp in accordance with AS 1428.1:2009; or</p> <p>(b) in other cases–</p> <p>(i) the doorway opens to a road or open space, external stair landing or external balcony; and</p> <p>(ii) the door sill is not more than 190 mm above the finished surface of the ground, balcony, or the like, to which the doorway opens.</p>	To be detailed in detailed design stage.	CRA – Refer Annexure F
D2.16: Barriers to prevent falls	<p>Balustrades must be provided to stairs and balconies, driveway ramps etc where there is a fall of more than 1m. Balustrades must comply with the following:</p> <p><u>Balustrade minimum heights</u></p> <ul style="list-style-type: none"> > 865 mm above stair nosings; > 865 mm above landings to a stair where the barrier is provided along the inside edge of the landing and does not exceed 500 mm in length; and > 1 m in all other locations. <p><u>Balustrade openings</u></p> <ul style="list-style-type: none"> > A 125 mm sphere must not be able to pass through any opening and for stairways, the 125 mm is measured above the nosing line of the stair treads. <p><u>Climbability – other than fire-isolated stairs</u></p>	<p>To be detailed in detailed design stage.</p> <p>EFSG DG 16.05.02 requires compliance over and above BCA D2.16:</p> <ul style="list-style-type: none"> • Minimum balustrade height not less than 1000mm above stair nosings, ramp surfaces and all landings • Balustrades to be provided where difference in level exceeds 300mm • Balustrades must not contain openings greater than 100mm in both horizontal and vertical directions. • All balustrades must not contain a toehold in the zone 150-760mm above the floor. 	CRA – Refer Annexure F

Section D: Access and Egress

	For floors more than 4m above the surface beneath, the balustrade must not incorporate any horizontal or near horizontal elements between 150 mm and 760 mm above the floor that could facilitate climbing.		
	<p>EFSG DG 16.05.02</p> <p>16.05.02 Construction Of Exits</p> <p>DoE has requirements over and above the minimum standards of the BCA, designed to enhance the functionality and safety of exits. The following are required:</p> <ul style="list-style-type: none"> • In buildings of three or more storeys, any balustrade in the third storey and above must not have openings in the first 100mm above the floor, to prevent objects rolling off and falling from the floor • Main student circulation passages are to have an unobstructed width not less than 2100mm • Each flight of stairs must have a minimum of 3 risers and a maximum of 14 risers • Height of stair risers in a primary school is to be 150mm (+/- 10mm) • Height of stair risers in a secondary school is to be 165-mm (+/- 10-mm) • Stair going dimension for stairs in a primary or secondary school is to be 285mm (+/- 20mm) • Balustrades are to be provided where the difference in level exceeds 300mm. • Balustrades must achieve a height not less than 1000mm above stair nosings, ramp surfaces and all landings. <p><i>Refer also to DG / CIRCULATION</i></p> <ul style="list-style-type: none"> • Balustrades must not contain openings greater than 100-mm in both the horizontal and vertical directions • All balustrades must not contain a toe-hold in the zone of 150-760mm above the floor. 		
D2.17: Handrails	<p>Handrails to stairways must:</p> <ul style="list-style-type: none"> > be located along at least one side of the ramp or flight (a flight being 2 or more risers); and > located along each side if the total width of the stairway or ramp is 2m or more; and > be fixed at a height of not less than 865 mm above the nosings of the stair treads and the floor surface of the ramp, landing, or the like; and 	<p>To be detailed in detailed design stage.</p> <p>Primary School: One handrail fixed at a height not less than 865mm and have a second handrail fixed at a height between 665 and 750mm.</p>	CRA – Refer Annexure F

Section D: Access and Egress			
	<ul style="list-style-type: none"> > be continuous between stair flight landings and have no obstruction that will break a hand-hold. > be constructed to comply with clause 12 of AS 1428.1:2009 (including handrails to the fire stairs). > Handrails in common areas (other than fire stairs) must also accord with D3.3. <p><u>Primary School</u></p> <p>Stairways & Ramps: One handrail fixed at a height not less than 865mm and have a second handrail fixed at a height between 665 and 750mm.</p>		
D2.18: Fixed platforms, walkways stairways and ladders		Not applicable to this development	N/A
D2.19: Doorways and doors	<ul style="list-style-type: none"> > Sliding doors serving as <i>exit</i> doors must be openable manually under a force of not more than 110N. > <i>Exit</i> doors that are power operated must be able to be opened manually under a force of not more than 110 N if there is a malfunction or failure of the power source and if leading to road or open space, open automatically if there is a power failure or on the activation of a fire or smoke alarm anywhere in the <i>fire compartment</i> served by the door. > A power operated door in a path of travel to a required <i>exit</i> must be able to be opened manually under a force of not more than 110 N if there is a malfunction of the power source. 	To be detailed in detailed design stage.	CRA – Refer Annexure F
D2.20: Swinging doors	<p>A swinging door in a required <i>exit</i> must swing in the direction of egress unless–</p> <ul style="list-style-type: none"> > it serves a building or part with a floor area not more than 200 m², it is the only required <i>exit</i> from the 	To be detailed in detailed design stage.	CRA – Refer Annexure F

Section D: Access and Egress

	<p>building or part and it is fitted with a device for holding it in the open position; or</p> <p>> it serves a sanitary compartment or airlock (in which case it may swing in either direction).</p>		
D2.21: Operation of latch	<p>All doors in a required <i>exit</i> or forming part of a required <i>exit</i> AND doors in a path of travel to a required <i>exit</i> must be readily openable without a key from the side that faces a person seeking egress, by—</p> <p>(iii) a single hand downward action or pushing action on a single device which is located between 900mm and 1.1 m from the floor and if serving an area required to be accessible by Part D3 –</p> <ul style="list-style-type: none"> ➤ be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and ➤ have a clearance between the handle and the back plate or door face at the centre grip section of the handle of not less than 35mm and not more than 45mm; or <p>(iv) a single hand pushing action on a single device which is located between 900mm and 1.2m from the floor.</p> <p>(v) where the latch operation device referred to in (ii) is not located on the door leaf itself—</p> <ul style="list-style-type: none"> ➤ manual controls to power-operated doors must be at least 25 mm wide, proud of the surrounding surface and located— <ul style="list-style-type: none"> (aa) not less than 500 mm from an internal corner; and (bb) for a hinged door, between 1 m and 2 m from the door leaf in any position; and 	<p>To be detailed in detailed design stage.</p> <p>Block C Hall will require panic bars on main hall exit doors to open space.</p>	CRA – Refer Annexure F

Section D: Access and Egress

	<p>(cc) for a sliding door, within 2 m of the doorway and clear of a surface mounted door in the open position.</p> <p>➤ braille and tactile signage complying with Clause 3 and 6 of Specification D3.6 must identify the latch operation device.</p> <p>The above requirements do not apply to a door that –</p> <p>(i) serves only or is within a <i>sole-occupancy unit</i> in a Class 2 building; or</p> <p>(ii) serves a <i>sole-occupancy unit</i> in a Class 5, 6, 7 or 8 building with a floor area not more than 200m²; or</p> <p>(iii) are fitted with a fail-safe device which automatically unlocks the door upon the activation of an AS 1670.1 detection system installed throughout the building and is readily openable when unlocked.</p>		
D2.22: Re-entry from fire-isolated exits		Not applicable to this development	N/A
D2.23: Signs on doors		Not applicable to this development	N/A
D2.24: Protection of openable windows	<p>(c) A barrier with a height not less than 865 mm above the floor is required to an openable window–</p> <p>(i) in addition to window protection, when a child resistant release mechanism is required by (b)(ii)(C); and</p> <p>(ii) where the floor below the window is 4m or more above the surface beneath if the window is not covered by (a).</p> <p>(d) A barrier covered by (c) except for (e) must not–</p>	<p>To be detailed in detailed design stage – to determine if the Level 1 floor in some locations has a fall of 4m or more to the surface beneath.</p> <p>Eg: Floor to floor heights is close to 4m for Building A so this D2.24(c) clause may be applicable. Where required windows will have a sill height greater than 865mm to satisfy D2.24.</p>	CRA – Refer Annexure F

Section D: Access and Egress

	(i) permit a 125 mm sphere to pass through it; and (ii) have any horizontal or near horizontal elements between 150 mm and 760 mm above the floor that facilitate climbing.		
D2.25: Timber stairways: concession		Not applicable to this development	N/A
Part D3 – Access for People with A Disability			
Refer to separate Access Report by BCA Logic: 113050A-Access-MRPS-r1			Noted

Section E: Services and Equipment**Part E1 – Fire Fighting Equipment**

E1.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
E1.3: Fire hydrants	<p>As the building has a floor area greater than 500 m2, a fire hydrant system complying with AS 2419.1:2005 must be provided to serve the building.</p> <p>Details should be provided showing:</p> <ul style="list-style-type: none"> > Hydrant booster assembly location. The booster location must comply with the following: <ul style="list-style-type: none"> ○ be within 8m of a hardstand for fire brigade appliance; ○ be within sight of the main entry; ○ and no less than 10m to the Building. 	<p>Booster location appears compliant at the Main Entry and more than 10m away. Development can be addressed via external hydrants subject to the following Performance Solutions:</p> <p>Permit Hydrant system to be in accordance with AS 2419.1:2017 in lieu of referenced 2005 version.</p> <p>Permit two external hydrants to be greater than 50m to a hardstand to provide coverage via external hydrants to all buildings.</p>	<p>PS Refer Part 3.3 of Report</p>

Section E: Services and Equipment

E1.4: Fire hose reels	<p>A fire hose reel system complying with BCA clause E1.4 and AS 2441:2005 must be provided to the building (excluding Classes 2, 3, 4, 5, 8 and 9c).</p> <p>All points on a floor shall be within reach of a 4 m hose stream issuing from a nozzle at the end of the hose laid on floor. The hose length shall not exceed 36 m.</p> <p>Fire hose reels must be located so that the fire hose will not need to pass through doorways fitted with fire or smoke doors, except—</p> <ul style="list-style-type: none"> (iii) doorways in walls referred to in C2.5(a)(v) in a Class 9a building and C2.5(b)(iv) in a Class 9c building, separating ancillary use areas of high potential fire hazard; and (iv) doorways in walls referred to in C2.12 or C2.13 separating equipment or electrical supply systems; and (v) doorway openings to shafts referred to in C3.13. 	<p>FHRs are not required to Class 5 Admin/Staff room and school classrooms and corridors.</p> <p>FHRs are required in:</p> <ul style="list-style-type: none"> • Building C • Building A Library on both levels <p>To be detailed in detailed design stage.</p>	CRA – Refer Annexure F
E1.5: Sprinklers		Not applicable to this development	N/A
E1.6: Portable fire extinguishers	Portable fire extinguishers must be provided in accordance with clause E1.6 & Table E1.6 of the BCA and must be selected, located and distributed in accordance with Sections 1, 2, 3 and 4 of AS 2444:2001.	To be detailed in detailed design stage.	CRA – Refer Annexure F
E1.8: Fire control centres		Not applicable to this development	N/A
E1.9: Fire precautions during construction	<p>Informational—</p> <ul style="list-style-type: none"> > During construction, not less than one portable fire extinguisher to suit Class A, B and C fires and electrical fires must be provided at all times on each storey adjacent to each required / temporary exit; 	To be detailed in detailed design stage.	Noted

Section E: Services and Equipment			
E1.10: Provision for special hazards		Not applicable to this development	N/A
Part E2 – Smoke Hazard Management			
E2.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
E2.1: Application of Part	Informational	Noted	Noted
E2.2: General requirements (including Tables E2.2a and E2.2b)	<p>Auto-shutdown of Air-handling System.</p> <p>(NSW Table E2.2b) - Any air-handling system in a Class 9b assembly building which does not form part of a smoke hazard management system shall have automatic shutdown, other than:</p> <ul style="list-style-type: none"> > non-ducted individual room units with a capacity of not more than 1000 L/s; or > miscellaneous exhaust are systems installed as per Section 5 and 6 of AS 1668.1:2015 	<p>Building A/B/C shall comply with automatic shutdown of air-handling systems, excluding the exemptions listed under NSW Table E2.2b.</p> <p>Smoke detection to activate shutdown to comply with Clause 6 of Spec E2.2a.</p> <p>NSW Table E2.2b: Hall with Stage – the stage must be less than 50m² floor area to avoid smoke-and-heat vents. To be reviewed and approved by the design team /client in detailed design stage.</p>	FI
E2.3: Provisions for special hazards		Not applicable to this development	N/A
Specification E2.2a – Smoke Detection and Alarm System			
1. Scope	Informational	Noted	Noted
6. Smoke detection for smoke control system	<p>(a) Smoke detectors required to activate air pressurisation systems for fire-isolated exits and zone pressurisation systems must—</p> <p>(i) be installed in accordance with AS 1670.1; and</p> <p>(ii) have additional smoke detectors installed adjacent to each bank of lift landing doors set</p>	<p>Smoke detectors required to activate—</p> <p>automatic shutdown of air-handling systems in accordance with NSW Table E2.2b;</p> <p>must—</p> <ul style="list-style-type: none"> • be spaced— 	CRA – Refer Annexure F

Section E: Services and Equipment

	<p>back horizontally from the door openings by a distance of not more than 3 m.</p> <p>(b) Smoke detectors required to activate—</p> <p>(i) automatic shutdown of air-handling systems in accordance with Table E2.2b; or</p> <p>(ii) a smoke exhaust system in accordance with Specification E2.2b,</p> <p>must—</p> <p>(iii) be spaced—</p> <ul style="list-style-type: none"> ➤ not more than 20 m apart and not more than 10 m from any wall, bulkhead or smoke curtain; and ➤ in enclosed malls and walkways in a Class 6 building not more than 15 m apart and not more than 7.5 m from any wall, bulkhead or curtain; and <p>(iv) have a sensitivity—</p> <ul style="list-style-type: none"> ➤ in accordance with AS 1670.1 in areas other than a multi- storey walkway and mall in a Class 6 building; and ➤ not exceeding 0.5% smoke obscuration per metre with compensation for external airborne contamination as necessary, in a multi- storey walkway and mall in a Class 6 building. <p>(c) Smoke detectors provided to activate a smoke control system must—</p> <p>(i)</p> <ul style="list-style-type: none"> ➤ form part of a building fire or smoke detection system complying with AS 1670.1; or 	<ul style="list-style-type: none"> ➤ not more than 20 m apart and not more than 10 m from any wall, bulkhead or smoke curtain; and ➤ in enclosed malls and walkways in a Class 6 building not more than 15 m apart and not more than 7.5 m from any wall, bulkhead or curtain; and <ul style="list-style-type: none"> • have a sensitivity— <ul style="list-style-type: none"> ➤ in accordance with AS 1670.1 in areas other than a multi- storey walkway and mall in a Class 6 building; and ➤ not exceeding 0.5% smoke obscuration per metre with compensation for external airborne contamination as necessary, in a multi- storey walkway and mall in a Class 6 building. <p>Smoke detectors provided to activate a smoke control system must—</p> <ul style="list-style-type: none"> ➤ form part of a building fire or smoke detection system complying with AS 1670.1; or ➤ be a separate dedicated system incorporating control and indicating equipment complying with AS 1670.1. <p>Note: Smoke detectors provided solely to initiate automatic shutdown of air-handling systems need not activate a BOWS.</p>	
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Section E: Services and Equipment

	<ul style="list-style-type: none"> ➤ be a separate dedicated system incorporating control and indicating equipment complying with AS 1670.1; and (ii) activate a building occupant warning system complying with Clause 7, except that smoke detectors provided solely to initiate automatic shutdown of air-handling systems in accordance with (b)(i) need not activate a building occupant warning system. 		
7. Building occupant warning system		Note: Smoke detectors provided solely to initiate automatic shutdown of air-handling systems need not activate a BOWS.	N/A
Part E3 – Lift Installations			
E3.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
E3.1: Lift installations	An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with Specification E3.1	Lift contractor to certify	CRA – Refer Annexure F
E3.2: Stretcher facility in lifts		Not applicable to this development	N/A
E3.3: Warning against use of lifts in fire	Warning signs indicating “DO NOT USE LIFTS IF THERE IS A FIRE” shall be displayed near every call button for a passenger lift or group of lifts throughout a building as per E3.3.	Lift contractor to certify	CRA – Refer Annexure F
E3.4: Emergency lifts		Not applicable to this development	N/A
E3.5: Landings	Access and egress to and from lift-well landings must comply with the Deemed-to-Satisfy Provisions of Section D.	Accessible space in front of lift complies	Complies

Section E: Services and Equipment			
E3.6: Passenger lifts	In an accessible building, every passenger lift must be one of the types specified in Table E3.6a, have accessible features in accordance with Table E3.6b, and not rely on a constant pressure device for its operation if the lift car is fully enclosed.	Lift contractor to certify	CRA – Refer Annexure F
Specification E3.1 – Lift Installations			
1. Scope	Informational	Noted	Noted
2. Lift cars exposed		Not applicable to this development – centrally located lift with roof over is not directly exposed to radiation.	N/A
3. Lift car emergency lighting	<p>A lift car must have an emergency lighting system designed –</p> <p>(a) to come on automatically upon failure of the normal light supply; and</p> <p>(b) to provide at least 20 lux of lighting for 2 hours on the alarm initiation button.</p>	Lift contractor to certify	CRA – Refer Annexure F
4. Cooling of lift shaft	<p>While a lift in a lift shaft is in service, the cooling of the lift shaft must –</p> <p>(a) ensure that the dry bulb air temperature in the lift shaft does not exceed 40°C; and</p> <p>(b) if the cooling is by a ventilation system, be provided with an air changed rate determined using a temperature rise of no more than 5 K.</p>	Mechanical designer to certify or provide a Performance Solution.	CRA – Refer Annexure F
Part E4 – Visibility In An Emergency, Exit Signs And Warning Systems			
E4.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted

Section E: Services and Equipment

E4.2:	Emergency lighting requirements	An emergency lighting system must be installed throughout the building in accordance with Clause E4.2 of the BCA and AS/NZS 2293.1:2018.	Electrical designer to certify	CRA – Refer Annexure F
E4.3:	Measurement of distance	Informational	Noted	Noted
E4.4:	Design and operation of emergency lighting	The emergency lighting system must comply with AS/NZS 2293.1:2018.	Electrical designer to certify	CRA – Refer Annexure F
E4.5:	Exit signs	<i>Exits</i> signs are to be provided above or adjacent to a door providing egress as well as directional signage throughout the entire development where necessary.	Electrical designer to certify	CRA – Refer Annexure F
E4.6:	Direction signs	Where an <i>exit</i> is not readily apparent, directional signage is to be installed indicating the direction of egress.	Electrical designer to certify	CRA – Refer Annexure F
E4.7:	Class 2 and 3 buildings and Class 4 Parts: Exemptions		Not applicable to this development	N/A
E4.8:	Design and operation of exit signs	<i>Exit</i> signs must comply with AS/NZS 2293.1:2018 and be clearly visible at all times when the building is occupied.	Electrical designer to certify	CRA – Refer Annexure F
E4.9:	Emergency warning and intercom systems		Not applicable to this development	N/A

Section F: Health and Amenity**Part F1 – Damp and Weatherproofing**

F1.0:	Deemed-to-Satisfy Provisions	<i>Performance Requirement</i> FP1.4, for the prevention of the penetration of water through external walls, must be complied with. There are no Deemed-to-Satisfy Provisions for this <i>Performance Requirement</i> in respect	Performance Solution required.	PS Required
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Section F: Health and Amenity

	of external walls. The assessment contained within this report does not include an assessment against Performance Provision FP1.4.		
F1.1: Stormwater drainage	Stormwater drainage to comply with AS/NZS 3500.3:2018.	Hydraulic designer to certify	CRA – Refer Annexure F
F1.4: External above ground membranes	Waterproofing membranes for external above ground use to comply with AS 4654 Parts 1 and 2:2012.	Architectural designer to certify	CRA – Refer Annexure F
F1.5: Roof coverings	Roof coverings are to comply with BCA Clause F1.5.	Roof designer to certify	CRA – Refer Annexure F
F1.6: Sarking	<i>Sarking-type materials</i> used for weatherproofing must comply with AS/NZS 4200 Part 1 and 2:2017.	Architectural designer to certify	CRA – Refer Annexure F
F1.7: Water proofing of wet areas in buildings	Wet areas must be constructed in accordance with AS 3740:2010 and F1.7 of the BCA.	Architectural designer & Waterproofing contractor to certify	CRA – Refer Annexure F
F1.9: Damp-proofing	Moisture is to be prevented from reaching the walls above a damp-proof course, and the underside of the suspended floors.	Architectural designer to certify	CRA – Refer Annexure F
F1.10: Damp-proofing of floors on the ground	If a floor of a room is laid on the ground or on fill, moisture from the ground must be prevented from reaching the upper surface of the floor and adjacent walls by the insertion of a vapour barrier in accordance with AS 2870:2011 (N/A to areas that do not require weatherproofing – refer specific clause exemptions).	Structural Engineer / designer to certify	CRA – Refer Annexure F
F1.13: Glazed Assemblies	Glazed assemblies are to comply with AS 2047:2014 and AS 1288:2006.	Architectural designer & Glazing Contractor to certify	CRA – Refer Annexure F
Part F2 – Sanitary and Other Facilities			

Section F: Health and Amenity			
F2.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
F2.2: Calculation of number of occupants and facilities	<p>Informational –</p> <ul style="list-style-type: none"> (a) The number of persons accommodated must be calculated according to D1.13 if it cannot be more accurately determined by other means (b) Unless the premises are used predominantly by one sex, sanitary facilities must be provided on the basis of equal numbers of males and females (c) In calculating the number of sanitary facilities to be provided under F2.1 and F2.3, a unisex facility required for people with a disability may be counted once for each sex (d) For the purpose of this Part, a unisex facility comprises one closet pan, one washbasin and means for the disposal of sanitary towels 	Noted	Noted
F2.3: Facilities in Class 3 to 9 buildings (including Table F2.3)	<ul style="list-style-type: none"> (a) Except where permitted by (b), (c), (f), F2.4(a) and F2.4(b), separate sanitary facilities for males and females must be provided for Class 3, 5, 6, 7, 8 or 9 buildings in accordance with Table F2.3. (b) If not more than 10 people are employed, a unisex facility may be provided instead of separate facilities for each sex. (c) If the majority of employees are one sex, not more than 2 employees of the other sex may share toilet facilities if the facilities are separated by means of walls, partitions and doors to afford privacy. (d) Employees and the public may share the same facilities in a Class 6 and 9b building (other than a school or early childhood centre) provided the number of facilities provided is not less than the 	<p>Staff:</p> <p>Staff toilet numbers are provided below for 80 staff – as Building A has sanitary facilities to cater for up to 80 staff (including GF unisex accessible facility in the entry area, but excluding the unisex ambulant toilet on GF). Building C also has an additional unisex accessible sanitary facility for Staff (which is not counted in the Building A facilities for 80 staff). This is compliant for staff numbers up to 30 as advised by Client.</p> <p>Block A: Entry area unisex accessible WC – is nominated for Staff and for public if required.</p> <p>Block A: The two staff unisex ambulant toilets on Ground Floor & Level 1 will require a Performance Solution, as unisex ambulant toilets are not allowed for under F2.3 or F2.4.</p>	<p>PS</p> <p>Refer Part 3.3 of Report</p>

Section F: Health and Amenity

	<p>total number of facilities required for employees plus those required for the public.</p> <p>(e) Adequate means of disposal of sanitary towels must be provided in sanitary facilities for use by females.</p>	<p>Student:</p> <p>Student toilet numbers comply throughout the school for the 450 students proposed.</p> <p>Block A: Student unisex ambulant toilet in sick bay will require a Performance Solution, as unisex ambulant toilets are not allowed for under F2.3 or F2.4.</p> <p>B2 Ground Floor: Unisex Change Room with shower is similar to unisex accessible toilet for support students and is considered compliant. The unisex accessible toilet is for students.</p> <p>B2 Ground Floor: Unisex Ambulant toilet for Support Unit students will require a Performance Solution, as unisex ambulant toilets are not allowed for under F2.3 or F2.4.</p>																										
	<p>Mulgoa Rise Sanitary Calculation:</p> <table><tr><th>STUDENTS 450</th><th>Pans</th><th>Urinals</th><th>Washbasin</th></tr><tr><td>Male – 225</td><td>5</td><td>4</td><td>5</td></tr><tr><td>Female - 225</td><td>8</td><td>-</td><td>6</td></tr><tr><th>STAFF 80</th><th>Pans</th><th>Urinals</th><th>Washbasin</th></tr><tr><td>Male – 40</td><td>2</td><td>2</td><td>2</td></tr><tr><td>Female - 40</td><td>4</td><td>-</td><td>2</td></tr></table>			STUDENTS 450	Pans	Urinals	Washbasin	Male – 225	5	4	5	Female - 225	8	-	6	STAFF 80	Pans	Urinals	Washbasin	Male – 40	2	2	2	Female - 40	4	-	2	
STUDENTS 450	Pans	Urinals	Washbasin																									
Male – 225	5	4	5																									
Female - 225	8	-	6																									
STAFF 80	Pans	Urinals	Washbasin																									
Male – 40	2	2	2																									
Female - 40	4	-	2																									
F2.4: Accessible sanitary facilities (including Table F2.4)	Unisex accessible sanitary facility required by Clause F2.3 is to be compliant with AS 1428.1:2009.	Refer to Access Report	Noted																									
F2.5: Construction of sanitary compartments	(a) Other than in an early childhood centre, sanitary compartments must have doors and partitions that separate adjacent compartments and extend—	To be detailed in detailed design stage.	CRA – Refer Annexure F																									

Section F: Health and Amenity			
	<ul style="list-style-type: none"> (i) from floor level to the ceiling in the case of a unisex facility; or (ii) to a height of not less than 1.5 m above the floor if primary school children are the principal users; or (iii) 1.8 m above the floor in all other cases. <p>(b) The door to a fully enclosed sanitary compartment must—</p> <ul style="list-style-type: none"> (i) open outwards; or (ii) slide; or (iii) be readily removable from the outside of the sanitary compartment, unless there is a clear space of at least 1.2 m, measured in accordance with Figure F2.5, between the closet pan within the sanitary compartment and the doorway. 		
F2.6: Interpretation: urinals and washbasins	<p>Informational—</p> <p>(a) A urinal may be—</p> <ul style="list-style-type: none"> (i) an individual stall or wall-hung urinal; or (ii) each 600 mm length of a continuous urinal trough; or (iii) a closet pan used in place of a urinal. <p>(b) A washbasin may be—</p> <ul style="list-style-type: none"> (i) an individual basin; or (ii) a part of a hand washing trough served by a single water tap. 	Noted – toilets are provided in lieu of urinals for males.	Noted
F2.8: Waste Management		Not applicable to this development	N/A

Section F: Health and Amenity			
F2.9: Accessible adult change facilities		Not applicable to this development	N/A
Part F3 – Room Sizes			
F3.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
F3.1: Height of rooms and other spaces	<p>The height of rooms and other spaces must be not less than—</p> <p>(c) in a Class 9b building—</p> <ul style="list-style-type: none"> (i) a school classroom or other assembly building or part that accommodates not more than 100 persons — 2.4 m; and (ii) a theatre, public hall or other assembly building or part that accommodates more than 100 persons — 2.7 m; and (iii) a corridor— <ul style="list-style-type: none"> ➤ that serves an assembly building or part that accommodates not more than 100 persons — 2.4 m; or ➤ that serves an assembly building or part that accommodates more than 100 persons — 2.7 m; and (iv) the number of persons accommodated must be calculated according to D1.13; and <p>(f) in any building—</p> <ul style="list-style-type: none"> (i) a bathroom, shower room, sanitary compartment, airlock, tea preparation room, pantry, store room, garage, car parking area, or the like — 2.1 m; and (ii) a commercial kitchen — 2.4 m; and 	<p>Class 9b building – requires 2.7m ceiling height throughout all classrooms and associated learning spaces.</p> <p>Sanitary compartments require 2.1m.</p> <p>Office/Admin requires 2.4m.</p>	CRA – Refer Annexure F

Section F: Health and Amenity			
	(iii) above a stairway, ramp, landing or the like — 2 m measured vertically above the nosing line of stairway treads or the floor surface of the ramp, landing or the like.		
Part F4 – Light and Ventilation			
F4.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
F4.1: Provision of natural light	Class 9b schools Natural light must be provided to all general purpose classrooms in primary or secondary schools	Natural light must be provided to all general purpose classrooms in primary school. Not required in office admin and staff room areas or library areas. Note: The 'Shared Withdrawal' rooms do not require natural light as they are not part of the general purpose classroom.	CRA – Refer Annexure F
F4.2: Methods and extent of natural lighting	(a) Natural light must be provided by: (i) Windows: ➤ with an aggregate light transmitting area of not less than 10% the floor area of the room; and ➤ that are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like;	Natural light must be provided to all general purpose classrooms in primary school. Architect to certify aggregate light transmitting area of not less than 10% the floor area of the classrooms	CRA – Refer Annexure F
F4.3: Natural light borrowed from adjoining room		Not applicable to this development	N/A
F4.4: Artificial Lighting	Lighting to all areas is to comply with AS/NZS 1680.0:2009.	Electrical designer to certify	CRA – Refer Annexure F

Section F: Health and Amenity			
F4.5: Ventilation of rooms	All rooms to be provided with Clause F4.6 compliant natural ventilation OR a mechanical ventilation or air-conditioning system complying with AS 1668.2:2012.	Mechanical designer to certify	CRA – Refer Annexure F
F4.6: Natural ventilation	<p>(a) Natural ventilation provided in accordance with F4.5(a) must consist of permanent openings, windows, doors or other devices which can be opened—</p> <p>(i) with an aggregate opening or openable size not less than 5% of the floor area of the room required to be ventilated; and</p> <p>(ii) open to—</p> <ul style="list-style-type: none"> ➤ a suitably sized court, or space open to the sky; or ➤ an open verandah, carport, or the like; or ➤ an adjoining room in accordance with F4.7. 	<p>Please advise if homebases will comply with natural ventilation F4.6 or mechanical ventilation to AS 1668.2? To be determined during Detailed Design stage.</p> <p>The 'Shared Withdrawal' rooms and other internal rooms require mechanical ventilation to AS 1668.2.</p> <p>Communal Hall space – with the tilt-up doors complies with natural ventilation.</p>	CRA – Refer Annexure F
F4.7: Ventilation borrowed from adjoining room		Not applicable to this development	N/A
F4.8: Restriction on position of water closets and urinals	<p>Sanitary compartments must not open directly into a –</p> <ul style="list-style-type: none"> > kitchen or pantry > public dining room or restaurant > dormitory in a Class 3 building > room used for public assembly (which is not an early childhood centre, primary school or open spectator stand) > workplace normally occupied by more than one person. 	<p>Building A Ground Floor: Accessible WC opens to entry area – complies. Sick bay toilet complies. Single toilet has an airlock which complies with F4.9.</p> <p>Building A Level 1: Staff toilets comply.</p> <p>Building B2 Ground Floor: Internal Sanitary facilities for support students can open into shared space being a primary school.</p> <p>Building C complies.</p>	Complies

Section F: Health and Amenity

F4.9: Airlocks	<p>If sanitary compartments are prohibited from opening directly to another room:</p> <p>Class 5 & 9</p> <ul style="list-style-type: none"> > access must be by an airlock, hallway or other room with a floor area of not less than 1.1m² and fitted with self-closing doors at all access doorways; or > the sanitary compartments must be provided with mechanical exhaust ventilation and the doorway to the room adequately screened from view. 	Building A Ground Floor: Single toilet has an airlock which complies with F4.9.	Complies
F4.11: Carparks		Not applicable to this development	N/A
F4.12: Kitchen local exhaust ventilation		Note: Architect has confirmed a commercial kitchen fitout is not proposed for Canteen.	N/A

Section G: Ancillary Provisions**Part G1 – Minor Structures and Components**

G1.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
G1.1: Swimming pools		Not applicable to this development	N/A
G1.2: Refrigerated chambers, strong-rooms and vaults		Not applicable to this development	N/A
G1.3: Outdoor play spaces		Not applicable to this development	N/A
NSW G1.101: Provision for cleaning windows		Not applicable to this development	N/A

Section G: Ancillary Provisions**Part G2 – Boilers, Pressure Vessels, Heating Appliances, Fireplaces, Chimneys and Flues**

G2.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
G2.2: Installation of Appliances		Not applicable to this development	N/A
G2.3: Open Fireplaces		Not applicable to this development	N/A
G2.4: Incinerator Rooms		Not applicable to this development	N/A

Part G6 – Occupiable Outdoor Areas

G6.1: Application of part		Not applicable to this development	N/A
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Section H: Special Use Buildings**Part H1 – Class 9b Buildings**

NSW H1.1: Application of Part	Refer to Clause NSW H1.1	Building C Hall – stage is less than 300m ² so Part H1 is not applicable, subject to H1.4 is applicable for all internal seating areas in Class 9b buildings.	N/A
H1.4: Seating Area	<p>In a seating area—</p> <p>(a) the gradient of the floor surface must not be steeper than 1 in 8, or the floor must be stepped so that—</p> <p>(i) a line joining the nosings of consecutive steps does not exceed an angle of 30° to the horizontal; and</p> <p>(ii) the height of each step in the stepped floor is not more than 600 mm; and</p>	<p>Building A Library – the tiered seating area and associated steps shall comply with this clause. To be detailed during detailed design stage. The steps shall be provided as per H1.4(b) in between the tiered seating platforms so as to provide a step level with the seating platforms for access onto the seating platforms.</p> <p>Block C Hall / Stage: The tiered seating in front of the stage shall comply with this clause – if that is the</p>	FI

Section H: Special Use Buildings

	<ul style="list-style-type: none"> (iii) the height of any opening in such a step is not more than 125 mm; and (b) if an aisle divides the stepped floor and the difference in level between any 2 consecutive steps— <ul style="list-style-type: none"> (i) exceeds 230 mm but not 400 mm — an intermediate step must be provided in the aisle; and (ii) exceeds 400 mm — 2 equally spaced intermediate steps must be provided in the aisle; and (iii) the going of intermediate steps must be not less than 270 mm and such as to provide as nearly as practicable equal treads throughout the length of the aisle; and (c) the clearance between rows of fixed seats used for viewing performing arts, sport or recreational activities must be not less than— <ul style="list-style-type: none"> (i) 300 mm if the distance to an aisle is not more than 3.5 m; or (ii) 500 mm if the distance to an aisle is more than 3.5 m. 	direction approved by the client. To be determined during detailed design stage.	
H1.7: Aisle Lights in Theatres		Not applicable to library or stage tiered seating	N/A

Section J: Energy Efficiency (Class 5, 9)**Part J0 – Energy Efficiency**

J0.1: Application of Section J

Informational

Noted

Noted

Part J1 – Building Fabric

Section J: Energy Efficiency (Class 5, 9)				
J1.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
J1.1:	Application of Part	The provisions of Part J1 apply to building elements forming part of the <i>envelope</i> of the building.	To be detailed at detailed design stage.	CRA – Refer Annexure F
J1.2:	Thermal construction general	Where required insulation is to comply with AS/NZS 4859.1:2018 and be installed in accordance with this clause. The required Total R-Value and Total System U-Value, must be determined in accordance with Clause J1.2 (e).	To be detailed at detailed design stage.	CRA – Refer Annexure F
J1.3:	Roof and ceiling construction	(a) A roof or ceiling must achieve a Total R-Value greater than or equal to— (i) in climate zones 1, 2, 3, 4 and 5, R3.7 for a downward direction of heat flow; and (ii) in climate zone 6, R3.2 for a downward direction of heat flow; and (iii) in climate zone 7, R3.7 for an upward direction of heat flow; and (iv) in climate zone 8, R4.8 for an upward direction of heat flow. (b) In climate zones 1, 2, 3, 4, 5, 6 and 7, the solar absorptance of the upper surface of a roof must be not more than 0.45.	To be detailed at detailed design stage.	CRA – Refer Annexure F
J1.4:	Roof lights		Not applicable to this development	N/A
J1.5:	Walls	(a) The Total System U-Value of wall-glazing construction must not be greater than— (i) for a Class 2 common area, a Class 5, 6, 7, 8 or 9b building or a Class 9a building other than a ward area, U2.0; and	To be detailed at detailed design stage.	CRA – Refer Annexure F

Section J: Energy Efficiency (Class 5, 9)

	<p>(ii) for a Class 3 or 9c building or a Class 9a ward area—</p> <ul style="list-style-type: none"> ➤ in climate zones 1, 3, 4, 6 or 7, U1.1; or ➤ in climate zones 2 or 5, U2.0; or ➤ in climate zone 8, U0.9. <p>(b) The Total System U-Value of display glazing must not be greater than U5.8.</p> <p>(c) The Total System U-Value of wall-glazing construction must be calculated in accordance with Specification J1.5a.</p> <p>(d) Wall components of a wall-glazing construction must achieve a minimum Total R-Value of—</p> <ul style="list-style-type: none"> (i) where the wall is less than 80% of the area of the wall-glazing construction, R1.0; or (ii) where the wall is 80% or more of the area of the wall-glazing construction, the value specified in Table J1.5a. <p>(e) The solar admittance of externally facing wall-glazing construction must not be greater than—</p> <ul style="list-style-type: none"> (i) for a Class 2 common area, a Class 5, 6, 7, 8 or 9b building or a Class 9a building other than a ward area, the values specified in Table J1.5b; and (ii) for a Class 3 or 9c building or a Class 9a ward area, the values specified in Table J1.5c. <p>(f) The solar admittance of a wall-glazing construction must be calculated in accordance with Specification J1.5a.</p> <p>(g) The Total system SHGC of display glazing must not be greater than 0.81 divided by the applicable</p>		
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Section J: Energy Efficiency (Class 5, 9)			
	shading factor specified in Clause 7 of Specification J1.5a.		
J1.6: Floors	<p>(a) A floor must achieve the Total R-Value specified in Table J1.6.</p> <p>(b) A floor must be insulated around the vertical edge of its perimeter with insulation having an R-Value greater than or equal to 1.0 when the floor—</p> <ul style="list-style-type: none"> (i) is a concrete slab-on-ground in climate zone 8; or (ii) has an in-slab or in-screed heating or cooling system, except where used solely in a bathroom, amenity area or the like. <p>(c) Insulation required by (b) for a concrete slab-on-ground must—</p> <ul style="list-style-type: none"> (i) be water resistant; and (ii) be continuous from the adjacent finished ground level— <ul style="list-style-type: none"> ➤ to a depth not less than 300 mm; or ➤ for the full depth of the vertical edge of the concrete slab-on-ground. 	To be detailed at detailed design stage.	CRA – Refer Annexure F
Part J2 – Glazing			
J2.0: Deemed-to-Satisfy Provisions	Part J2 has deliberately been left blank from the BCA2019		Noted
Part J3 – Building Sealing			
J3.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted

Section J: Energy Efficiency (Class 5, 9)

J3.1: Application of Part	<p>The requirements of this Part apply to elements forming the <i>envelope</i> of the building other than:</p> <ul style="list-style-type: none"> > a building in a climate zones 1, 2, 3 and 5 where the only means of air-conditioning is by using an evaporative cooler; or > a permanent building opening necessary for the safe operation of a gas appliance; > a building or space where mechanical ventilation required by Part F4 provides sufficient pressurisation to prevent infiltration; > parts of building that cannot be fully enclosed. 	To be detailed at detailed design stage.	Noted
J3.2: Chimneys and flues		Not applicable to this development	N/A
J3.3: Roof lights		Not applicable to this development	N/A
J3.4: Windows and doors	<p>(a) A door, openable window or the like must be sealed—</p> <ul style="list-style-type: none"> (i) when forming part of the <i>envelope</i>; or (ii) in climate zones 4, 5, 6, 7 or 8. <p>(b) The above does not apply to:</p> <ul style="list-style-type: none"> (i) a window complying with AS 2047; or (ii) a fire door or smoke door; or (iii) roller shutter door, roller shutter grille or other security device or device installed only for out-of-hours security. <p>(c) A seal to restrict air infiltration—</p> <ul style="list-style-type: none"> (i) for the bottom edge of a door, must be a draft protection device; and 	To be detailed at detailed design stage.	CRA – Refer Annexure F

Section J: Energy Efficiency (Class 5, 9)

	<p>(ii) for the other edges of a door or the edges of an openable window or other such opening, may be a foam or rubber compression strip, fibrous seal or the like.</p> <p>(d) An entrance to a building, if leading to a conditioned space must have an airlock, self-closing door, revolving door or the like, other than–</p> <p>(i) where the conditioned space has a floor area of not more than 50m²; or</p> <p>(ii) where a café, restaurant, open front shop or the like has–</p> <ul style="list-style-type: none"> ➤ a 3m deep un-conditioned zone between the main entrance, including an open front, and the conditioned space; and ➤ at all other entrances to the café, restaurant, open front shop or the like, self-closing doors 		
J3.5: Exhaust fans	The exhaust fans serving conditioned spaces or habitable room in climate 4 - 8, must be fitted with a sealing device, such as a self-closing damper of the like.	To be detailed at detailed design stage.	CRA – Refer Annexure F
J3.6: Construction of ceilings, walls and floors	The roof, walls, floors and any other openings, such as window or doors, are to be constructed to minimise air leakage by being enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or are sealed by expanding architraves, skirting, cornices; or expanding foam, rubber compressible strip, caulking or the like.	To be detailed at detailed design stage.	CRA – Refer Annexure F
J3.7: Evaporative Coolers	The evaporative cooler must be fitted with a self-closing damper or like when serving heated space OR in climate zones 4 - 8.	To be detailed at detailed design stage.	CRA – Refer Annexure F
Part J4			

Section J: Energy Efficiency (Class 5, 9)

J4.0:		This part has deliberately been left blank in the BCA2019		N/A
Part J5 – Air Conditioning and Ventilation Systems				
J5.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
J5.1:	Application of Part	Informational	Noted	Noted
J5.2:	Air-conditioning systems	Clause contains requirements for air conditioning system control.	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure F
J5.3:	Mechanical ventilation system control	Clause contains requirements for mechanical ventilation system control.	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure F
J5.4:	Fan systems	Clause contains requirements for fans, ductwork and duct components.	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure F
J5.5:	Ductwork Insulation	Clause contains requirements for ductwork insulation.	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure F
J5.6:	Ductwork Sealing	Ductwork in an air-conditioning system with a capacity of 3000 L/s or greater, not located within the only or last room served by the system, must be sealed against air loss in accordance with the duct sealing requirements of AS 4254.1 and AS 4254.2 for the static pressure in the system.	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure F
J5.7:	Pump Systems	Clause contains requirements for pumps and pipework that form part of air-conditioning systems.	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure F
J5.8:	Pipework Insulation	Clause contains requirements for pipework insulation.	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure F

Section J: Energy Efficiency (Class 5, 9)

J5.9: Space Heating	Clause contains requirements for space heating.	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure F
J5.10: Refrigerant Chillers	Clause contains requirements for air-conditioning system refrigerant chillers.	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure F
J5.11: Unitary Air-Conditioning Equipment	Clause contains requirements for unitary air-conditioning equipment.	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure F
J5.12: Heat Rejection Equipment	Clause contains requirements for heat rejection equipment.	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure F

Part J6 – Artificial Lighting and Power

J6.0: Deemed-to-Satisfy Provisions	Informational	Noted	Noted
J6.1: Application of Part	Informational	Noted	Noted
J6.2: Artificial lighting	Artificial lighting must comply with BCA Clause J6.2.	Design certification to be provided by the electrical designer.	CRA – Refer Annexure F
J6.3: Interior artificial lighting and power control	Lighting switches and control devices must comply with BCA Clause J6.3.	Design certification to be provided by the electrical designer.	CRA – Refer Annexure F
J6.4: Interior decorative and display lighting	Lighting falling under this clause is to be separately switched from other lighting, be under a manual switch and controlled with a time switch.	Design certification to be provided by the electrical designer.	CRA – Refer Annexure F
J6.5: Exterior artificial lighting	Exterior lighting attached to or directed at the façade of the building must be controlled by daylight sensors or time switches in accordance with the specific requirements of this clause.	Design certification to be provided by the electrical designer.	CRA – Refer Annexure F

Section J: Energy Efficiency (Class 5, 9)

J6.6:	Boiling water and chilled water storage units	The power supply to a fixed boiling water or chilled water storage unit must be controlled by a time switch in accordance with BCA Specification J6.	Design certification to be provided by the electrical designer.	CRA – Refer Annexure F
J6.7:	Lifts	Lifts must be configured to ensure artificial lighting and ventilation in the car are turned off when it is unused for 15 minutes; it also must achieve energy control requirements that comply to Clause J6.7 (b) and (c).	Design certification to be provided by the electrical designer.	CRA – Refer Annexure F
J6.8:	Escalators and moving walkways	Escalators and moving walkways must have the ability to slow to between 0.2 m/s and 0.05 m/s when unused for more than 15 minutes.	Design certification to be provided by the electrical designer.	CRA – Refer Annexure F
Part J7 – Heated Water Supply				
J7.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
J7.2:	Heated water supply system	A heated water supply system for food preparation and sanitary purposes must be designed and installed in accordance with Part B2 of NCC Volume Three — Plumbing Code of Australia.	Design certification to be provided by the hydraulic designer.	CRA – Refer Annexure F
Part J8 – Facilities for Energy Monitoring				
J8.0:	Deemed-to-Satisfy Provisions	Informational	Noted	Noted
J8.1:	Application of Part	Informational	Noted	Noted
J8.3:	Facilities for energy monitoring	<ul style="list-style-type: none"> > A building with a floor area of more than 500m² must have an energy meter configured to record the time-of-use consumption of gas and electricity. > A building with a floor area of more than 2,500m² must have the energy meters configured to enable 	Design certification to be provided by the electrical designer.	CRA – Refer Annexure F

Section J: Energy Efficiency (Class 5, 9)

	<p>individual time-of-use energy consumption data recording, in accordance with (c), of the energy consumption of –:</p> <ul style="list-style-type: none"> ○ air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and ○ artificial lighting; and ○ appliance power; and ○ central hot water supply; and ○ internal transport devices including lifts, escalators and moving walkways where there is more than one serving the building; and ○ other ancillary plant. <p>> Energy meters required by (b) must be interlinked by a communication system that collates the time-of-use energy consumption data to a single interface monitoring system where it can be stored, analysed and reviewed.</p> <p>> The provisions of (b) do not apply to a Class 2 building with a floor area of more than 2500 m² where the total area of the common areas is less than 500 m².</p>		
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ANNEXURE E DEFINITIONS

Annexure E - Definitions

Average specific extinction area

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

Critical radiant flux

Critical radiant flux (CRF) means the critical heat flux at extinguishment (CHF in kW/m²) as determined by AS ISO 9239.1:2003.

Envelope

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

- i. the exterior of the building; or
- ii. a non-conditioned space including—
 - (i) the floor of a rooftop plant room, lift-machine room or the like; and
 - (ii) the floor above a carpark or warehouse; and
 - (iii) the common wall with a carpark, warehouse or the like.

Exit

Exit means –

- i. Any, or any combination of the following if they provide egress to a road or open space—
 - (i) An internal or external stairway.
 - (ii) A ramp.
 - (iii) A fire-isolated passageway.
 - (iv) A doorway opening to a road or open space.
 - (v) A horizontal exit or a fire-isolated passageway leading to a horizontal exit.

Fire compartment

Fire compartment means –

- i. the total space of a building; or
- ii. when referred to in—
 - (i) the Performance Requirements — any part of a building separated from the remainder by barriers to fire such as walls and/or floors having an appropriate resistance to the spread of fire with any openings adequately protected; or
 - (ii) the Deemed-to-Satisfy Provisions — any part of a building separated from the remainder by walls and/or floors each having an FRL not less than that required for a fire wall for that type of construction and where all openings in the separating construction are protected in accordance with the Deemed-to Satisfy Provisions of the relevant Part.

Fire-resistance level (FRL)

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

- i. structural adequacy; and
- ii. integrity; and
- iii. insulation,

and expressed in that order.

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

Fire-source feature

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

Flammability index

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

Group number

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

Loadbearing

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

Non-combustible

Non-combustible means—

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

Open space

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

Performance Requirement

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

Performance Solution

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

Sarking-type material

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

Smoke developed index

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

Smoke development rate

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

Smoke growth rate index

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

Sole-occupancy unit

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

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

ANNEXURE F BCA COMPLIANCE SPECIFICATION

Annexure F – BCA Compliance Specification

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

Architectural Design Certification

1. Building A/B: The FRL's of building elements for the proposed works have been designed in accordance with Table 4 of Specification C1.1 of BCA2019 for a building of Type B Construction.
2. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2019.
3. Building elements must be non-combustible in accordance with C1.9 of BCA2019.
4. Materials, floor and wall linings/coverings, surface finishes and air-handling ductwork used in the works will comply with the fire hazard properties of Clause C1.10 and Specification C1.10 of BCA2019.
5. Any ancillary elements fixed, installed or attached to the internal parts or external face of an external wall that is required to be non-combustible will comply with Clause C1.14 of BCA2019.
6. Equipment will be separated in accordance with Clause C2.12 of BCA2019.
7. The main switch room sustaining emergency equipment required to operate in emergency mode, will be separated from the remaining building with construction having an FRL 120/120/120 and provided with self-closing -/120/130 fire doors in accordance with Clause C2.13 of BCA2019.
8. Services penetrating elements required to possess an FRL including the floor slabs, walls, shafts, etc. will be protected in accordance with Clause C3.12, C3.13 and C3.15 and Specification C3.15 of BCA2019.
9. Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation will be protected in accordance with BCA Clause C3.16.
10. Columns protected by light weight construction will achieve an FRL not less than the FRL for the element it is penetrating, in accordance with Clause C3.17 of BCA2019.
11. A lintel will have the FRL required for the part of the building in which it is situated, unless it does not contribute to the support of a fire door, fire window or fire shutter, and it spans an opening in masonry which is not more than 150 mm thick and is not more than 3m wide if the masonry is non-loadbearing; or not more than 1.8m wide if the masonry is loadbearing and part of a solid wall or one of the leaves of a cavity wall, or it spans an opening in a non-loadbearing wall of the Class 2 or 3 building, in accordance with Specification C1.1 Clause 2.3 BCA2019.
12. All attachments to the external façade of the building will be fixed in a way that does not affect the fire resistance of that element in accordance with Clause 2.4 of Specification C1.1 of BCA2019.
13. Fire doors will comply with AS 1905.1:2015 and Specification C3.4 of BCA2019.
14. Smoke doors will be constructed so smoke will not pass from one side of the doorway to the other in accordance with Specification C3.4 of BCA2019.
15. Travel distances to exits will be in accordance with Clause D1.4 of BCA2019, *except where addressed with a Performance Solution*.
16. The alternative exits will be distributed uniformly around the storey and will not be less than 9m apart, and not more than 45m apart in the residential portion or patient care areas in the health-care building or 60m, in accordance with Clause D1.5 of BCA2019.

17. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D1.6 of BCA2019.
18. Discharge from exits will be in accordance with Clause D1.10 of BCA2019.
19. Access to the lift pit will be in accordance with Clause D1.17 of BCA2019.
20. The non-fire isolated stairs will be constructed in accordance with Clause D2.3 of BCA2019.
21. The construction of EDB's and telecommunications distribution boards will be in accordance with Clause D2.7 of BCA2019 with the enclosure bounded by non-combustible construction or fire protective covering and smoke seals provided around the perimeter of the non-combustible doors and any openings sealed with non-combustible mastic to prevent smoke spreading from the enclosure.
22. New pedestrian ramps will comply with AS 1428.1:2009, Clause D2.10 and Part D3 of BCA2019. The floor surface of a ramp must have a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013.
23. Stair geometry to the new stairways will be in accordance with Clause D2.13 of BCA2019. Stair treads are to have a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013.
24. Landings and door thresholds throughout the development will be provided in accordance with Clause D2.14 and D2.15 of BCA2019. Landings to have either a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013 or a strip at the edge of the landing with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013 where the edge ledge to a flight below.
25. The handrails and balustrades to all stairs and throughout the building will be in accordance with Clause D2.16, and D2.17 of BCA2019.
26. The fixed platform, walkway, stairway and ladder and any associated going and riser, landing handrail, balustrade, located within the machinery room, boiler house, lift-machine room, plant-room, or non-habitable attic/storeroom within the sole occupancy unit will comply with AS 1657:2013 or Part D2 of BCA2019.
27. The doorways and doors will be in accordance with Clause D2.19 and D2.20 of BCA2019.
28. Door latching mechanisms will be in accordance with Clause D2.21 of BCA2019.
29. In accordance with Clause D2.24 of BCA2019: For openable windows 4 meters or more above the ground below, a barrier with a height not less than 865mm above the floor will be installed to the openable window.
30. Fire precautions whilst the building is under construction fire precautions will be in accordance with Clause E1.9 of BCA2019.
31. External above ground waterproofing membranes will comply with Clause F1.4 of BCA2019 and AS 4654 Parts 1 & 2:2012.
32. The new roof covering will be in accordance with Clause F1.5 of BCA2019.
33. Any sarking proposed will be installed in accordance with Clause F1.6 of BCA2019.
34. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F1.7 of BCA2019 and AS 3740:2010.
35. Damp proofing of the proposed structure will be carried out in accordance with Clause F1.9 and F1.10 of BCA2019.
36. All new glazing to be installed throughout the development will be in accordance with Clause F1.13 of BCA2019 and AS 1288:2006 / AS 2047:2014.

37. Sanitary facilities will be provided in the building in accordance with Clause F2.3 and Table F2.3 of BCA2019.
38. The construction of the sanitary facilities will be in accordance with Clause F2.5 of BCA2019.
39. Ceiling heights to the new areas will be in accordance with Clause F3.1 of BCA2019.
40. Natural light will be provided in accordance with Clause F4.1, F4.2, and F4.3 of BCA2019.
41. Natural ventilation will be provided in accordance with Clause F4.5, F4.6 and F4.7 of BCA2019.
42. Water closets and urinals will be located in accordance with Clause F4.8 of BCA2019.
43. The sanitary compartments will be either be provided with mechanical exhaust ventilation or an airlock in accordance with Clause F4.9 of BCA2019.
44. Tiered Seating Areas: The design of the tiered seating platforms and steps will be in accordance with Clause H1.4 of BCA2019.
45. Essential fire or other safety measures must be maintained and certified on an ongoing basis, in accordance with the provisions of the Environmental Planning and Assessment Regulation, 2000.
46. Building Fabric and Thermal Construction will be in accordance with Part J1 of BCA2019.
47. Glazing will be in accordance with Part J1 of BCA2019.
48. Building sealing will be in accordance with Part J3 of BCA2019.
49. Facilities for Energy Monitoring will be provided in accordance with Clause J8.3 of BCA2019.

Electrical Services Design Certification:

50. A smoke detection and alarm system will be installed throughout any building which is required to have auto-shutdown of air-handling systems in accordance with NSW Table E2.2b and Specification E2.2a of BCA2019.
51. Emergency lighting will be installed throughout the development in accordance with Clause E4.2, E4.4 of BCA2019 and AS/NZS 2293.1:2018.
52. Exit signage will be installed in accordance with Clause E4.5, E4.7, and E4.8 of BCA2019 and AS/NZS 2293.1:2018.
53. Artificial lighting will be installed throughout the development in accordance Clause F4.4 of BCA2019 and AS/NZS 1680.0:2009.
54. Lighting power and controls will be installed in accordance with Part J6 of BCA2019.
55. Electrical conductors located within the building that supply a main switchboard that sustains emergency equipment will comply with Clause C2.13 of BCA2019.

Hydraulic Services Design Certification:

56. Storm water drainage will be provided in accordance with Clause F1.1 of BCA2019 and AS/NZS 3500.3:2018
57. Fire hydrant system will be installed in accordance with Clause E1.3 of BCA2019 and AS 2419.1:2005 as required.
58. Fire hose reels will be installed in accordance with Clause E1.4 of BCA2019 and AS 2441:2005.
59. Portable fire extinguishers will be installed in accordance with Clause E1.6 of BCA2019 and AS 2444:2001.
60. The heated water supply systems will be designed and installed to NCC Volume 3 – Plumbing code and Clause J7.2 of BCA2019.

Mechanical Services Design Certification:

61. Air-handling systems will be provided with automatic shutdown in accordance with NSW Table E2.2b and Clause 6 of Specification E2.2a of BCA2019.
62. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F4.5, NSW F4.5(b) of BCA2019 and AS 1668.2:2012.
63. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J5 of BCA2019
64. Rigid and flexible ductwork will comply with the fire hazard properties set out in AS 4254 Parts 1 and 2.

Structural Engineers Design Certification:

65. The material and forms of construction for the proposed works will be in accordance with Clause B1.2, B1.4 and B1.6 of BCA2019 as follows:
 - Dead and Live Loads – AS/NZS 1170.1:2002
 - Wind Loads – AS/NZS 1170.2:2011
 - Earthquake actions – AS 1170.4:2007
 - Masonry – AS 3700:2018
 - Concrete Construction – AS 3600:2018
 - Steel Construction AS 4100:1998
 - Aluminium Construction – AS/NZS 1664.1 or 2:1997
 - Timber Construction – AS 1720.1:2010
66. Building A/B: The FRL's of the structural elements for the proposed works have been designed in accordance with Specification C1.1 of BCA2019, including Table 4 for a building of Type B Construction.
67. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2019.

Lift Services Design Certification:

68. Warning signage in accordance with Clause E3.3 of BCA2019 will be provided to the lifts to advise not to use the lifts in a fire.
69. Access and egress to the lift well landings will comply with the Deemed-to-Satisfy Provisions of D3 of the BCA2019 and will be suitable to accommodate disabled persons.
70. The type of lifts will also be suitable to accommodate persons with a disability in accordance with Clause E3.6, Table E3.6a, and will have accessible features in accordance with Table E3.6b of BCA2019.
71. The lifts will comply with AS 1735.12:1999 in accordance with Clause E3.6 of BCA2019.
72. All electric passenger lifts and electrohydraulic passenger lifts shall comply with Specification E3.1 of BCA2019.