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Regulatory Compliance Report

Redevelopment Works
Freshwater SLSC | Kooloora Ave,

Reshwater

Prepared for: **Bonus Architects**
Date: **15.5.2023**
Revision: **A**

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1. Executive Summary

Development Overview

The proposed development is the additions and alterations to an existing Freshwater Surf Life Saving Club located at Freshwater Beach on Kooloora Avenue, Freshwater NSW 2096.

Compliance Summary

As Registered Certifiers we have reviewed the approval architectural design documents prepared by Bonus Architects (refer appendix A) for compliance with the building assessment provisions currently outlined in BCA 2022, as current project timeframes indicate that BCA 2022 will be that which applies to the development.

This report has been prepared to assess the project against the Building Code of Australia to enable issuance of construction approvals. Further assessment of the design will be undertaken as the design develops to ensure compliance is achieved prior to approval being issued

Deviations from the Deemed-to-Satisfy Provisions

The assessment of the approval design documentation has revealed that the following areas deviate from the deemed-to-satisfy provisions of the BCA. These items are to be addressed to ensure compliance is achieved, either through design amendment to achieve compliance with the deemed-to-satisfy provisions, or through a performance solution demonstrating compliance with the Performance Requirements of the BCA:

No.	Description	DTS Clause	Performance Requirements
Fire Safety Items			
1	**Vertical Separation of opening in external wall** Openings above another opening are proposed not to provide a 900 mm spandrel with an FRL not less than 60/60/60	C3D7 (previously C2.6)	C1P2, C1P8, E2P2 (previously CP2, CP8, EP2.2)
2	**Extend travel Distance** • Level 1 Point A - Extended travel distance of 31m to a point of choice in lieu of 20m - Extended travel distance to the nearest exit of 48m in lieu of 40m • Level 2 Point B - Extended travel distance of 30m to a point of choice in lieu of 20m • Level 3 Point C - Extended travel distance of 26m to a point of choice in lieu of 20m - Extended travel distance to the nearest exit of 52mm in lieu of 40m - Extended travel distance between alternative exits of 73m in lieu of 60m.	D2P5 & D2D6	D1P4 & E2P2
Miscellaneous Items			
3	**Weatherproofing of External Walls** As the external walls are proposed to be constructed of a material not nominated in F3D5, a performance solution is to be	F3D5	F3P1 (previously FP1.4).

No.	Description	DTS Clause	Performance Requirements
	provided by the façade engineer/registered architect demonstrating that the external walls comply with the requirements of Performance Requirement F3P1 (previously FP1.4).		

The feasibility and any additional requirements that will apply as a result of the performance solution will need to be confirmed by the professional preparing the performance solution. Any performance solution will need to be prepared by a suitably qualified/accredited professional.

Fire Safety Services

The following key fire safety services are required to meet the minimum DTS requirements.

1.	Fire hydrant system throughout
2.	Fire hose reels throughout except Class 4 & 5 portion of the project
3.	Fire precautions during construction
4.	Automatic smoke detection and alarm system throughout

Refer to parts 9 and 10 of this report for further details regarding the required services.

Any fire engineered solution relating to E2P2 will need to be approved after consultation with the NSW Fire Brigade as part of the Construction Certificate process.

Further Assessment for the Construction Certificate assessment phase

The assessment of the design documentation has also revealed that the following additional information is required in order to complete the assessment, and/or the following areas need to be further reviewed.

No.	Further Information / Review Required	Report Reference
1.	FRL of the building elements for walls, floors & roofing structure	8.1
2.	Stair, handrail and barrier details	9.5
3.	Fire hydrant, fire hose reels and fire extinguishers locations	10.1, 10.2, 10.3
4.	Automatic Smoke Detection/Alarm System in	10.4
5.	Lift details	10.5
6.	Location of all exit/directional signs and emergency lighting	10.6
7.	Additional Sanitary facilities	11.6
8.	Sound Transmission and Insulation Report for Class 4	11.8
9.	Energy Efficiency Report	12
10.	Access report	13

Documentation to enable assessment and demonstrate compliance will be required to address the above items prior to approval.

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 (Development Certification and Fire Safety) Regulation 2021.

2. Introduction

The proposed development comprises internal fit-out and the addition of the 3-storey Surf Life Saving Clubhouse consisting of reconfiguration of the layout in addition to a caretaker's residence on the top floor.

The site is located at Freshwater Beach in Freshwater NSW 2096.

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.

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 Registered Certifier for the Construction Certificate. For the purposes of this Report, BCA 2022 has been utilised as it is anticipated that BCA 2022 will apply to the project based on project timeframes.

3. Compliance with the Building Code of Australia

The Building Code of Australia is a performance based document, whereby compliance is achieved by complying with the Governing Requirements and the Performance Requirements.

Performance Requirements are satisfied by one of the following:

1) A Performance Solution
2) A Deemed-to-Satisfy Solution
3) A combination of (1) and (2)

4. Documentation of Performance Solutions

A Performance Solution must demonstrate compliance with all relevant Performance Requirements, or the solution must be at least equivalent to the Deemed-to-Satisfy provisions.

Compliance with the Performance Requirements is to be demonstrated through one or a combination of the following:

a) Evidence of suitability in accordance with Part A5 of the BCA that shows the use of a material, product, plumbing and drainage product, form of construction or design meets the relevant Performance Requirements.
b) A Verification Method including the following:
    i. The Verification Methods provided in the NCC.
    ii. Other Verification Methods, accepted by the appropriate authority that show compliance with the relevant Performance Requirements
c) Expert Judgement
d) Comparison with the Deemed-to-Satisfy Provisions

Where a Performance Solution is proposed as the method to achieve compliance, the following steps must be undertaken:

a) Prepare a performance-based design brief in consultation with relevant stakeholders

b) Carry out analysis, using one or more of the assessment methods nominated above, as proposed by the performance-based design brief.
c) Evaluate results from (b) against the acceptance criteria in the performance-based design brief
d) Prepare a final report that includes:
    i. All Performance Requirements and/or Deemed-to-Satisfy Provisions identified as applicable
    ii. Identification of all assessment methods used
    iii. Details of required steps above
    iv. Confirmation that the Performance Requirement has been met; and
    v. Details of conditions or limitations, if an exist, regarding the Performance Solution.

5. Preliminaries

5.1. Building Assessment Data

Summary of Construction Determination:

Part of Project	Building 1
Classification	4, 5, 6, 7b,9b
Number of Storeys	3
Rise In Storeys	3
Type of Construction	A
Effective Height (m)	5.98m

Note: The effective height of the project includes all stories included in the rise in stories of the project (Level RL 10.355 – Leve 1 RL 4.374 = 5.981m)

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
Level 1	Water Craft Storage	7b	624	1,044	2,536	19
	Store		129			5
	Restaurant BOH	6	28			3
	Beach Inspector/1st Aid	5	23			2
Level 2	Restaurant	6	168	1,039	1,790	151
	Kitchen	6	45			4
	Cafe	6	62			56
	Musuem of Surf/	9b	121			30
	Feshwater Room/Members Lounge		186			168
	FSLSC Office/Reception		24			2

Part of Project		BCA Classification	Approx. Floor Area (m^2)		Approximate Volume (m^3)	Assumed Population
	Table & Chair Store		16			1
	External Balcony		71		N/A	64
	Recreation Hall		302		1,790	30
Level 3	Gymnasium	9b	168	494	1,690	50
	Cartakers Apartment	4	79			2
	Office Portion	5	66			6
	Training Room 1&2	9b	47			4
	Store	5	13			1
Total				**2,577**	**7,806**	**598**

Notes:

- The above populations have been based on floor areas and calculations in accordance with Table D2D18 (prev. Table D1.13) of the BCA.
- The floor areas have been adjusted without ancillary areas such as sanitary facilities, corridors, shelving and or racking layouts in storage areas.

6. Structure

6.1. Structural Provisions (BCA B1):

New structural works are to comply with the applicable requirements of BCA Part B1, including AS/NZS 1170.0-2002, AS/NZS 1170-1-2002, AS/NZS 1170.2-2021 and AS 1170.4-2007.

Depending on the importance level of the building as determined by AS/NZS 1170.0-2002, the non structural elements of the building, including partitions (and non-structural fire walls), ceilings, services and racking/shelving may be required to comply with the seismic restraint requirements of AS 1170.4-2007. Where this is required, certification will be required confirming that the design of the seismic restraints comply with AS 1170.4-2002. This may be provided by a specialist seismic consultant or by the architect and services design engineers.

It is noted that BCA 2019 introduced a new Verification Method, B1V2 (previously BV2), which is a pathway available to verify compliance with BCA Performance Requirement B1P1 (1)(c) (previously BP1.1(a)(iii)).

Glazing is to comply with AS1288-2021, and AS2047-2014.

Prior to the issue of the Construction Certificate structural certification is required to be provided by a Professional Engineer registered on the National Engineering Register.

7. Fire Protection

7.1. Fire Compartmentation (BCA C2D2 (previously 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 C3D3 (previously C2.2).

Based upon the rise in storeys and use of the building, it is required to be constructed in accordance with the requirements of **Type A** Construction, in accordance with Tables S5C11a-g of Specification 5 (previously Table 3 & 3.9 of Specification C1.1) of the Building Code of Australia 2022.

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

- Separation of the Caretaker's Residence from the remainder of the building with FRL 120/120/120
- Fire compartmentation of the building at each floor level;
  - Between 7b level 1 & Level 2 with FRL 240/240/240
  - Between Level 2 and Level 3 with FRL 180/180/180

The maximum floor area and volume limitations of a fire compartment as nominated in the deemed to satisfy provisions are as follows:

Classification		**Type of Construction**		
		A	B	C
5, 9b or 9c aged care building	max floor area—	**8 000 m²**	5 500 m²	3 000 m²
	max volume—	**48 000 m³**	33 000 m³	18 000 m³
6, 7, 8 or 9a (except for patient care areas)	max floor area—	**5 000 m²**	3 500 m²	2 000 m²
	max volume—	**30 000 m³**	21 000 m³	12 000 m³

7.2. Fire Resistance (BCA C2D2 (previously C1.1))

The building should be constructed generally in accordance with the relevant provisions of Specification 5 (previously Specification C1.1) of the BCA applicable to **Type A** Construction, Please refer to Appendix C which outlines the required fire rating to be achieved by the development.

Where a fire wall is proposed, it is noted that the wall is to achieve a structural rating regardless of whether it is loadbearing or not. Refer to Appendix C for required FRLs.

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

- Lift Motor Rooms;

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

Please note that with regards to fire separation, the provisions and required FRL's that apply to the building also apply to an occupiable outdoor space associated with the building.

7.3. Fire Hazard Properties (BCA C2D10 and C2D11 (previously C1.10 and BCA C1.9))

External Wall Cladding

Since the building is of Type A construction, the following components are required to be completely non-combustible:

- External walls and common walls, including façade coverings, framing, insulation;
- Flooring and floor framing of lift pits;
- Non-loadbearing internal walls required to have an FRL;

- All non-loadbearing shafts;
- All loadbearing internal walls and loadbearing fire walls, including those that are part of loadbearing shafts.

Please provide product specifications and test reports to AS 1530.1-1994 for all materials to demonstrate compliance

For materials and assemblies that are required to be non-combustible, the material or system must be not deemed combustible when tested in accordance with AS 1530.1-1994.

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) Sarking type materials that do not exceed 1mm in thickness and have a Flammability Index not greater than 5.
g) 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 bonded laminated material as a whole does not exceed 0 and 3 respectively.

It is recommended that once material selections are made, copies of the fire test certificates/reports be provided for review and approval.

Any Aluminium Composite Panels must be labelled in accordance with SA TS 5344.

The BCA 2022 has included additional items that are not required to comply with the above, including glazing, fixings, packers, paints, sealants to joints, adhesives and the like.

Furthermore, the BCA now considers the following items as non-combustible, therefore non-combustibility does not need to be demonstrated to achieve compliance. These items are concrete, steel, masonry, aluminium, autoclaved aerated concrete, iron, terracotta, porcelain, ceramic, natural stone, copper, zinc, lead, bronze, brass.

The BCA does nominate that ancillary elements may not 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.

i) An awning, sunshade, canopy, blind or shading hood other than one provided under (a) that—

i) meets the relevant requirements of Table S7C7 as for an internal element; and

ii) serves a storey—

A. at ground level; or

B. immediately above a storey at ground level; and

iii) does not serve an exit, where it would render the exit unusable in a fire.

j) A part of a security, intercom or announcement system.

k) Wiring.

l) Waterproofing material installed in accordance with AS 4654.2 and applied to an adjacent floor surface, including vertical upturn, or a roof surface.

m) Collars, sleeves and insulation associated with service installations.

n) Screens applied to vents, weepholes and gaps complying with AS 3959.

o) Wiper and brush seals associated with doors, windows or other openings.

p) A gasket, caulking, sealant or adhesive directly associated with (a) to (o)

Please provide fire hazard properties reports for any proposed signs and confirm their extent i.e. not spanning more than one storey or fire compartment:

Interior Linings

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 7 (previously Specification C1.10) of the Building Code of Australia. The following requirements apply:

Non-Sprinkler Protected Areas

a) Floor Coverings – Critical radiant Flux not less than 2.2kW/m^2 a maximum smoke development rate of 750 percent-minutes

b) Wall and Ceiling Linings – Material Group No. 1, 2, 3 and with a smoke growth rate index not more than 100, or an average specific extinction area less than 250m^2/kg

c) Other Materials – Spread of Flame Index not exceeding 9 and Smoke Developed Index not exceeding 8 (if Spread of Flame if >5)

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

Floor linings and floor coverings used in lift cars must have a critical radiant flux not less than 2.2, and wall and ceiling linings must be a Material Group No. 1 or 2.

7.4. Separation of equipment (C3D13 (previously C2.12))

Equipment listed below must be separated from the remainder of the building providing a FRL as required by Specification 5 (previously Spec C1.1) but not less than 120/120/120 with a self-closing fire door with an FRL or not less than -/120/30. When separating a lift shaft and life motor room, an FRL of not less than 12/-/- is required.

a) Lift motors and lift control panels; or

7.5. Vertical Separation of openings in external walls (BCA C3D7 (previously C2.6))

A building of Type A construction must be provided with spandrel separation between openings on different storeys unless the building is protected with a sprinkler system (other than a FPAA101D or FPAA101H system) throughout in accordance with Specification 17 (previously Specification E1.5).

For the purposes of C3D7 (previously C2.6), window or other opening means that part of the external wall of a building that does not have an FRL of 60/60/60 or greater.

Spandrels are required in accordance with BCA Clause C3D7 (previously C2.6), which stipulates a 900mm high spandrel; with 600mm of this spandrel being above the finished floor level. Alternatively, an 1100mm horizontal slab may be utilized. The spandrel material is required to be non-combustible and to achieve an FRL of 60/60/60.

It is noted that any penetrations in the spandrel construction e.g. for drainage, overflow etc. are to be protected.

Detailed elevations will be required to enable a full check and assessment to be undertaken of the spandrels proposed during the construction certificate assessment phase.

In the initial review of the approved design drawings of the elevations and sections, it appears a spandrel of a minimum of 900m high with an FRL of not less than 60/60/60 has not been provided. This will need to be addressed to comply with the requirements of the deemed to satisfy provisions noted above or be assessed as performance solutions by the Fire Safety Engineer using BCA Performance Requirements C1P2, C1P8 and E2P2 (previously CP2, CP8 & EP2.2)

7.6. Protection of Openings fire rated building elements (BCA C4D6, C4D11 (previously C3.5 and BCA C3.10))

The prescriptive provisions of the BCA stipulate that openings within building elements required to have an FRL shall be protected as follows:

a) Penetrations through fire rated floors to be protected either by a tested prototype (e.g. fire collar, fire damper, etc) or be installed within a fire rated shaft achieving an FRL the same as the FRL of the floor it is passing through;
b) Any penetration through a wall or room required to have an FRL (e.g. substation, boiler room, apartment separating wall etc) is to be protected either by a tested prototype (e.g. fire collar, fire damper, etc) or be installed within a shaft achieving an FRL the same as the FRL of the floor it is passing through; (or 120/120/120 where it is a room such as a substation);
c) Self-closing -/60/30 fire doors to the doors opening to the fire isolated stairs (note that this also includes the access doors to the condenser units on the plant platforms).

Note that where fire dampers, fire collars, etc are utilised, allowance needs to be made for access hatches to be provided within the walls / ceilings to ensure that maintenance access is provided.

As the design develops, details will need to be included in relation to sealing of penetrations / construction of fire rated shafts.

8. Access and Egress

8.1. Provision for Escape (BCA D2 (previously D1))

The egress provisions for the proposed building are provided by the following:

- Required non-fire isolated stairways
- External Doors

The egress provisions that apply to the building also apply to any occupiable outdoor areas.

Detailing issues that will need to be addressed as the design develops include:

- Door Hardware
- Exit Door Operation
- Stair Construction
- Handrail and Balustrade construction
- Details of the egress provisions to the Road.
- Door swings

8.2. Exit Travel Distances (BCA D2D5, D2D6 (previously D1.4, D1.5))

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 5 to 9

- no point on the floor must be more than 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

Class 4

- 6m from an exit or from a point of choice from the entrance doorway of a sole occupancy unit
- 20m from a single exit at the level of egress to a road or open space
- Alternate exits not more than 45m apart

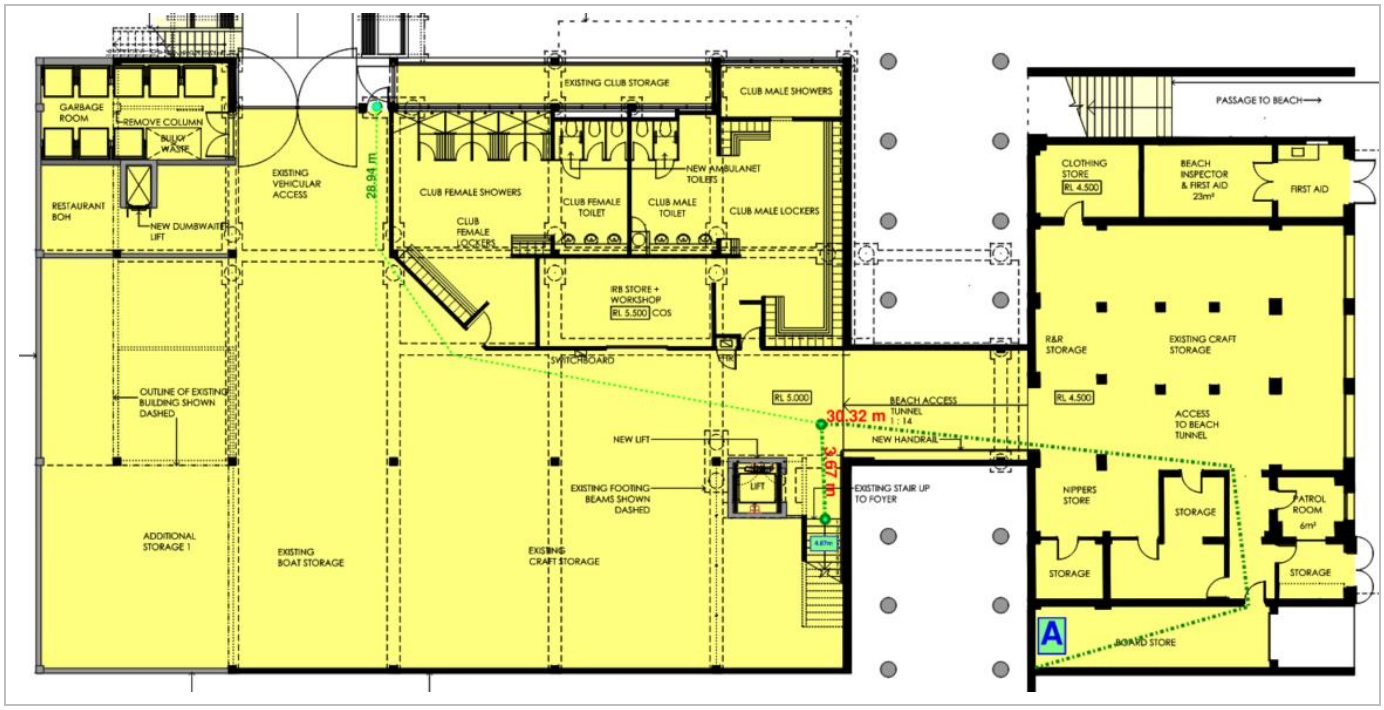
The locations of the proposed exits indicate that the travel distances within the building are as follows:

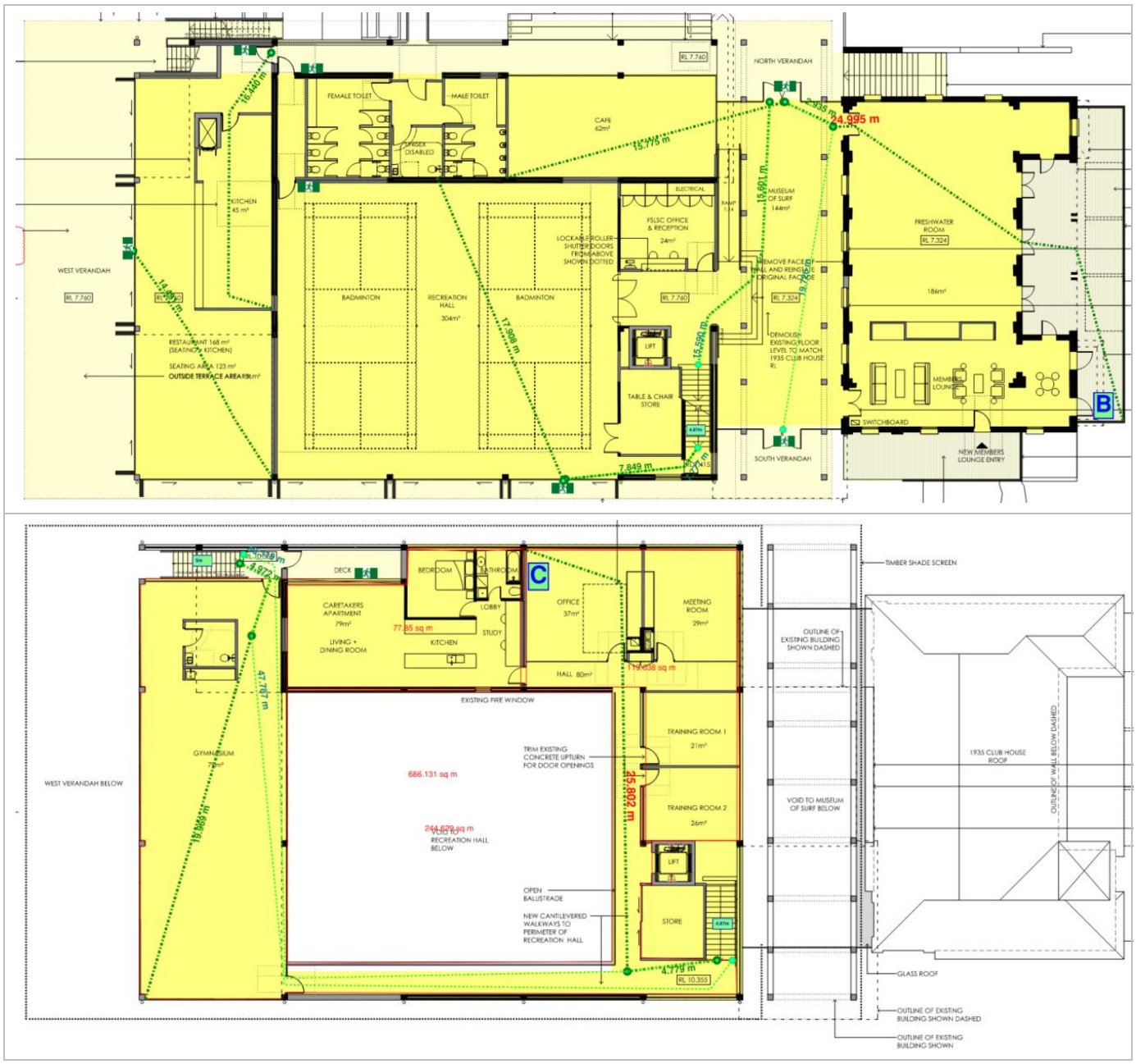
Area	BCA Provisions (Distance to Point of Choice/ Travel Distance/Distance Between	Assessed Distances			Comments
		To a Point of Choice	Overall Travel Distance	Between Alternate Exits	
Level 1 Point A Board Store	20m/40m/60m	**31m**	**48m**	42m	2 exits are provided for Level 1 to the stairs & adjacent to the vehicular access, which creates

					extended travel distances
Level 2 Point B External Balcony	20m/40m/60m	**30m**	33m	20m	From the external balcony and extended travel distance to a point of choice.
Level 3 Point C Office	20m/40m/60m	**26m**	**52m**	**73m**	The furthest office has an extended travel distance to a point of choice, overall and between the alternative exits
Caretaker's Apartment	-/6m/45m	-	6m	-	Though not shown on the drawings, it is expected the deck area will serve as an exit to the adjacent stairs within 6 m.

The above indicates that the deemed to satisfy requirements in terms of travel distances are not satisfied in 3 x areas as indicated in the markup below.

The extended travel distances and distance between the exit stairs will need to addressed to comply with the requirements of the deemed to satisfy provisions noted above, or be assessed as performance solutions by the Fire Safety Engineer using BCA Performance Requirements D1P4 and E2P2 (previously DP4 & EP2.2)





8.3. Dimensions of Exits (BCA D2D7, D2D8, D2D9, D2D10, D2D11 (previously 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 AS1657-2018 in which case a 600mm clear width is required).

The following table summarises the exit widths required by BCA Clause D2D7, D2D8, D2D9, D2D10, D2D11 (previously D1.6):

Storey	Number of people	Exit Width Required	Exit Width Provided
Level 1	27	1m	2m
Level 2	351	3.5m	6m

Storey	Number of people	Exit Width Required	Exit Width Provided
Level 2 Restaurant	155	1.75m	2m
Level 3	61	1m	2m
Caretaker's Apartment	2	1m	1m

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).

In the review of the approved floor plan, it suggests that compliance is achievable, however, further review will be required on the updated drawings for the Construction Certificate assessment phase.

8.4. Travel via Required Non-Fire Isolated Stairs (BCA D2D14 (previously D1.9)

A required non-fire isolated stair must provide direct egress, via its own flights from every storey served to the level of road or open space.

The following additional travel distance parameters apply where a required non-fire isolated stair is utilised for egress:

- In a Class 4 building, the distance between a doorway of a room or a sole occupancy unit to road or open space must not exceed 30m in a building of Type C Construction, or 60m in all other cases
- In Class 5-9 buildings, the distance from any point of a floor to road or open space is not to exceed 80m
- In a Class 5 to 8 or 9b building, a required non-fire-isolated stairway or non-fire-isolated ramp must discharge at a point not more than:
  - 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
  - 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

In the review of the approved architectural drawings, the proposed design is capable of complying with the above clause. However, as the design develops further review will be required during the Construction Certificate assessment phase.

8.5. Balustrades and Handrails (BCA D3D17, D3D18, D3D19, D3D20, D3D22 (previously D2.16 / BCA D2.17))

Generally

Balustrading to a minimum height of 1000mm with a maximum opening of 124mm in any direction should be provided adjacent to balconies, landings, corridors etc where located adjacent to a change in level exceeding 1000mm, or where it is possible to fall through an openable window located more than 4m above the surface beneath.

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. It is noted that these provisions also apply to any building elements, including AC covers and the like, that are within 1m of the required balustrade.

Where a required barrier is fixed to the vertical face forming an edge of a landing, balcony, deck, stairway or the like, the opening formed between the barrier and the face must not exceed 40 mm.

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.

Strength and rigidity of all balustrades to play spaces are to comply with AS 1926.1.

The balustrading and handrails indicated on the approved drawings are generally acceptable, however as the design develops further review will be required during the Construction Certificate assessment phase.

8.6. Slip Resistance (BCA D3D15 (previously D2.14))

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

Table D3D15 (prev. Table D2.14) SLIP-RESISTANCE CLASSIFICATION

Application	Surface conditions	
	Dry	Wet
Ramp steeper than 1:14	P4 or R11	P5 or R12
Ramp steeper than 1:20 but not steeper than 1:14	P3 or R10	P4 or R11
Tread or landing surface	P3 or R10	P4 or R11
Nosing or landing edge strip	P3	P4

9. 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.

It is noted that the provisions below also apply to occupiable outdoor areas.

9.1. Fire Hydrants (BCA E1D2 (previously E1.3))

A system of Fire Hydrants is required to be provided in accordance with BCA Clause E1D2 (prev. E1.3) and AS2419.1-2021.

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;

The fire services/hydraulic engineer is to confirm the required flow rates for the development and the provisions of a booster assembly/hydrant pump room as part of the fire hydrant requirements. If the booster is required, it should 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 or with sight of the main entry of the building within 20m of a hardstand area.

9.2. Fire Hose Reels (BCA E1D3 (previously E1.4))

A Fire Hose Reel System is required to BCA Clause E1D3 (previously E1.4) and AS2441-2005.

The system is required to provide coverage to all areas except the Caretaker's Apartment and the office portion of the development.

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

Fire hose reel cupboards must not contain any other services such as water meters, etc., and doors to fire hose reel cupboards are not to impede the path of egress unless a performance solution is developed under BCA Performance Requirement E1P1 (previously EP1.1).

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

The hose reels currently are only indicated on Level 1 and the assessment generally appears capable of complying. For Levels 2 & 3, it has not been indicated and will be required to be shown for Construction Certificate assessment phase.

9.3. Fire Extinguishers (BCA E1D14 (previously E1.6))

The provision of portable fire extinguishers is required to BCA Clause E1D14 (previously E1.6) and AS2444 - 2001 to provide coverage to the Caretaker's Apartment and the office portion of the development.

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). 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 4 part of building.

In addition, extinguishers are to be provided to the class 4 portions of the building in accordance with the below:

- an ABE type fire extinguisher is to be installed with a minimum size of 2.5 kg; and
- extinguishers are to be distributed outside a sole-occupancy unit:
  a) to serve only the storey at which they are located; and
  b) so that the travel distance from the entrance doorway of any sole-occupancy unit to the nearest fire extinguisher is not more than 10 m.

Fire extinguishers are to be located in accordance with AS 2444 - 2001, often collocated with fire hydrants and/or fire hose reels.

The fire extinguisher locations currently are indicated on the drawings. This will be required to be shown for the Construction Certificate assessment phase.

9.4. Smoke Hazard Management (BCA E2D3 – E2D20 (previously E2.2)

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

- Automatic Smoke Detection/Alarm System in accordance with the requirements of BCA Spec 20 Clause 3, 4 or a combination of Clause 3 and 4 (previously E2.2a) and AS 3786 and/or AS 1670.1-2018;

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.

9.5. Lift Services (BCA E3D4, E3D9, E3D11 (E3.4 and BCA E3.6)

The passenger lifts to be installed are to be:-

- Fitted with warning signs, fire service controls in accordance with Clauses E3D4, Figure E3D4, E3D9, E3D11, andE3D12 (previously E3.3, Figure E3.3, E3.7, E3.9 and E3.10) of the BCA.
- Be provided with the following in order to satisfy accessibility requirements:
  - A handrail in accordance with AS1735.12-1999,
  - Minimum internal floor dimensions of 1100 x 1400mm for lifts which travel not more than 12m,
  - Fitted with a series of door opening sensory devices which will detect a 75mm diameter or across the door opening between 50mm and 1550mm above floor level,
  - Have a set of buttons for operating the lift located at heights above level complying with AS1735.12 - 1999
  - For lifts serving more than 2 levels, automatic audible information within the lift car identifying the level each time the car stops, and audible and visual indication at each lift landing to indicate the arrival of a car

9.6. Exit Signs and Emergency Lighting (BCA E4D2, E4D4, E4D5, E4D6 and E4D8 (previously E4.2 E4.5, E4.6, E4.8))

Emergency Lighting and Exit Signs indicating exit location paths of travel to exits to be provided in accordance with BCA Part E4 and AS/NZS 2293.1-2018, including the potential use of photo luminescent exit signs.

Details are required to be provided for review during the Construction Certificate assessment phase as the design develops further.

9.7. Fire Precautions During Construction (BCA E1D16 (previously E1.9))

In a building under construction, not less than one fire extinguisher to suit Class A, B and C fires and electrical fire must be provided at all times on each storey adjacent to each required exit or temporary stairway or exit.

10. Health and Amenity

10.1. Stormwater Drainage (BCA Clause F1D3 (previously Clause F1.1)

Stormwater drainage systems serving the building are to comply with AS3500.3 - 2018.

The use of a syphonic stormwater drainage system is not covered by Australian Standards and any design incorporating one would need an appropriate performance solution will need to be documented by the hydraulic consultant addressing the system compliance against BCA Performance Requirements F1P2 and F1P3 (prev. FP1.2 & FP1.3).

10.2. Surface Water Management (BCA Part F1)

Exposed Joints

Exposed joints in the drainage surface on a roof, balcony, podium or similar horizontal surface part of a building must not be located beneath or run through a planter box, water feature or similar part of the building.

Joints are to be protected in accordance with Section 2.9 of AS 4654.2.

External Waterproofing Membranes

All external above ground areas (roof slabs, balconies etc.) shall be protected by a waterproofing system in accordance with AS4654 Parts 1 and 2 – 2012.

10.3. Floor Wastes (BCA Clause F2D4 (previously F1.11)

Floor wastes to be provided within bathrooms and laundries where located above another sole occupancy unit. The floor shall be sloped towards these wastes.

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 to be shown on the drawings for the Construction Certificate assessment phase as the design further develops.

10.4. Roof & Wall Cladding (BCA Part F3 (previously Part F1))

NCC 2022 has introduced some deemed to satisfy provisions that relate to the waterproofing of external walls. These provisions apply as follows:

- Masonry, including masonry veneer, unreinforced and reinforced masonry is to comply with AS 3700
- Autoclaved aerated concrete is to comply with AS 5146.3
- Metal wall cladding is to comply with AS 1562.1

Where the installation is not proposed to comply with the above, or a different material is proposed to be used, a performance solution can be utilised to demonstrate compliance.

Performance Requirement F3P1 (previously FP1.4) which relates to the prevention of the penetration of water through external walls, must be complied with. Where a performance solution is proposed, it is to be prepared by a suitably qualified professional (façade engineer with NER for structural engineering) that demonstrates that the external walls of the proposed building comply with Performance Requirement F3P1 (previously 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.

10.5. Wet Areas & Overflow Protection (BCA Part F2 (previously Part F1)

Internal wet areas throughout the development (e.g. bathrooms, laundries) shall be waterproofed in accordance with AS3740 - 2010 requirements.

Further review will be undertaken as the design develops with respect to the specification of waterproofing membrane, provision of water-stops at doorways etc.

10.6. Sanitary Facilities (BCA F4D2, F4D3, F4D4, F4D5, F4D6 (previously F2.2 and F2.3)

Caretaker's Apartments

Each apartment is required to be provided with the following:

- A kitchen sink and facilities for the preparation and cooking of food; and
- A bath or shower; and
- A closet pan and wash basin; and
- Clothes washing facilities comprising at least one wash tub and space for a washing machine; and
- Clothes line of at least 7.5m, or space for one heat operated drying device within the same space as the clothes washing.

Offices, Gymnasuim, restaurant/café/Freshwater Club rooms.

Separate sanitary facilities are required to be provided for male & female employees at a rate at the following.

The following table summarises the sanitary facilities required / provided:

Sanitary Facilities Provided			
Level 1 & 2 – Class 5, 7b & 9b portion (382 persons)	WC	Urinals	Basins
Male	3	1	3
Female	5	-	3
Accessible	Not Provided	-	Not Provided
The Above Facilities are adequate for 25 males & 25 females. Number 25 is limited to only 1 urinal available for the males on Level 2. In addition, the sanitary compartment requires an accessible shower that has not been provided.			
The Following additional facilities would be required to cater to a total of 382 person			
Male	**7**	**1**	**4**
Female	**8**	**-**	**4**
Accessible	-	-	-

Sanitary Facilities Provided			
Level 2 – Class 6 portion (214 persons)	WC	Urinals	Basins
Male	2	3	2
Female	4	-	2
Accessible	1	-	1
The Above Facilities are adequate for 107 male & 107 female patrons to the restaurant, café			

Detailed designs will need to be developed as to the layout, dimensions, etc of the sanitary facilities.

Note: The Unisex facilities provided for people with disabilities may be counted once for each sex. These facilities are to be provided in accordance with AS1428.1-2009.

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.

10.7. Light and Ventilation (BCA Part F6 (previously Part F4)

Class 4

Natural light and ventilation is to be provided to all habitable rooms at a rate of 10% and 5% of the floor area of the rooms respectively.

A required window that faces a boundary of an adjoining allotment or a wall of the same building or another building on the allotment must not be less than a horizontal distance from that boundary or wall that is the greater of:

(i) generally — 1 m; and
(ii) 50% of the square root of the exterior height of the wall in which the window is located, measured in metres from its sill.

Class 5, 6, 7 & 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

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

These provisions also apply to areas considered as occupiable outdoor areas.

10.8. Sound Transmission and Insulation (BCA Part F7 (previously Part F5))

Building elements within Class 4 Caretaker's Apartment should provide the following sound insulation levels.

Location	Notes	Sound Insulation Requirement
Walls separating habitable rooms		$R_w + C_{tr} \geq 50$
Walls separating habitable room and kitchen or bathroom	Wall must be of Discontinuous Construction	$R_w + C_{tr} \geq 50$
Floor separating habitable rooms	Impact isolation required	$R_w + C_{tr} \geq 50$ $L_{n,w} + C_l \leq 62$
Duct, soil, waste or water supply pipe, including pipes that is located in a floor or wall cavity, serves or passes through more than one room	Adjacent habitable room or Adjacent non-habitable room	$R_w + C_{tr} \geq 40$ or $R_w + C_{tr} \geq 25$
Door to habitable room		$R_w \geq 30$

Please note for walls requiring impact resistance an air gap between leafs of the wall construction is required to be provided.

Please provide a report from the acoustic engineer verifying design compliance with the provisions of Part F7 (previously Part F5) of the BCA.

The current design generally can achieve compliance, however, further review will be required during the Construction Certificate assessment phase.

10.9. Condensation management (BCA Part F8 (previously Part F6)

External Wall Construction

Pliable building membranes installed to an external wall must:

- achieve compliance with AS 4200.1, and
- be installed in accordance with AS4200.2, and
- be located on the exterior side of the primary insulation layer or the wall assembly and except for the single skin mason and single skin concrete be separated from water sensitive materials.

Where a pliable building membrane, sarking-type material or insulation layer is installed on the exterior sode of he primary insulation layer, it must have a vapour permeance of not less than: 0.143µg/N.s in climate zones 4 and 5, and not less than 1.14µg/N.s in climate zones 6,7 and 8.

Exhaust Systems

Exhaust systems must achieve a minimum flow rate of 25L/s for bathrooms and sanitary compartments and 40L/s for kitchens and laundries. These exhaust systems must all discharge directly or via a shaft/duct to outdoor air.

An exhaust system that is not run continuously and is serving a bathroom or sanitary compartment that is not ventilated in accordance with F6D7 is to be:

- Interlocked with the rooms light switch; and
- Include a run on timer so that the exhaust system continues to operate for 10 minutes after the light switch is turned off.

Ventilation of Roof Spaces

A roof in climate zones 6, 7 and 8 must have a roof space that:

a) Is located
   i. Immediately above the primary insulation layer; or
   ii. Immediately above sarking with a vapour permeance of not less than 1.14µg/N.s, which is immediately above the primary insulation layer; or
   iii. Immediately above ceiling insulation which meets the requirements of J3D7 (3) and (4)
h) Has a height of not less than 20mm; and
i) Is either
   i. Ventilated to outdoor air through evenly distributed openings in accordance with Table F8D5; or
   ii. Located immediately underneath roof tiles of an unsarked tiled roof

11. Energy Efficiency

11.1. SECTION J (JP1 Energy Efficiency)

Efficient energy use must be achieved appropriate to the function and use of the building, level of human comfort, solar radiation, energy source of the services and sealing of the building envelope. To achieve this JV1, JV2, JV3, JV4 and JV5 verification methods have been introduced as options available to achieve compliance.

It is noted that a deemed to satisfy pathway is still available.

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.

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

Verification Methods

The Verification Methods available to demonstrate compliance with the BCA on a performance basis are as follows:

J1V1 (previously JV1) NABERS Energy for Offices

- To achieve compliance with J1P1 (previously JP1) a class 5 building must achieve a minimum of 5.5 NABERS Energy for Offices Base Building Commitment Agreement.
- The energy model demonstrates the base buildings greenhouse gas emissions are not more than 67% of the 5.5 star level when excluding:
  - Tenant supplementary heating and cooling systems
  - External lighting; and
  - Car park services.
  - A thermal comfort level between predicted mean vote of -1 to +1 is achieve across not less than 95% of the floor area of all occupied zones for not less than 98% of annual hours of operation.
- The building also need to comply with additional requirements of Spec 33 (previously JVa).

The calculation method must comply with ANSI/ASHRAE Standard 140

J1V2 (previously JV3) Green Star

To achieve compliance with J1P1 (previously JP1) for Class 3,4,5,6, 7, 8, 9 and common area of Class 2 buildings Green Star can be used as a verification method when the calculation method complies with ANSI/ASHRAE Standard 140, Specification 34 (previously Spec JVb) and when:

- The building complies with simulation requirements and is registered for a Green Star – Design & As-Built rating; and
- The annual greenhouse gas emissions of the proposed building are less than 90% of the annual greenhouse gas emissions of the reference building; and
- In the proposed building, a thermal comfort level of between predicted mean vote of -1 to +1 is achieve across not less than 95% of the floor area of all occupied zones for not less than 98% of the annual hours of operation of the building; and

J1V3 (previously JV3) Verification Using a Reference Building

To achieve compliance with JP1 for Class 3,4,5,6, 7, 8, 9 and common area of Class 2 buildings verification using a reference building can be used when the calculation method complies with ANSI/ASHRAE Standard, Specification 34 (previously Spec JVb) and when:

- It is determined that the annual greenhouse gas emissions of the proposed building are not more than the annual greenhouse gas emissions of a reference building when
  - the proposed building is modelled with the proposed services; and
  - the proposed building is modelled with the same services as the reference building.
  - The proposed building thermal comfort level is to be between predicted mean vote of -1 to +1 across not less than 95% of the floor area of all occupied zones for not less than 98% of the annual hours of operation; and
  - The building achieves the additional requirements in Specification 33 (previously Spec JVa); and
  - The greenhouse gas emissions of the proposed building may be offset by renewable energy generated and use on site and another process such as reclaimed energy used on site.

J1V4 (previously JV4) Building Envelope Sealing

Compliance with J1P1(e) (previously JP1) and J1P2 (previously JP2) is verified for building envelope sealing when the envelope is sealed at an air

- permeability rate, tested in accordance with Method 1 of AS/NZS ISO 9972, of not more than—For a class 2 building or a class 4 part of a building, 10m³hr.m² at 50 Pa reference pressure; or
- For a class 5, 6, 8, 9a or 9b building other than a ward area in climate zones 1, 7 and 8, 5 m³/hr.m² at 50 Pa reference pressure; or
- For class 3 or 9c building, or a class 9a ward area in climate zones 1, 3, 4, 6, 7 and 8 5m³/hr.m² at 50 Pa reference pressure.

Part J3 and performance solution that uses on of the other NCC assessment Methods which verifies that compliance with JP1 (e) will be achieve can also be used as verification methods.

In a sole-occupancy unit of a Class 2 building or a Class 4 part of a building, where an air permeability rate of not more than 5 m3/hr.m2 at 50 Pa reference pressure is achieved—

a) a mechanical ventilation system must be provided that—
   i. can be manually overridden; and
   ii. provides outdoor air, either—
      A. continuously; or
      B. intermittently, where the system has controls that enable operation for not less than 25 per cent of each 4 hour segment; and
   iii. provides a flow rate not less than that achieved with the following formula:
      Q = (0.05 x A + 3.5 x (N + 1)) / p (refer J1V4 for full articulation of equation.
b) any space with a solid-fuel burning combustion appliance must be ventilated with permanent openings directly to outside with a free area of not less than half of the cross-sectional area of the appliance's flue; and
c) any space with a gas-fueled combustion appliance must be ventilated in accordance with—

i. clause 6.4 of AS/NZS 5601.1; and
ii. clause 6.4.5 of AS/NZS 5601.1.

The volume of the space is considered to be 1 m3 for determining ventilation requirements.

11.2. Elemental Provisions for a Sole Occupancy Unit (Part J3)

These provisions apply to the building fabric and energy efficiency of domestic services of a sole occupancy unit of a Class 4 part of a building

Reducing Heating and Cooling Loads

The sole occupancy units o a Class 2 or 4 part must, for reducing the heating or cooling loads, collectively achieve an average energy rating of not less than 7 stars, including the separate heating and cooling load limits. Individually, an energy rating of not less than 6 stars must be achieved for each unit. This also must include separate heating and cooling load limits.

The units must also comply with the following:

- for thermal breaks, comply with J3D5 and J3D6; and
- for compensating for a loss of ceiling insulation, other than where the house energy rating software has compensated for a loss of ceiling insulation, comply with Table J3D7w; and
- for general thermal construction, comply with J4D3; and
- for floor edge insulation, comply with J3D10(3), J3D10(5) and J3D10(6); and
- for building sealing, comply with Part J5

Ceiling Fans

Ceiling fans must be installed in climate zones1, 2 and 3, and in climate zone 5 in New South Wales and Queensland. Ceiling fans must be permanently installed an have a speed controller, and are to be installed as follows:

Size of room (m2)	Minimum number and diameter (mm) of ceiling fans required for a bedroom in climate zones 1, 2 and 3	Minimum number and diameter (mm) of ceiling fans required in a habitable room other than a bedroom
< 15	1 x 900	1 x 900
≥ 15 to < 20	1 x 1200	1 x 1200
≥ 20 to < 25	1 x 1200	1 x 1400
≥ 25 to < 30	1 x 1400	2 x 1200
≥ 30 to < 45	1 x 1400	2 x 1400
≥ 45 to < 50	2 x 1400	3 x 1200
≥ 50	2 x 1400	3 x 1400

Thermal Breaks

A roof that has metal sheet roofing directly fixed to metal purlins, metal rafters or metal battens; and does not have a ceiling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens, must have a thermal break, consisting of a material with an R-Value of greater than or equal to R0.2, installed between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens.

A metal-framed wall that forms part of the building envelope must have a thermal break, consisting of a material with an R-Value of not less than R0.2, installed at all points of contact between the external cladding and the metal

frame if the wall does not have a wall lining or has a wall lining that is fixed directly to the same metal frame, and is clad with weatherboards, fibre-cement or the like, or metal sheeting fixed to a metal frame.

This does not apply to roofs or walls constructed using insulated sandwich panels.

Roofs and Ceilings

Roof and ceiling insulation must achieve the minimum R-value as nominated in Clause J3D7 of the BCA.

Reflective insulation installed to comply with this clause must have a surface emittance of not more than 0.05, be adjacent to a roof space of not less than 20mm and, in climate zones 3-8, be downward facing.

The thermal bridging in a metal framed roof must be addressed as follows:

- For a pitched roof with a horizontal ceiling –
  a) achieving the Total R-Value in Table J3D7s, calculated using a method that accounts for the effects of thermal bridging; or
  b) increasing the R-Value of the insulation between the ceiling frames by R0.5 more than the R-Value derived by roof and ceiling insulation requirements in Clause J3D7; or
  c) adding a continuous ceiling insulation layer with a minimum R-Value of R0.13 above or below the ceiling joists or the bottom chords of the trusses; or
  d) achieving the required ceiling R-Value derived from (1) by stacking two layers of insulation immediately on top of each other, such that the top layer is orientated to cover the ceiling joists or bottom chord of the trusses and has an R-Value of at least R0.5; or
- for a flat, skillion or cathedral roof—
  a) achieving the Total R-Value in Table J3D7t, calculated using a method that accounts for the effects of thermal bridging; or
  b) complying with Table J3D7u.

Where F8D5(1) applies, continuous insulation placed above the primary insulation layer to mitigate thermal bridging
must have a vapour permeance of not less than that of the primary insulation layer.

Where, for operational or safety reasons, the area of ceiling insulation required is reduced, the loss of insulation must
be compensated for in accordance with Table J3D7w.

Where the ceiling insulation required by (1) to (5) has an R-Value—

a) greater than R3.0 and less than or equal to R4.5, it may be reduced to R3.0 within 450 mm of an external wall; or
b) greater than R4.5, it may be reduced to R3.0 within 450 mm of an external wall, provided all other required ceiling insulation is increased by R0.5.

These requirements do not apply to roofs constructed using insulated sandwich panels. Roofs constructed using insulated sandwich panels must achieve the minimum Total R-Value in Table J3D7x.

In climate zones 1 to 5, the solar absorptance of the upper surface of a roof must not be more than 0.64

External Walls

The Total R-Value of an external wall—

a) in climate zones 1, 2, 3, 5 and 6—
   i. where the ratio of the area of opaque external walls to the floor area of the sole-occupancy unit is less than 20%, must be at least R1.15; and
   ii. where the ratio of the area of opaque external walls to the floor area of the sole-occupancy unit is greater than or equal to 20% but less than 35%, must be at least R2.04; and

iii. where the ratio of the area of opaque external walls to the floor area of the sole-occupancy unit is greater than or equal to 35%, must be at least R2.24; and

b) in climate zones 4, 7 and 8, must be at least R2.24.

The Total R-Value of an external wall must be determined in accordance with—

a) for a spandrel panel in a curtain wall system, in accordance with Specification 38; and
b) for all other walls, in accordance with AS/NZS 4859.2.

The solar absorptance of an external wall must in climate zones 1 to 6, be in accordance with Table J3D8a; and, in climate zones 7 and 8, be in accordance with Table J3D8b.

Wall Glazing

The Total System U-Value of wall-glazing construction that forms part of the external building fabric must not be greater than—

- in climate zones 1 to 5, U2.2; or
- in climate zone 6, U2.0; or
- in climate zones 7 and 8, U1.4.

The Total System U-Value of wall-glazing construction that forms part of the external building fabric, and the solar admittance must be calculated in accordance with Specification 37.

Wall components of wall-glazing construction must achieve a minimum Total R-Value of—

- where the wall is less than 80% of the area of the wall-glazing construction, R1.0; or
- where the wall is 80% or more of the area of the wall-glazing construction, the value specified in Table J4D6a for a Class 3 building.

In climate zones 1 to 6, the solar admittance of externally facing wall-glazing construction must be not greater than that shown in Table J3D9.

In climate zones 7 and 8, glazing in a wall-glazing construction must have a Total System SHGC of at least 0.4.

The solar absorptance of an external wall must be in accordance with J3D8(3).

Floors

Where a sole-occupancy unit of a Class 2 building or a Class 4 part of a building has a concrete floor above an unenclosed carpark, undercroft, or the like, underfloor insulation must be installed with an R-Value at least—

- in climate zone 2 and climate zones 5 to 8, R2.0; and
- in climate zones 3 and 4, R1.5.

Where a sole-occupancy unit of a Class 2 building or Class 4 part of a building has a concrete floor above an enclosed carpark, undercroft or the like, underfloor insulation must be installed with an R-Value at least—

- in climate zone 2, R0.5; and
- in climate zones 4 and 5, R1.0; and
- in climate zone 6, R1.5; and
- in climate zones 7 and 8, R2.0.

A concrete slab-on-ground with an in-slab or in-screed heating or cooling system must have insulation with an R-Value at least 1.0 installed around the vertical edge of its perimeter. This does not apply to an in-screed heating or cooling system used solely in a bathroom, amenity area or the like.

Except for a waffle-pod slab—

- in climate zones 6 and 7—
  - insulation with an R-Value of at least 0.64 must be installed around the vertical edge of its perimeter; and
  - insulation with an R-Value of at least 0.64 must be installed underneath the slab; and
- in climate zone 8—
  - insulation with an R-Value of at least 1.0 must be installed around the vertical edge of its perimeter; and
  - insulation with an R-Value of at least 2.0 must be installed underneath the slab.

Insulation required by the above must be water resistant, continuous from the adjacent finished ground level to a depth of not less than 300 mm, or, for at least the full depth of the vertical edge of the concrete slab-on-ground.

Winter Glazing

In climate zones 2 to 8, the ratio of the conductance (CU) and solar heat gain (CSHGC) of the glazing of each storey, including any mezzanine, of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building must not exceed the allowance obtained from Table J3D11a; and be calculated in accordance with the formula outlined in Clause J3D11.

Summer Glazing

In climate zones 1 to 7, the aggregate solar heat gain of the glazing in each storey, including any mezzanine, of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building must not exceed the allowance resulting from multiplying the floor area of the storey, including any mezzanine, measured within the enclosing walls, by the constant CSHGC obtained from Table J3D12a; and be calculated in accordance with the formula outlined in Clause J3D12.

Shading

Where shading is required to comply with J3D11 or J3D12, it must be provided by an external permanent projection, such as a verandah, balcony, fixed canopy, eaves, shading hood or carport, which extends horizontally on both sides of the glazing for a distance greater than or equal to the projection distance P in Figure S37C7 or provide the equivalent shading to the above with a reveal or the like.

Alternatively, shading is to be provided by an external shading device, such as a shutter, blind, vertical or horizontal building screen with blades, battens or slats, which is capable of restricting at least 80% of the summer solar radiation, and, if adjustable, is readily operated either manually, mechanically or electronically by the building occupants.

Net Equivalent Energy Usage

The net equivalent energy usage of a sole occupancy unit of a Class 2 building or a Class 4 part must not exceed the allowance calculated. The usage and allowance must be calculated in accordance with the formulas outlined in Clause J3D14.

A sole-occupancy unit of a Class 2 building or a Class 4 part of a building must achieve a whole-of-home rating of not less than 50 using house energy rating software.

11.3. Building Fabric (Part J4 (previously Part J1))

Roof and Ceiling Construction (Part J4D4 (previously J1.3))

For a deemed-to-satisfy solution roofs and or ceilings are to be constructed to provide a total R-Value greater than or equal to-

(i) in climate zones 1, 2, 3, 4 and 5, R3.7 for a downward direction of heat flow; and
(ii) in climate zone 6, R3.2 for a downward direction of heat floor; and

(iii) in climate zone 7, R3.7 for an upward direction of heat flow; and
(iv) in climate zone 8, R4.8 for an upward direction of heat flow;

In climate zones 1, 2, 3, 4, 5, 6 and 7, the solar absorptance of the upper surface of a roof must be not more than 0.45.

Where the layer of insulation is penetrated by the percentages as tabled below, additional upgrading of the remainder of the insulation level is required.

To achieve compliance with J0.2 (c) a roof that has a metal sheet roofing fixed to metal purlins, metal rafters or metal battens and does not have a celling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens must have a thermal break. The thermal break to be consisting of a material with a R-Value of not less than R0.2, installed at all points of contact between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens.

Roof lights (Part J4D5 (previously J1.4))

Where roof lights are installed they must have :-

(a) a total area of not more than 5% of the floor area of the room or space served; and
(b) transparent and translucent elements, including any imperforate ceiling diffuser, with a combined performance of:-
  (i) for Total system SHGC, in accordance with the below table; and
  (ii) for Total system U-value, not more than U3.9;

Roof light shaft index (see Note 1)	Total area of roof lights up to 3.5% of the floor area of the room or space	Total area of roof lights more than 3.5% and up to 5% of the floor area of the room or space
Less than 1.0	Not more than 0.45	Not more than 0.29
1.0 to less than 2.5	Not more or equal to than 0.51	Not more than 0.33
Greater than 2.5	Not more than or equal to 0.76	Not more than 0.49

External Walls and Glazing (Part J4D6 (previously J1.5))

For walls and glazing construction the total system U-value must not be greater than-

(i) for a Class 2 common area, a Class 5, 6, 7, 8 or 9b building other than a ward area, U2.0; and
(ii) for a Class 3 or 9c building or a Class 9a ward area –
  (a) in climate zones 1, 3, 4, 6 or 7, U1.1; or
  (b) in climate zones 2 or 5, U2.0; or
  (c) in climate zones 8, U0.9;

The total system U-value of wall-glazing construction should be calculated in accordance with Specification 37 (previously J1.5a).

Wall components of the wall-glazing construction must achieve a minimum total R-Value of R1.0 where the wall is less 80% if the area and reflect the value specified in Table J4D6a (previously J1.5a) where the wall is *0% or more of the area.

There are further design parameters for display glazing and solar admittances for wall-glazing construction, both of which should comply with the relevant provisions of J4D6 (previously J1.5).

Floors (Part J4D7 (previously J1.6))

Floors are to achieve an R rating of 2.0.

11.4. Building sealing (Part J5 (previously J3))

Windows and Doors (Part J5D5 (previously J3.4))

a) A door, openable window or the alike must be sealed –
   (i) When forming part of the envelope; or
   (ii) In climate zones 4,5,6,7 or 8
b) The requirements of (a) do not apply to –
   (i) A window complying with AS2047; or
   (ii) A fire door or smoke door; or
   (iii) A roller shutter door, roller shutter grille or other security door or device installed only for out of house security
c) A seal to restrict air infiltration –
   (i) For the bottom edge of a door, must be draft protection device; and
   (ii) For the other edged of a door or the edges of an openable window or other such opening, may be a foam or rubber compression strip, fibrous seal or the like.
d) An entrance to a building, if leading to a conditioned space must have an airlock, self-closing door, rapid roller door, revolving door or the like, other than –
   (i) When the conditioned space has a floor area of not more than 50m²; or
   (ii) Where a café, restaurant, open front shop or the like has –
      (A) A 3m deep un-conditioned zone between the main entrance, including an open front, and the conditioned space; and
      (B) At all other entrances to the café, restaurant, open front shop or the like, self-closing doors.
   (iii) A loading dock entrance, if leading to a conditioned space, must be fitted with a rapid roller door or the like

Exhaust fans (Part J5D6 (previously J3.5))

An exhaust fan must be fitted with a sealing device such as a self-closing damper or the like when serving a conditioned space or a habitable room in climate zones 4, 5, 6, 7, or 8.

Construction of ceilings, walls and floors (Part J5D7 (previously J3.6))

A seal to restrict air infiltration must be fitted to each edge of the external doors and openable windows. The seals may be foam or compressible strip, fibrous seal or the like. The main entry doors must have either an airlock, or self-closing doors, or a revolving door.

Ceilings, walls, floors and any openings such as a window frame, door frame, roof light frame or the like must be constructed to minimise air leakage in accordance with the below when forming part of –

(i) The envelope; or
(ii) In climate zones 4, 5, 6, 7 or 8

Construction required by above must be –

(iii) Enclosed by internal lining systems that are close fittings at ceiling, wall and floor junctions; or
(iv) Sealed at junctions and penetrations with –

(A) Close fitting architrave, skirting or cornice; or

(B) Expanding foam, rubber compressible strip, caulking or the like

The above does not apply to openings, grilles or the like required for smoke hazard management.

Evaporative coolers (Part J5D8 (previously J3.7))

An evaporative cooler must be fitted with a self-closing damper or the like –

(a) When serving a heated space; or
(b) In climate zones 4,5,6,7 or 8.

11.5. Air Conditioning and Ventilation systems (Part J6 (previously J5))

Air conditioning and ventilation systems must be designed to comply with the following provisions:

- Be capable of being deactivated when the building or part of a building being served by that system is not occupied;
- Where motorised dampers are in place, they should close when the system is deactivated
- Where serving a sole-occupancy unit in a Class 3 building, must not operate when any external door of the sole-occupancy unit that opens to a balcony or the like, is open for more than one minute;
- Time switches should be provided to control an air-conditioning system of more than 2kWr and a heater of more than 1kW $_{\text{heating}}$ used for air-conditioning, and be capable of switching electric power on and off at variable pre-programmed times on variable pre-programmed days.
- Ductwork and fittings in an air-conditioning system should have insulation complying with AS/NZS 4859.1 and have an insulation R-Value greater than or equal to:-
  - for flexible ductwork R1.0; or
  - for cushion boxes, that of the connecting ductwork; or
  - That specified in Table J6D6 (previously J5.5)

Table J6D6 (previously Table J5.5)

Location of ductwork and fittings	Climate zone 1, 2, 3, 4, 5, 6 or 7	Climate zone 8
Within a conditioned space	1, 2	2.0
Where exposed to direct sunlight	3.0	3.0
All other locations	2.0	3.0

Mechanical:

- Be capable of being deactivated where the building or part of the building served by that system is not occupied
- Time switches must be provided to a mechanical ventilation system with an air flow rate of more than 1000 L/s, capable of switching electric power on and off at variable pre-programmed times and on variable pre-programmed days;

Heaters

A heater used for air-conditioning or as part of an air-conditioning system must be a either a solar heater, gas heater, heat pump heaters, a heater using reclaimed heat or an electric heater.

A gas water heater, that is used as part of an air-conditioning system must:-

(i) if rated to consume 500 MJ/hour of gas or less, achieve a minimum gross thermal efficiency of 86% ; or

(ii) If rated to consume more than 500 MJ/hour of gas, achieve a minimum gross thermal efficiency of 90%

Unitary air-conditioning equipment

Unitary air-conditioning equipment including packaged air-conditioners, split systems, and variable refrigerant flow systems must comply with MEPS and for a capacity greater than or equal to 65 kWr –

(a) Where water cooled, have a minimum energy efficiency ratio of 4.0 W_r/ $W_{input\ power}$ for cooling when tested in accordance with AS/NZS 3823.1.2 at test condition T1, where input power includes both compressor and fan input power; or

(b) Where air cooled, have a minimum energy efficiency ratio of 2.9 W_r / $W_{input\ power}$ for cooling when tested in accordance with AS/NZS 3823.1.2 at test condition T1, where input power includes both compressor and fan input power.

11.6. Artificial Lighting and Power (Part J6)

Interior Artificial Lighting and Power Control (Part J6.2 & 6.3)

In a sole-occupancy unit of a Class 2 building or Class 4 part the lamp power density/illumination power density of artificial lighting must not exceed the allowance of 5 W/m^2 within a sole-occupancy unit and 4 W/m^2 on a verandah, balcony or the like attached to a sole-occupancy unit.

In a building other than a sole-occupancy unit of a Class 2 building or a Class 4 building for artificial lighting, the aggregate design illumination power load must not exceed the sum of the allowances obtained by multiplying the area of each space by the maximum illumination power density below:-

The maximum illumination power density;

Stairways, including fire-isolated stairways	2W/m^2
Toilet, locker room, staff room, rest room or the like	3W/m^2
Lift cars	3W/m^2
Service area, cleaner's room and the like	3W/m^2
Office:	
(A) Artificially lit to an ambient level of 200 lx or more	4.5W/m^2
(B) Artificially lit to an ambient level of less than 200 lx	2.5W/m^2
Museum & gallery	2.5W/m^2
Corridors:	5W/m^2
Lounge area for communal use in a Class 4 building	4.5W/m^2
Storage	1.5W/m^2
Kitchen and food preparation area:	4W/m^2
Restaurant, café, bar:	14W/m^2

Artificial Lighting must be controlled by a time switch, other control device or a combination of both.

Each light control in a building must not operate lights within an area of more than;

- 250m^2 if in a Class 6 building
- Not operate lighting for an area more than -
  a) 250m^2 for a space of not more than 2000m^2;

b) 1000m^2 for a space of more than 2000m^2

if in a Class 3, 6, 7(other than a laboratory) or 9 building;

- 1000m^2 for a space of more than 2000m^2

Interior decorative and display lighting

Interior decorative and display lighting, such as for a foyer mural or art display, must be controlled -

- Separately from other artificial lighting; and
- By a manual switch for each area other than when operating times of the displays are the same in a number of areas (e.g. where in a museum) in which case they may be combined; and
- By a time switch in accordance with Specification 40 (previously J6) where the display lighting exceeds 1 kW

Window display must be controlled separately from other display lighting exceeds 1kW.

Exterior artificial lighting

Artificial lighting attached to or directed at the façade of the building if it exceeds a total of 100W must;

- Use LED luminaires for 90% of the total lighting load; or
- Be controlled by a motion detector in accordance with Specification J6 of the BCA;
- When used for decorative purposes, such as façade lighting or signage lighting, have a separate switch in accordance with Specification J6.

Lifts (Part J7D8 (previously J6.7))

Lifts must be configured to ensure artificial lighting and ventilation in the car are turned off when it is unused for 15 minutes and achieve the idle and standby energy performance level required, and the energy efficiency class under J7D8 (previously J6.7) of the BCA.

11.7. Heated Water Supply (Part J8 (previously J7))

Heated water supply (Part J8D2 (previously J7.2))

A heated water supply system for food preparation and sanitary purposes must be designed and installed in accordance with Part B2 of NCC Volume Three — Plumbing Code of Australia.

11.8. Energy Monitoring and On-Site Distributed Energy Resources (Part J9 (previously Part J8))

Notes

From 1 May 2023 to 30 September 2023 Section J of NCC 2019 Volume One Amendment 1 may apply instead of Section J of NCC 2022 Volume One. From 1 October 2023 Section J of NCC 2022 Volume One applies.

Facilities for Energy Monitoring (J9D3 (previously J8.3))

A building or sole-occupancy unit with a floor area of more than 500 m2 must have energy meters configured to record the time-of-use consumption of gas and electricity.

A building with a floor area of more than 2 500 m2 must have energy meters configured to enable individual time-of-use energy data recording, in accordance with the below, of—

a) artificial lighting; and
b) appliance power; and
c) central hot water supply; and
d) internal transport devices including lifts, escalators and moving walkways where there is more than one serving the building; and
e) on-site renewable energy equipment; and
f) on-site electric vehicle charging equipment; and
g) on-site battery systems; and
h) other ancillary plant.

Energy meters required by the above must be interlinked by a communication system that collates the time-of-use energy data to a single interface monitoring system where it can be stored, analysed and reviewed.

These provisions do not apply to energy meters serving—

a) individual sole-occupancy units with a floor area of less than 2 500 m

Facilities for Electric Vehicle Charging Equipment (Clause J9D4)

A carpark associated with a Class 5, 6, 7b, 8 or 9 building must be provided with electrical distribution boards dedicated to electric vehicle charging in accordance with Table J9D4 in each storey of the carpark, and labelled to indicate use for electric vehicle charging equipment.

Electrical distribution boards dedicated to serving electric vehicle charging in a carpark must—

a) be fitted with a charging control system with the ability to manage and schedule charging of electric vehicles in response to total building demand; and
b) when associated with a Class 5 to 9 building, have capacity for each circuit to support an electric vehicle charger able to deliver a minimum of 12 kWh from 9:00 am to 5:00 pm daily; and
c) be sized to support the future installation of a 7 kW (32 A) type 2 electric vehicle charger in—
   i. 100% of the car parking spaces associated with a Class 2 building; or
   ii. 10% of car parking spaces associated with a Class 5 or 6 building; or
   iii. 20% of car parking spaces associated with a Class 3, 7b, 8 or 9 building; and
d) contain space of at least 36 mm width of DIN rail per outgoing circuit for individual sub-circuit electricity metering to record electricity use of electric vehicle charging equipment; and
e) be labelled to indicate the use of the space required by (f) is for the future installation of metering equipment.

These provisions do not apply to a stand-alone Class 7a building.

Facilities for Solar Photovoltaic and Battery Systems

The main electrical switchboard of a building must—
a) contain at least two empty three-phase circuit breaker slots and four DIN rail spaces labelled to indicate the use of each space for—
   i. a solar photovoltaic system; and
   ii. a battery system; and
b) be sized to accommodate the installation of solar photovoltaic panels producing their maximum electrical output on at least 20% of the building roof area.

At least 20% of the roof area of a building must be left clear for the installation of solar photovoltaic panels, except for buildings—

a) with installed solar photovoltaic panels on—
   i. at least 20% of the roof area; or
   ii. an equivalent generation capacity elsewhere on-site; or
b) where 100% of the roof area is shaded for more than 70% of daylight hours; or
c) with a roof area of not more than 55 m2; or
d) where more than 50% of the roof area is used as a terrace, carpark, roof garden, roof light or the like.

The requirements do not apply to a building with solar photovoltaic panels installed on at least 20% of the roof area or to a building with battery systems installed.

12. Access for People with Disabilities

The development is required to comply with the accessibility provisions contained within:

- The Building Code of Australia 2022;
- Disability (Access to Premises – Buildings) Standards 2010;
- AS1428.1-2009 General Requirements for Access – New Building Work;
- AS1428.4.1 -2009 Tactile Ground Surface Indicators
- AS2890.6-2009 Car Parking for People with Disabilities

Note: With the introduction of the Commonwealth *Disability Discrimination Act (DDA)* in 1992 (enacted in 1993), all organisations have a responsibility to provide equitable and dignified access to goods, services and premises used by occupants. Organisations and individuals since its introduction, are required to work to the objects of the Act which are to eliminate, as far as possible, discrimination against persons on the ground of disability in the **areas of work, accommodation, education, access to premises, clubs and sports, and the provision of goods, facilities, services and land, existing laws and the administration of Commonwealth laws and programs.**

This report assesses against the requirements contained with the Building Code of Australia (and documents referred to therein) and is not considered to be a full assessment against the Disability Discrimination Act.

12.1. General Building Access Requirements (BCA D4D2 (previously D3.1))

Access for people with disabilities shall be provided to and within the building in accordance with the requirements of Clause D4D3, D4D4 and D4D5 (previously D3.2, D3.3 and D3.4) of the BCA 2022 and AS 1428.1. Parts of the building required to be accessible shall comply with the requirements of:-

- AS1428.1-2009 General Requirements for Access – New Building Work;
- AS1428.4.1 -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:

Office/shops (Class 5/Class 6 buildings)

To and within all areas normally used by the occupants.

Level 1 Water craft storage areas

To and within all areas normally used by the occupants,

Where the uses of these areas could be deemed inappropriate, confirmation is required as the appropriateness of the areas in question by the owners or tenant. Where an exemption is sought from providing access under clause D4D5 (previously D3.4), this is to be applied for as part of the application for building work approval.

Assembly Halls/Sporting venues

To all required wheelchair seating spaces and to all areas normally used by occupants except tiers or seating areas or platforms not containing accessible wheelchair seating areas.

12.2. Provision for Access to Buildings (BCA Clause D4D3 (previously D3.2)

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

- Via the principle pedestrian entry and at least 50% of all other entrances from the allotment boundary
- 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 occupants.

In buildings over 500m^2 in floor area, a non-accessible entrance must not be located more than 50m from an accessible entrance.

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

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

12.3. Accessibility within Building (BCA Clause D4D4 (previously D3.3))

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

An exemption to not provide either a lift or ramp exists for class 5, 6, 7b, or 8 buildings, where a building contains;

a) Less than 3 storeys; and
b) Floor area of each storey (excluding the entrance level) is not more than 200m^2.

Within the building the following are required;

- Door circulation space as per AS1428.1 Clause 13.3;
- 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 and backing <4mm
- Any glazing 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.

12.4. Tactile Indicators (BCA Clause D4D9 (previously 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.

12.5. Stairs (BCA Clause D4D4 (previously clause 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 and 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 one tread width plus 300mm (nominally 700mm as per AS 1428.1-2009 Fig 26(b)), 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, including fire isolated stairs shall, 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.

12.6. Accessible Sanitary Facilities (BCA Clause F4D5, F4D6, F4D7 (previously 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 products and as per following.

Building Type	Minimum accessible unisex sanitary compartments to be provided
Office, assembly 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 AS 1428.1-2009

Accessible unisex showers

Accessible unisex showers must be provided in accordance with AS 1428.1 and at the following rates;

Building	Minimum accessible unisex showers to be provided
Theatres, sporting venues or gyms	1 for every 10 showers or part thereof provided

12.7. Signage (BCA Clause D4D7 (previously 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 15 (previously Spe. 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 E4D5 (previously E4.5) to be provided with an exit sign, stating ‘EXIT’ and ‘Level” number
- Braille and tactile signs must be illuminated to ensure *luminance contrast* requirements are met at all times during which the sign is required to be read.

12.8. Lifts (BCA Clause E3D7, E3D8 (previously E3.6))

Lifts compliant to BCA E3D7, E3D8, and E3D9 (previously E3.6, 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.

13. Appendix A - Reference Documentation

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

Drawing No.	Title	Revision	Date	Prepared By
DA200	LOCATION PLAN	P1	09.12.22	BONUS ARCHITECTS
DA201	SITE ANALYSIS PLAN	P1	09.12.22	BONUS ARCHITECTS
DA202	SITE PLAN	P2	16.03.23	BONUS ARCHITECTS
DA203	LEVEL 1 DEMOLITION PLAN	P1	09.12.22	BONUS ARCHITECTS
DA204	LEVEL 2 DEMOLITION PLAN	P1	09.12.22	BONUS ARCHITECTS
DA205	LEVEL 3 DEMOLITION PLAN	P1	09.12.22	BONUS ARCHITECTS
DA207	LEVEL 1 FLOOR PLAN	P2	16.03.23	BONUS ARCHITECTS
DA208	LEVEL 2 FLOOR PLAN	P2	16.03.23	BONUS ARCHITECTS
DA209	LEVEL 3 FLOOR PLAN	P2	16.03.23	BONUS ARCHITECTS
DA210	ROOF PLAN	P2	16.03.23	BONUS ARCHITECTS
DA211	SOUTH EAST & NORTH EAST ELEVATION	P2	16.03.23	BONUS ARCHITECTS
DA212	NORTH WEST & SOUTH EAST ELEVATION	P2	16.03.23	BONUS ARCHITECTS
DA212	SECTION A-A & B-B	P2	16.03.23	BONUS ARCHITECTS
DA214	SECTION C-C & D-D	P2	16.03.23	BONUS ARCHITECTS
DA215	SECTION A-A	P2	16.03.23	BONUS ARCHITECTS

14. Appendix B - Draft Fire Safety Schedule

	Essential Fire Safety Measures	Standard of Performance
1.	Access Panels, Doors and Hoppers	BCA 2022 Clause C4D14
2.	Automatic Fail Safe Devices	BCA 2022 Clause D3D24 & D3D26
3.	Automatic Smoke Detection and Alarm System	BCA 2022 Clause E2D3, E2D8, E2D9, E2D19, E2D20, Spec 20 Clause S20C3/S20C4/S20C5, AS 1670.1 – 2018, AS/NZS 1668.1 – 2015, AS 3786-2014
4.	Emergency Lighting	BCA 2022 Clause E4D2, E4D4 & AS/NZS 2293.1 – 2018
5.	Emergency Evacuation Plan	Fire Engineering Report XXXX Revision XX prepared by XXXX dated XXXX and AS 3745 – 2002
6.	Exit Signs	BCA 2022 Clauses E4D5, E4D6 & E4D8 and AS/NZS 2293.1 – 2018
7.	Fire Dampers	BCA 2022 Clause C3D13, C4D15, Spec 11, D2D12, E2D3, E2.3, F4.12, Spec E2.2, E2D21, Spec 21, Spec 31 & AS 1668.1 – 2015
8.	Fire Doors	BCA 2022 Clause C4D3, C4D5, C4D6, C4D7, C4D8 & C4D9 and AS 1905.1 – 2015
9.	Fire Hose Reels	BCA 2022 Clause E1D3 & AS 2441 – 2005 Amdt 1
10.	Fire Hydrant System	BCA 2022 Clause C3D13, E1D2, Spec 18, I3D9 & AS 2419.1 – 2021
11.	Fire Seals	BCA 2022 Clause C4D15, C4D16, Spec 13, Spec 14, & AS 1530.4 –2014
12.	Fire Windows	BCA 2022 C4D5, Spec 12
13.	Lightweight Construction	BCA 2022 Clause C2D9, Spec 6
14.	Portable Fire Extinguishers	BCA 2022 Clause E1D14 & I3D11, AS 2444 – 2001
15.	Required Exit Doors (power operated)	BCA 2022 Clause E3D24 (3)

15. Appendix C - Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2022:

Type A Construction

Table S5C11a: Type A Construction: FRL of loadbearing parts of external walls

Distance from a fire source feature	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Less than 1.5m	90/90/90	120/120/120	180/180/180	240/240/240
1.5 to less than 3m	90/60/30	120/90/90	180/180/120	240/240/180
3m or more	90/60/30	120/60/30	180/120/90	240/180/90

Table S5C11b: Type A Construction: FRL of non-loadbearing parts of external walls

Distance from a fire source feature	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Less than 1.5m	-/90/90	-/120/120	-/180/180	-/240/240
1.5 to less than 3m	-/60/60	-/90/90	-/180/120	-/240/180
3m or more	-/-/-	-/-/-	-/-/-	-/-/-

Table S5C11c: Type A Construction: FRL of external columns non incorporated in an external wall

Column tyle	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Loadbearing	90/-/-	120/-/-	180/-/-	240/-/-
Non-loadbearing	-/-/-	-/-/-	-/-/-	-/-/-

Table S5C11d: Type A Construction: FRL of common walls and fire walls

Wall type	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Loadbearing or non-loadbearing	90/90/90	120/120/120	180/180/180	240/240/240

Table S5C11e: Type A Construction: FRL of loadbearing internal walls

Location	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Fire-resisting lift and stair shafts	90/90/90	120/120/120	180/120/120	240/120/120

Bounding public corridors, public lobbies and the like	90/90/90	120/-/-	180/-/-	240/-/-
Between or bounding sole-occupancy units	90/90/90	120/-/-	180/-/-	240/-/-
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion	90/90/90	120/90/90	180/120/120	240/120/120

Table S5C11f: Type A Construction: FRL of non-loadbearing internal walls

Location	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Fire-resisting lift and stair shafts	-/90/90	-/120/120	-/120/120	-/120/120
Bounding public corridors, public lobbies and the like	-/60/60	-/-/-	-/-/-	-/-/-
Between or bounding sole-occupancy units	-/60/60	-/-/-	-/-/-	-/-/-
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion	-/90/90	-/90/90	-/120/120	-/120/120

Table S5C11g: Type A Construction: FRL of other building elements not covered by Tables S5C11a to S5C11f

Location	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Other loadbearing internal walls, internal beams, trusses and columns	90/-/-	120/-/-	180/-/-	240/-/-
Floors	90/90/90	120/120/120	180/180/180	240/240/240
Roofs	90/60/30	120/60/30	180/60/30	240/90/60