BCA LOGIC

Building Regulation, BCA,
Fire, Access and Energy Consultants

To:	DesignInc Sydney Pty Ltd
Project:	New Ultimo Pyrmont Public School - State Significant Development DA
Report:	BCA Assessment Report
Reference No:	106876-BCA-r9
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DOCUMENT CONTROL

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106876-BCA-r3	14.09.17	Description:	BCA Assessment Report		
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		Signature:			

Table of Contents

1 BASIS OF ASSESSMENT

1.1 Location and Description

The building development, the subject of this report, is located at the corner of Quarry and Jones Streets, Ultimo. The works involve the construction of a new public school for up to 800 students and 33 staff and shell space for a 40-space child care centre.

Vehicular access to the site is from Wattle Street.

1.2 Purpose

The purpose of this report is to assess the current design proposal against the Deemed-to-Satisfy Provisions of BCA 2016, 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 2016. 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, 2016 Edition (BCA) incorporating the State variations where applicable. Please note that the version of the BCA applicable to new building works is the version applicable at the time of the lodgement of the Construction Certificate application to the Accredited Certifying Authority. The BCA is updated generally on a three-yearly cycle, starting from the 1st of May 2016.

1.4 Limitations

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

(a) the structural adequacy or design of the building;

(b) the inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and

(c) 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),

(c) The deemed to satisfy provision of Part D.3 and F2.4 of BCA2016 relating to access for people with disabilities – refer to separate Access Assessment Report by BCA Logic;

(d) Demolition Standards not referred to by the BCA;

(e) Work Healthy and Safety Act 2011;

(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), Roads and Transport Authority, 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 building has a rise in storeys of five (5).

2.2 Classification (Clause A3.2)

The building has been classified as follows.

Class	Level	Description
7a	Ground	Carpark
9b	Ground to Level 04	Assembly building

2.3 Effective Height (clause A1.1)

The building has an effective height of 12.3 m.

2.4 Type of Construction Required (Table C1.1)

The building is required to be of Type A Construction.

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

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

Class 9b	Maximum Floor Area	8,000 m^2
	Maximum Volume	48,000 m^3
Class 7a	There are no maximum floor area or volume limitations for sprinkler protected carparks.	

Compliance with the above maximum fire compartment sizes is readily achievable. Refer to comments under Clause C2.2 of BCA Assessment Table in Annexure B of this report.

2.6 Fire Compartments

The carpark, main switch room and substation will be separate fire compartments to remainder of the building.

2.7 Exits

The following points in the building have been considered as the exits (assumed). The exits are highlighted in green in the figures below.

Ground Level:

- The door from the carpark to Quarry Street.
- The doorway from the carpark entry lobby to Wattle Street
- The stairway on the northern side of the building from the open playground area to Level 1
- The stairway on the northern side of the building leading down to the carpark entry lobby
- The doorway from the passageway adjacent to the carpark, opening to Wattle Street.
- The stairway on the southern side of the building leading to Wattle Street.
- The doors of the substation and switch room

Figure 1: Exits Ground Level

Level 1:

- The gate to Quarry Street on the northern side of the building
- The internal stairway at the northern end of the building connecting to Ground Level
- The stairway next to Home Base 18 leading to Level 2
- The stairway on the southern side of the building leading to Wattle Street

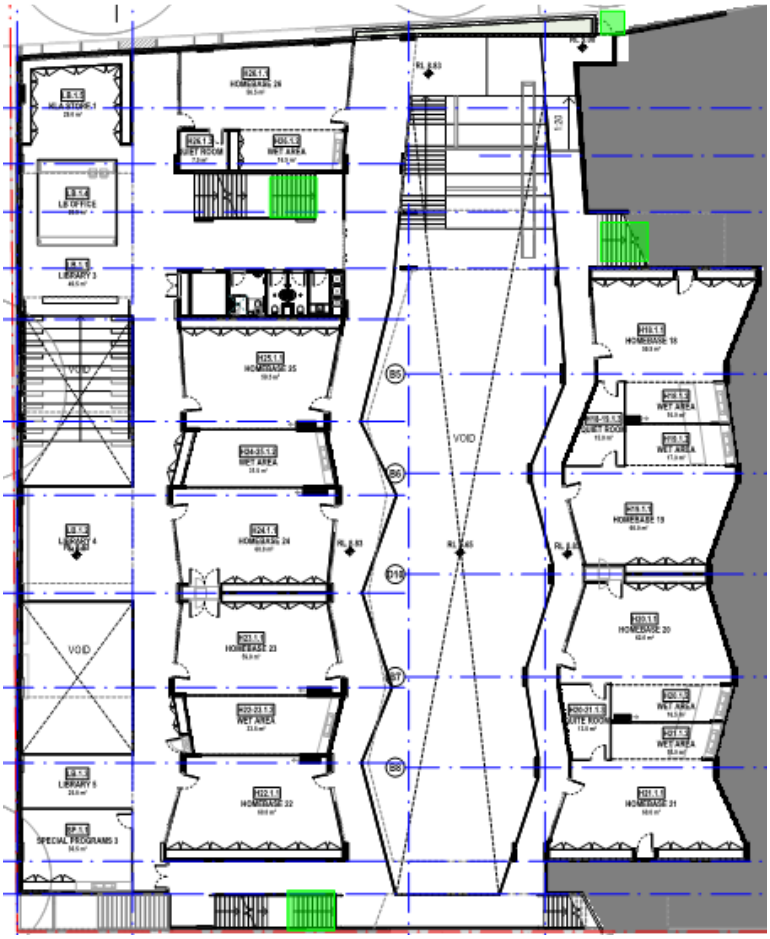


Figure 2: Exits Level 1

Level 2:

- The internal stairway at the northern end of the building connecting Level 2, Level 1 & Ground Level
- The internal stairway on the north side of the building located adjacent to Home Base 12 and connecting to Level 3
- The double doors on the northern side of the building to Quarry Street
- The two stairways on the southern side of the building leading to open space at Level 3

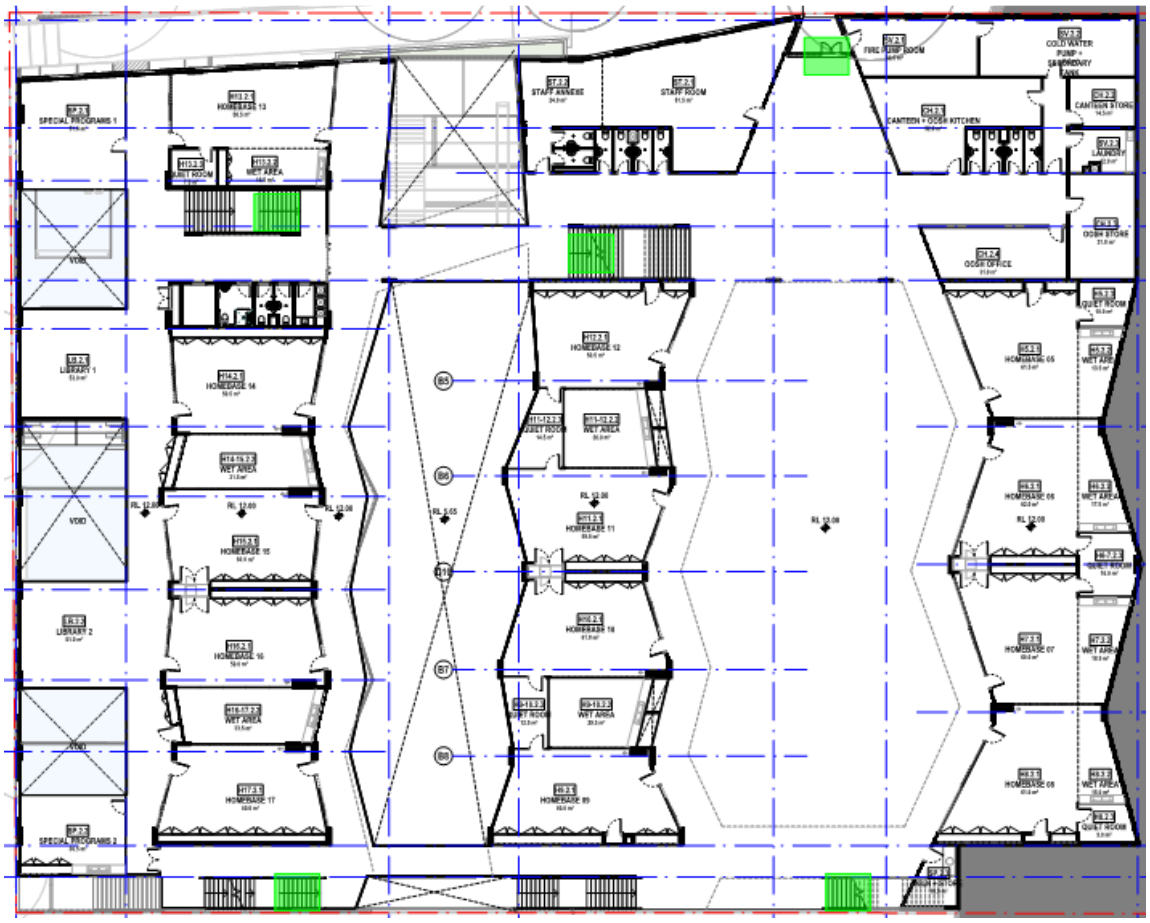


Figure 3: Exits Level 2

Level 3:

- The door from the communal hall to open space
- The double doors to Quarry Street forming the main entry
- The points at which an occupant reaches open space within the playground areas open to the sky
- The stairway opposite the sick bay leading to level 4 COLA

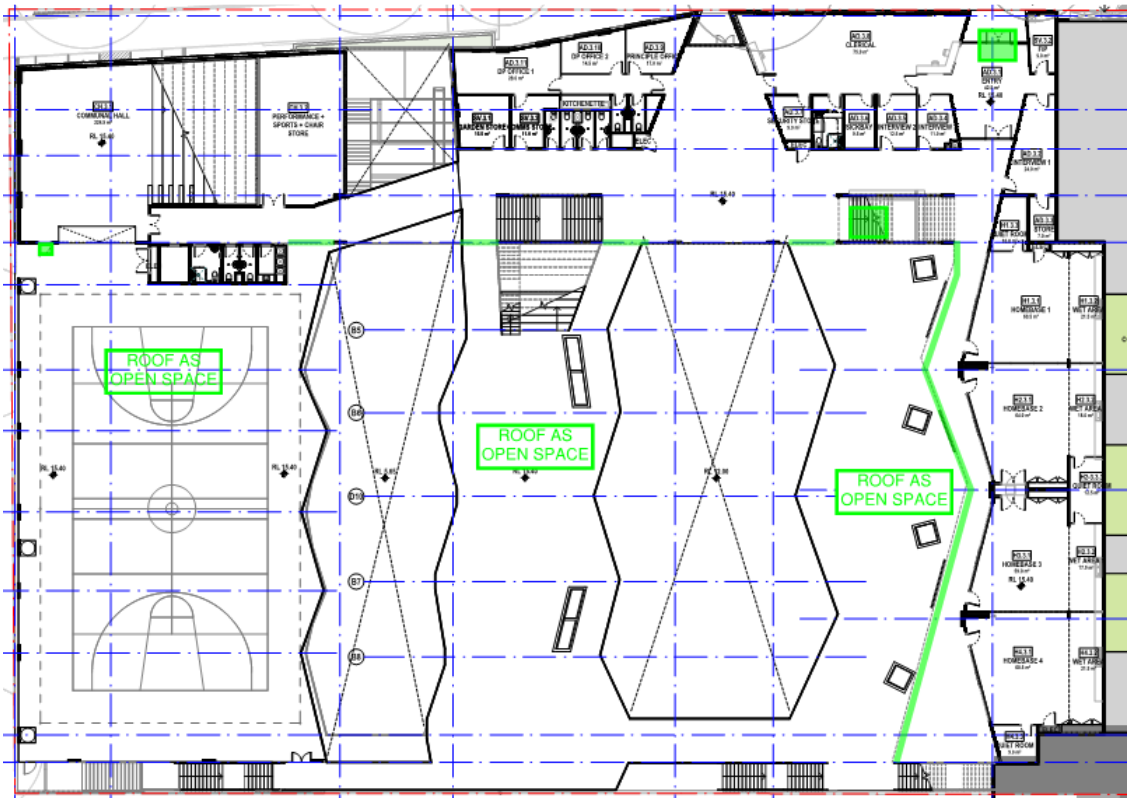


Figure 4: Exits Level 3

Level 4:

- The stairway from the COLA to Jones Street
- The entry ramp adjacent to the COLA
- The entry ramp of the childcare
- The two stairways connecting to open space at Level 3

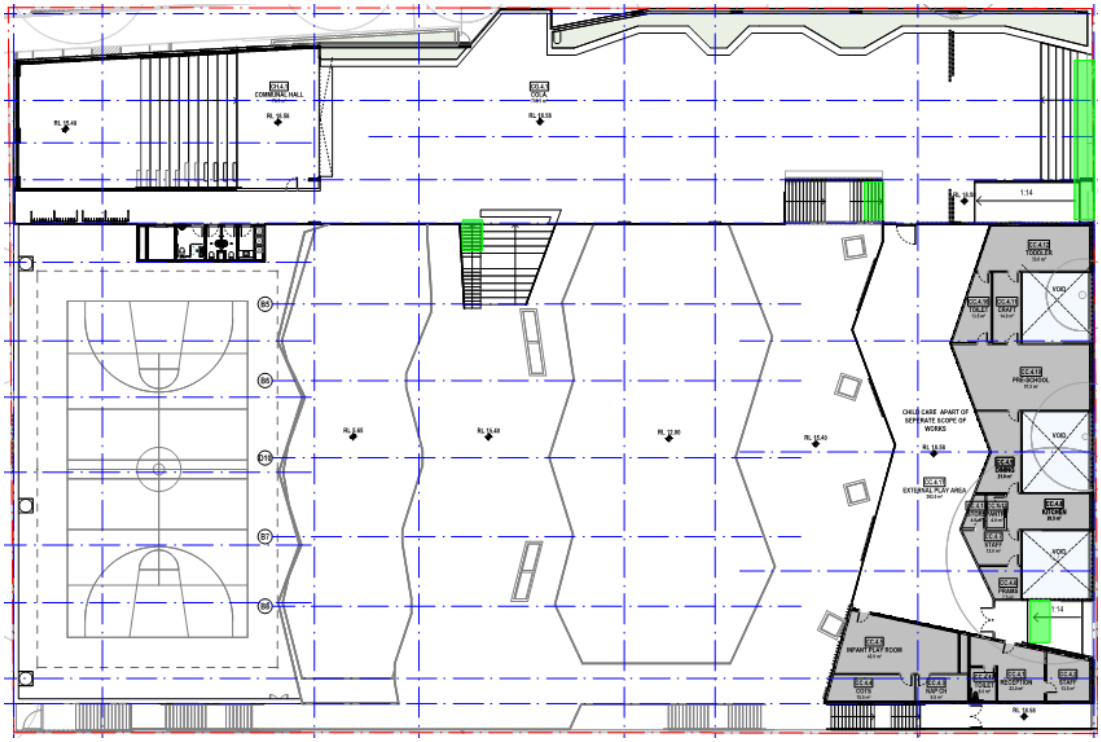


Figure 5: Exits Level 4

2.8 Climate Zone (Clause A1.1)

The building is located within Climate Zone 5.

2.9 Location of Fire-source features

The fire source features for the subject development are:

North: The far boundary of Quarry Street
South: The southern allotment boundary
East: The far boundary of Jones Street
West: The far boundary of Wattle Street

3 ESSENTIAL FIRE SAFETY MEASURES

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

Item	Proposed Essential Fire Safety Measure	Minimum Standard of Performance
1.	Access panels, doors and hoppers to fire resisting shafts	BCA2016 Clause C3.13
2.	Automatic fire detection and alarm system	BCA2016 Clause E2.2a, Clause 3, 4, 5, 6 of Specification E2.2a and AS1670.1-2015
3.	Automatic fire suppression system (sprinkler system)	BCA2016 Specification E1.5, AS2118.1-1999
4.	Emergency lighting	BCA2016 Clauses E4.2 & E4.4, AS2293.1-2005
5.	Emergency warning and intercom systems (EWIS)	BCA2016 Clause E4.9, AS1670.4-2015
6.	Exit signs	BCA2016 Clauses E4.5, E4.6 & E4.8, AS2293.1-2005
7.	Fire dampers	BCA2016 Specification C3.15, AS/NZS1668.1-2015, AS1682.1 & 2
8.	Fire doors	BCA2016 Specification C3.4, AS1905.1-2015
9.	Fire hose reel system (to carpark and childcare only)	BCA2016 Clause E1.4, AS2441-2005
10.	Fire hydrant system	BCA2016 Clause E1.3, AS2419.1-2005
11.	Fire seals protecting openings in fire resisting components of the building	BCA2016 Clause C3.15 & Specification C3.15
12.	Lightweight Fire Rated Construction (storage enclosures beneath stairways)	BCA2016 Clause / Specification C1.8
13.	Mechanical air handling systems • automatic shutdown of air handling systems • smoke exhaust to hall	BCA2016 NSW Table E2.2b & AS/NZS1668.1-2015 Specification E2.2b (smoke exhaust)
14.	Paths of travel, stairways, passageways or ramps	BCA2016 Section D & EP&A Regulation 2000 Clause 184 to 186
15.	Portable fire extinguishers	BCA2016 Clause E1.6, AS2444-2001
16.	Smoke exhaust system	BCA2016 NSW Table E2.2b & Fire Engineering Report
17.	*Additional Fire Engineering issues*	*Fire Engineering Report to be prepared under separate cover*

4 FIRE RESISTANCE LEVELS

The following fire resistance levels (FRL's) are required for the various structural elements of the building, with a fire source feature being the far boundary of a road adjoining the allotment or a side or rear boundary.

Type A Construction

Item	Class 7a & 9b
Loadbearing External Walls (including columns and other elements incorporated therein) • Less than 1.5m to a fire source feature • 1.5 – 3m from fire source feature; • More than 3m from a fire source feature	 120/120/120 120/90/90 120/60/30
Non-Loadbearing External Walls • Less than 1.5m to a fire source feature • 1.5 – 3m from fire source feature; • More than 3m from a fire source feature.	 -/120/120 -/90/90 -/-/-
External Columns • Loadbearing • Non-loadbearing	 120/-/- -/-/-
Fire Walls	120/120/120
Stair and Lift Shafts required to be fire-resisting • Loadbearing • Non-loadbearing	 120/120/120 -/120/120
Internal walls bounding public corridors, public lobbies and the like: • Loadbearing • Non-loadbearing	 120/-/- -/-/-
Ventilating, pipe, garbage and like shafts: • Loadbearing • Non-loadbearing	 120/90/90 -/90/90
Other loadbearing internal walls, beams trusses and columns	120/-/-
Floors	120/120/120
Roofs[1]	120/60/30

N.B. There are FRL concessions applicable for fully sprinkler protected car park portions under Clause 3.9 of BCA Specification C1.1, reducing the carpark FRL's down from 120/120/120 to 60/60/60.

[1] The roof need not comply with any FRL's due to the sprinkler protection of the entire building.

5 MATTERS FOR FURTHER CONSIDERATION

5.1 General

Assessment of the Architectural design documentation against the Deemed-to Satisfy Provisions of the Building Code of Australia, 2016 (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 B 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 B 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.

5.2 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 maters such as access for people with disabilities, stair and corridor widths and balustrade heights.

5.3 Performance Based Design – Performance Solutions

There are specific areas throughout the development (identified below) where strict Deemed-to-Satisfy BCA Compliance will not be achieved by the proposed design and site constraints. These matters will need to be address in a detailed Fire Safety Engineering Report to be prepared for this development under separate cover:

Item	Description of Performance Solution	DTS Provision
1.	To permit the distance to a point of choice of exits from the balcony area outside the community hall on level 4 to be 39m in lieu of 25m.	D1.4
2.	To permit the distance between alternative exits on Level 1 and 2 to be 61.5m in lieu of 60m.	D1.5
3.	To permit smoke exhaust to be provided above the stage of the communal hall only rather than through the entire fire compartment.	E2.2

5.4 Fire hydrants – BCA Clause E1.3

The hydrant booster assembly is required by AS 2419.1-2005 to be separated from the building by construction achieving FRL 90/90/90 for 2 m either side of and 3 m above the upper hose connections. Further details are to be provided of the proposed shielding.

5.5 Fire hose reels – BCA Clause E1.4

A fire hose reel system coverage complying with BCA clause E1.4 and AS 2441-2005 must be provided to the car park, communal hall, admin and staff areas, canteen, COLA and the childcare centre. Fire hose reels must generally be located adjacent to internal fire hydrants and within 4m of an exit.

5.6 Childcare sanitary facilities – BCA Clause F2.3

The ability to facilitate supervision of children younger than 2 years old is required to be provided from the childcare kitchen. It is noted that BCA compliance is achievable via a Performance Solution incorporating bottle prep areas within the pre-school rooms.

A laundry facility must be provided within the childcare, comprising a washtub and space in the same room for a washing machine.

6 STATEMENT OF COMPLIANCE

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

ANNEXURE A - DESIGN DOCUMENTATION

This report has been based on the following design documentation.

Architectural Plans Prepared by DesignInc / Lacoste + Stevenson / bmc2			
Drawing Number	**Revision**	**Date**	**Title**
DA-0000	E	20/10/17	COVER SHEET + PROPOSED SITE PLAN
DA-2300	Q	20/10/17	GROUND – LOWER PLAYGROUND
DA-2301	Q	20/10/17	LEVEL 01 – LIBRARY
DA-2302	Q	20/10/17	LEVEL 02 – MID PLAYGROUND
DA-2303	Q	20/10/17	LEVEL 03 – UPPER PLAYGROUND
DA-2304	Q	20/10/17	LEVEL 04 – COLA
DA-2305	Q	20/10/17	ROOF LEVEL
DA-3001	J	20/10/17	NORTH ELEVATION
DA-3002	J	20/10/17	EAST ELEVATION
DA-3003	D	20/10/17	SOUTH ELEVATION
DA-3004	D	20/10/17	WEST ELEVATION
DA-4001	J	20/10/17	BUILDING SECTIONS
DA-4002	J	20/10/17	BUILDING SECTIONS
DA-9000	G	20/10/17	PERSPECTIVE – WATTLE & QUARRY STREETS
DA-9001	G	20/10/17	PERSPECTIVE – JONES STREET
DA-9002	B	20/10/17	PERSPECTIVE – AXONOMETRIC NW
DA-9003	B	20/10/17	PERSPECTIVE – AXONOMETRIC SW
DA-9004	B	20/10/17	PERSPECTIVE – AXONOMETRIC NE
DA-9005	B	20/10/17	PERSPECTIVE – AXONOMETRIC SE

ANNEXURE B - DETAILED BCA 2016 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	'COMPLIANCE READILY ACHIEVABLE'. It is considered that there was not enough information included in the documentation to accurately determine strict compliance with the individual clause requirements. However, subject to noting the requirements of each clause, compliance can be readily achieved.
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

Clause	Comment	Status
SECTION B: STRUCTURE		
PART B1 – STRUCTURAL PROVISIONS		
B1.0: Deemed-to-Satisfy Provisions	Informational	Noted
B1.1: Resistance to actions	Structural Engineer to certify compliance with this clause at CC stage.	CRA – Refer Annexure C
B1.2: Determination of individual actions	Structural Engineer to certify compliance with this clause at CC stage.	CRA – Refer Annexure C
B1.4: Determination of structural resistance of materials and forms of construction	Structural Engineer, Architect and Manufacturers to certify at CC stage.	CRA – Refer Annexure C
B1.5 Structural software	Structural Engineer to certify compliance with this clause at CC stage.	CRA – Refer Annexure C
SECTION C: FIRE RESISTANCE		
PART C1 – FIRE RESISTANCE AND STABILITY		
C1.0: Deemed-to-Satisfy Provisions	Informational	Noted
C1.1: Type of construction required	The building is required to be of Type A Construction.	CRA – Refer Annexure C
C1.2: Calculation of rise in storeys	The building has a rise in storeys of four (4).	Noted
C1.3: Buildings of multiple classification	Informational	Noted
C1.4: Mixed Types of construction	Not applicable	NA
C1.8: Lightweight construction	Lightweight construction used in a fire-rated application is to comply with Specification C1.8.	CRA – Refer Annexure C
C1.10: Fire hazard properties	Fire hazard properties of materials must comply with C1.10 of the BCA and Specification C1.10, including for floor, wall and ceiling linings, air-handling ductwork, lift cars, insulation, sarking-type materials and attachments, or be considered non-combustible.	CRA – Refer Annexure C
C1.11: Performance of external walls in fire	Not applicable	NA

SECTION C: FIRE RESISTANCE		
C1.12: Non-combustible materials	The following materials, though *combustible* or containing *combustible* fibres, may be used wherever a *non-combustible* material is *required*: (a) Plasterboard. (b) Perforated gypsum lath with a normal paper finish. (c) Fibrous-plaster sheet. (d) Fibre-reinforced cement sheeting. (e) 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. (f) Bonded laminated materials where— (i) each laminate is *non-combustible*; and (ii) each adhesive layer does not exceed 1 mm in thickness; and (iii) the total thickness of the adhesive layers does not exceed 2 mm; and (iv) the *Spread-of-Flame Index* and the *Smoke-Developed Index* of the laminated material as a whole does not exceed 0 and 3 respectively.	Noted
PART C2 – COMPARTMENT AND SEPARATION		
C2.0: Deemed-to-Satisfy Provisions	Informational	Noted
C2.1: Application of Part	Informational	Noted
C2.2: General floor area and volume limitations	The size of fire compartments in the building must not exceed that specified in Table C2.2, being a maximum floor area of 8,000 m^2 and a maximum volume of 48,000 m^3. The building is capable of achieving compliance with the above maximum fire compartment sizes. The largest fire compartment has a floor area of approximately 7985m^2 (floor area to be confirmed by architect). Should the floor area of this compartment exceed 8000m^2, the provision of fire wall separation between the carpark and the carpark entry lobby will reduce the fire compartment size to under 8000m^2.	CRA – Refer Annexure C
C2.6: Vertical separation of openings in external walls	Not applicable – clause does not apply to buildings provided with a sprinkler system installed throughout.	NA
C2.7: Separation by fire walls	• **Construction -** A fire wall must be constructed in accordance with the following: – Any openings in a fire wall must not reduce the FRL required by Specification C1.1 for the fire wall, except where permitted by the Deemed-to-Satisfy Provisions of Part C3. – Building elements, other than roof battens with dimensions of 75 mm x 50 mm or less or sarking-type material, must not pass through or cross the fire wall unless the required fire resisting performance of the fire wall is maintained. • **Separation of fire compartments –** A part of a building separated from the remainder of the building by a fire wall may be treated as a	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		
	separate fire compartment if it is constructed in accordance with this clause and the fire wall extends to the underside of – – a floor having an FRL required for a fire wall; or – the roof covering.	
C2.8: Separation of classifications in the same storey	Not applicable – Class 7a & 9b require the same FRLs therefore separation of classifications is not required	NA
C2.9: Separation of classifications in different storeys	The floors separating storeys must achieve an FRL of not less than 120/120/120.	CRA – Refer Annexure C
C2.10: Separation of lift shafts	The passenger lifts must be separated from the remainder of the building by enclosure in a fire rated shaft achieving an FRL of not less than 120/120/120 for loadbearing or –/120/120 for non-loadbearing.	CRA – Refer Annexure C
C2.11: Stairways and lifts in one shaft	A stairway and lift must not be in the same shaft if either the stairway or the lift is required to be in a fire-resisting shaft.	Complies
C2.12: Separation of equipment	Any of the following equipment located in the building must be separated from the remainder of the building: • 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 or batteries installed in the building that have a voltage exceeding 24 volts and a capacity exceeding 10 ampere hours. Equipment need not be separated in if the equipment comprises: • smoke control exhaust fans located in the air stream which are constructed for high temperature operation in accordance with Specification E2.2b; or • a lift installation without a machine room; or • equipment otherwise adequately separated from the remainder of the building. Separation must be by construction having an FRL as required by Specification C1.1, but not less than FRL 120/120/120 with openings protected by self-closing fire doors having an FRL of not less than –/120/30. Separation of on-site fire pumps must comply with the requirements of AS 2419.1-2005.	CRA – Refer Annexure C
C2.13: Electricity supply system	• The electrical substation located within the building must be separated from the remainder of the building by construction having an FRL of not less than 120/120/120, and doorways protected with self-closing fire doors having an FRL of not less than –/120/30. • 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 FRL of not less than 120/120/120 and have the doorway fitted with self-	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		
	closing fire door having an FRL 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: – fire hydrant booster pumps; – sprinkler pumps; – hose reel pumps; – air-handling systems designed to exhaust and control the spread of smoke; – 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
C3.1: Application of Part	Informational	Noted
C3.2: Protection of openings in external walls	Openings in an external wall that is required to have an FRL must be protected in accordance with C3.4 if the distance between the opening and the fire-source feature is less than 3 m from a side boundary. Where wall-wetting sprinklers are used, they must be located externally. The following openings are located within 3m of the side boundary and are required to be protected: • the two doorways of the switch room at ground level. It is recommended that the above openings be protected by –/60/30 self-closing fire doors.	CRA – Refer Annexure C
C3.3: Separation of external walls and associated openings in different fire compartments	Not applicable – the building is a single fire compartment	NA

SECTION C: FIRE RESISTANCE		
C3.4: Acceptable methods of protection	Where protection is required, openings must be protected as follows: <u>Doorways:</u> (i) Internal or external wall-wetting sprinklers as appropriate used with doors that are self-closing; or (ii) –/60/30 fire doors that are self-closing. <u>Windows:</u> (i) Internal or external wall-wetting sprinklers as appropriate used with windows that are automatic closing or permanently fixed in the closed position; or (ii) –60/– fire windows that are automatically closing or permanently fixed in the closed position; or (iii) –/60/– automatic closing fire shutters. <u>Other openings:</u> (i) Excluding voids – internal or external wall-wetting sprinklers; or (ii) Construction having an FRL not less than –/60/– Fire doors, fire windows and fire shutters must comply with BCA Specification C3.4.	CRA – Refer Annexure C
C3.5: Doorways in fire walls	Doorways in the fire walls must be protected by a self-closing fire door that achieves an FRL of not less than that required by Specification C1.1 for the fire wall except that each door must have an insulation level of at least 30.	CRA – Refer Annexure C
C3.6: Sliding fire doors	Not applicable	NA
C3.7: Protection of doorways in horizontal exits	Not applicable	NA
C3.8: Openings in fire-isolated exits	Not applicable – there are no fire-isolated exits proposed	NA
C3.9: Service penetrations in fire-isolated exits	Not applicable	NA
C3.10: Openings in fire-isolated lift shafts	• Lift landing doors are required to be fire doors with an FRL of -/60/- that comply with AS 1735.11-1986, and be set to remain closed except when discharging or receiving, passengers, goods or vehicles. • Panels in the wall of the lift shaft must be backed by construction having an FRL of not less than –/60/60 if it exceeds 35 000 mm^2 in area.	CRA – Refer Annexure C
C3.12: Openings in floors and ceilings for services	Where services pass through a floor which is required to achieve an FRL or a ceiling required to have a resistance to the incipient spread of fire, the service must be enclosed within a fire resisting shaft or fire protected in accordance with Clause C3.15.	CRA – Refer Annexure C
C3.13: Openings in shafts	Openings in shafts must be protected by: a) if it is in a sanitary compartment – a door or panel which together with its frame, is non-combustible or has an FRL of not less than –/30/30; or b) a self-closing –/60/30 fire door or hopper; or	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		
	c) an access panel having an FRL of not less than –/60/30; or d) if the shaft is a garbage shaft – a door or hopper of non-combustible construction.	
C3.15: Openings for service installations	Where services pass through an element which is required to achieve a FRL (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.	CRA – Refer Annexure C
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 to achieve the required FRL.	CRA – Refer Annexure C
C3.17: Columns protected with lightweight construction to achieve an FRL	A column protected by lightweight construction to achieve an FRL which passes through a building element that is required to have an FRL 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 FRL or resistance to the incipient spread of fire.	CRA – Refer Annexure C
SPECIFICATION C.1.1 – FIRE-RESISTING CONSTRUCTION		
2.1: Exposure to fire-source features	A building element is exposed to a *fire-source feature* if any of the horizontal straight lines between that part and the fire-source feature, or vertical projection of the feature, is not obstructed by another part of the building that– (i) has an FRL of not less than 30/–/–; and (ii) is neither transparent nor translucent.	Noted
2.2: Fire protection for a support of another part	Where a part of a building required to have an FRL depends upon direct vertical or lateral support from another part to maintain its FRL, that supporting part must have an FRL not less than that required by other provisions of this Specification; and if located within the same fire compartment as the part it supports have an FRL in respect of structural adequacy the greater of that required for the supporting part itself and for the part it supports.	CRA – Refer Annexure C
2.3: Lintels	A lintel must 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 meets the requirements of Spec C1.1 clause 2.3 (a) & (b).	CRA – Refer Annexure C
2.4: Attachments not to impair fire-resistance	Where a combustible material is used as a finish or lining to a wall or roof, or sunscreen, or awning, to a building element required to have an FRL– • the material must be exempted under C1.10 or comply with the fire hazard properties prescribed under C1.10; and • the material must not be located near or directly above a required exit so as to make the exit unusable in a fire; and	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE			
		• the material must not otherwise constitute an undue risk of fire spread via the façade of the building or compromise egress from the building.	
2.5:	General concessions	Not applicable	NA
2.6:	Mezzanine floors: Concession	Not applicable	NA
2.7:	Enclosure of shafts	Fire-isolated shafts are required to be enclosed at the top and bottom of the shaft with fire rated construction having an FRL required for the walls of a non-load-bearing shaft in the same building, as per specification C1.1. This fire rating is required in two directions. The above does not apply to shafts extending beyond the roof covering, other than fire isolated stair and lift shafts and the bottom of non-combustible shafts laid directly on the ground.	CRA – Refer Annexure C
3.0:	Type A fire-resisting construction	Noted	-
3.1:	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. • External walls, common walls and the flooring and floor framing of lift pits must be non-combustible; and • Internal walls required to be fire rated must extend to– (i) to the underside of the floor next above; or (ii) the underside of a roof complying with Table 3; or (iii) if under Clause 3.5 the roof is not required to comply with Table 3, the underside of the non-combustible roof covering and, except for roof battens with dimensions of 75 mm x 50 mm or less or sarking-type material, must not be crossed by timber or other combustible building elements; or (iv) a ceiling that is immediately below the roof and has a resistance to the incipient spread of fire to the roof space above itself of not less than 60 minutes. • Load bearing internal walls (including those part of a loadbearing shaft) and fire walls must be of concrete or masonry. • Non-loadbearing internal walls required to be fire rated, as well as non-load bearing lift, ventilating, pipe, garbage or similar shaft wall must be of non-combustible construction.	CRA – Refer Annexure C
3.2:	Concessions for floors	A floor need not comply with Table 3 if— (a) it is laid directly on the ground; or (b) the space below is not a *storey*, does not accommodate motor vehicles, is not a storage or work area, and is not used for any other ancillary purpose; or	Noted

SECTION C: FIRE RESISTANCE			
		(c) it is a timber *stage* floor in a Class 9b building laid over a floor having the *required* FRL and the space below the *stage* is not used as a dressing room, store room, or the like.	
3.3:	Floor Loading of Class 5 and 9b buildings: Concession	If a floor in a Class 5 or 9b building is designed for a live load not exceeding 3 kPa— (a) the floor next above (including floor beams) may have an FRL of 90/90/90; or (b) the roof, if that is next above (including roof beams) may have an FRL of 90/60/30.	Noted
3.4:	Roof superimposed on concrete slab: Concession	Not applicable	NA
3.5:	Roof: Concession	A roof need not comply with Table 3 if its covering is non-combustible and the building has a sprinkler system complying with Specification E1.5 installed throughout.	CRA – Refer Annexure C
3.6:	Roof lights	Not applicable – no roof lights are proposed	NA
3.7:	Internal columns and walls: Concession	For a building having a roof without an FRL in accordance with Clause 3.5, in the *storey* immediately below that roof, internal columns other than those referred to in Clause 3.1(f) and *internal walls* other than *fire walls* and *shaft* walls may have an FRL of 60/60/60.	CRA – Refer Annexure C
3.9:	Carparks	The carpark may comply with the reduced FRLs contained within Table 3.9 of Specification C1.1.	CRA – Refer Annexure C
SPECIFICATION C1.10 – FIRE HAZARD PROPERTIES			
3.	Floor linings and floor coverings	A floor lining or floor covering must have– a) a critical radiant flux not less than that listed in Table 2; and b) a group number complying with Clause 6(b), for any portion of the floor covering that is continued more than 150 mm up a wall.	CRA – Refer Annexure C
4.	Wall and ceiling linings	a) A wall or ceiling lining system must comply with the group number specified in Table 3. b) A group number of a wall or ceiling lining and the smoke growth rate index or average specific extinction area must be determined in accordance with AS 5637.1.	CRA – Refer Annexure C
5.	Air-handling ductwork	Rigid and flexible ductwork must comply with the *fire hazard properties* set out in AS 4254 Parts 1 and 2.	CRA – Refer Annexure C
6.	Lift cars	Materials used as— a) floor linings and floor coverings must have a *critical radiant flux* not less than 2.2; and b) wall and ceiling linings must be a Group 1 material or a Group 2 material in accordance with AS 5637.1.	CRA – Refer Annexure C
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.	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS
PART D1 – PROVISION FOR ESCAPE

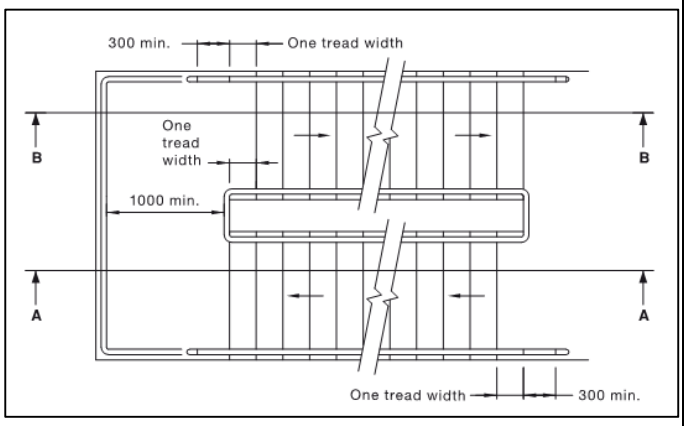
SECTION D: ACCESS AND EGRESS		
D1.2: Number of exits required	• Not less than 2 exits must be provided from each storey. • Without passing through another sole-occupancy unit, every occupant of a storey or part of a storey must have access to an exit or at least 2 exit, if 2 or more are required.	Complies
D1.3: When fire-isolated stairways and ramps are required	The stairways connect no more than 3 storeys in a sprinkler protected building and therefore do not need to be fire-isolated.	NA
D1.4: Exit travel distances	No point on a floor must be more than 20 m from an exit, or a point from which travel in different directions to 2 exits is available, in which case the maximum distance to one of those exits must not exceed 40 m. The following non-compliance is noted in relation to Clause D1.4: <u>Level 4:</u> The distance to a point of choice of exits from the open balcony lift landing area is 39 m. It is recommended that an alternative egress route be provided or compliance be achieved via a Performance Solution.	Performance Solution Refer to Part 5 of Report
D1.5: Distance between alternative exits	Exits that are required as alternative means of egress must be– (a) distributed as uniformly as practicable within or around the storey served and in positions where unobstructed access to at least 2 exits is readily available from all points on the floor including lift lobby areas; and (b) not less than 9 m apart; and (c) not more than 60 m apart; and (d) located so that alternative paths of travel do not converge such that they become less than 6 m apart. Note: the distance between exits must be measured through the point at which travel two exits is available. The maximum distance of 60m between exits is exceeded in the following areas: – between alternative exits via the library on level 1 and level 2 – 61.5m; – between alternative exits via the balcony of the eastern home bases on level 2 – 61m.	Performance Solution Refer to Part 5 of Report
D1.6: Dimensions of exits and paths of travel to exits	In a required exit or path of travel to an exit– • the unobstructed height throughout exits and paths of travel to exits 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 exit or path of travel to an exit, 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.	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		
	• the required width of a stairway or ramp must be measured clear of all obstructions such as handrails.	
D1.7: Travel via fire-isolated exits	Not applicable	NA
D1.8: External stairways or ramps in lieu of fire-isolated exits	Not applicable	NA
D1.9: Travel by non-fire-isolated stairways or ramps	• A non-fire-isolated stairway serving as a required exit 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. • The distance from any point on a floor to a point of egress to a road or open space by way of a required non-fire-isolated stairway must not exceed 80m. • A required non-fire-isolated stairway must discharge at a point not more than – (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 (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.	Complies
D1.10: Discharge from exits	• If a required exit leads to open space, the path of travel to the road must have an unobstructed width of not less than 1m. • If an exit 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.	CRA – Refer Annexure C
D1.11: Horizontal exits	Not applicable – there are no horizontal exits proposed or required.	NA
D1.12: Non-required stairways, ramps or escalators	Non-required, non-fire-isolated stairways must not connect more than 3 storeys.	Complies
D1.13: Number of persons accommodated	Informational– It is understood from correspondence received from the architect that the school is proposed to accommodate up to 800 students and 33 staff.	Noted
D1.14: Measurement of distances	Informational – The nearest part of an exit means in the case of— (a) a fire-isolated stairway, fire-isolated passageway, or fire-isolated ramp, the nearest part of the doorway providing access to them; and (b) a non-fire-isolated stairway, the nearest part of the nearest riser; and	Noted

SECTION D: ACCESS AND EGRESS		
	(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 (d) a doorway opening to a road or open space, the nearest part of the doorway; and (e) a horizontal exit, the nearest part of the doorway.	
D1.15: Method of Measurement	Informational	Noted
D1.16: Plant rooms, lift motor rooms and electricity network substations: concession	Not applicable	NA
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.	CRA – Refer Annexure C
PART D2 – CONSTRUCTION OF EXITS		
D2.2: Fire-isolated stairways and ramps	Not applicable – there are no fire-isolated stairways required or proposed.	NA
D2.3: Non-fire-isolated stairways and ramps	Required stairs and ramps (including landings and any supporting building elements) must be constructed according to D2.2, or only of- (a) reinforced or prestressed concrete; or (b) steel in no part less than 6 mm thick; or (c) timber that— (i) has a finished thickness of not less than 44 mm; and (ii) has an average density of not less than 800 kg/m3 at a moisture content of 12%; and (iii) has not been joined by means of glue unless it has been laminated and glued with resorcinol formaldehyde or resorcinol phenol formaldehyde glue".	CRA – Refer Annexure C
D2.4: Separation of rising and descending stair flights	Not applicable – this clause relates to fire-isolated exits.	NA
D2.7: Installations in exits and paths of travel	• Gas or other fuel services must not be installed in a required exit. • 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 non-combustible construction or a fire protective covering with doorways suitably sealed against smoke spread.	CRA – Refer Annexure C
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.	CRA – Refer Annexure C
D2.9: Width of stairways and ramps	Informational– 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.	Noted

<table>
<tr><th colspan="3">SECTION D: ACCESS AND EGRESS</th></tr>
<tr><td>D2.10: Pedestrian ramps</td><td>The floor surface of a ramp must have a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586.</td><td>CRA – Refer Annexure C</td></tr>
<tr><td>D2.12: Roof as open space</td><td>If an exit discharges to a roof of a building, the roof must have an FRL of 120/120/120.</td><td>CRA – Refer Annexure C</td></tr>
<tr><td>D2.13: Goings and risers</td><td>Stairways must comply with the following:
stairways must have not more than 18 and not less than 2 risers in each flight;
goings must be between 250 mm and 355 mm;
risers must be between 115 mm high and 190 mm high;
the slope relationship (2 x riser dimension + going dimension) must be within the range of 550-700;
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–
(A) adjacent risers, or between adjacent goings, is no greater than 5 mm; and
(B) the largest and smallest riser within a flight, or the largest and smallest going within a flight, does not exceed 10 mm.
Risers must not contain any openings that would permit a 125 mm sphere to pass through.
each tread must have a non-slip finish or an adequate non-skid strip near the edge of the nosings;
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.</td><td>CRA – Refer Annexure C</td></tr>
<tr><td>D2.14: Landings</td><td>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.
<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></td><td>CRA – Refer Annexure C</td></tr>
</table>

SECTION D: ACCESS AND EGRESS		
D2.15: Thresholds	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– a) in a building required to be accessible, the doorway– (i) opens to a road or open space; and (ii) is provided with a threshold ramp or step ramp in accordance with AS 1428.1; or b) in other cases– (i) the doorway opens to a road or open space, external stair landing or external balcony; and (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.	CRA – Refer Annexure C
D2.16: Barriers to prevent falls	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: <u>Balustrade minimum heights</u> • 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. <u>Balustrade openings – other than fire-isolated stairs</u> • 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. <u>Climbability – other than fire-isolated stairs</u> 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.	CRA – Refer Annexure C
D2.17: Handrails	Handrails to stairways must: • 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 in a Class 9b building used as a primary school— (i) have one handrail fixed at a height of not less than 865 mm; and (ii) have a second handrail fixed at a height between 665 mm and 750 mm, measured above the nosings of stair treads and the floor surface of the ramp, landing or the like; 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	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		
	• 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 (including handrails to the fire stairs). • Handrails in common areas (other than fire stairs) must also accord with D3.3. <u>Clause 12 of AS 1428.1-2009</u> A required exit (fire-isolated or non-fire isolated) serving an area required to be accessible must be fitted with handrails in accordance with Clause 12 of AS1428.1. The handrail shall follow the angle of the nosings and be consistent height through the stair flight and any landings with no vertical sections at the landing. Compliance can be achieved via offset risers at the bottom of the flight in accordance with Figure 28 in AS1428.1-2009 or with larger landings to accommodate required handrail extensions.  *Figure 28 in AS1428.1-2009*	
D2.18: Fixed platforms, walkways stairways and ladders	Not applicable	NA
D2.19: Doorways and doors	Not applicable	NA
D2.20: Swinging doors	A swinging door in a required exit must swing in the direction of egress unless– • it serves a building or part with a floor area not more than 200 m^2, it is the only required exit from the building or part and it is fitted with a device for holding it in the open position; or • it serves a sanitary compartment or airlock (in which case it may swing in either direction).	Complies
D2.21: Operation of latch	All doors in a required exit or forming part of a required exit AND doors in a path of travel to a required exit must be readily openable without a key from the side that faces a person seeking egress, by– (i) 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 –	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		
	A. be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and B. have a clearance between the handle and the back plate or door face at the centre grip section of the handle of not less than 35mm and not more than 45mm; or (ii) a single hand pushing action on a single device which is located between 900mm and 1.2m from the floor. The above requirements do not apply to a door that – (i) is 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; or (ii) a door serving secure parts of the childcare centre if it can be immediately unlocked– – by operating a fail-safe control switch, not contained within a protective enclosure, to actuate a device to unlock the door; or – by hand by a person or persons, specifically nominated by the owner, properly instructed as to the duties and responsibilities involved and available at all times when the building is lawfully occupied so that persons in the building or part may immediately escape if there is a fire.	
D2.22: Re-entry from fire-isolated exits	Not applicable	NA
D2.23: Signs on doors	Not applicable	NA
D2.24: Protection of openable windows	Not applicable – there are no windows requiring compliance with this clause.	NA
D2.25: Timber stairways: concession	Not applicable	NA
PART D3 - ACCESS FOR PEOPLE WITH A DISABILITY		
Refer to separate Access Report by BCA Logic		

SECTION E: SERVICES AND EQUIPMENT		
PART E1 – FIRE FIGHTING EQUIPMENT		
E1.3: Fire hydrants	As the building has a floor area greater than 500 m^2, a fire hydrant system complying with AS 2419.1-2005 must be provided to serve the building. Details should be provided showing: • The hydrant booster assembly is required to be separated from the building by construction achieving FRL 90/90/90 for 2 m either side of and 3 m above the upper hose connections. In the current	DNC Refer to Part 5 of Report

SECTION E: SERVICES AND EQUIPMENT			
		design it does not appear that 3m high shielding will be achieved above the upper hose connections. • Internal hydrants must be located within 4 m of an exit and providing coverage to all parts of the building. For internal fire hydrant coverage, all points on the floor must be covered by a 10m hose stream, issuing from 30 m hose length, extending not less than 1m into the room.	
E1.4:	Fire hose reels	A fire hose reel system coverage complying with BCA clause E1.4 and AS 2441-2005 must be provided to the car park, communal hall, admin and staff areas, canteen, COLA and the childcare centre. (i.e. all parts of the building other than classrooms and associated corridors). Fire hose reels must generally be located adjacent to internal fire hydrants and within 4m of an exit. 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. Fire hose reels must be located adjacent to internal fire hydrants and within 4m of an exit.	FI Refer to Part 5 of Report
E1.5:	Sprinklers	Not applicable – refer to Clause E2.2 below in relation to sprinkler requirements.	NA
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.	CRA – Refer Annexure C
E1.8:	Fire control centres	Not applicable	NA
E1.9:	Fire precautions during construction	Informational– • 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; and • After the building has reach an effective height of 12m, the required fire hydrants and fire hose reels must be operational on all floor / roof covered storeys, except for the 2 uppermost storeys; and all required booster connections must be installed.	Noted
E1.10:	Provision for special hazards	Not applicable	NA
PART E2 – SMOKE HAZARD MANAGEMENT			
E2.1:	Application of Part	Informational	Noted
E2.2:	General requirements (including Tables E2.2a and E2.2b)	**General smoke hazard management requirements** An air-handling system which does not form part of a smoke hazard management system in accordance with Table E2.2a or Table E2.2b and which recycles air from one fire compartment to another fire compartment or operates in a manner that may unduly contribute to the spread of smoke from one fire compartment to another fire compartment (such as lobby air supply) must— (i) be designed and installed to operate as a smoke control system in accordance with AS/NZS 1668.1; or (ii)	CRA – Refer Annexure C & Performance Solution Refer to Part 5 of Report

SECTION E: SERVICES AND EQUIPMENT		
	(A) incorporate smoke dampers where the air-handling ducts penetrate any elements separating the fire compartments served; and (B) be arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke detectors complying with clause 4.10 of AS/NZS 1668.1; and for the purposes of this provision, each sole-occupancy unit in a Class 2 or 3 building is treated as a separate fire compartment. Miscellaneous air-handling systems covered by Sections 5 and 11 of AS/NZS 1668.1 serving more than one fire compartment (other than a carpark ventilation system) and not forming part of a smoke hazard management system must comply with that Section of the Standard. **Sprinkler system** The building must be provided with a sprinkler system complying with Specification E1.5. Note: provision of a sprinkler system to satisfy Clause E2.2 requirements will remove the need to comply with the atrium construction requirements of Part G3. **Automatic shutdown of air-handling systems** The building must be provided with automatic shutdown of any air-handling system (other than non-ducted individual room units with a capacity not more than 1000 L/s and miscellaneous exhaust air systems installed in accordance with Sections 5 and 6 of AS/NZS 1668.1) which does not form part of the smoke hazard management system, on the activation of— (i) smoke detectors installed complying with Clause 5 of Specification E2.2a; and (ii) any other installed fire detection and alarm system, including a sprinkler system complying with Specification E1.5. **Smoke Exhaust to Hall** In accordance with NSW Table E2.2b, the Class 9b building, having a fire compartment floor area greater than 2000m^2, is required to be provided with an automatic smoke exhaust system complying with Specification E2.2b. This applies to parts of the building that are not classroom use. Furthermore NSW Table E2.2b requires smoke exhaust to be provided over stage areas where the stage floor area is more than 150m^2. It is understood that smoke exhaust will be provided to the stage area only rather than throughout the entire fire compartment. It is recommended that BCA compliance be achieved via a Performance Solution. **Class 7a buildings** It appears that the Class 7a car park will be naturally ventilated. Please advise if this is not the case.	
E2.3: Provisions for special hazards	Not applicable	NA
PART E3 – LIFT INSTALLATIONS		

SECTION E: SERVICES AND EQUIPMENT			
E3.1:	Lift installations	An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with Specification E3.1	CRA – Refer Annexure C
E3.2:	Stretcher facility in lifts	A stretcher facility must be provided to passenger lifts installed to serve any storey above an effective height of 12 m. A stretcher facility must accommodate a raised stretcher with a patient lying on it horizontally by providing a clear space not less than 600mm wide x 2000mm long x 1400mm high above floor level.	CRA – Refer Annexure C
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.	CRA – Refer Annexure C
E3.4:	Emergency lifts	Not applicable	NA
E3.5:	Landings	Access and egress to and from lift-well landings must comply with the Deemed-to-Satisfy Provisions of Section D.	CRA – Refer Annexure C
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.	CRA – Refer Annexure C
E3.7:	Fire service controls	The lifts serving any storey above an effective height of 12 m must be provided with: a) A fire service recall control switch complying with E3.9 for— (i) a group of lifts; or (ii) a single lift not in a group that serves the *storey*. b) A lift car fire service drive control switch complying with E3.10 for every lift.	CRA – Refer Annexure C
E3.9:	Fire service recall switch	The fire service control switch required by E3.7, is to comply with this clause. Lift services design to confirm compliance at CC stage.	CRA – Refer Annexure C
E3.10:	Lift car service drive control switch	The lift car service drive control switch required by E3.7, is to comply with this clause. Lift services design to confirm compliance at CC stage.	CRA – Refer Annexure C
PART E4 – VISIBILITY IN AN EMERGENCY, EXIT SIGNS AND WARNING SYSTEMS			
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 2293.1-2005.	CRA – Refer Annexure C
E4.3:	Measurement of distance	Informational	Noted
E4.4:	Design and operation of emergency lighting	The emergency lighting system must comply with AS 2293.1-2005.	CRA – Refer Annexure C
E4.5:	Exit signs	Exits signs are to be provided above or adjacent to a door providing egress as well as directional signage throughout the entire development where necessary.	CRA – Refer Annexure C
E4.6:	Direction signs	Where an exit is not readily apparent, directional signage is to be installed indicating the direction of egress.	CRA – Refer Annexure C

SECTION E: SERVICES AND EQUIPMENT			
E4.8:	Design and operation of exit signs	Exit signs must comply with AS 2293.1-2005 and be clearly visible at all times when the building is occupied.	CRA – Refer Annexure C
E4.9:	Sound systems and intercom systems for emergency purposes	A sound system and intercom system for emergency purposes (EWIS) complying where applicable with AS 1670.4 must be installed within the building.	CRA – Refer Annexure C

SECTION F: HEALTH AND AMENITY			
PART F1 – DAMP AND WEATHERPROOFING			
F1.0:	Deemed-to-Satisfy Provisions	Performance Requirement 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 Performance Requirement in respect of external walls.	Noted
F1.1:	Stormwater drainage	Stormwater drainage to comply with AS3500.3-2003.	CRA – Refer Annexure C
F1.4:	External above ground membranes	Waterproofing membranes for external above ground use to comply with AS4654 Parts 1 and 2-2012.	CRA – Refer Annexure C
F1.5:	Roof coverings	Roof coverings are to comply with BCA Clause F1.5.	CRA – Refer Annexure C
F1.6:	Sarking	Sarking-type materials used for weatherproofing must comply with AS/NZS 4200 Part 1 and 2-1994.	CRA – Refer Annexure C
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.	CRA – Refer Annexure C
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.	CRA – Refer Annexure C
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).	CRA – Refer Annexure C
F1.12:	Sub-floor ventilation	Not applicable – no sub-floor spaces are proposed.	NA
F1.13:	Glazed Assemblies	Glazed assemblies are to comply with AS2047 and AS1288.	CRA – Refer Annexure C
PART F2 – SANITARY AND OTHER FACILITIES			
F2.2:	Calculation of number of occupants and facilities	Informational – a) The number of persons accommodated must be calculated according to D1.13 if it cannot be more accurately determined by other means. b) 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.	CRA – Refer Annexure C
F2.3:	Facilities in Class 3 to 9 buildings (including Table F2.3)	a) Separate sanitary facilities for males and females must be provided in accordance with BCA Table 2.3. Staff facilities – primary school	FI &

SECTION F: HEALTH AND AMENITY		
	The sanitary facilities located adjacent to the interview rooms on Level 03 are assumed to be for staff use and can easily cater for the proposed 33 staff in accordance with Table F2.3. Student facilities – primary school Student facilities appear to comprise: – one right hand and one left-hand transfer accessible unisex sanitary facilities and six water closets on Ground Level; – one right hand transfer accessible unisex sanitary facility and two water closets on Level 1; – one left-hand transfer accessible unisex sanitary facility and twelve water closets on Level 2; – one left-hand transfer and one right hand transfer accessible unisex facility and eight water closets on Level 3; – one left hand transfer accessible unisex facility and two water closets on Level 4. The above 7 unisex accessible sanitary facilities and 30 water closets can easily cater for the proposed 800 students and the expected number of staff. It is noted that the student population requires the following number of facilities: Male students: 6 closet pans, 5 urinals & 7 wash basins. (note: closet pans may be substituted for urinals). Female students: 11 closet pans & 7 wash basins. Childcare The single accessible unisex facility can cater for up to 10 staff. Further details are required of the proposed children's facilities.	DNC Refer to Part 5 of Report
	b) The early childhood centre must be provided with the following: (i) a kitchen or food preparation area with a kitchen sink, separate hand washing facilities, space for a refrigerator and space for cooking facilities, with— (A) the facilities protected by a door or gate with child proof latches to prevent unsupervised access to the facilities by children younger than 5 years old; and (B) the ability to facilitate supervision of children from the facilities if the early childhood centre accommodates children younger than 2 years old; and (ii) one bath, shower or shower-bath; and (iii) if the centre accommodates children younger than 3 years old— (A) a laundry facility comprising a washtub and space in the same room for a washing machine; and	

SECTION F: HEALTH AND AMENITY			
		(B) a bench type baby bath, which is within 1 m of the nappy change bench; and (C) a nappy changing bench which— (aa) is within 1 m of separate adult hand washing facilities and bench type baby bath; and (bb) must be not less than 0.9 m2 in area and at a height of not less than 850 mm, but not more than 900 mm above the finished floor level; and (cc) must have a space not less than 800 mm high, 500 mm wide and 800 mm deep for the storage of steps; and (dd) is positioned to permit a staff member changing a nappy to have visibility of the play area at all times. The following issues are noted in relation to Clause F2.3: • The kitchen is not provided with a means of supervising the children younger than 2 years old. It is recommended that either the design be amended to comply or BCA compliance achieved via a Performance Solution. • A laundry is not detailed on the plans.	
F2.4:	Accessible sanitary facilities (including Table F2.4)	Refer to Access Report by BCA Logic	-
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— (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. b) The door to a fully enclosed sanitary compartment must— (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. <u>Early childhood centre</u> In an early childhood centre, facilities for use by children must have each sanitary compartment screened by a partition which, except for the doorway, is opaque for a height of at least 900 mm but not more than 1200 mm above the floor level. Screens are to be provided in accordance with this clause.	CRA – Refer Annexure C
F2.6:	Interpretation: urinals and washbasins	Informational– (a) A urinal may be— (i) an individual stall or wall-hung urinal; or	Noted

SECTION F: HEALTH AND AMENITY		
	(ii) each 600 mm length of a continuous urinal trough; or (iii) a closet pan used in place of a urinal. (b) A washbasin may be— (i) an individual basin; or (ii) a part of a hand washing trough served by a single water tap.	
PART F3 – ROOM SIZES		
F3.1: Height of rooms and other spaces	• In a Class 9b building— (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— (A) that serves an assembly building or part that accommodates not more than 100 persons — 2.4 m; or (B) that serves an assembly building or part that accommodates more than 100 persons — 2.7 m; and • in any building— (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 (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.	CRA – Refer Annexure C
PART F4 – LIGHT AND VENTILATION		
F4.1: Provision of natural light	Natural light must be provided to all general purpose classrooms in the primary school and all playrooms or the like for the use of children in an early childhood centre.	Complies
F4.2: Methods and extent of natural lighting	• Natural light must be provided by: (i) Windows: A. with an aggregate light transmitting area of not less than 10% the floor area of the room; and B. 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; or (ii) Rooflights, that: A. have an aggregate light transmitting area of not less than 3% the floor area of the room; or (iii) a proportional combination of windows and roof lights required by (i) and (ii). • In a Class 9b early childhood centre, the sills of 50% of windows in children's rooms must be located not more than 500 mm above the floor level.	CRA – Refer Annexure C

SECTION F: HEALTH AND AMENITY			
F4.3:	Natural light borrowed from adjoining room	Informational	Noted
F4.4:	Artificial Lighting	Lighting to the all areas is to comply with AS 1680.0.	CRA – Refer Annexure C
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.	CRA – Refer Annexure C
F4.6:	Natural ventilation	(a) Natural ventilation provided in accordance with F4.5(a) must consist of permanent openings, windows, doors or other devices which can be opened— (i) with an aggregate opening or openable size not less than 5% of the floor area of the room required to be ventilated; and (ii) open to— (A) a suitably sized court, or space open to the sky; or (B) an open verandah, carport, or the like; or (C) an adjoining room in accordance with F4.7.	CRA – Refer Annexure C
F4.7:	Ventilation borrowed from adjoining room	Ventilation may be 'borrowed' from adjoining rooms in some instances in accordance with this clause.	CRA – Refer Annexure C
F4.8:	Restriction on position of water closets and urinals	Sanitary compartments must not open directly into a – • kitchen or pantry; or • workplace normally occupied by more than one person.	Complies
F4.9:	Airlocks	If sanitary compartments are prohibited from opening directly to another room: • access must be by an airlock, hallway or other room with a floor area of not less than 1.1m^2 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.	Complies
F4.11:	Carparks	Every storey of a carpark (except an open deck carpark) must have: • a system of mechanical ventilation complying with AS1668.2-2012; or • a system of natural ventilation complying with Section 4 of AS 1668.4-2012.	CRA – Refer Annexure C
F4.12:	Kitchen local exhaust ventilation	Any commercial kitchen must be provided with a kitchen exhaust hood complying with AS/NZS 1668.1 and AS 1668.2 where: • any cooking apparatus has: – a total maximum electrical power input exceeding 8 kW; or – a total gas power input exceeding 29 MJ/h; or • the total maximum power input to more than one apparatus exceeds: – 0.5 kW electrical power; or – 1.8 MJ gas,	CRA – Refer Annexure C

SECTION F: HEALTH AND AMENITY		
	Per m^2 of floor area of the room or enclosure.	
PART F5 – SOUND TRANSMISSION AND INSULATION		
Part F5 is not applicable		

SECTION G: ANCILLARY PROVISIONS		
PART G1 – MINOR STRUCTURES AND COMPONENTS		
G1.1: Swimming pools	Not applicable	NA
G1.2: Refrigerated chambers, strong-rooms and vaults	Not applicable	NA
G1.3: Outdoor play spaces	The outdoor play space must be enclosed on all sides with a barrier which complies with AS 1926.1-2007 to restrict the children from exiting the premises. The above requirements do not apply to a wall, including doors and windows, which form part of the Class 9b early childhood centre.	CRA – Refer Annexure C
NSW G1.101: Provision for cleaning windows	A safe manner for cleaning of windows located 3 or more storeys above ground level must be provided, and compliance is achieved where: • the windows can be cleaned wholly from within the building; or • via a method complying with the Work Health and Safety Act 2011 and regulations made under that Act.	CRA – Refer Annexure C
PART G2 – BOILERS, PRESSURE VESSELS, HEATING APPLIANCES, FIREPLACES, CHIMNEYS AND FLUES		
Part G2 is not applicable		
PART G3 – ATRIUM CONSTRUCTION		
G3.1: Application of Part	Part G3 is not applicable to atriums connecting 3 storeys in a sprinkler protected building.	Noted

SECTION H: SPECIAL USE BUILDINGS		
PART H1 – CLASS 9B BUILDINGS		
H1.4: Seating area	In a seating area— (a) the gradient of the floor surface must not be steeper than 1 in 8, or the floor must be stepped so that— (i) a line joining the nosings of consecutive steps does not exceed an angle of 30° to the horizontal; and (ii) the height of each step in the stepped floor is not more than 600 mm; and (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— (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	CRA – Refer Annexure C

SECTION H: SPECIAL USE BUILDINGS			
		(c) the clearance between rows of fixed seats used for viewing performing arts, sport or recreational activities must be not less than— (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.	
H1.7	Aisle lights	In every enclosed Class 9b building, where in any part of the auditorium, the general lighting is dimmed or extinguished during public occupation and the floor is stepped or is inclined at a slope steeper than 1 in 12, aisle lights must be provided to illuminate the full length of the aisle and tread of each step.	CRA – Refer Annexure C

SECTION J: ENERGY EFFICIENCY			
PART J1 – BUILDING FABRIC			
J1.1:	Application of Part	The provisions of Part J1 apply to building elements forming part of the *envelope* of the building.	CRA – Refer Annexure C
J1.2:	Thermal construction general	Where required insulation is to comply with AS4859.1 and be installed in accordance with this clause.	CRA – Refer Annexure C
J1.3:	Roof and ceiling construction	a) Roof and ceiling construction must achieve the Total R-Value specified in BCA Table J1.3a for the direction of heat flow. b) For compliance with Table J1.3a, roof and ceiling construction is deemed to have the thermal properties listed in Specification J1.3. c) Where, for operational or safety reasons associated with exhaust fans, flues or recessed down lights, the area of required ceiling insulation is reduced, the loss of insulation must be compensated for by increasing the R-Value of the insulation in the remainder of the ceiling in accordance with Table J1.3b. d) A roof that: (i) is required to achieve a minimum Total R-Value; and (ii) has metal sheet roofing fixed to metal purlins, metal rafters or metal battens; and (iii) does not have a ceiling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens (see Specification J1.3 Figure 2(c) and (f)), must have a thermal break, consisting of a material with an R-Value of not less than R0.2, installed between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens.	CRA – Refer Annexure C
J1.4:	Roof lights	Any roof lights, including any associated shaft and diffuser, must comply with the requirements of BCA Clause J1.4.	CRA – Refer Annexure C
J1.5:	Walls	a) Each part of an external wall that is part of the *envelope* must satisfy one of the options in Table J1.5a except for:	CRA – Refer Annexure C

SECTION J: ENERGY EFFICIENCY		
	(i) opaque non-glazed openings in external walls such as doors, vents, penetrations, shutters and the like; and (ii) glazing. b) Any wall other than an external wall that is part of the *envelope* must achieve the Total R-Value in Table J1.5b. c) A wall that: (i) is required to achieve a minimum Total R-Value; and (ii) has lightweight external cladding such as weatherboards, fibre cement or metal sheeting fixed to a metal frame; and (iii) does not have a wall lining or has a wall lining fixed directly to the same metal frame, must have a thermal break, consisting of a material with an R-Value of not less than R0.2, installed between the external cladding and the metal frame. d) For compliance with Table J1.5a and Table J1.5b, wall construction is deemed to have the thermal properties listed in Specification J1.5.	
J1.6: Floors	a) A floor that is part of the *envelope* of a building, including a floor above or below a carpark or plant room: (i) must achieve the Total R-Value specified in Table J1.6; and (ii) with an in-slab heating or cooling system, must be insulated around the vertical edge of its perimeter with insulation having an R-Value of not less than 1.0. b) The minimum Total R-Value required in (a) may be reduced by R0.5 provided R0.75 is added to the Total R-Value required for the roof and ceiling construction. c) A concrete slab-on-ground with an in-slab heating or cooling system must have insulation installed around the vertical edge of its perimeter. d) Insulation required by (c) must– (i) have an R-Value of not less than 1.0; and (ii) be water resistant; and (iii) be continuous from the adjacent finished ground level– A. to a depth of not less than 300 mm; or B. for the full depth of the vertical edge of the concrete slab-on-ground. e) Floor construction is deemed to have the thermal properties listed in Specification J1.6.	CRA – Refer Annexure C
PART J2 – GLAZING		
J2.1: Application of Part	This part applies to all glazing located in the *envelope* of the building.	Noted

SECTION J: ENERGY EFFICIENCY			
J2.4:	Glazing	Glazing to comply with this clause, it is noted that this assessment does not include an assessment with the glazing calculator.	CRA – Refer Annexure C
J2.5:	Shading	Shading where required by Clause J2.4, must comply with BCA Clause J2.5.	CRA – Refer Annexure C
PART J3 – BUILDING SEALING			
J3.1:	Application of Part	The requirements of this Part apply to elements forming the *envelope* of the building other than: • a building in a climate zones 1, 2, 3 and 5 where the only means of air-conditioning is by using an evaporative cooler; • a permanent building opening necessary for the safe operation of a gas appliance; • a building or part where mechanical ventilation required by part F4 provides sufficient pressurization to prevent infiltration; • parts of buildings that cannot be fully enclosed.	Noted
J3.2:	Chimneys and flues	Not applicable	NA
J3.3:	Roof lights	Roof lights must be sealed or be capable of being sealed and must be constructed with– (i) an imperforate ceiling diffuser or the like installed at the ceiling or lining level; or (ii) a weatherproof seal; or (iii) a shutter system readily operated either manually, mechanically or electronically by the occupant.	CRA – Refer Annexure C
J3.4:	External windows and doors	• A seal to restrict air infiltration must be fitted to each edge of a door, openable window or the like forming part of: – the *envelope* of a conditioned space; or – the external fabric of a habitable room or public area. • The above does not apply to: – a window complying with AS 2047; or – a fire door or smoke door; or – a roller shutter door, roller shutter grille or other security device. • For the bottom edge of external swing doors, the seal must be a draft protection device and may otherwise be a foam or rubber compression strip, fibrous seal or the like. • An entrance to a building, if leading to a conditioned space must have an airlock, self-closing door, revolving door or the like.	CRA – Refer Annexure C
J3.5:	Exhaust fans	The exhaust fans to the sanitary facilities and any other miscellaneous exhaust fans to other conditioned spaces, are to be pre-fitted with a sealing device, such as a self-closing damper of the like.	CRA – Refer Annexure C
J3.6:	Construction of roofs, 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	CRA – Refer Annexure C

SECTION J: ENERGY EFFICIENCY			
		are close fitting at ceiling, wall and floor junctions or are sealed by caulking, skirting, architraves, cornices or the like.	
J3.7:	Evaporative Coolers	Where provided an evaporative cooler is to be fitted with a self-closing damper in accordance with this clause.	CRA – Refer Annexure C
PART J5 – AIR CONDITIONING AND VENTILATION SYSTEMS			
J5.2:	Air-conditioning systems	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure C
J5.3:	Mechanical ventilation systems	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure C
J5.4:	Miscellaneous exhaust systems	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure C
PART J6 – ARTIFICIAL LIGHTING AND POWER			
J6.1:	Application of Part	Applies to all buildings except a Class 8 electricity network substation.	Noted
J6.2:	Artificial lighting	Artificial lighting must comply with J6.2(b) and J6.2(c), relevant to maximum permitted illumination power loads. Design certification to be provided by the electrical designer.	CRA – Refer Annexure C
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 C
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 C
J6.5:	Artificial lighting around the perimeter of a building	Artificial lighting around the perimeter of a building must be controlled by 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 C
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 C
PART J7 – HEATED WATER SUPPLY			
J7.2:	Heated water supply system	The hot water supply systems must be designed and installed in accordance with Part B2 of NCC Volume Three — Plumbing Code of Australia.	CRA – Refer Annexure C
PART J8 – FACILITIES FOR ENERGY MONITORING			
J8.3	Facilities for energy monitoring	• The building must have an energy monitoring facility to record the consumption of gas and electricity. • The building must have the facility to record, individually the energy consumption of: – 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	CRA – Refer Annexure C

SECTION J: ENERGY EFFICIENCY		
	– lifts; and – other ancillary plant.	

ANNEXURE C - BCA COMPLIANCE SPECIFICATION

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

Architectural Design Certification:

1. The FRL's of the structural elements for the proposed works have been designed in accordance with Table 3 of Specification C1.1 of BCA2016 for a building of Type A Construction.
2. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2016.
3. Materials, floor and wall linings/coverings, surface finished and air-handling ductwork used in the works will comply with the fire hazard properties of Clause C1.10 and Specification C1.10 of BCA2016.
4. The size of the fire compartments within the building will not exceed 8,000m^2 in floor area or 48,000m^3 in volume in accordance with Clause C2.2 of BCA2016.
5. Floors separating storeys of different classifications will comply with BCA Clause C2.9 of BCA2016.
6. Equipment will be separated in accordance with Clause C2.12 of BCA2016.
7. The electricity substation, any main switch room sustaining emergency equipment required to operate in emergency mode, will be separated from the remaining building with construction having a FRL 120/120/120 and provided with self-closing -/120/130 fire doors in accordance with Clause C2.13 of BCA2016.
8. Openings in the external walls that are required to have an FRL will be in located in accordance with Clause C3.2 and C3.3 of BCA2016 or protected in accordance with Clause C3.4 of BCA2016.
9. Services penetrating elements required to possess a 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 BCA2016.
10. Construction joints 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.
11. The lift doors will be --/60/- fire doors complying with AS1735.11 in accordance Clause C3.10 of BCA2016.
12. 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 BCA2016.
13. All attachments to the external façade of the building will be of a non-combustible material, or a combustible material in accordance with Clause 2.4 of Specification C1.1 of BCA2016.
14. The top and bottom of the riser shafts will achieve an FRL not less than the FRL required for the walls of the shaft in accordance with Clause 2.7 of Specification C1.1 of BCA2016.
15. Fire doors will comply with AS1905.1 and Specification C3.4 of BCA2016.
16. Doorways in any fire walls separating fire compartments will be protected in accordance with Clause C3.5 of BCA2016.
17. Travel distances to exits will be in accordance with Clause D1.4 of BCA2016 other than where compliance is achieved via a Performance Solution.
18. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D1.6 of BCA2016.
19. Discharge from exits will be in accordance with Clause D1.10 of BCA2016.

20. Access to the lift pit will be in accordance with Clause D1.17 of BCA2016.
21. The non-fire isolated stairs will be constructed in accordance with Clause D2.3 of BCA2016.
22. The construction of EDB's and telecommunications distribution boards will be in accordance with Clause D2.7 of BCA2016 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.
23. The enclosing walls and ceiling under the non-fire-isolated stairway will achieve an FRL of 60/60/60, and have a self-closing -/60/30 fire door, in accordance with Clause D2.8 of BCA2016.
24. New pedestrian ramps will comply with AS1428.1-2009, Clause D2.10 and Part D3 of BCA2016. The floor surface of a ramp must have a slip-resistance classification complying with Table D2.14 when tested in accordance with AS4586.
25. The roof of the building where the exit discharges will have an FRL of 120/120/120, and will not have roof lights or openings within 3m of the path of travel in accordance with Clause D2.12 of BCA2016.
26. Stair geometry to the new stairways will be in accordance with Clause D2.13 of BCA2016. Stair treads are to have a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS4586.
27. Landings and door thresholds throughout the development will be provided in accordance with Clause D2.14 and D2.15 of BCA2016. Landings to have either a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS4586 or a strip at the edge of the landing with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS4586 where the edge ledge to a flight below.
28. The handrails and balustrades to all stairs and throughout the building will be in accordance with Clause D2.16, and D2.17 of BCA2016.
29. The doorways and doors will be in accordance with Clause D2.19 and D2.20 of BCA2016.
30. The door latching mechanisms to the proposed required exit doors will be in accordance with Clause D2.21 of BCA2016.
31. The new works will be accessible in accordance with Clause D3.1 and table D3.1, D3.2, D3.3 of BCA2016, and with AS1428.1-2009, with particular note to door circulation spaces, accessway widths, turning spaces and floor coverings, in accordance with Part D3 of BCA2016.
32. Accessible carparking will be in accordance with Clause D3.5, and Table D3.5 of BCA2016.
33. Braille and tactile signage will in accordance with Clause D3.6, and Specification D3.6 of BCA2016.
34. Hearing augmentation system will be provided in accordance with Clause D3.7 of BCA2016.
35. Tactile ground surface indicators will be provided in accordance with Clause D3.8 of BCA2016 and AS1428.4.1-2009.
36. Fixed wheel chair seating will be in accordance with Clause D3.9, and Table D3.9 of BCA2016.
37. On an accessway, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, will be clearly marked in accordance with AS1428.1-2009 and Clause D3.12 of BCA2016.
38. Fire precautions whilst the building is under construction fire precautions will be in accordance with Clause E1.9 of BCA2016.
39. Non-illuminated exit signage will be installed in accordance with Clause E4.7, and of BCA2016.
40. External above ground waterproofing membranes will comply with Clause F1.4 of BCA2016 and AS 4654 Parts 1 & 2.
41. The roof covering will be in accordance with Clause F1.5 of BCA2016.
42. Any sarking proposed will be installed in accordance with Clause F1.6 of BCA2016.
43. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F1.7 of BCA2016 and AS3740.

44. Damp proofing of the proposed structure will be carried out in accordance with Clause F1.9 and F1.10 of BCA2016.
45. All new glazing to be installed throughout the development will be in accordance with Clause F1.13 of BCA2016 and AS1288 / AS2047.
46. Sanitary facilities will be provided in the building in accordance with Clause F2.1, Table F2.1, Clause F2.3 and Table F2.3 of BCA2016.
47. Accessible sanitary facilities will be provided in the building in accordance with Clause F2.4, Table F2.4 (a) of BCA2016 and AS1428.1-2009.
48. The construction of the sanitary facilities will be in accordance with Clause F2.5 of BCA2016.
49. Ceiling heights will be in accordance with Clause F3.1 of BCA2016.
50. Natural light will be provided in accordance with Clause F4.1, F4.2, and F4.3 of BCA2016.
51. Natural ventilation will be provided in accordance with Clause F4.5, F4.6 and F4.7 of BCA2016.
52. The sanitary compartments will be either be provided with mechanical exhaust ventilation or an airlock in accordance with Clause F4.9 of BCA2016.
53. The carpark will be provided with an adequate system of permanent natural or mechanical ventilation in accordance with Clause F4.11 of BCA2016.
54. A means of cleaning of windows in accordance with the Work Health & Safety Act 2011 and regulations made under that Act in accordance with NSW G1.101 of BCA2016.
55. Outdoor play spaces associated with the early childhood centre will be in accordance with Clause G1.3 of BCA2016.
56. The stoves, heaters or similar appliances installed in the building will be in accordance with AS/NZS 2918 and Clause G2.2 of BCA2016.
57. The seating area within the communal hall will comply with BCA H1.4 & H1.7.
58. Building Fabric and Thermal Construction will be in accordance with Part J1 of BCA2016.
59. Glazing will be in accordance with Part J2 of BCA2016.
60. Building sealing will be in accordance with Part J3 of BCA2016.
61. Facilities for Energy Monitoring will be provided in accordance with Clause J8.3 of BCA2016.

Electrical Services Design Certification:

62. A smoke detection and alarm system will be installed throughout the building in accordance with Table E2.2a, and Specification E2.2a of BCA2016.
63. Emergency lighting will be installed throughout the development in accordance with Clause E4.2, E4.4 of BCA2016 and AS2293.1.
64. Exit signage will be installed in accordance with Clause E4.5, E4.7, and E4.8 of BCA2016 and AS2293.1.
65. A sound systems and intercom systems for emergency purposes (SSISEP) will be provided to the building in accordance with Clause E4.9 of BCA2016.
66. Artificial lighting will be installed throughout the development in accordance Clause F4.4 of BCA2016 and AS/NZS 1680.0.
67. Lighting power and controls will be installed in accordance with Part J6 of BCA2016.

Hydraulic Services Design Certification:

68. Storm water drainage will be provided in accordance with Clause F1.1 of BCA2016 and ASNZS3500.3
69. Fire hydrants will be installed in accordance with Clause E1.3 of BCA2016 and AS2419.1 as required.

70. Fire hose reels will be installed to the childcare and the carpark in accordance with Clause E1.4 of BCA2016 and AS2441.

71. A sprinkler system will be installed in accordance with Specification E1.5 and AS2118.

72. Portable fire extinguishers will be installed in accordance with Clause E1.6 of BCA2016 and AS2444.

73. The heated water supply systems will be designed and installed to NCC Volume 3 – Plumbing code and Clause J7.2 of BCA2016.

Mechanical Services Design Certification:

74. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F4.5 of BCA2016 and AS1668.2.

75. Automatic shutdown of air-handling systems will be provided in accordance with NSW Table E2.2b and AS 1668.1.

76. A smoke exhaust system will be provided to the hall in accordance with BCA Specification E2.2b.

77. The car park will be ventilated in accordance with Clause F4.11 of BCA2016 and where not naturally ventilated it will be mechanically ventilated in accordance with AS1668.2 as applicable.

78. The commercial kitchen will be provided with a kitchen exhaust hood where required by Clause F4.12 of BCA2016, in accordance with AS/NZS 1668.1 and AS1668.2.

79. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J5 of BCA2016.

Structural Engineers Design Certification:

80. The material and forms of construction for the proposed works will be in accordance with Clause B1.2, B1.4 and B1.6 of BCA2016 as follows:
    - Dead and Live Loads – AS1170.1
    - Wind Loads – AS1170.2
    - Earthquake actions – AS1170.4
    - Masonry – AS3700
    - Concrete Construction – AS3600
    - Steel Construction AS4100
    - Aluminium Construction – AS/NZS1664.1 or 2
    - Timber Construction – AS 1720.1
    - ABCB Standard for Construction of Buildings in Flood Hazard Areas.

81. The FRL's of the structural elements for the proposed works have been designed in accordance with Table 3 of Specification C1.1 of BCA2016 for a building of Type A Construction.

82. The lift shaft will have a FRL in accordance with Clause C2.10 and Specification C1.1 of BCA2016.

83. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2016.

84. The construction joints to the structure will be in accordance with Clause C3.16 of BCA2016 to maintain the FRL integrity of the element concerned.

Lift Services Design Certification:

85. The lifts will be provided with stretcher facilities in accordance with Clause E3.2 of BCA2016 and will be capable of accommodating a stretcher with a patient lying horizontally by proving a clear space not less than 600mm wide x 2000mm long x 1400mm high above the floor level.

86. Warning signage in accordance with Clause E3.3 of BCA2016 will be provided to the lifts to advise not to use the lifts in a fire.

87. An emergency lift will be provided in the building in accordance with Clause E3.4 of BCA2016.

88. A fire service recall control switch is to be installed on a landing at a location nominated by the appropriate authority in accordance with Clause E3.9.

89. A lift car fire service drive control switch is to be installed within the lift car in accordance with Clause E3.10.

90. Access and egress to the lift well landings will comply with the Deemed-to-Satisfy Provisions of D3 of the BCA2016, and will be suitable to accommodate disabled persons.

91. 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 BCA2016.

92. The lifts will comply with AS1735.12 in accordance with Clause E3.6 of BCA2016.