mckenzie group
A Bureau Veritas Group Company
McKenzie Group Consulting (NSW) Pty Ltd
ACN: 093 211 995
Level 6, 189 Kent Street, Sydney NSW 2000
Tel: 02 8298 6800 Fax: 02 8298 6899
sydney@mckenzie-group.com.au

Warren and Mahoney
Suite 13.03, Plaza Building
95 Pitt Street
Sydney NSW 2000

Attention: Andrew Walsh

Dear Andrew,

Re: Mona Vale Surf Club – Development Application
BCA Compliance

We have reviewed the design documentation against the provisions of the Building Code of Australia 2016 Amendment 1. We confirm that, based on the below documentation, the project is capable of complying with the Building Code of Australia 2016 Amendment 1.

Drawings reviewed:

Drawing No.	Title	Date	Drawn By	Rev
A.DA.00.001	Cover Sheet/ Development Application Drawing List	-	-	A
A.DA.00.002	DA Legend Sheet	-	-	A
A.DA.01.001	Location Plan	-	-	A
A.DA.02.002	Site Analysis Plan	-	-	A
A.DA.02.002	Existing / Demolition Plan	-	-	A
A.DA.02.003	Staging / Temporary Building Plan	-	-	A
A.DA.02.004	Proposed Site Plan	-	-	A
A.DA.10.001	GA Plan – Ground Level	-	-	A
A.DA.10.002	GA Plan – First Level	-	-	A
A.DA.11.001	Roof Plan	-	-	A
A.DA.12.001	Landscape Plan	-	-	A
A.DA.20.001	North & East Elevations	-	-	A
A.DA.20.002	South & West Elevations	-	-	A
A.DA.30.001	Sections	-	-	A
A.DA.40.001	Material Schedule Sheet 01	-	-	A

Yours faithfully

Zoe Brown
Building Surveyor
McKenzie Group Consulting (NSW) Pty Ltd
ACN 093 211 995

mckenzie group

A Bureau Veritas Group Company

BUILDING CODE OF AUSTRALIA REPORT

Revision: 01 September 2018

Proposed Mona Vale Surf Club
Surf View Road, Mona Vale NSW

Prepared for: Warren and Mahoney

Document Disclaimer

This document has been prepared solely for the use of our client in accordance with our current professional standards and as per our agreement for providing compliance consulting services. Although all due care has been taken in the preparation of this document, no warranty is given, nor liability accepted (except that required by law) in relation to the information contained within this document.

This document represents the opinions of McKenzie Group Consulting based on the facts and matters known at the time of preparation of this document. Opinions, judgments and recommendations detailed in this document, which are based on our understanding and interpretation of current statutory and regulatory obligations and standards, should not be construed as legal opinions.

Table of Contents

Appendix C- Fire Resistance Levels **24**

Date	Rev No	No. of Pages	Issue or Description of Amendment	Assessed By	Approved By	Date Approved
16/10/18	01	25	Draft report for DA Submission	Zoe Brown	Paul Curjak	18/10/18

Executive Summary

Development Overview

The proposed development is a two storey surf lifesaving club, consisting of club facilities, public amenities and retail components on the ground floor, and a restaurant and function room on the first floor.

Compliance Summary

As Accredited Certifiers, we have reviewed architectural design documents prepared by Warren and Mahoney (refer appendix A) for compliance with the Building Code of Australia 2016 Amendment 1 Volume One.

In this regard the following areas in particular require further review as the project develops:

No.	Items for review	Responsibility
1.	Please advise if there are any proposed alternative building solutions with regard to design of the building services for the project.	Services Consultants
2.	Hydrant locations to be provided for coverage assessment	Services Consultants
3.	Fire Test Reports for all elements incorporated in the External walls to be provide for further assessment against BCA Clause C1.9	Architect
4.	Fire Test reports for all internal linings to enable further assessment against BCA clause C1.10	Architect
5.	Automatic shutdown, including associated detectors, are to be provided where a ducted air handling system is proposed.	Mechanical Engineer
6.	Details of the Kitchen Exhaust are to be provided	Mechanical Engineer

The assessment of the design documentation has revealed that the following areas are required to be assessed against the relevant performance requirements of the BCA. The submission for Construction certificate will need to include verification from a suitably accredited fire engineer: -

No.	Alternative Solution Description	DTS Clause	Performance Requirement
Fire Safety Items			
1.	**Rationalisation of FRLs** The building incorporates class 6 portions and therefore structural elements are required to have an FRL of 180 minutes. The FRL of the building elements are to be rationalised from 180 minutes to 120 minutes.	C1.1 Spec C1.1 C2.8	CP1
2.	**Dimensions of Exits** Unobstructed width of the path of travel to an exit must be not less than 1.0m Board Riders room contains a corridor width of less than	D1.6	DP4, DP6

	1.0m. The design is to be amended to document deemed-to-satisfy compliance or addressed with a performance solution prepared by a Fire Engineering.		
3.	**Swinging Doors** A swinging doors in a required exit must swing in the direction of egress. The required exit door adjacent to the gym swings in the opposite direction of egress. The design is to be amended to document deemed-to-satisfy compliance or addressed with a performance solution prepared by a Fire Engineering.	D2.20	DP2
4.	**Operation of Latch** Within a 9b Assembly building an area accommodating more than 100 persons must contain “push action” devices such as a panic bar. Egress doors leading from the first floor function and members lounge located on the first floor are not provided with “push action” doors leavers (aka panic bars). This includes the sliding door to the balcony, and also the two exit doors on the ground floor that leads from the stair to open space The design is to be amended to document deemed-to-satisfy compliance or addressed with a performance solution prepared by a Fire Engineering.	D2.21	DP2
Accessibility Items			
1.	**Door Circulation** Main entry Pivot Doors leading to the ground floor do not comply with the circulation requirements of AS 1428.1. A Performance Solution report prepared by an Access Consultant is to be prepared.	D3.3	DP1

The building is less than 2,000m² and therefore consultation with NSW Fire Brigade is not applicable under Clause 144 of the Environmental Planning & Assessment Regulation 2000.

The assessment of the design documentation has also revealed that the following additional information is required in order to assess BCA compliance within the development.

No.	Further Information / Review Required
1.	**Hose Reel Coverage** Hose reels are to be located within 4m of the required exits. The First floor contains 2 egress stairs which do not have hose reels located within 4m.

2.	**Operation of Latch** Confirmation of how the door leading from the first floor hallway to the members lounge functions during emergency. If this door is proposed to be secure, fail safe devices are to be required.
3.	**Obstruction of Exit** The fire hose reel located adjacent to the switch room obstructs the required exit door.
4.	**Combustible Cladding & Attachments** The external walls and all components/attachments must be non-combustible to a Building with Type B Construction. The Proposed material schedule shows various 'timber like' and plywood elements. Test reports for all materials are to be provided to enable further assessment.

The application for Construction Certificate shall be assessed under the relevant provisions of the Environmental Planning & Assessment Act 1979 (As Amended) and the Environmental Planning & Assessment Regulation 2000.

1.0 Introduction

The proposed development comprises of a two storey surf lifesaving club, consisting of club facilities, public amenities and retail components on the ground floor, and a restaurant and function room on the first floor.

The site is located to the east of Surfview road and will replace the existing Mona Vale Surf Lifesaving Club.

This report is based upon the review of the design documentation listed in Appendix A of this Report

The report is intended as an overview of the relevant provisions of the Building Code of Australia for assistance only. Detailed drawings and associated review will still be required as the final design is developed.

1.1 Current Legislation

The applicable legislation governing the design of buildings is the Environmental Planning and Assessment Act 1979. This Act requires that all new building works must be designed to comply with the BCA.

The version of the BCA applicable to the development, is version that in place at the time of the application to the Certifying authority for the Construction Certificate. For the purposes of this Report, BCA 2016 Amendment 1 has been utilised as the version of the BCA applicable at the time of preparation this Report.

2.0 PRELIMINARIES

2.1 Building Assessment Data

Summary of Construction Determination: -

Part of Project	Mona Vale Surf Club
Classification	6 & 9b
Number of Storeys	2
Rise In Storeys	2
Type of Construction	Type B
Effective Height (m)	3.6m (RL 11.4 – RL 7.8)

Summary of the floor areas and relevant populations where applicable: -

Part of Project	BCA Classification	Approx. Floor Area (m^2)	Approximate Volume (m^3)	Assumed Population
Ground Floor	6 & 9b	735m²	2,425m³ (Approx 3.3m FTC)	126 86 (minus outdoor)
Gym	9b	39		13 (3m² pp)
Lifeguard Store	9b	260		9 (30m² pp)
Lifeguard Office / Patrol / First aid	9b	34		4 (10m² pp)
Café	6	47		40 (seats)
Kitchen	6	40		4 (10m² pp)
Canteen	6	14		5 (3m² pp)
Nippers Shop	6	31		11 (3m² pp)
Circulation	9b	60		N/A
Sanitary Facilities	9b	136		N/A
Our door seating (Café)	6			40
First Floor	6 & 9b	629m²	2,265 m³ (Approx 3.6m FTC)	329
Function & Lounge	9b	238		238 (1m² pp)
Kitchen	6	74		8 (10m² pp)
Restaurant	6	144		79 (seats)
Meeting Room	9b	29		3 (10m² pp)
Storage	9b	11		1 (30m² pp)
Circulation	9b	79		N/A
TOTAL	**6 & 9b**	**1,364 m²**	**4,690 m³**	**455** (415 without outdoor seating)

Notes:

1. The above populations have been based on the floor areas and calculations in accordance with Table D1.13 of the BCA

2.2 Structural Provisions (BCA B1)

Any new structural works are to comply with the applicable requirements of AS/NZS 1170.1.

Glazing is to comply with AS1288, and AS2047.

Prior to the issue of the Construction Certificate structural certification is required to be provided, including determination of the importance level of the development.

This is to include assessment against the provisions of BCA Clause B1.6 – Construction of Buildings in Flood Areas

2.3 Development Approval

A Development Approval will be required from the Local Authority for the development. A copy of the Development Permit conditions and approved drawings will be required prior to the issuing of the Building Approval for that component of works.

The proposed development must not be inconsistent with the endorsed drawings and all relevant conditions will need to be satisfied and accurately reflect the construction issue drawings.

A review of the Council Development Approval to determine the Conditions to be satisfied prior to the issuance of a Construction Certificate will be undertaken upon the receipt of the Development approval

2.4 Copy of Certificate of Title:

A copy of the current Certificate of Title and Registered Plan is required. Where it is proposed to construct any part of the building work within an easement, the consent of the relevant authority and /or Council is required prior to the issue of the Construction Certificate.

3.0 FIRE PROTECTION

3.1 Fire Compartmentation (BCA C1.1)

The BCA stipulates three levels of fire resistant construction, which is based upon the rise in storeys and classification of the building. Each of these types of construction has maximum floor area and volume limitations as per BCA Table C2.2.

Based upon the rise in storeys and use of the Building, the building is required to be Type B Construction in accordance with Table 4 & 4.9 of Specification C1.1 of the Building Code of Australia 2016 Amendment 1.

The building has been assessed on the basis of the following fire separation/ compartmentation within the development;

- The Building has been assessed as one Fire compartmentation.

The maximum floor area and volume limitations of a fire compartment as nominated in the deemed to satisfy provisions are as follows, to which the proposal does not exceed:

Classification		Type of Construction		
		A	B	C
9b	max floor area—	8 000 m^2	**5 500 m^2**	3 000 m^2
	max volume—	48 000 m^3	**33 000 m^3**	18 000 m^3
6	max floor area—	5 000 m^2	**3 500 m^2**	2 000 m^2
	max volume—	30 000 m^3	**21 000 m^3**	12 000 m^3

3.2 Fire Resistance (BCA C1.1)

The building should be constructed generally in accordance with the relevant provisions of Specification C1.1 of the BCA applicable to Type B Construction, Please refer to Appendix C which outlines the required fire rating to be achieved by the development. These fire ratings are summarised below:-

Building Element	9b	6
Fire Walls	120/120/120	180/180/180
Loadbearing internal walls and Columns	120/--/--	180/--/--

The FRL of the building elements within class 6 areas are to be rationalised from 180 minutes to 120 minutes. To be addressed with a performance solution prepared by a Fire Engineering.

The Building contains class 9b and Class 6 portions which are required to be separated by a wall with an FRL of 180/180/180.

Further investigation into the fire separation of the Class 6 and 9b portions is to be undertaken in consultation with the fire engineer as the building has been assessed as one fire compartment.

Other passive fire protection issues that will need to be addressed in detailed documentation phase include:

- Electricity Supply (Switch room),

The above area is to be separated from the remainder of the building by construction achieving a minimum fire resistance level of 120 minutes.

3.3 Fire Hazard Properties (BCA C1.10 and BCA C1.12)

The fire hazard properties of fixed surface linings and mechanical ductwork will also need to be addressed within the detailed documentation phase pursuant to specification C1.10 Building Code of Australia.

Rigid and flexible air handling ductwork must comply with AS4254 parts 1 & 2 2012.

External Wall Cladding

As the building is of B construction the external walls, including any external and internal claddings & linings must be non-combustible as determined by AS1530.1. 1994.

The following materials 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 lamina, including any core, is non-combustible; and
    ii. each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2mm; and
    iii. the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole does not exceed 0 and 3 respectively.

The BCA does nominate that ancillary elements may be fixed to an external wall that is required to be non-combustible unless they comprise of the following:

a) An ancillary element that is non-combustible.
b) A gutter, downpipe or other plumbing fixture or fitting.
c) A flashing.
d) A grate or grille not more than 2 m² in area associated with a building service.
e) An electrical switch, socket-outlet, cover plate or the like.
f) A light fitting.
g) A required sign.
h) A sign other than one provided under (a) or (g) that—
    i) achieves a group number of 1 or 2; and
    ii) does not extend beyond one storey; and
    iii) does not extend beyond one fire compartment; and
    iv) is separated vertically from other signs permitted under (h) by at least 2 storeys.

The Proposed material schedule shows various ‘timber like’ and plywood elements. Test reports for all materials are to be provided to enable further assessment.

4.0 EGRESS PROVISIONS

4.1 Provisions for Escape (BCA D1)

The egress provisions from the proposed building are provided by:

- External perimeter doorways
- Required non-fire isolated stairways

Other detailing issues that will need to be addressed include:

- Door Hardware
- Exit door operation
- Stair construction
- Handrail and balustrade construction
- Details of the egress provisions to the Road.

4.2 Exit Travel Distances (BCA D1.4)

The locations of the proposed exits would appear to indicate that the deemed to satisfy requirements in terms of travel distances, distances between alternative exits and egress widths would be satisfied.

The travel distances to exits should not exceed:

Class 6 and 9b

- 20m to a single exit or point of choice and where two exits are provided, a maximum of 40m to one of those exits; and
- exits shall be located to not be more than 60m apart and not closer than 9m

The locations of the proposed exits indicate that the deemed to satisfy requirements in terms of travel distances would be satisfied.

4.3 Dimensions of Exits (BCA D1.6)

Minimum dimensions of 1000mm and 2000mm height to be provided within exits, with the paths of travel should provide a minimum width of 1000mm (note that all maintenance access, cat walks, etc may comply with AS1657 in which case a 600mm clear width is required).

The following table summarises the exit widths required by BCA Clause D1.6:

Storey	Number of People	Exit Width Required	Exit Width Provided
Ground Floor	126	1.0m	>1.0m
First Floor	329	3.0m	3.4m

The total aggregate exit width within the building caters for 350 occupants.

The following doors being designed to swing in the direction of egress:

- All required exit doors

The required exit door adjacent to the gym swings in the opposite direction of egress. The design is to be amended to document deemed-to-satisfy compliance or addressed with a performance solution prepared by a Fire Engineering.

Doorways are permitted to contain a clear opening width of the required width of the exit minus 250mm, with a height of 1980mm as part of egress requirements. Access for persons with disabilities however requires a clear doorway opening width of 850mm (i.e minimum 920 mm doors).

Board Riders room contains a corridor width of less than 1.0m. The design is to be amended to document deemed-to-satisfy compliance or addressed with a performance solution prepared by a Fire Engineering.

Within a 9b Assembly building an area accommodating more than 100 persons must contain “push action” devices such as a panic bar.

Egress doors leading from the first floor function and members lounge located on the first floor are not provided with “push action” doors leavers (aka panic bars). This includes the sliding door to the balcony, and also the two exit doors on the ground floor that leads from the stair to open space

The design is to be amended to document deemed-to-satisfy compliance or addressed with a performance solution prepared by a Fire Engineering.

4.4 Balustrading and Handrails (BCA D2.16 and BCA D2.17)

Generally

Balustrading to a height of 1000mm with a maximum opening of 125mm in any direction should be provided adjacent to balconies, landings, corridors etc where located adjacent to a change in level exceeding 1000mm.

Where it is possible to fall more than 4m to the surface below, the balustrade shall not contain any horizontal or near horizontal members that facilitate climbing between 150 – 760mm above the floor.

Handrails should generally be provided at a minimum height of 865mm alongside of all ramps and stairs.

The public stairs and ramps located along an accessible path of travel should be designed in accordance with the requirements of AS1428.1 for persons with disabilities. This requires a handrail on each side of the stair and ramp and for the handrail to extend approximately 550mm – 600mm past the last tread / end of ramp.

Intermediate rails located between 665mm and 7500mm should be provided within Class 9b Primary Schools.

4.5 Slip Resistance

The adoption of BCA 2014 introduced a requirement for slip resistance of stairway treads and ramp surfaces. The requirements are as follows:

Table D2.14 SLIP-RESISTANCE CLASSIFICATION

Application	***Surface conditions***	
	Dry	***Wet***
Ramp steeper than 1:14	*P4 or R11*	*P5 or R12*
Ramp not steeper than 1:14	*P3 or R10*	*P4 or R11*
Tread or landing surface	*P3 or R10*	*P4 or R11*
Nosing or landing edge strip	*P3*	*P4*

5.0 ACCESS FOR PEOPLE WITH DISABILITIES

5.1 General Building Access Requirements (BCA D3.1)

Access for people with disabilities shall be provided to and within the building in accordance with the requirements of Clause D3.2, D3.3 and D3.4 of the BCA 2016 Amendment 1. Parts of the building required to be accessible shall comply with the requirements of:-

- AS1428.1-2009 General Requirements for Access – New Building Work;
- AS1428.4-2009 Tactile Ground Surface Indicators
- AS2890.6-2009 Car Parking for People with Disabilities

Access for persons with a disability is to be provided as follows:-

- To and within all areas normally used by the occupants

5.2 Provision for Access to Buildings

The BCA prescribes access to be provided to and within the building as follows:

- Via the principle public entry and at least 50% of all other entrances
- From designated car parking spaces for the use of occupants with a disability.
- From another accessible building connected by a pedestrian link.
- All areas used by the public.

In buildings over 500m2 in floor area, a non-accessible entrance must not be located more than 50m from an accessible entrance.

And where a pedestrian entry contains multiple doors, the following is required;

- Entrance containing not more than 3 doors, at least one of the door leaves must be accessible.
- Where an entrance contains more than 3 doors, not less than 50% of the door leaves must be accessible.

A door is considered to be accessible if it is automatic (open and closing) or is more than 850mm in clear opening width and contains the required door circulation space.

5.3 Provisions for Access within Buildings (BCA D3.3)

A building required to be accessible is required to be equipped with either a 1428.1 compliant lift or 1428.1 compliant ramp, (but the maximum vertical rise of a ramp must not exceed 3.6m).

Within the building the following are required;

- Door circulation space as per AS1428.1 Clause 13.3 and as attached in appendix 1;
- Doorways must have a clear opening of 850mm;
- Passing spaces (1.8m wide passages) must be provided at maximum of 20m intervals
- Within 2.0m of end access ways/corridors, turning areas spaces are required to be provided.
- Carpet pile height of not more than 11mm to an adjacent surface
- Any glazed capable of being mistaken for a doorway or opening must be clearly marked (or contain chair rail, hand rail or transom as per AS 1288 requirements)

The design would generally comply with the prescriptive provisions of the BCA with additional ongoing review being undertaken as to door widths, circulation, etc. Further details are to be provided or access to these areas is to be assessed by an access consultant.

5.4 Car parking (BCA D3.5)

Accessible car parking spaces are required to comply with AS 2890.6-2009 at the rate of (insert)

The development is proposed to contain less than 50 amended car parking spaces which requires a minimum of 1 accessible spaces.

A 'shared zone' of minimum 5400mm x 2400mm is required adjacent to accessible car parking spaces, protected with a bollard.

5.5 Tactile Indicators (BCA D3.8)

Tactile indicators are required to be provided to warn occupants of all stairs (except Fire Isolated stairs) and ramps regardless of public nature or private environment and where an overhead obstruction occurs less than 2.0m above the finished floor level.

Exemptions apply in aged care facilities to include a down button to handrails in lieu of tactile indicators.

5.6 Stairs (BCA D3.3 inter Alia AS1428.1)

Stairs shall be constructed as follows:

a) Where the intersection is at the property boundary, the stair shall be set back by a minimum of 900mm so that the handrail TGSIs do not protrude into the transverse path of travel.
b) Where the intersection is at an internal corridor, the stair shall be set back in 300mm, so the handrails do not protrude into transverse path of travel.
c) Stairs shall have opaque risers.
d) Stair nosing shall not project beyond the face of the riser and the riser may be vertical or have a splay backwards up to a maximum 25mm.
e) Stair nosing profiles shall-
    - Have a sharp intersection;
    - Be rounded up to 5mm radius; or
    - Be chamfered up to 5mm x 5mm
f) All stairs at the nosing of each tread have a strip not less than 50mm and not more than 75mm deep across the full width of the path of travel. The strip may be set back a maximum of 15mm from the front of the nosing. The strip shall have a minimum luminance contrast of 30% to the background. Where the luminous contrasting strip is affixed to the surface of the tread, any change in level shall not exceed a difference of 5mm.

5.7 Provisions for Accessible Sanitary Facilities (BCA F2.4)

Unisex Accessible Sanitary Facilities

An accessible unisex sanitary facility must be located so that it can be entered without crossing an area reserved for one sex only and provided in accordance with AS 1428.1-2009 and must contain a closet pan, washbasin, shelf or bench top and adequate means of disposal of sanitary towels and as per following.

Building Type	Minimum accessible unisex sanitary compartments to be provided
Office, industrial, assembly building, schools, health care except for within a ward area of a Class 9a health-care building	a) 1 on every storey containing sanitary compartments; and b) Where a storey has more than 1 bank of sanitary compartments containing male and female sanitary compartments, at not less than 50% of those banks.

Ambulant Facilities

At each bank of toilets where there is one or more toilets in addition to an accessible unisex sanitary compartment, a sanitary compartment suitable for a person with an ambulant disability in accordance with AS 1428.1-2009 must be provided for use by males and females.

Where male sanitary facilities are provided at a separate location to female sanitary facilities, accessible unisex sanitary facilities are only required at one of those locations.

An accessible unisex sanitary compartment or an accessible unisex shower need not be provided on a storey or level that is not provided with a passenger lift or ramp complying with AS1428.1-2009

5.8 Signage (BCA D3.6)

As part of the detailed design package, specifications will need to be developed indicating:

- Sanitary Facility Identification Signs (note that they are to comply with BCA Specification D3.6 and include the use of Braille, Tactile, etc and be placed on the wall on the latch side of the facility);
- Directional / Way Finding signs to the Lifts, Sanitary Facilities, etc;
- Hearing Augmentation System;
- Identify each door required by BCA Clause E4.5 to be provided with an exit sign, stating ‘EXIT’ and ‘Level” number

5.9 Hearing Augmentation (BCA D3.7)

A hearing augmentation-listening system shall be installed throughout the building in accordance with the requirements of Clause D3.7 of the BCA, where ever in a 9b building, auditorium conference room, meeting room etc contain a PA system not used for emergency purposed or any ticket office or teller’s booth or reception where the public is screened from the service provider.

5.10 Lifts (BCA E3.6)

Lifts compliant to BCA E3.6 and BCA E3.7 must be provided, where required to be provided, with a minimum size of 1400 x 1600mm or 1100mm x 1400mm (whichever is appropriate) in size – with appropriate handrails and auditory commands.

6.0 FIRE SERVICES AND EQUIPMENT

The following section of this report describes the essential fire safety measures and the minimum performance requirements of those measures. A draft essential fire safety schedule can be found in Appendix B.

6.1 Fire Hydrants (BCA E1.3)

A system of Fire Hydrants is required to be provided in accordance with BCA Clause E1.3 and AS2419.1-2005, please provide pressure and flow calculations for review.

Pressure and flow information will be required to confirm the required pressures and flow to the system, depending on the type of hydrant to be utilized;

- Feed hydrants (within 20m of hard stand for pumping appliance), 150 kPa
- Attack hydrant (within 50m of hard stand) 250 kPa
- Hydrants on a pump station, 700 kPa

Where the building is required to be provided with a booster assembly as part of the fire hydrant requirements, yhe booster is required to be located attached to the building at the main entry. If remote from the building, the booster is to be located at the main vehicle entry and within sight of the main entry of the building within 20m of a hardstand area.

A fire ring main is not required.

6.2 Fire Hose Reels (BCA E1.4)

A Fire Hose Reel System is required to BCA Clause E1.4 and AS2441-2005

Fire hose reels are to be located within 4m of exits and provide coverage within the building based on a 36m hose length. Where required, additional fire hose reels shall be located internally as required to provide coverage.

Fire Hose reel are not to extend through Fire and Smoke Walls.

The hose reels currently indicated are not satisfactory and require design amendments to address the following comments:

- The First floor contains 2 egress stairs which do not have hose reels located within 4m.
- The fire hose reel located adjacent to the switch room obstructs the required exit door.

6.3 Fire Extinguishers (BCA E1.6)

The provision of portable fire extinguishers is required to BCA Clause E1.6 and AS2444-2001 to provide coverage.

Table E.6 details when portable fire extinguishers are required:

Occupancy Class	Risk Class (as defined in AS 2444)
General provisions – Class 2 to 9 buildings (except within sole-occupancy units of a Class 9c building)	(a) To cover Class AE or E fire risks associated with emergency services switchboards. (Note 1) (b) To cover Class F fire risks involving cooking oils and fats in kitchens. (c) To cover Class B fire risks in locations where flammable liquids in excess of 50 litres are stored or used (not excluding that held in fuel tanks of vehicles).

Occupancy Class	Risk Class (as defined in AS 2444)
	(d) To cover Class A fire risks in normally occupied fire compartments less than 500m^2 not provided with fire hose reels (excluding open deck carparks). (e) To cover Class A fire risks in classrooms and associated schools not provided with fire hose reels. (f) To cover Class A fire risks associated with Class 2 or 3 building or class 4 part of building.

Fire extinguishers are to be located in accordance with AS 2444, often collocated with fire hydrants and/or fire hose reels.

The fire extinguisher locations are to be provided to enable further assessment

6.4 Exit Signs and Emergency Lighting (BCA E4.2 and BCA E4.5)

Emergency Lighting and Exit Signs indicating exit location paths of travel to exits to be provided in accordance with AS2293.1-2005

Details are required to be provided for review.

6.5 Smoke Hazard Management (BCA E2.2)

Smoke hazard management shall be provided throughout the building by means of the following systems:

- Automatic Shutdown of Mechanical Systems in accordance with the requirements of AS/NZS 1668.1-2015;
- Automatic Smoke Detection System in accordance with the requirements of BCA Spec E2.2a and AS 1670.1-2004

A fire indicator panel is required as part of the detection system. This panel is to be located within 4m of the main entry and should be incorporated within the fire control room. Any variation to the prescriptive provisions will require the consent of the fire brigade and should form part of the fire safety engineering report to verify the performance requirements of the BCA.

6.6 Lift Services (BCA E3.42 and BCA E3.6)

The passenger lifts to be installed are to be: -

- fitted with warning signs, fire service controls in accordance with Clauses E3.3, E3.7, E3.9 and E3.10 of the BCA.
- Stretcher facilities are to be provided within the lifts with minimum dimensions of 600m wide, 2000mm long and 1400mm high.
- Be provided with the following: -
    - A handrail in accordance with AS 1735.12;
    - Minimum internal floor dimensions as specified in Table E3.6b of the BCA i.e. 1,400mm x 1,600mm;
    - Minimum clear door opening complying with AS 1735.12;
    - Passenger protection system complying with AS 1735.12;
    - Have a set of buttons for operating the lift located at heights above level complying with AS 1735.12;
    - Lighting in accordance with AS 1735.12;
    - Automatic audible information within the lift car to identify the level each time the car stops; and
    - Audible and visual indication at each lift landing to indicate the arrival of the lift car.

7.0 HEALTH AND AMENITY

7.1 Sanitary Facilities (BCA F2.2 and BCA F2.3)

Bathroom Construction

Where bathrooms or rooms containing water closets have the WC within 1200mm of the doorway, the door shall be either sliding, open outwards, or be provided with removable hinges.

7.2 Floor Wastes (BCA F1.11)

Floor wastes are required to be provided where wall hung urinals are provided and the floor shall be sloped towards these wastes.

Floor wastes are not indicated.

7.3 Light and Ventilation (BCA Part F4)

Class 5, 6, 7, 8 & 9

Natural Ventilation is required to be provided to rooms at a rate of 5% of the floor area in openings. Alternatively, mechanical ventilation is required in accordance with AS1668.2-2012. The architect is to provide calculations to verify compliance is achieved.

Artificial lighting complying with AS/NZS1680.0-2009 is to be incorporated with the final detailed design to be developed to confirm this.

7.4 Weatherproofing of External Walls (BCA FP1.4)

Performance Requirement FP1.4 which relates to the prevention of the penetration of water through external walls, must be complied with. It is noted that there are no Deemed-to-Satisfy Provisions for this Performance Requirement in respect of external walls.

As such, a performance solution is to be prepared by a suitably qualified professional that demonstrates that the external walls of the proposed building complies with Performance Requirement FP1.4 which reads as follows:

> *A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause—*
>
> *a) unhealthy or dangerous conditions, or loss of amenity for occupants; and*
> *b) undue dampness or deterioration of building elements.*

8.0 ENERGY EFFICIENCY

The proposed development shall comply with Part J of the BCA. To achieve compliance, there are two options available:

1. The building can comply with the deemed-to-satisfy provisions of the BCA, relating to the following areas:

    - Building Fabric
    - Glazing
    - Building Sealing
    - Air Conditioning & Ventilation Systems
    - Artificial Lighting & Power
    - Hot Water Supply

2. The building can be verified against a reference building as per Verification Method JV3. This requires that the proposed building and its services be shown to have an annual energy consumption of equal or less than the reference building which has been modelled as per the requirements of Part J of the BCA.

Certification from an appropriately qualified engineer should be provided for either option with a report / computations outlining how compliance is achieved.

Access for maintenance is to be provided to the building in accordance with the requirements of BCA Part J8.

The proposed site will be located in a climate zone 5.

Due to special nature of the building some energy provisions may not be appropriate.

8.1 Access for Maintenance

Access if to be provided to all plant, equipment and components associated with the provision of the above energy requirements i.e.

- Adjustable or monitored shading devices
- Time switches and motion detectors
- Room temperature thermostats
- Plant thermostats such as boilers or refrigeration units
- Motorised air dampers and central valves
- Reflectors, Lenses and Diffusers of light fittings
- Heat transfer equipment

Appendix A - Design Documentation

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

Drawing No.	Title	Date	Drawn By	Rev
A.DA.00.001	Cover Sheet/ Development Application Drawing List	-	-	A
A.DA.00.002	DA Legend Sheet	-	-	A
A.DA.01.001	Location Plan	-	-	A
A.DA.02.002	Site Analysis Plan	-	-	A
A.DA.02.002	Existing / Demolition Plan	-	-	A
A.DA.02.003	Staging / Temporary Building Plan	-	-	A
A.DA.02.004	Proposed Site Plan	-	-	A
A.DA.10.001	GA Plan – Ground Level	-	-	A
A.DA.10.002	GA Plan – First Level	-	-	A
A.DA.11.001	Roof Plan	-	-	A
A.DA.12.001	Landscape Plan	-	-	A
A.DA.20.001	North & East Elevations	-	-	A
A.DA.20.002	South & West Elevations	-	-	A
A.DA.30.001	Sections	-	-	A
A.DA.40.001	Material Schedule Sheet 01	-	-	A

Appendix B - Draft Fire Safety Schedule

	Essential Fire Safety Measures	Standard of Performance
1.	Automatic Fail Safe Devices	BCA Clause D2.19 & D2.21
2.	Emergency Lighting	BCA Clause E4.2, E4.4 & AS/NZS 2293.1 – 2005 Amdt 1 & 2
3.	Emergency Evacuation Plan	AS 3745 – 2002
4.	Exit Signs	BCA Clauses E4.5, NSW E4.6 & E4.8 and AS/NZS 2293.1 – 2005 Amdt 1 & 2
5.	Fire Hose Reels	BCA Clause E1.4 & AS 2441 – 2005 Amdt 1
6.	Fire Hydrant System	BCA Clause E1.3 & AS 2419.1 – 2005 Amdt 1
7.	Mechanical Air Handling System	BCA Clause E2.2, AS/NZS 1668.1 – 2015
8.	Paths of Travel	EP&A Reg 2000 Clause 186
9.	Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001
10.	Required Exit Doors (power operated)	BCA Clause D2.19
11.	Smoke Detectors	BCA Spec E2.2a & AS 1670.1-2015, AS/NZS 1668.1-2015
12.	Warning and Operational Signs	EP&A Reg 2000 Clause 183, BCA Clause C3.6, D2.23, E3.3 & H101.8

Appendix C- Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2016 Amendment 1:

Table 4 TYPE B CONSTRUCTION: FRL OF BUILDING ELEMENTS

Building element	Class of building—FRL: (in minutes) *Structural adequacy/Integrity/Insulation*			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated within it) or other external building element, where the distance from any fire-source feature to which it is exposed is—				
For *loadbearing* parts—				
less than 1.5 m	90/ 90/ 90	120/120/120	180/180/180	240/240/240
1.5 to less than 3 m	90/ 60/ 30	120/ 90/ 60	180/120/ 90	240/180/120
3 to less than 9 m	90/ 30/ 30	120/ 30/ 30	180/ 90/ 60	240/ 90/ 60
9 to less than 18 m	90/ 30/–	120/ 30/–	180/ 60/–	240/ 60/–
18 m or more	–/–/–	–/–/–	–/–/–	–/–/–
For non-*loadbearing* parts—				
less than 1.5 m	–/ 90/ 90	–/120/120	–/180/180	–/240/240
1.5 to less than 3 m	–/ 60/ 30	–/ 90/ 60	–/120/ 90	–/180/120
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN not incorporated in an *external wall*, where the distance from any *fire-source feature* to which it is exposed is—				
less than 3 m	90/–/–	120/–/–	180/–/–	240/–/–
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS—	90/ 90 / 90	120/120/120	180/180/180	240/240/240
INTERNAL WALLS—				
Fire-resisting lift and stair *shafts*—				
Loadbearing	90/ 90/ 90	120/120/120	180/120/120	240/120/120
Fire-resisting stair *shafts*				
Non-*loadbearing*	–/ 90/ 90	–/120/120	–/120/120	–/120/120
Bounding *public corridors*, public lobbies and the like—				
Loadbearing	60/ 60/ 60	120/–/–	180/–/–	240/–/–
Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
Between or bounding *sole-occupancy units*—				
Loadbearing	60/ 60/ 60	120/–/–	180/–/–	240/–/–
Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
OTHER LOADBEARING INTERNAL WALLS				

and COLUMNS—	60/–/–	120/–/–	180/–/–	240/–/–
ROOFS	–/–/–	–/–/–	–/–/–	–/–/–