



A Bureau Veritas Group Company

# SSDA Regulatory Compliance Report

**NEXTDC S4  
16 Johnston Crescent  
Horsley Park, NSW 2175**

**Prepared for: NEXTDC Limited - Sydney  
Date: 14/06/2024  
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(NSW) This document does not, in any way, constitute or form part of a 'Design Declaration' under the Design and Building Practitioners Act 2020 or the Design and Building Practitioners Regulation 2021. In addition, this report is not to be referenced or referred to in any declarations made under that legislation.

## 1. Executive Summary

### Development Overview

This NEXTDC Data Centre S4 National Construction Code (NCC) 2022 Regulatory Compliance Report has been prepared by McKenzie Group on behalf of NEXTDC Limited to accompany a detailed State Significant Development Application (SSDA) for the S4 data centre development at 16 Johnston Crescent, Horsley Park. The site is legally described as Lot 305 in Deposited Plan 1275011.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project (SSD-63741210). This report concludes that the proposed data centre development is suitable and warrants approval subject to the implementation of the any mitigation measures.

### Compliance Summary

As Registered Certifiers we have reviewed the SSDA architectural design documents prepared by HDR Architects 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 SSDA approvals. Further assessment of the design will be undertaken as the design develops to ensure compliance is achieved prior to approval being issued for construction certificates.

### Deviations from the Deemed-to-Satisfy Provisions

The assessment of the SSDA 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
<b>Fire Safety Items</b>			
1	Travel to an exit exceed the DtS limits allowed	D2D5	D1P4
2	Travel to a Point of choice exceed the DtS limits allowed	D2D5	D1P4
3	Distance between alternate exits exceed the DtS limits allowed	D2D6	D1P4
<b>Accessibility Items</b>			
4	To be further reviewed as design progresses.	D4D2	D1P1, D1P2
5	Exemptions – to be requested in writing	D4D5	D1P2
<b>Miscellaneous Items</b>			
6	<b>Weatherproofing of External Walls</b> As the external walls are proposed to be constructed of a material not nominated in F3D5, a performance solution is to be provided by the façade engineer/registered architect demonstrating that the external walls comply with the requirements of Performance Requirement F3P1 (previously FP1.4).	F3D5	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 the building
2.	Fire hose reels throughout the building
3.	Fire precautions during construction
4.	Automatic smoke detection and alarm system throughout the building

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

(NSW) Any fire engineered solution relating to insert relevant category 2 items will need to be approved after consultation with the NSW Fire Brigade as part of the Construction Certificate process.

## Further Assessment

(NSW) 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

This report has been prepared to accompany a detailed SSDA for the proposed S4 data centre development at 16 Johnston Crescent, Horsley Park (SSD-63741210). The application seeks consent for construction and operation of a data centre development and includes site preparation works, bulk earthworks and infrastructure, and construction of the buildings, ancillary facilities, and associated site works.

The key features of the Proposal are summarised as follows:

- Site preparation works including bulk earthworks.
- Staged construction and operation of five data centre buildings comprising a total gross floor area (**GFA**) of 63,654m<sup>2</sup> including 52,916m<sup>2</sup> of technical data hall floor space and 10,738m<sup>2</sup> of ancillary office and innovation floor space, including 'front of house' meeting and function spaces, and a café.
- Associated and ancillary on-site facilities on-site parking for 200 cars, business identification signage (pylon and elevation signage), civil and stormwater works and 9,900m<sup>2</sup> of deep soil landscaping.
- Delivery of 232 megawatts of power, including a 330kV substation and a 33kV switching station, plus above ground diesel storage tanks and above ground water tanks for industrial water and fire water.

The Project will be delivered in three construction stages as follows:

- Stage 1 = Buildings A, B, C, and substation
- Stage 2 = Building D
- Stage 3 = Building E

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 27 October 2023 issued for the SSDA (SSD-63741210). Specifically, this report has been prepared to respond to the SEARS requirement issued below:

Item	Description of Requirements	Section Reference
4. Built Form and Urban Design	Demonstrate how the building design will deliver a high-quality development, including consideration of façade design, articulation, materials, finishes, colours, any signage and integration of services.	<ul style="list-style-type: none"> <li>• Sections 7.3, 10.4 &amp; 11 of this report</li> <li>• Refer to Architectural Design Report and Accessibility Report</li> </ul>

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 2022 for assistance only. Detailed drawings and associated review will still be required as the final design is developed.

(NSW) 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 A	Building B	Building C	Building D	Building E
Classification	5, 6, 7b	5, 7b	5, 7b	5, 7b	5, 7b
Number of Storeys	3	4	4	4	4
Rise In Storeys	3	8	8	8	8
Type of Construction	B	A	A	A	A
Effective Height (m)	<25m (12m)	<25m (19.2m)	<25m (19.2m)	< 25m (19.2m)	<25 (19.2m)

*Note: The effective height of the project includes all stories included in the rise in stories of the project.*

## 5.2. Council Development Approval / Planning Permit Approval

A Development Permit will be required from the relevant planning approval authority for the development. A copy of the Development Approval, associated conditions and approved drawings will be required prior to the issuing of the Building Approval for that component of works.

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

## 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 B Construction (Building A) and Type A Construction (Building B-E), in accordance with Tables S5C11a-g/S5C21a-g/S5C24a-e of Specification 5 (previously Table 3 & 3.9/4 & 4.9/5 & 5.9 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:

- Fire compartmentation of the building at each floor level

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 m <sup>2</sup>	5 500 m <sup>2</sup>	<del>3 000 m<sup>2</sup></del>
	max volume—	48 000 m <sup>3</sup>	33 000 m <sup>3</sup>	<del>18 000 m<sup>3</sup></del>
6, 7, 8 or 9a (except for patient care areas)	max floor area—	5 000 m <sup>2</sup>	3 500 m <sup>2</sup>	<del>2 000 m<sup>2</sup></del>
	max volume—	30 000 m <sup>3</sup>	21 000 m <sup>3</sup>	<del>12 000 m<sup>3</sup></del>

If the building exceeds the area / volume limitations of the BCA provisions, the building is then considered a large isolated building and the following provisions will apply:

- Automatic sprinkler protection to AS2118.1 and BCA Specification 17 (previously Specification E1.5) throughout the development / smoke detection and alarm system in accordance with AS1670,
- Perimeter emergency vehicular access 6m wide located within 18m of the entire building perimeter in accordance with BCA Clause C3D5 (previously C2.4),
- Smoke exhaust or smoke and heat vents required throughout the development if the building exceeds 18,000m<sup>2</sup> or 108,000m<sup>3</sup> in volume
- Provision of a fire hydrant ring main

## 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 B (Building A) and Type A (Building B to E) Construction, Please refer to Appendix B 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 B for required FRLs.

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

- Lift Motor Rooms;
- Emergency Power Supply;

- Emergency Generators;
- Electricity Supply;
- Batteries;
- Fuel Tank Rooms
- Hydrant Pump Rooms;
- Sprinkler Pump Rooms;
- Fire Control Room

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))**

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#### External Wall Cladding

Buildings B to E - 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.

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

- External walls, including façade coverings, framing, insulation;
- Flooring and framing of lift pits;
- Non-loadbearing internal walls required to have an FRL;
- All non-loadbearing shafts connecting more than 2 storeys since the building is a Class 5, Class 6 7 7b building.
- 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 m<sup>2</sup> 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:

#### Sprinkler Protected Areas

- a) Floor Coverings – Critical radiant Flux not less than 1.2 kW/m<sup>2</sup>
- b) Wall and Ceiling Linings – Material Group No. 1, 2 & 3.
- c) Other Materials – Spread of Flame Index not exceeding 0 and Smoke Developed Index not exceeding 2.

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. Fire-protected timber: Concession (C2D13 (previously C1.13))**

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Fire-protected timber may be used wherever an element is required to be non-combustible, provided –

- a) The building is –
  - (i) a separate building; or
  - (ii) a part of a building –
    - (A) which only occupies part of a story, and is separated from the remaining part by a fire wall; or
    - (B) which is located above or below a part not containing fire protected timber and the floor between the adjoining parts is provided with an FRL not less than that prescribed for a fire wall for the lower storey; and
- b) the building has an effective height of not more than 25m; and
- c) the building has a sprinkler system (other than FPAA101D or FPAA101H system) throughout complying with Specification 17 (previously Specification E1.5); and
- d) any insulation installed in the cavity of the timber building element required to have an FRL is non-combustible; and
- e) Cavity barriers are provided in accordance with Specification 9 (previously Specification C1.13).

#### **7.5. Separation of equipment (C3D13 (previously C2.12))**

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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
- b) Emergency generators used to sustain emergency equipment operating in the emergency mode; or

- c) Central smoke control plant; or
- d) Boilers; or
- e) A battery system installed in that building that has total voltage of 12 volts or more and a storage capacity of 200kWh or more.

### 7.6. 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.

### 7.1. Protection of Openings in External Walls (BCA C4D3, C4D4, C4D5 (previously C3.2 / C3.3 / C3.4))

The prescriptive provisions of the BCA stipulate that any external opening within 3m of the boundary, within 6m of the far boundary of a road, river, lake or the like that adjoins the allotment, or within 6m of another building on the allotment requires protection by -/60/- fire rated construction, or externally located wall wetting sprinklers.

Where a building is separated into fire compartments, the distance between parts of external walls and openings within them must be not less than the table below unless those parts of each external wall has an FRL not less than 60/60/60 and openings are protected.

Angle Between Walls	Minimum Distance
0° (walls opposite)	6m
More than 0° to 45°	5m
More than 45° to 90°	4m
More than 90° to 135°	3m
More than 135° to 180°	2m
More than 180°	Nil

*Fire source feature is defined as;*

- a) *The far boundary of a road, river, lake or the like adjoining an allotment,*
- b) *The side or rear boundary of the allotment,*
- c) *The external wall of another building on the allotment which is not a class 10 building.*

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

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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))

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

- Fire isolated stairways
- Required non-fire isolated stairways
- Non Fire isolated Stairs
- External Doors
- Horizontal Exits

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 Separation of Rising and Descending Stairs
- Discharge from Fire Isolated Exits
- Details of the egress provisions to the Road.
- Door swings

### 8.2. Required Fire Isolation of Exits (BCA Clause D2D5 (previously D1.3))

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*Class 5 to 9*

Stairs utilised as required exits must be fire isolated where they connect, pass through or pass by more than 2 consecutive storeys and, an extra storey may be added if the building has a sprinkler system (other than a FPAA101D system) installed throughout.

Alternatively, where the stair does not provide access to or egress from the third storey, and is separated from that storey by construction achieving and FRL of 60 minutes or, in a Type A building where the construction is loadbearing, 90 minutes, the exit is also not required to be fire isolated.

The proposed exits are required to be fire isolated.

### 8.3. Travel via Fire Isolated Exits (BCA D2D12 (previously D1.7))

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The BCA requires each fire isolated stairway to provide independent egress from each storey served and discharge directly, or by way of its own fire isolated passageway to:

- A road or open space; or
- To a point in a storey within the confines of the building, that is used only for pedestrian movement, car parking or the like and is open for at least 2/3 of its perimeter, and an unimpeded path of travel not more than 20m to a road or open space; or
- A covered area that adjoins a road or open space, is open for at least 1/3 of its perimeter, has an unobstructed clear height throughout of not less than 3m, and provides an unimpeded path of travel to a road or open space of not less than 6m.

Additionally, where the path of travel from the point of discharge requires occupants to pass within 6m of any part of the external wall of the same building (measured horizontally), that external wall must have a 60/60/60 FRL and have any openings protected internally for a distance of 3m above or below the path of travel.

#### **8.4. Fire Stair Re-Entry (BCA D3D27 (previously D2.22))**

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The doors of a fire isolated exit must not be locked from the inside so as to allow provision for fire stair re-entry in Class 9a, 9b early childhood centre and 9c buildings or parts, or within fire isolated exits serving any storey above any effective height of 25m.

The requirement for doors to remain unlocked do not apply to a door fitted with a fail-safe device that automatically unlocks the door upon activation of a fire alarm and –

- a) On at least every fourth storey the doors are not able to be locked and a sign is fixed on such doors stating that re-entry is available; or
- b) An intercommunication system, or an audible or visual alarm system operated from within the enclosure is provided, and a sign is fixed adjacent to such doors explaining its purpose and method of operation.

(b) above is not required in an early childhood centre where the door is fitted with a fail-safe device that automatically unlocks on activation of the fire alarm,

Further review will be undertaken to ensure compliance as the design develops

#### **8.5. Exit Travel Distances (BCA D2D5, D2D6 (previously D1.4, D1.5))**

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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

The extended travel distances and distance between the exit stairs 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 D1P4 and E2P2 (previously DP4 & EP2.2)

Further review will be undertaken to ensure compliance as the design develops.

#### **8.6. Dimensions of Exits (BCA D2D7, D2D8, D2D9, D2D10, D2D11 (previously D1.6))**

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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).

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).

Further review will be undertaken to ensure compliance as the design develops.

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

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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 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

## **8.8. Balustrades and Handrails (BCA D3D17, D3D18, D3D19, D3D20, D3D22, D3D29 (previously D2.16 / BCA D2.17 / D2.24))**

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### 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.

In addition to the above, handrails are required to both sides of all stairs with a width of 2m or more.

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

### Fire Isolated Stairways & Class 7b/8 Buildings

Balustrades in the fire isolated stairways (excluding those serving a Class 9b early childhood centre) and Class 7b or 8 parts of buildings are permitted to contain a 3 rail system, with a bottom rail situated at not more than 150mm above the nosings. The distance between the rails shall not exceed 460mm.

Handrails are required on both sides of all stairways except for fire isolated stairways used only for emergency egress purposes.

Note: in a required exit serving an area required to be accessible, handrails must be designed and constructed to comply with Clause 12 of AS1428.1-2009

Further review will be undertaken to ensure compliance as the design develops.

### 8.9. 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))

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

The new version of the fire hydrant standard notes that the standard does not apply to the following:

- Class 7b or 8 buildings with a total volume of more than 108,000m<sup>3</sup>
- Buildings that include automatic racked storage systems
- Buildings with an effective height of more than 135m
- Buildings and associated areas that include special hazards.

Where the building falls into one of the above criteria, the hydrant system is required to be assessed on a performance basis with consultation with the relevant fire brigade as required by legislation. Performance solutions are required to be verified to BCA Performance Requirement E1P3 (previously EP1.3).

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.

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

Further review will be undertaken to ensure compliance as the design develops.

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

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

Fire hose reels are to be located within 4m of exits and provide coverage within the building based on a 36m hose length 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.

Further review will be undertaken to ensure compliance as the design develops.

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

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The provision of portable fire extinguishers is required to BCA Clause E1D14 (previously E1.6) and AS2444 - 2001 to provide coverage.

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

Occupancy Class	Risk Class (as defined in AS 2444)
General provisions – Class 2 to 9 buildings (except within sole-occupancy units of a Class 9c building)	<ul style="list-style-type: none"> <li>a) To cover Class AE or E fire risks associated with emergency services switchboards. (Note 1)</li> <li>b) To cover Class F fire risks involving cooking oils and fats in kitchens.</li> <li>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).</li> <li>d) To cover Class A fire risks in normally occupied fire compartments less than 500m<sup>2</sup> not provided with fire hose reels (excluding open deck carparks).</li> <li>e) To cover Class A fire risks in classrooms and associated schools not provided with fire hose reels.</li> <li>f) To cover Class A fire risks associated with Class 2 or 3 building or class 4 part of building.</li> </ul>

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

Further review will be undertaken to ensure compliance as the design develops.

#### **9.4. Buildings not more than 25 m in effective height: Class 5, 6, 7b, 8 and 9b buildings**

A building not more than 25 m in effective height having a rise of storey of more than 2 and contains a class 5 and 7b part shall be provided with —

- In each required fire-isolated stairway, including any associated fire-isolated passageway or fire-isolated ramp, an automatic air pressurisation system for fire-isolated exits in accordance with AS 1668.1; or
- A zone pressurisation system between vertically separated fire compartments in accordance with AS 1668.1, if the building has more than one fire compartment; or
- An automatic smoke detection and alarm system complying with Specification 20; or
- A sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification 17.

#### **9.5. Lift Services (BCA E3D3, E3D4, E3D5, E3D9, E3D10, E3D11E3.4 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, and E3D12 (previously E3.3, Figure E3.3, E3.7, E3.9 and E3.10) of the BCA.
- Stretcher facilities are to be provided within the lifts with minimum dimensions of 600mm wide, 2000mm long and 1400mm high;
- At least two emergency lifts with stretcher facilities in accordance with Clause E3D5 (previously Part E3.4) of the BCA. The two emergency lifts shall be located in separate shafts. These lifts are to serve all storeys that are served by passenger lifts.
- Be provided with the following in order to satisfy accessibility requirements:
  - A handrail in accordance with AS1735.12-1999,
  - Minimum internal floor dimensions of 1400 x 1600mm for lifts which travel more than 12m, or 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))**

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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.

Where exit signs are proposed to be above 2.7m to avoid potential damage by forklifts in the warehousing areas, this will need to be documented as a performance solution by an accredited fire safety engineer. This would need to be assessed to BCA Performance Requirement E4P2 (previously EP4.2).

Further review will be undertaken to ensure compliance as the design develops.

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

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After the building has reached an effective height of 12m, the following fire services are required to be operational:

- Required fire hydrants and fire hose reels on every storey covered by the roof/floor structure (except the 2 uppermost storeys); and
- Booster connections installed.

Due to the height of the building this will need to be considered and implemented during construction.

#### **9.8. Provisions for Special Hazard (BCA E1D17 (previously E1.10))**

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Suitable additional provision must be made if special problems of fighting fire could arise because of:

- the nature or quantity of materials stored, displayed or used in a building or on the allotment; or
- the location of the building in relation to a water supply for fire-fighting purposes

## 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.

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

BCA 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))**

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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))**

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*Retail* - Separate sanitary facilities are required to be provided for male & female employees. In relation to the public, sanitary facilities are required to be provided either where more than 600 persons can be accommodated (standard shops) or for café / restaurant where there are more than 20 seats.

*Offices* - Separate sanitary facilities are required to be provided for male & female employees.

Further review will be undertaken to ensure compliance as the design develops.

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))**

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Class 5, 6 & 7

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.

## 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 6.

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 achieved 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 JV4).

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 achieved 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. For a class 5 building other than a ward area in climate zones 1, 7 and 8, 5 m<sup>3</sup>/hr.m<sup>2</sup> at 50 Pa reference pressure; or

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

### **11.2. Building Fabric (Part J4 (previously Part J1))**

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

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 ceiling 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 5 & 7, U2.0;

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 for slab without in slab heating or cooling system and 3.25 for an in-slab heating or cooling system.

#### 11.3. 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 50m<sup>2</sup>; 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.

### **11.4. Air Conditioning and Ventilation systems (Part J6 (previously J5))**

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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 2kW<sub>r</sub> and a heater of more than 1kW<sub>heating</sub> 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 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%

#### Refrigerant chillers

An air-conditioning system refrigerant chiller must comply with MEPS and the full load operation energy efficiency ratio and integrated part load energy efficiency ratio laid out under clause J5.10 of the BCA when determined in accordance with AHRI 551/591

#### 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 kW<sub>r</sub> –

- (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.

## 11.5. 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<sup>2</sup> within a sole-occupancy unit and 4 W/m<sup>2</sup> 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;

Common rooms, spaces and corridors in a Class 2 building	4.5W/m <sup>2</sup>
Stairways, including fire-isolated stairways	2W/m <sup>2</sup>
Toilet, locker room, staff room, rest room or the like	3W/m <sup>2</sup>
Lift cars	3W/m <sup>2</sup>
Service area, cleaner's room and the like	3W/m <sup>2</sup>
Control room, switch room or the like	
(A) intermittent monitoring	3W/m <sup>2</sup>
(B) Constant monitoring	4.5W/m <sup>2</sup>
Plant room:	
(A) Where an average of 160 lx vertical illuminance is required on a vertical panel such as in switch rooms	4W/m <sup>2</sup>
(B) With a horizontal illuminance target of 80 lx	2W/m <sup>2</sup>
Library:	
(A) Stack & shelving area	2.5W/m <sup>2</sup>
(B) Reading room & general areas	4.5W/m <sup>2</sup>
Office:	
(A) Artificially lit to an ambient level of 200 lx or more	4.5W/m <sup>2</sup>
(B) Artificially lit to an ambient level of less than 200 lx	2.5W/m <sup>2</sup>
Museum & gallery	2.5W/m <sup>2</sup>
Retail:	14W/m <sup>2</sup>
Corridors:	5W/m <sup>2</sup>
Common rooms, spaces & corridors in a Class 2 building	4.5W/m <sup>2</sup>
Lounge area for communal use in a Class 3 or 9c building	4.5W/m <sup>2</sup>
Dormitory of Class 3 building:	
(A) Used for sleeping only	3W/m <sup>2</sup>
(B) Used for sleeping & study	4W/m <sup>2</sup>
Storage	1.5W/m <sup>2</sup>
School:	4.5W/m <sup>2</sup>
Health Care:	
(A) Infants & children's wards & ED	4W/m <sup>2</sup>
(B) Exam room	4.5W/m <sup>2</sup>
(C) Exam room in intensive care & high dependency ward	6W/m <sup>2</sup>
(D) All other patient care areas inc wards & corridors	2.5W/m <sup>2</sup>

Kitchen and food preparation area:	4W/m <sup>2</sup>
Car parks:	
(A) General	2W/m <sup>2</sup>
(B) Entry zone (first 15m of travel during the daytime)	11.5W/m <sup>2</sup>
(C) Entry zone (next 4m of travel) during the day	2.5W/m <sup>2</sup>
(D) Entry zone (first 20m of travel) during nighttime	2.5W/m <sup>2</sup>
Auditoriums, church and public hall :	8W/m <sup>2</sup>
Restaurant, café, bar:	14W/m <sup>2</sup>

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<sup>2</sup> if in a Class 6 building or Class 8 laboratory
- Not operate lighting for an area more than -
  - a) 250m<sup>2</sup> for a space of not more than 2000m<sup>2</sup>;
  - b) 1000m<sup>2</sup> for a space of more than 2000m<sup>2</sup>
 if in a Class 3, 6, 7, 8 (other than a laboratory) or 9 building;
- 1000m<sup>2</sup> for a space of more than 2000m<sup>2</sup>

#### 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.

### **11.6. Energy Monitoring and On-Site Distributed Energy Resources (Part J9 (previously Part J8))**

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

A building or sole-occupancy unit with a floor area of more than 500 m<sup>2</sup> 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 m<sup>2</sup> 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) a Class 2 building where the total floor area of the common areas is less than 500 m<sup>2</sup>; or
- b) individual sole-occupancy units with a floor area of less than 2 500 m<sup>2</sup>

## 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

#### Warehouse and production/Manufacturing facilities

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))**

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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<sup>2</sup> 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))**

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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).

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. Car Parking (BCA Clause D4D6 (previously D3.5))**

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Accessible car parking spaces are required to comply with AS 2890.6-2009.

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

## **12.5. Tactile Indicators (BCA Clause D4D9 (previously D3.8))**

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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.

## 12.6. Seating in Assembly Building (BCA Clause D4D10 (previously D3.9))

The location of wheelchair seats must cater for a representative range of seating provided.

In an assembly building, when fixed seating is provided, the wheelchair spaces to the following are required to be provided.

Number of fixed seats in a room or space	Number of wheelchair seating spaces	Grouping and location
Up to 150	3 spaces	1 single space; and 1 group of 2 spaces Not more than 2 spaces in any other group
151 to 800	3 spaces; plus 1 additional space for each additional 50 seats or part thereof in excess of 150 seats	Not less than 1 single space; and not less than 1 group of 2 spaces; and Not more than 5 spaces in any other group.

## 12.7. 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.

## 12.8. 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, industrial, assembly	a) 1 on every storey containing sanitary compartments; and

Building Type	Minimum accessible unisex sanitary compartments to be provided
building, schools, health care except for within a ward area of a Class 9a health-care building	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.

#### 12.9. 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.

#### 12.10. Hearing Augmentation (BCA Clause D4D8 (previously D3.7))

A hearing augmentation system shall be installed throughout the building in accordance with the requirements of Clause D4D8 (previously D3.7) of the BCA, where ever in a 9b building, auditorium conference room, meeting room etc. contain a PA system not used for emergency purposed or any ticket office or teller's booth or reception where the public is screened from the service provider.

#### 12.11. 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
S4-ARC-NXT-DRG-00000-0000	SSDA COVER SHEET	CP02	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-0050	SSDA LOCALITY PLAN	CP02	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-0060	SSDA SITE ANALYSIS PLAN	CP02	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-0061	SSDA SITE SURVEY PLAN	CP02	01/03/2024	HDR
<i>ARC-HDR-DRG-00000-0070</i>	<i>SSDA PROPOSED SITE PLAN</i>	<i>CP03</i>	<i>12/06/2024</i>	<i>HDR</i>
S4-ARC-NXT-DRG-00000-0080	SSDA 3D VIEWS	CP02	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-0101	SSDA GFA CALCULATION - SHEET 1	CP02	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-0102	SSDA GFA CALCULATION - SHEET 2	CP02	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-0200	SSDA SHADOW DIAGRAMS	CP02	01/03/2024	HDR
<i>ARC-HDR-DRG-00000-0301</i>	<i>SSDA PHASING DIAGRAM - STAGE 1</i>	<i>CP03</i>	<i>12/06/2024</i>	<i>HDR</i>
<i>ARC-HDR-DRG-00000-0302</i>	<i>SSDA PHASING DIAGRAM - STAGE 2</i>	<i>CP03</i>	<i>12/06/2024</i>	<i>HDR</i>
<i>ARC-HDR-DRG-00000-0303</i>	<i>SSDA PHASING DIAGRAM - STAGE 3</i>	<i>CP03</i>	<i>12/06/2024</i>	<i>HDR</i>
S4-ARC-NXT-DRG-00000-1000	SSDA DEMOLITION PLAN	CP02	01/03/2024	HDR
<i>ARC-HDR-DRG-00000-3000</i>	<i>SSDA GENERAL ARRANGEMENT MASTER PLAN - GROUND LEVEL</i>	<i>CP03</i>	<i>12/06/2024</i>	<i>HDR</i>
S4-ARC-NXT-DRG-00000-3001	SSDA GENERAL ARRANGEMENT PLAN - BLD A GROUND LEVEL	CP01	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-3002	SSDA GENERAL ARRANGEMENT PLAN - BLD B GROUND LEVEL	CP01	01/03/2024	HDR
<i>ARC-HDR-DRG-00000-3010</i>	<i>SSDA GENERAL ARRANGEMENT MASTER PLAN - LEVEL 1</i>	<i>CP03</i>	<i>12/06/2024</i>	<i>HDR</i>
S4-ARC-NXT-DRG-00000-3011	SSDA GENERAL ARRANGEMENT PLAN - BLD A LEVEL 1	CP01	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-3012	SSDA GENERAL ARRANGEMENT PLAN - BLD B LEVEL 1	CP01	01/03/2024	HDR
<i>ARC-HDR-DRG-00000-3020</i>	<i>SSDA GENERAL ARRANGEMENT</i>	<i>CP03</i>	<i>12/06/2024</i>	<i>HDR</i>

Drawing No.	Title	Revision	Date	Prepared By
	<i>MASTER PLAN - LEVEL 2</i>			
S4-ARC-NXT-DRG-00000-3021	SSDA GENERAL ARRANGEMENT PLAN - BLD A LEVEL 2	CP01	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-3022	SSDA GENERAL ARRANGEMENT PLAN - BLD B LEVEL 2	CP01	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-3030	SSDA GENERAL ARRANGEMENT MASTER PLAN - LEVEL 3	CP02	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-3032	SSDA GENERAL ARRANGEMENT PLAN - BLD B LEVEL 3	CP01	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-3040	SSDA GENERAL ARRANGEMENT MASTER PLAN - ROOF LEVEL	CP02	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-3041	SSDA GENERAL ARRANGEMENT PLAN - BLD A ROOF LEVEL	CP01	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-3042	SSDA GENERAL ARRANGEMENT PLAN - BLD B ROOF LEVEL	CP01	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-6001	SSDA GENERAL ARRANGEMENT SECTIONS - SHEET 1	CP02	01/03/2024	HDR
S4-ARC-NXT-DRG-00000-6002	SSDA GENERAL ARRANGEMENT SECTIONS - SHEET 2	CP02	01/03/2024	HDR
<i>ARC-HDR-DRG-00000-7001</i>	<i>SSDA GENERAL ARRANGEMENT ELEVATIONS - SHEET 1</i>	<i>CP03</i>	<i>12/06/2024</i>	<i>HDR</i>
<i>ARC-HDR-DRG-00000-7002</i>	<i>SSDA GENERAL ARRANGEMENT ELEVATIONS - SHEET 2</i>	<i>CP03</i>	<i>12/06/2024</i>	<i>HDR</i>
<i>ARC-HDR-DRG-00000-7003</i>	<i>SSDA GENERAL ARRANGEMENT ELEVATIONS - SHEET 3</i>	<i>CP03</i>	<i>12/06/2024</i>	<i>HDR</i>

## 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, E2D5, E2D7, E2D8, E2D9, E2D10, E2D11, E2D13, E2D14, E2D15, E2D16, E2D17, 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.	Lightweight Construction	BCA 2022 Clause C2D9, Spec 6
13.	Portable Fire Extinguishers	BCA 2022 Clause E1D14 & I3D11, AS 2444 – 2001
14.	Smoke Alarms	BCA 2022 Spec 20 & AS 3786 - 2014
15.	Smoke Dampers	BCA 2022 Clause E2D3, E2D21, Spec 21, Spec 31 & AS/NZS 1668.1 – 2015
16.	Smoke Doors	BCA 2022 Spec 11
17.	Solid Core Doors	BCA 2022 Clause C4D12
18.	Stand-by Power System	BCA 2022 Clause G3D8, Spec 31
19.	Warning and Operational Signs	BCA 2022 Clause C4D7, D2.23, E3D4, AS 1905.1 –2015

## 15. Appendix C - Fire Resistance Levels

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

### Type A Construction – Buildings B to E

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 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	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	90/90/90	120/-/-	180/-/-	240/-/-

lobbies and the like				
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

### (3) Carparks

For building elements in a carpark as described in (1) and (2), the following minimum FRLs are applicable:

a)

External wall:

i.

Less than 3 m from a fire-source feature to which it is exposed:

A.

Loadbearing: 60/60/60.

B.

Non-loadbearing: -/60/60.

ii.

3 m or more from a fire-source feature to which it is exposed: -/-/-.

- b) Internal wall:
- i. Loadbearing, other than one supporting only the roof (not used for carparking): 60/--.
  - ii. Supporting only the roof (not used for carparking): --/--.
  - iii. Non-loadbearing: --/--.
- c) Fire wall:
- i. From the direction used as a carpark: 60/60/60.
  - ii. From the direction not used as a carpark: as required by Tables S5C11a to S5C11g.
- d) Columns:
- i. Supporting only the roof (not used for carparking) and 3 m or more from a fire-source feature to which it is exposed: --/--.
  - ii. Steel column, other than one covered by (i) and one that does not support a part of a building that is not used as a carpark—
    - A. 60/--; or
    - B. an ESA/M of not greater than 26m<sup>2</sup>/tonne.
  - iii. Any other column not covered by (i) or (ii): 60/--.
- e) Beams:
- i. Steel floor beam in continuous contact with a concrete floor slab
    - A. 60/--; or
    - B. an ESA/M of not greater than 30m<sup>2</sup>/tonne.
  - ii. Any other beam: 60/--.
- f) Fire-resisting lift and stair shaft (within the carpark only): 60/60/60.
- g) Floor slab and vehicle ramp: 60/60/60.
- h) Roof (not used for carparking): --/--.
- (4) For the purposes of subclause (3):
- a) ESA/M means the ratio of exposed surface area to mass per unit length.
  - b) Refer to Specification 17 for special requirements for a sprinkler system in a carpark complying with (3) and (b) located within a multi-classified building.

## Type B Construction - Building A

Table S5C21a: Type B 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	120/90/60	180/120/90	240/180/120
3m to less than 9m	90/30/30	120/30/30	180/90/60	240/90/60
9m to less than 18m	90/30/-	120/30/-	180/60/-	240/60/-
18m or more	-/-/-	-/-/-	-/-/-	-/-/-

Table S5C21b: Type B 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	-/60/30	-/90/60	-/120/90	-/180/120
3m or more	-/-/-	-/-/-	-/-/-	-/-/-

Table S5C21c: Type B Construction: FRL of external columns not incorporated in an external wall

Column 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	90/-/-	120/-/-	180/-/-	240/-/-
Non-loadbearing	-/-/-	-/-/-	-/-/-	-/-/-

Table S5C21d: Type B 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 S5C21e: Type B 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	180/180/180	240/240/240
Bounding public corridors, public	60/60/60	120/-/-	180/-/-	240/-/-

lobbies and the like				
Between or bounding sole-occupancy units	60/60/60	120/-/-	180/-/-	240/-/-

Table S5C21f: Type B 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	-/-/-	-/-/-	-/-/-

Table S5C21g: Type B Construction: FRL of other building elements not covered by Tables S5C21a to S5C21e

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	60/-/-	120/-/-	180/-/-	240/-/-
Roofs	-/-/-	-/-/-	-/-/-	-/-/-

### Carparks

- 1) Notwithstanding S5C21, a carpark may comply with this clause if it is an open-deck carpark or is protected with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification 17 and is—
  - a) a separate building; or
  - b) a part of a building, and if occupying only part of a storey, is separated from the remaining part by a fire wall.
  
- 2) For the purposes of this clause, a carpark—
  - a) includes—
    - i. an administration area associated with the functioning of the carpark; and
    - ii. where the carpark is sprinklered, is associated with a Class 2 or 3 building and provides carparking for separate sole-occupancy units each carparking area with an area not greater than 10% of its floor area for purposes ancillary to the sole-occupancy units; but
  - b) excludes—
  - c)
    - i. except for (a), any area of another classification, or other part of a Class 7 building not used for carparking; and
    - ii. a building or part of a building specifically intended for the parking of trucks, buses, vans and the like.

3) For building elements in a carpark as described in (1) and (2), the following minimum FRLs are applicable:

a) External walls:

- i. Less than 3 m from a fire-source feature to which it is exposed:
  - A. Loadbearing: 60/60/60.
  - B. Non-loadbearing: -/60/60.
- ii. 3 m or more from a fire-source feature to which it is exposed: -/-/-.

b) Internal walls:

- i. Loadbearing, other than one supporting only the roof (not used for carparking): 60/-/-.
- ii. Supporting only the roof (not used for carparking): -/-/-.
- iii. Non-loadbearing: -/-/-.

c) Fire walls:

- i. From the direction used as a carpark: 60/60/60.
- ii. From the direction not used as a carpark: as required by Tables S5C21a to S5C21f as appropriate.

d) Columns:

- i. Supporting only the roof (not used for carparking) and 3 m or more from a fire-source feature to which it is exposed: -/-/-.
- ii. Steel column, other than one covered by (i) and one that does not support a part of a building that is not used as a carpark—
  - A. 60/-/-; or
  - B. an ESA/M of not greater than 26 m<sup>2</sup>/tonne.
- iii. Any other column not covered by (i) or (ii): 60/-/-.

e) Beams:

- i. Steel floor beam in continuous contact with a concrete floor slab—
  - A. 60/-/-; or
  - B. an ESA/M of not greater than 30 m<sup>2</sup>/tonne.
- ii. Any other beam: 60/-/-.

f) Lift shaft: -/-/-.

g) Fire-resisting stair shaft (within the carpark only): 60/60/60.

h) Roof, floor slab and vehicle ramp: -/-/-.

4) For the purposes of (3), ESA/M means the ratio of exposed surface area to mass per unit length