

BCA Assessment Report

Triple Two Nine Industrial Development
13 Endeavour Road, Caringbah

Prepared for:

Aliro Group

Revision 3.1

14 October 2024

Reference: 230188



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Liability limited by a scheme approved under Professional Standards Legislation.

Executive Summary

The following comprises a summary of the key compliance issues identified under the assessment in this report that will be required to be addressed prior to the Certification Applications for the project.

A. Matters Requiring Redesign or Additional Information at CC Stage:

+ BCA (DTS) Clause		+ Description
1.	Part B1	Confirmation is required from the Structural Engineer that the load for provision for solar panels is incorporated into the design.
2.	C2D10 / C2D14	Provide a copy of the External Wall Disclosure Statement with the CC Application, demonstrating that the external walls of Buildings 3, 4 & 5 (Block 1) comprise only of non-combustible materials.
3.	C3D6, C3D3 & C3D8-C3D10	Provide finalised fire compartmentation plans outlining the compartmentation strategy for Buildings 3, 4 & 5 (Block 1), along with verification of the total area & volume of each compartment. Specific attention is also drawn to the requirement for fire compartmentation of the childcare facility. The intersection of fire walls & structural members is also to be investigated prior to finalised
4.	C3D13 & C3D14	Provide plans identifying the fire separation of rooms comprising essential/ electrical equipment.
5.	C4D3-C4D5	Building 4 is within 6m of Building 3 along its northern façade, thus any openings (doors/windows) in this façade require protection. Provide plans demonstrating compliance.
6.	C4D4	Provide plans demonstrating fire rating to external walls of compartments externally exposed to one another.
7.	Spec. 5	Provide design documentation demonstrating the proposed FRLs to each building element. Specific attention is drawn to the proposed use of mass timber.
8.	Spec. 9, Spec. 10 & D3D30	Provide details of the proposed usage of mass timber in Building 5 (Block 1). Where compliance is not achieved, a Fire Engineering Report will be required.
9.	D2D8	A clear width of 1m is required to be maintained through egress paths. The indicative racking layout in unit 06.A required further design development in this respect.
10.	D2D13	Provide further details demonstrating compliance with the requirements of this clause, with respect to the external stair associated with the egress from the eastern side of Level 1 of the childcare centre.
11.	D2D18, F4D3 & F4D4	Provide occupant numbers for the proposed buildings to facilitate an accurate assessment of aggregate egress widths & sanitary facility numbers.
12.	D3D9	Provide plans demonstrating fire ratings to enclosures beneath egress stairs.

+ BCA (DTS) Clause		+ Description
13.	D3D26	Provide details regarding the proposed latching arrangements to egress doors serving the early childhood centre.
14.	D3D29	The windows in the early childhood centre are required to be provided with restrictors complying with the requirements of this clause.
15.	D4D5	Access Consultant to advise of the extent of any exemptions for areas, under the provisions of this clause.
16.	D4D9	TGSIs are required to the base of the stairway serving Unit 6A.
17.	E1D2	Hydraulic designer to provide details demonstrating compliance with AS 2419.1-2021 & confirm whether any additional Performance Solutions are proposed with respect to the hydrant system.
18.	E1D3	A number of fire hose reels are shown as being >4m from an exit. This does not comply.
19.	NSW E1D4, E1D12, E1D13	Fire services designer to provide details demonstrating compliance with AS 2118.1 & confirm whether any Performance Solutions are proposed with respect to the sprinkler system.
20.	Part E2	Fire services designer to provide details demonstrating the extent of the smoke detection & alarm systems, as well as the smoke exhaust system proposed throughout each building & confirm whether any additional Performance Solutions are proposed with respect to these systems.
21.	E2D14, E2D15 & NSW E2D19	Confirm the compartment sizes of the Class 6 & 9b parts of Building 5 (Block 1) do not exceed 2,000m ² .
22.	F4D4 & F4D8	Upon submission of occupant numbers a details sanitary facility assessment is required to be undertaken. Additionally, a detailed review of the kitchen and other facilities required for the early childhood facility will be required upon submission of plans demonstrating the layout of these spaces.
23.	G1D4	Designs demonstrating compliance with the 'Outdoor Play Space' requirements of this clause are to be provided with the CC application.
24.	F6D2	Details of the methods of providing natural light to early childhood centre playrooms are to be provided, in order to establish compliance.
25.	J9D4	Details of the provision for EV charging stations are to be provided, confirming compliance with the requirements of this clause.

B. Matters Requiring Fire Safety Engineered Performance Solutions:

+ BCA (DTS) Clause		+ Description
1.	Spec. 5	Reduction of FRLs is proposed to a number of the proposed buildings. It is understood that a smoke seal in lieu of a fire seal at the slab edge is proposed to be addressed, in Buildings 4 & 5 (Block 1).
2.	C3D3	The compartmentation proposed as part of the Building 4 & 5 (Block 1) is proposed to be incorporated into the Fire Engineering Report.

+ BCA (DTS) Clause		+ Description
3.	C3D5	Non-compliant Perimeter Vehicular Access is proposed to be justified via a Fire Engineering Report for Buildings 5 (Blocks 1 & 2), 7 & 8.
4.	D2D5 & D2D6	The current plans indicate that exit travel distances, and distances between alternative exits within multiple buildings will not comply with D2D5 & D2D6.
5.	D3D13	The western non-fire isolated stair serving Building 4 from the roof as open space requires travel back into the building. It is understood this is to be address either via a design amendment or a Fire Engineered Performance Solution. The roof as open space incorporates additional non-compliances in that, egress back under covered awnings is required after discharging onto the roof, and service penetrations through the roof will also be required.
6.	E1D2	Design of Hydrant System per AS 2419.1-2021 Appendix C, in relation to Building 5 (Block 1).
7.	E1D3	It is understood that a Fire Engineered Performance Solution may be proposed to justify omission of fire hose reels throughout one or more of the warehouse buildings.
8.	NSW E2D10	A Performance Solution is proposed to be prepared to justify a reduced air exchange rate to the smoke exhaust system in Building 5 (Block 1).
9.	E4D4	Where any exit signs are proposed to be installed at a height in excess of 2.7m this is to be addressed via a Fire Engineered Performance Solution.

C. Matters Requiring Non-Fire Safety Performance Solutions:

+ BCA (DtS) Clause		+ Description
1.	D4D4	An Access performance Solution is proposed to be prepared to justify non-provision of access to the office mezzanines throughout.
2.	F3P1	A Performance Solution report is to be provided by the Architect/Façade Engineer to demonstrate how the external walls are designed to prevent the penetration of water into each building.
3.	F4D4	The Ground Floor Kitchen in the childhood centre does not facilitate supervision of children. Where children under the age of 2 are accommodated this design would not comply.

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+ Report Status

+ Date	14.10.2024
+ Revision	3.1
+ Status	Preliminary Issue – Updated to address design changes
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+ Revision History

+ Revision	0	+ Date	03.07.2023
+ Status	Preliminary Issue		
+ Revision	1	+ Date	06.09.2023
+ Status	Preliminary Issue – Updated to address design changes		
+ Revision	2	+ Date	05.10.2023
+ Status	Preliminary Issue – Updated to address design changes		
+ Revision	3	+ Date	11.10.2024
+ Status	Preliminary Issue – Updated to address design changes		
+ Revision	3.1	+ Date	14.10.2024
+ Status	Preliminary Issue – Updated to address design changes.		

1.0 Description of Project

1.1 Proposal

BM+G have been commissioned by Aliro Group to undertake an assessment of the proposed 'Triple Two Nine' industrial development at 13 Endeavour Road, Caringbah against the relevant provisions of the Building Code of Australia 2022 (BCA).

1.2 Aim

The aim of this report is to:

- + Undertake an assessment of the proposed development against the deemed-to-satisfy provisions of the BCA.
- + Identify matters that require plan amendments in order to achieve compliance with the BCA.
- + Identify matters that are to be required to be addressed by Performance Solutions.
- + Enable the certifying authority to satisfy its statutory obligations under Section 19(1) of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021.

1.3 Project Team

The following BM+G team members have contributed to this Report:

- + **Jackson Boyd** – Report Preparation (Building Surveyor)
- + **John Kassiou** – Report Preparation (Cadet Building Surveyor)
- + **Kathryn Garcia** – Report Preparation (Cadet Building Surveyor)
- + **Dean Goldsmith** – Project PCA/Peer Review (Director) | Building Surveyor-Unrestricted

1.4 Referenced Documentation

The following documentation has been reviewed, referenced and/or relied upon in the preparation of this report:

- + Building Code of Australia 2022 (BCA)
- + Architectural Plans prepared by Watson Young Architects, numbered:

+ Drawing No.	+ Revision	+ Date
004	B	04.10.2024
006	B	04.10.2024
008	B	04.10.2024
020	B	04.10.2024
301	B	10.10.2024
303	B	10.10.2024
320	B	10.10.2024
400	B	04.10.2024
402	B	04.10.2024
404	B	04.10.2024
411	B	04.10.2024
421	B	04.10.2024
500	B	04.10.2024
515	B	04.10.2024
551	B	04.10.2024
600	B	11.10.2024
602	B	11.10.2024
610	B	11.10.2024
621	B	11.10.2024

+ Drawing No.	+ Revision	+ Date
005	D	10.10.2024
007	B	10.10.2024
010	B	04.10.2024
300	B	10.10.2024
302	B	10.10.2024
310	B	10.10.2024
350	B	10.10.2024
401	B	04.10.2024
403	B	04.10.2024
410	B	04.10.2024
420	B	04.10.2024
450	B	04.10.2024
505	B	04.10.2024
522	B	04.10.2024
552	C	04.10.2024
601	B	11.10.2024
603	B	11.10.2024
620	B	11.10.2024
650	B	11.10.2024

1.5 Regulatory Framework

- + Pursuant to Section 19(1) of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021 all new building work must comply with the current BCA however the existing features of an existing building need not comply with the BCA unless upgrade is required by other clauses of the legislation.
- + Pursuant to Section 60 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021, if a Certifier becomes aware of any significant fire safety issues in the process of determining a CDC, there are two options:
 - Address the significant fire safety issue in the proposed development, or
 - Notify Council of the significant fire safety issue (noting Council may potentially then issue a Fire Safety Order on the building compelling the building owner to rectify the issue).
- + Pursuant to Section 143 of the Environmental Planning and Assessment Regulation 2021, the development standards applicable to complying development that involves the alteration of an existing building include the following requirements—
 - if the building work involves the reconfiguration of an internal part of the building that will be occupied—on completion of the building work, the building will contain measures that are adequate, if there is a fire, to facilitate the safe egress of persons from the reconfigured part of the building,

- the fire protection and structural capacity of the building will, on completion of the building work, not be reduced.
- + Pursuant to Section 14 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021, a certifier must not issue a construction certificate for alteration building work unless, on completion of the building work, the fire protection and structural capacity of the building will not be reduced.

The assessment has been undertaken in accordance with Clause 24 and 25 of the Building and Development Certifiers Regulation 2020. **BM+G** are the proposed Registered Certifier and the advice provided in this Report is limited to whether submitted documentation complies with the Building Code of Australia or a legislative requirement.

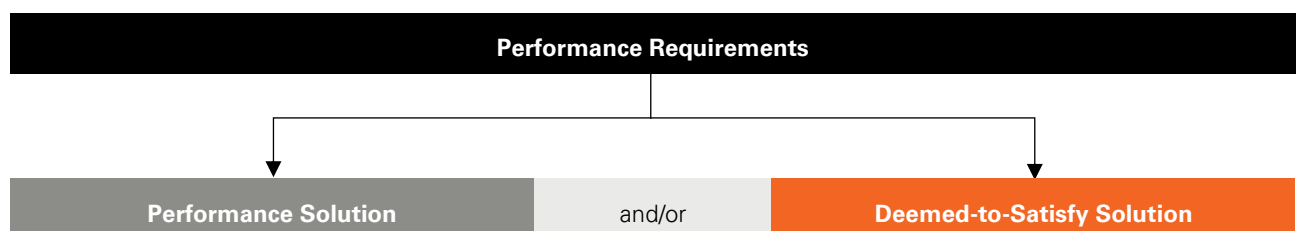
1.6 Relevant Version of the NCC Building Code of Australia

Pursuant to Section 19 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021 the proposed building is subject to compliance with the relevant requirements of the BCA as in force at the day on which the application for the Construction Certificate is made. The current version of the BCA is BCA 2022, with the next revision of the BCA coming into effect 1 May 2025. As the Construction Certificate application will be lodged after 1 May 2023, this report assesses the design against compliance with the requirements of BCA 2022.

The following parts of the BCA are subject to transitional provisions:

- + NCC 2022 Energy Efficiency provisions – 1 October 2023.
- + NCC 2022 Condensation Management provisions under BCA Part F8 – 1 October 2023.

1.7 Compliance with the National Construction Code



Compliance with the NCC is achieved by complying with:

- + the Governing Requirements of the NCC; and
- + the Performance Requirements.

Performance Requirements are satisfied by one of the following, as shown in the Figure below:

- + A Performance Solution.
- + A Deemed-to-Satisfy Solution.
- + A combination of the above two options.

1.8 Limitations and Exclusions

The limitations and exclusions of this report are as follows:

- + This report is prepared in accordance with the Conflicts of Interest provisions of Part 4 of the Building and Development Certifiers Regulation 2020. **bm+g** confirm that this report is prepared specifically to address the requirements of Clause 25(5) and (9) of the Regulation with respect to the role of the Registered Certifier. This assessment report is not to be construed as extending any further into providing design advice, which would be contrary to the aims of this legislation.
 - + No assessment has been undertaken with respect to the Disability Discrimination Act 1992 (DDA). The building owner needs be satisfied that their obligations under the DDA have been addressed.
 - + Please note that whilst the BCA specifies a minimum standard of compliance with AS1428 (Parts 1-3) and Part D4 of the BCA for access and facilities for people with disabilities, compliance with such requirements may not necessarily preclude the possibility of a future complaint made under the DDA 1992. The DDA is a complaint based legislation and is presently not identified by the State Building Codes and Regulations. In this regard the building owner should be satisfied that their obligations under the DDA have been addressed.
 - + No assessment has been undertaken with respect to SEPP (Housing) 2021. It is understood that suitably qualified consultants will be engaged to determine the relevance of any Council planning requirements or SEPP requirements and provided detailed assessment reports where applicable.
- Where relevant to this development, it is assumed that these assessments will be undertaken by others.
- + This report does not consider BCA Part G5 (Volume 1) which makes provision for construction of buildings in bushfire-prone areas, therefore no assessment has been undertaken in consideration of RFS, Planning for Bushfire Protection and AS 3959. Where Part G is applicable to the site, then it is required that assessment / due diligence is undertaken by a specialist consultant to verify compliance.
 - + This report does not constitute a detailed assessment of the architectural documentation against the requirements of Section J. It is understood that a suitably qualified consultant will be engaged to determine compliance in this regard.
 - + **bm+g** has not undertaken an assessment of any Performance Solution Reports at the time of the preparation of this report.
 - + The Report does not address matters in relation to the following Local Government Act and Regulations:
 - Work Health and Safety Act and Regulations.
 - Work Cover Authority requirements.
 - Water, drainage, gas, telecommunications and electricity supply authority requirements.
 - Disability Discrimination Act 1992.
 - + **bm+g** cannot guarantee acceptance of this report by Local Council, Fire & Rescue NSW or other approval authorities.
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1.9 Report Terminology

Building Code of Australia – Document published on behalf of the Australian Building Codes Board.

The BCA is a uniform set of technical provisions for the design and construction of buildings and other

structures throughout Australia and is adopted in NSW under the provisions of the Environmental Planning & Assessment Act & Regulation.

Climatic Zone – Means an area defined in Figure 2 and in Table 2 (of BCA Schedule 3) for specific locations, having energy efficiency provisions based on a range of similar climatic characteristics.

Construction Certificate – Building Approval issued by the Certifying Authority pursuant to Part 6 of the EP&A Act 1979.

Construction Type – The construction type is a measure of a building's ability to resist a fire. The minimum type of fire-resisting construction of a building must be that specified in Table C2D2 and Specification 5, except as allowed for:

- certain Class 2, 3 or 9c buildings in C2D6; and
- a Class 4 part of a building located on the top storey in C2D4(2); and
- open spectator stands and indoor sports stadiums in C2D8.

***Note:** Type A construction is the most fire-resistant and Type C the least fire-resistant of the types of construction.*

Deemed-to-Satisfy (DtS) Provisions of the BCA – Means the prescriptive provisions of the BCA which are deemed to satisfy the performance requirements.

Effective Height – The vertical distance between the floor of the lowest storey included in the calculation of rise in storeys and the floor of the topmost storey (excluding the topmost storey if it contains only heating, ventilating, lift, or other equipment, water tanks or similar service units).

Exit – Any, or any combination of the following if they provide egress to a road or open space:

- + An internal or external stairway.
- + A ramp.
- + A fire-isolated passageway.
- + A doorway opening to a road or open space.

Fire Compartment – The total space of the building; or when referred to in

- + The Performance Requirements – any part of a building separated from the remainder by barriers to fire such as walls and/or floors having

an appropriate resistance to the spread of fire with any openings adequately protected; or

- + The Deemed-to-Satisfy Provisions – any part of a building separated from the remainder by walls and/or floors each having an FRL not less than that required for a fire wall for that type of construction and where all openings in the separating construction are protected in accordance with the Deemed-to-Satisfy Provisions of the relevant part.

Fire Resistance Level (FRL) – The grading periods in minutes for the following criteria:

- structural adequacy; and
- integrity; and
- insulation.

and expressed in that order.

Fire Source Feature (FSF) – The far boundary of a road adjoining the allotment; or a side or rear boundary of the allotment; or an external wall of another building on the allotment which is not a Class 10 building.

National Construction Code Series (NCC) – The NCC was introduced 1 May 2011 by the Council of Australian Governments (COAG). The BCA Volume One (Class 2 to 9 Buildings) is now referenced as the National Construction Code Series Volume One — BCA.

Occupiable outdoor area means a space on a roof, balcony or similar part of a building:

- + that is open to the sky; and
- + to which access is provided, other than access only for maintenance; and
- + that is not open space or directly connected with open space.

Occupation Certificate (OC) – Building Occupation Approval issued by the Principal Certifying Authority pursuant to Part 6 of the EPA Act 1979.

Open Space – Means a space on the allotment, or a roof or other part of the building suitably protected from fire, open to the sky and connected directly with a public road.

Performance-Based Design Brief – Means the process and the associated report that defines the scope of work for the performance-based analysis,

the technical basis for analysis, and the criteria for acceptance of any relevant Performance Solution as agreed by stakeholders.

Performance Requirements of the BCA – A Building Solution will comply with the BCA if it satisfies the Performance Requirements. A Performance requirement states the level of performance that a Building Solution must meet.

Compliance with the Performance Requirements can only be achieved by-

- a. complying with the Deemed-to-Satisfy Provisions; or
- b. formulating an Performance Solution which-
 - complies with the Performance Requirements; or
 - is shown to be at least equivalent to the Deemed-to-Satisfy Provisions; or
- c. a combination of (a) and (b).

Performance Solution – Means a method of complying with the performance requirements other than by a Deemed-To-Satisfy Solution.

2.0 Building Characteristics

2.1 Proposed Development

The proposed development consists of construction and operation of a mixed-use industrial estate including demolition of existing buildings and construction of Warehouse Buildings 3, 4, 5, 6 & 7, within the existing industrial complex.

The building is classified as follows:

+ BCA Classifications:	<p>Buildings 3, 4, 5 (Block 2), 6, 7 & 8: Class 5 (office) & 7b (warehouse)</p> <p>Building 5 (Block 1): Class 5 (office), Class 6 (café), 7b (warehouse) & Class 9b (childcare)</p> <p>Sprinkler Pump House: Class 10a</p> <p>On-Grade Car Parking & Other Ancillary External Structures: Class 10b</p> <p><i>Note: BM+G are advised that all buildings may have parts of the Class 7b components used as Class 8 (manufacturing).</i></p>
+ Rise in Storeys:	<p>Buildings 3, 5 (Block 1 & 2), 6, 7 & 8: Two (2)</p> <p>Building 4: Four (4)</p>
+ Type of Construction:	<p>Buildings 5 (Block 2), 6, 7 & 8: Type C Construction</p> <p>Buildings 3, 4 & 5 (Block 1): Type A Construction</p>
+ Importance Level (Structural)	Buildings 3-8: Level 2 (TBC by Structural Engineer)
+ Sprinkler Protected Throughout	Buildings 3-8: Yes (sprinkler protection required by DtS provisions)
+ Effective Height	<p>Building 3, 6, 7 & 8: 3.8m</p> <p>Building 4: 10.3m</p> <p>Building 5 (Block 1): 4.2m</p> <p>Building 5 (Block 2): 4.0m</p>
+ Floor Area	<p>Building 3: 4,890m²</p> <p>Building 4: 9,317m²</p>

	<p>Building 5 (Block1): 10,870m²</p> <p>Building 5 (Block 2): 7,086m²</p> <p>Building 6: 3,021m²</p> <p>Building 7: 4,759m²</p> <p>Building 8: 1,682m²</p> <p><i>Note: The above is based on the floor areas provided by the Architect.</i></p>
+ Volume	<p>Building 3: 50,000m³ (approx.)</p> <p>Building 4: 76,000m³ (approx.)</p> <p>Building 5 (Block1): 106,800m³ (approx.)</p> <p>Building 5 (Block 2): 106,300m³ (approx.)</p> <p>Building 6: 23,200m³ (approx.)</p> <p>Building 7: 36,400m³ (approx.)</p> <p>Building 8: 13,600m³ (approx.)</p> <p><i>Note: Architect to provide precise measurements of the above.</i></p>
+ Largest Fire Compartment Size	<p>Buildings 5 (Block 1 & 2), 6, 7 & 8: No limitation (large isolated buildings)</p> <p>Buildings 3 & 4: Max. permitted = 5,000m²/30,000m³</p>
+ Climate Zone	Zone 5 (Sutherland)

2.2 Fire Compartment Floor Area Limitations

The maximum permissible size of fire compartments is as below (does not apply to large isolated buildings).

+ Classification		+ Type A	+ Type B	+ Type C
6 & 7	Max. floor area	5,000m ²	3,500m ²	2,000m ²
	Max. volume	30,000m ³	21,000m ³	12,000m ³
5 & 9b	Max. floor area	8,000m ²	5,500m ²	3,000m ²
	Max. volume	48,000m ³	33,000m ³	18,000m ³

2.3 Distance to Fire Source Features

Based upon a review of the plans, it is noted that each elevation of the building is located within the following distances from fire source features on the site.

+ Elevation	+ Fire Source Feature	+ Distance
Building 3		
North	Building on same allotment	>3m
East	Side or rear boundary	>3m
South	Building on same allotment	>3m
West	Building on same allotment	>3m
Building 4		
North	Building on same allotment	>3m
East	Side or rear boundary	>3m

South	Side or rear boundary	>3m
West	Building on same allotment	>3m
Building 5 (Block 1)		
North	Building on same allotment	>3m
East	Building on same allotment	>3m
South	Far side of the road	>3m
West	Far side of the road	>3m
Building 5 (Block 2)		
North	Building on same allotment	>3m
East	Building on same allotment	>3m
South	Building on same allotment	>3m
West	Building on same allotment	>3m
Building 6		
North	Building on same allotment	>3m
East	Side or rear boundary	>3m
South	Building on same allotment	>3m
West	Building on same allotment	>3m
Building 7		
North	Building on same allotment	>3m
East	Side or rear boundary	>3m
South	Building on same allotment	>3m
West	Building on same allotment	>3m
Building 8		
North	Building on same allotment	>3m
East	Side or rear boundary	>3m
South	Far side of the road	>3m
West	Far side of the road	>3m

Note: Fire Source Feature (FSF) – The far boundary of a road adjoining the allotment; or a side or rear boundary of the allotment; or an external wall of another building on the allotment which is not a Class 10 building.

3.0 BCA Assessment

We note the following BCA compliance matters with relation to proposed building works are capable of complying with the BCA. Please note that this is not a full list of BCA clauses, they are the key requirements that relate to the proposed work and the below should be read in conjunction with the BCA.

3.1 Section B – Structure

Part B1

- + New building works are to comply with the structural provisions of the BCA 2022 and the following referenced standards including:
 - AS 1170.0 – 2002 General Principles
 - AS 1170.1 – 2002, including certification for balustrades (dead and live loads)
 - AS 1170.2 – 2021, Wind loads
 - AS 10170.4 – 2007, Earthquake loads
 - AS 3700 – 2018, Masonry Structures
 - AS 3600 – 2018, Concrete Structures
 - AS 4100 – 1998, Steel Structures and/or
 - AS 4600 – 2018, Cold formed steel Structures
 - AS 2159 – 2009, Piling Design & Installation
 - AS 1720 – 2010, Design of Timber Structure
 - AS/NZS 1664.1 & 2 – 1997, Aluminium Structures
 - AS 2047 – 2014, Windows and External Glazed Doors in buildings
 - AS 1288 – 2006, Glass in buildings
 - AS 3660.1 – 2014, Termite control (or confirmation no primary building elements are timber).
- + Design certification will also be required from the Architect and Services Consultants to confirm compliance with Section 8 of AS1170.4-2007 with regard to the design of non-structural parts and components and their fastenings for horizontal and vertical earthquake forces and inter-storey drift.
- + In accordance with B1D3(a)(iv) a notional additional load of not less than 0.15kPa to support the addition of solar photovoltaic panels is to be applied to the roof structure.
- + The Importance Level provisions of BCA (Section B) are to be acknowledged by the Structural Engineer and addressed to the degree necessary.

Comment: Structural design details and certification will be required at CC application stage

3.2 Section C – Fire Resistance

C2D2/ Spec 5

Type of Construction Required: The buildings are required to comply with the requirements of Type A or Type C Construction as relevant (see Section 2.1, above). The below tables provide an overview of the requirements of each. Refer to Table 4 & 6 of Appendix 1 for the FRL requirements of Type A & C Construction, respectively.

	<div style="background-color: black; color: white; text-align: center; padding: 5px;">Type A Construction:</div> <ul style="list-style-type: none"> + Load-bearing external walls and columns must achieve an FRL regardless of distance from boundary / separate building. + Non load-bearing external walls (and columns incorporated within) need not achieve an FRL if >3m from a boundary or separate building. + Floors must achieve a 2-hour FRL. + Roof must be of non-combustible construction. + Internal columns on the floor immediately below the roof need not achieve an FRL. <div style="background-color: black; color: white; text-align: center; padding: 5px; margin-top: 10px;">Type C Construction:</div> <ul style="list-style-type: none"> + External walls (and columns incorporated within) need not achieve an FRL if >3m from a boundary or separate building. Where required, external walls of Type C Construction only require an FRL from the outside and not in both directions. + Floors need not achieve an FRL, subject to Cl. 2.2. + Roofs need not achieve an FRL. + Internal columns need not achieve an FRL.
C2D3	<p>Comment: Plans and design statements to be provided by the Structural Engineer at CC stage.</p> <p>Calculation of Rise in Storeys: The rise in storeys of a building is the sum of the greatest number of storeys at any part of the external walls of the building and any storeys within the roof space calculated in accordance with the requirements set out in this clause.</p> <p>Comment: As stipulated in table 2.1 of this report, the rise in storeys of each building is as follows:</p> <ul style="list-style-type: none"> + Buildings 3, 5 (Block 2), 6, 7 & 8: Two (2) + Building 4: Four (4) + Building 5 (Block 1): Three (3)
C2D10/ C2D14	<p>Non-Combustible Building Elements: All materials and or components incorporated in an external wall of a Type A or B Construction Building, or fire-rated wall must be non-combustible. This includes but not limited to:</p> <ul style="list-style-type: none"> + Any external wall claddings. + Any framing or integral formwork systems, i.e. timber framing, sacrificial formwork, etc. + Any external linings or trims, i.e. external UPVC window linings, timber window blades, etc. + Any sarking or insulation contained within the wall assembly. <p>This is not an exhaustive list, and any element incorporated within any external wall assembly must be identified and approved prior to the issue of a CC.</p> <p>Refer to Table 1 in Appendix 1 for the elements required to be non-combustible.</p> <p>Ancillary Elements: An ancillary element must not be fixed, installed or attached to the internal parts or external face of an external wall that is required to be non-combustible, unless it is in accordance with this clause.</p> <p>Comment: Design documentation is to be provided at CC stage demonstrating compliance. Specific attention is drawn to commentary regarding 'green walls', noting that Buildings 3, 4 & 5 (Block 1) are subject to Type A construction, thus require non-combustible external walls.</p>
C2D11 & Spec. 7	<p>Fire Hazard Properties: A schedule of all wall, floor, and ceiling linings along with associated test reports are to be provided for review to ensure compliance with the fire hazard property requirements of the BCA. Noting:</p> <ul style="list-style-type: none"> + Minimum Group Numbers apply to wall and ceiling linings. AS 5637 test reports must be provided to determine compliance.

- + Minimum Critical Radiant Flux values apply to floor linings. AS ISO 9239.1 test reports must be provided to determine compliance

Refer to Table 2 and 3 in Appendix 1 below for the required fire hazard properties.

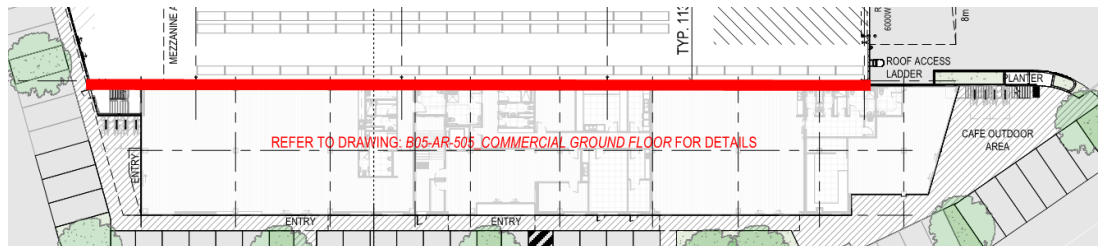
Comment: Design documentation is to be provided at CC stage.

C2D13

Fire-Protected Timber: This clause sets out the provisions for use of fire-protected timber in lieu of non-combustible building elements.

Comment: The use of mass timber as the structure of the southern section of Building 5 (Block 1) is subject to the requirements of this clause. In this regard, compliance with the following is required;

- + The mass timber section of the building is to be separated from the building by a fire wall achieving the FRL required for a fire wall under Spec. 5 (see comments under Spec. 5 regarding reduction of FRLs & comments under C4D2 regarding exposure between adjacent fire compartments).



- + The building is required to be sprinkler protected throughout,
- + Any insulation installed in the cavity of the timber building element to have an FRL is non-combustible, and cavity barriers are to be provided in accordance with Spec. 9.

C3D3

General Floor Area and Volume Limitations: Buildings are required to achieve fire compartment sizes not in excess of the DtS requirements of this clause.

Comment: As stipulated in Table 2.1 of this report, Buildings 5 (Blocks 1 & 2), 6, 7 & 8 are 'large isolated buildings' and thus no limitation on fire compartment sizes exist.

Buildings 3 & 4 however are limited to fire compartments not exceeding the limitations of this clause (i.e. Building 3: 2,000m²/12,000m³ & Building 4: 5,000m²/30,000m³). The provided plans indicate the buildings exceed these limitations. It is understood that a combination of fire compartmentation by internal fire walls and a **Fire Engineered Performance Solution** is proposed in this regard.

C3D4

Large Isolated Buildings: A Large Isolated Building that contains Class 5, 6, 7, 8 or 9 parts, is required to be—

- + Protected throughout with a sprinkler system complying with Specification 17; and
- + Provided with a perimeter vehicular access complying with C3D5(2).

Comment: The proposed Buildings 5 (Block 1 & 2), 6, 7 & 8 are required to be sprinkler protected and provided with a 6m wide perimeter vehicular accessway in accordance with Clause C3D5(2) throughout (see notes below).

Note 1: Any proposed gates are to achieve no less than 6m unobstructed width or the reduced width will need to be included in the above Performance Solution.

Note 2: The driveways providing vehicular perimeter access must be designed with adequate loading capacities, gradients and swept paths to accommodate a fire truck, having regard to the FRNSW Fire Safety Guideline – Access for Fire Brigade Vehicles and Firefighters.

Note 3: The Trial Design for the Fire Engineered Performance Solution must take into consideration and detail the proposed security access to the site and how this may impact on FRNSW vehicular access.

C3D5

Requirements for Open Spaces and Vehicular Access: Open space and vehicular access required by C3D4 must comply with the requirements of sub-clauses (a) & (b) of this Part whereby

Comment: Spandrel protection is not required where sprinkler systems are provided. Noting that it is understood that the buildings are all required to be sprinkler protected, the requirements of this clause are not applicable.

This comment has been provided for compliance information only. No action is required in this regard.

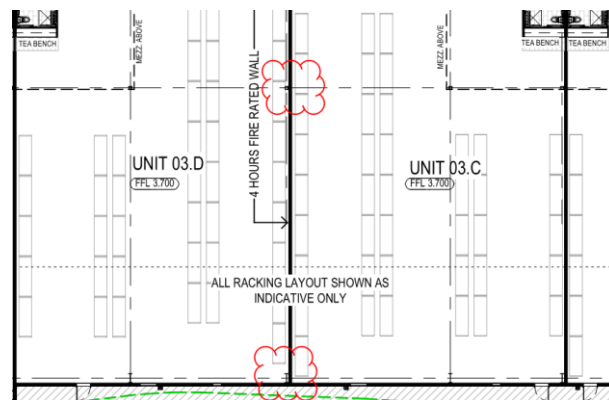
C3D8

Separation by Fire Walls: Separation of Fire Compartments must be constructed in accordance with the following:

- + FRL in accordance with Tables S5C11a – S5C11g of Spec. 5 and extend to the underside of a floor with the same FRL, or to the underside of a non-combustible roof covering.
- + Any openings in a fire wall must not reduce the FRL, except where permitted by the Deemed-to-Satisfy Provisions of Part C3 (i.e. fire doors; protection of services).
- + Building elements, other than roof battens with dimensions of 75 mm x 50 mm or less or sarking-type material, must not pass through or cross the fire wall unless the required fire resisting performance of the fire wall is maintained.

Comment: Fire walls proposed to be provided internally are required to be in conformance with the requirements of this clause. It is understood that fire walls are proposed to separate Warehouse 3 into three fire compartments; Units A & B; Units C & D; and Units E & F.

It is noted that specific attention is drawn to the intersection between fire walls and any structural components (e.g. I beams & roof purlins). Fire walls are required to extend to the underside of the roof covering (or floor slab, as applicable), and not be crossed by any building elements that would adversely affect the integrity of the wall (except roof battens having a cross sectional area $\leq 75 \times 50 \text{ mm}$). An example of this is pictured in the below excerpt from Warehouse 3.



C3D9/
C3D10

Separation of Classifications: Separate classifications will either need to be separated by a fire wall achieving the higher FRL requirement between the two classes, or alternatively the higher FRL must apply to both areas subject to Spec 5.

Note: Refer to C3D8 comments above in regards to structural elements crossing a fire wall at roof level.

Comment: It is understood that separation of the Class 6/9b parts of Building 5 (Block 1) is proposed to be separated from the Class 5/7b parts. In this regard the fire wall separating these parts requires a 240/240/240 FRL.

C3D11

Separation of Lift Shafts: Lift shafts are required to achieve an FRL in accordance with Spec. 5 where they connect greater than 3 storeys in sprinkler protected buildings.

Comment: It is noted that the lift shafts in Buildings 4 & 5 (Block 1) do not exceed the above threshold, however, it is understood that the lift shafts are required to be fire rated for the purpose of fire compartmentation across storeys.

C3D12

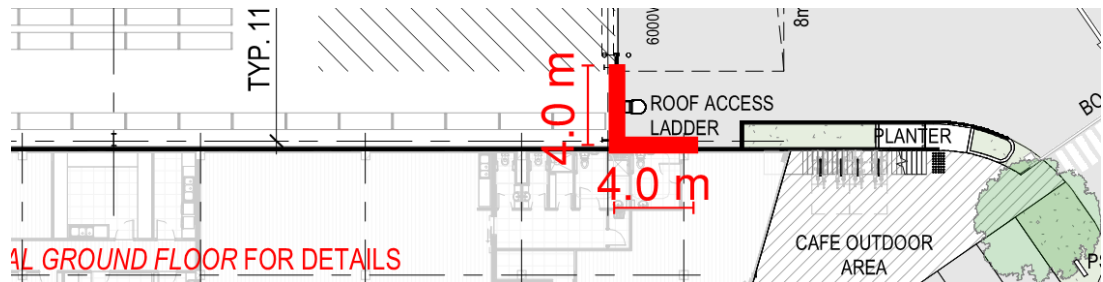
Stairways and Lifts One Shaft: A stairway and a lift must not be in the same shaft if either the stairway or the lift is required to be in a fire resisting shaft.

Comment: To be noted by the Architect.

C3D13	<p>Separation of Equipment: Equipment as listed below must be separated from the remainder of the building with construction that achieves an FRL of 120/120/120 (or that required by Spec. 5, whichever is greater) and doorways being self-closing -/120/30 fire doors:</p> <ul style="list-style-type: none"> + Lift motors and lift control panels; or + Emergency generators used to sustain emergency equipment operating in emergency mode; or + Central smoke control plant; or + Boilers; or + A battery or battery system installed in the building that has a voltage of 12 volts or more and a storage capacity of 200kWh or more. <p>Confirmation is required as to whether any of the above will be applicable to this development.</p> <p>Comment: To be noted by the Architect. Provide plans demonstrating compliance as part of the CC application package.</p>
C3D14	<p>Electricity Supply System: An electricity substation, electrical conductors & main switchboards which sustain 'emergency equipment' operating in the emergency mode, located within a building must—</p> <ul style="list-style-type: none"> + Be separated from any other part of the building by construction having an FRL of not less than 120/120/120; and + Having any doorway in that construction protected with a self-closing fire door having an FRL of not less than -/120/30 + Electrical conductors which supply a substation or main switchboard sustaining emergency equipment operating in the emergency mode – + Have a classification in accordance with AS/NZS 3013 of not less than— <ul style="list-style-type: none"> o If located in a position that could be subject to damage by motor vehicles — WS53W; or o Otherwise — WS52W; or + Be enclosed or otherwise protected by construction having an FRL of not less than 120/120/120. <p>Where emergency equipment is required in a building, all switchboards in the electrical installation, which sustain the electricity supply to the emergency equipment switchgear must be separated from the non-emergency equipment switchgear by metal partitions designed to minimise the spread of fault from the non-emergency equipment switchgear.</p> <p>Note: For the purpose of this clause, 'emergency equipment' includes (but is not limited to) fire pumps, air handling systems for smoke control, emergency lifts, control & indicating equipment, EWIS.</p> <p>Comment: To be noted by the Architect. Provide plans demonstrating compliance as part of the CC application package.</p> <p>Specific attention is drawn to the Building 4 MSB located in the car park, without any bounding construction presently shown. The MSB is required to be provided with a fire separated room as part of the design finalisation prior to issue of the relevant CC.</p>
C4D3 & C4D5	<p>Protection of Openings in External Walls: Openings that are less than 3m from the allotment boundary or less than 6m from another building on the same allotment are required to be protected in accordance with BCA Clause C4D5.</p> <p>Comment: Note that Building 4 is within 6m of Building 3 along its northern façade, thus any openings (doors/windows) in this façade require protection.</p>
C4D4	<p>Separation of External Walls and Associated Openings in Different Fire Compartments: The distance between parts of external walls and openings within them in different fire compartments separated by a fire wall must not be less than that set out in Table C4D4, unless those parts of each wall have an FRL not less than 60/60/60 and any openings are protected in accordance with C4D5.</p>

Comment: The separation of Buildings 3 & 4 shown on the provided plans does not result in any horizontal exposure between adjacent compartments.

The below exposure occurs in Building 5 (Block 1). These walls require a 60/60/60 FRL & openings appropriately fire protected also.



C4D6 Doorways in Fire Walls: A doorway in fire walls that does not form a horizontal exit must not consist of more than 50% of the fire wall in which they are located. All doorways in fire walls must be protected by either a single or 2 fire doors that achieve an equivalent fire rating to the fire wall in which they are located.

All fire doors must be self-closing, and if they are proposed to be held-open, the self-closing operation must be activated by AS 1670.1 compliant smoke detectors within 1.5m on either side of the door and on general fire trip in the building.

Comment: To be noted by the Architect. Provide plans demonstrating compliance as part of the CC application package.

C4D11 Openings in Fire-isolated Shafts: If lift shafts are required to be fire-isolated an entrance doorway must be protected by -/60/- fire doors and the lift indicator panels must be backed by construction having an FRL of not less than -/60/60 if it exceeds 35,000mm².

Comment: To be noted. Documentation required at OC stage.

C4D13 Openings in Floors and Ceilings for Services: This clause applies to the floors and ceilings in buildings of Types A, B & C Construction and sets out the methods required to limit the spread of fire through openings in these building elements, required to resist the spread of fire.

Comment: To be noted. Documentation required at OC stage.

C4D15 Openings for Services Installations: All opening for services installations in building elements required to be fire-resisting with respect to integrity and insulation must be protected in accordance with the provisions of Spec. 13.

Comment: To be noted. Documentation required at OC stage.

Spec. 5 Fire Resisting Construction: The new building works are required to comply with the requirements detailed under Specification 5. The below details the FRL requirements for building elements for each proposed warehouse.

Comment: It is noted that **Fire Engineered Performance Solutions** are proposed to rationalise FRLs in a number of instances – specific attention is drawn to the fire-protected timber proposed in Building 5 (Block 1) in this regard also. Documentation & Design Statements required at CC stage demonstrating compliance with the below (as applicable):

Type A Construction:

- + All loadbearing external walls & loadbearing elements incorporated in or attached to an external wall are to achieve the required FRL per Table S5C11a.
- + All non-loadbearing parts of external walls are to achieve the required FRL per Table S4C11b.
- + All loadbearing external columns are to achieve the required FRL per Table S5C11c.
- + Any Fire Walls that are proposed to separate different classifications per C3D9 above are to achieve the required FRL per Table S5C11d for Class 7b.

- + Lift shafts are to achieve the required FRL per Table S5C11e (for loadbearing lift shafts) and S5C11f (for non-loadbearing lift shafts).
- + Fire stair shafts are to achieve the required FRL per Table S5C11e (for loadbearing fire stairs) and S5C11f (for non-loadbearing fire stairs).
- + Services shafts are to achieve the required FRL per Table S5C11e (for loadbearing service shafts) and S5C11f (for non-loadbearing service shafts).
- + All loadbearing internal columns, walls, beams and trusses throughout are to achieve the required FRL per Table S5C11/ S5C11f.
- + Floors are to achieve the required FRL per Table S5C11f and not less than the FRL of the classification with the highest FRLs in the storey below.
- + The roof is required to achieve the required FRL per Table S5C11g or the coverings are required to be non-combustible in accordance with Clause S5C15. In this regard it is understood that neither Buildings 3, 4 nor 5 (Block 1) are proposed to be provided with a fire rated roof – instead a non-combustible roof covering is to be provided.
Specific attention is drawn to the above, noting that for roofs required to comply with this clause, the total area taken up by roof lights cannot exceed 20%. The provided plans indicate compliance is achieved in this regard.
- + Where a part of the building required to have an FRL depends on direct vertical or lateral support from another part to maintain its FRL, that supporting part must achieve an FRL in accordance with Clause S5C3 of Spec. 5 and be non-combustible, unless one of the concessions in S5C3 (2) can be applied.

Type C Construction:

- + All external walls & loadbearing elements incorporated in or attached to an external wall are to achieve the required FRL per Table S5C24a.
- + All loadbearing external columns are to achieve the required FRL per Table S5C24b.
- + Any Fire Walls that are proposed to separate different classifications per C3D9 above are to achieve the required FRL per Table S5C24c.
- + All internal stair shaft walls and walls bounding SOUs, as well as any associated columns, walls, beams and trusses throughout are to achieve the required FRL per Table S5C21d.

Note: Any proposal to reduce the FRLs of building elements that are required to be fire rated must be addressed as a Performance Solution from the Fire Engineer.

Spec. 9

Cavity Barriers for Fire-Protected Timber: This specification sets out the requirements for cavity barriers when constructing buildings from fire-protected timber (in lieu of non-combustible building elements).

Comment: A detailed assessment is required to be carried out against the requirements of this Spec. by the Structural Engineer. Where any non-conformance with this specification is proposed, a **Fire Engineered Performance Solution** will be required.

Spec. 10

Fire-Protected Timber: This specification contains measures for fire-protected timber when used to achieve FRLs.

Comment: The proposed use of massive timber is required to comply with clause S10C3, specifically,

- + The timber is required to be coated with a tested, non-combustible, fire-protective covering,
- + The covering is required to provide the required FRL in accordance with Spec. 5,
- + All cavities must be filled with non-combustible insulation.

A detailed assessment is required to be carried out against the requirements of this Spec. by the Structural Engineer. Where any non-conformance with this specification is proposed, a **Fire Engineered Performance Solution** will be required.

Spec. 7

Fire Hazard Properties: As noted above this Specification sets out the requirements in relation to the fire hazard properties of linings, materials and assemblies in Class 2 to 9 buildings. Table

	<p>S7C2 outlines the applicable requirements of Spec. 7 to the different types of Linings, Materials and Assemblies.</p> <p>Comment: Certification will be required to be provided at both CC and OC application stages.</p>
Spec. 8	<p>Performance of External Walls in Fire: This specification contains measures to minimise in the event of fire the likelihood of external walls collapsing outwards as complete panels and the likelihood of panels separating from supporting members.</p> <p>Comment: Structural Design certification and details demonstrating compliance are required to be provided at CC Application Stage for the proposed warehouses.</p>
Spec. 12	<p>Fire Doors, Smoke Doors, Fire Windows and Shutters: Fire doors and smoke doors must comply with the requirements of this specification.</p> <p>Comment: To be noted by the Architect. Provide plans demonstrating compliance as part of the CC application package.</p>

3.3 Section D – Access and Egress

D2D3	<p>Number of Exits Required: The buildings require no less than 2 exits to each storey comprising a Class 9b early childhood centre. All other areas require no less than 1 exit.</p> <p>Comment: The provided plans demonstrate compliance in this regard.</p>
D2D4	<p>When Fire-Isolated Stairways and Ramps are Required: This clause specifies the requirements for when fire isolated stairs or ramps are required in buildings based upon the number of storeys that they interconnect and the classification of the building.</p> <p>Comment: The stair(s) providing egress from the early childhood centre are required to be fire isolated, based on the requirements of this clause. It is however understood that this is proposed to be address via construction of this stair as an 'external stair in lieu of a fire isolated stair' complying with the requirements of clause D2D13.</p> <p>For all other buildings, none of the proposed stairs serve in excess of 3 storeys (in sprinkler protected buildings), thus they are not required to be constructed in fire-rated shafts.</p>
D2D5	<p>Exit Travel Distances: This clause specifies the permitted travel distances allowable from Class 2 to Class 9 buildings. Sub-clauses (1) to (6) specify the maximum distances to be taken into account for the various uses in each Class of building.</p> <p>In a Class 5, 6, 7, 8 & 9 Buildings no point on a floor must be more than 20m for a single exit or to a point of choice to alternative exits; and no point on a floor must be more than 40m to an exit where two or more alternative exits are available for egress.</p> <p>Comment: The travel distances to exits are summarised as follows:</p> <ul style="list-style-type: none"> + Warehouse 3: Complies + Warehouse 4: <ul style="list-style-type: none"> – Ground Floor Car Parking Area: Distance to the nearest of two exits up to 55m – Warehouse 4.11: Distance to a point of choice up to 25m – Warehouse 4.11: Distance to the nearest of two exits up to 45m + Warehouse 5 (Block 1): <ul style="list-style-type: none"> – Warehouse: Distance to the nearest of two exits up to 50m – GF Tenant 2: Distance to a single exit up to 27m + Warehouse 5 (Block 2): <ul style="list-style-type: none"> – Warehouse: Distance to the nearest of two exits up to 45m + Warehouse 6:

	<ul style="list-style-type: none"> – Warehouse 6B: Distance to a point of choice up to 25m – Warehouse 6B: Distance to the nearest of two exits up to 50m – Mezzanine 6A: Distance to a single exit up to 25m <p>+ Warehouse 7: Complies</p> <p>+ Warehouse 8: Complies (subject to office fitout on mezzanine levels)</p>
D2D6	<p>Distance Between Alternative Exits: Exits required as alternative exits must be –</p> <ul style="list-style-type: none"> + Distributed as uniformly as practicable within or around the storey served and in positions where unobstructed access to at least two exits is readily available from all points on the floor including lift lobby areas; and + not less than 9m apart; and + not more than – 60m apart. + Located so that the alternative paths of travel do not converge such that they become less than 6m apart. <p>Comment: The travel distances between alternative exits are summarised as follows:</p> <ul style="list-style-type: none"> + Warehouse 3: Complies. + Warehouse 4: <ul style="list-style-type: none"> – Warehouse 4.03 & 4.04: Distance between alternative exits up to 95m. – Ground Floor Car Parking Area: Distance between alternative exits up to 95m. + Warehouse 5 (Block 1): <ul style="list-style-type: none"> – Warehouse: Distance between alternative exits up to 100m + Warehouse 5 (Block 2): <ul style="list-style-type: none"> – Warehouse: Distance between alternative exits up to 90m + Warehouse 6: <ul style="list-style-type: none"> – Warehouse 6B: Distance between alternative exits up to 65m. + Warehouse 7: Complies. + Warehouse 8: Complies.
D2D7/ D2D8/ D2D9/ D2D10/ D2D11	<p>Dimensions of Paths of Travel to an Exit: The minimum clear height through all egress paths is required to be no less than 2m, and a minimum of 1m wide (this width dimension is measured clear of any obstructions such as handrails and joinery). Aggregate exit widths must be achieved which are driven by occupancy numbers of each floor.</p> <p>Comment: The provided plans indicate that compliance is readily achievable. Architect to note. Specific attention is drawn to the external passages adjacent external walls incorporating downpipes, roof access ladders and other permanent attachments to the façade, noting that these attachments mustn't impinge on the required egress width, nor interfere with compliance of the handrails or the like.</p> <p>Additionally, it is noted that provisions relating to widths through accessible paths of travel are applicable in accessible areas. Refer to commentary under Part D4 in this regard.</p> <p>The indicative racking layout in Unit 06.A indicates a clear width of 890mm in the northern corner. Further design development is required in this respect.</p>
D2D12	<p>Travel via Fire Isolated Exits: A fire isolated stairway is required to provide independent egress from each storey that it serves and discharge directly –</p> <ul style="list-style-type: none"> + To a road open space; or + To a point – <ul style="list-style-type: none"> - In a storey or space, 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 - From which an unimpeded path of travel, not further than 20m, is available to a road or open space

	<p>External walls and openings exposed to the discharge path of a fire-isolated stairway (less than 6m, measured perpendicular to the path of travel) must be protected with a 1-hour fire-rating for external walls, and C4D5 for openings.</p> <p>Comment: The provided plans demonstrate compliance in this regard.</p>
D2D13	<p>External Stairways or Ramps in Lieu of Fire-Isolated Stairways: An external stairway or ramp may serve as a required exit in lieu of a fire-isolated exit serving a storey below an effective height of 25m provided that it is constructed in accordance with the following.</p> <ul style="list-style-type: none"> + The external stair is to achieve a minimum FRL of 60/60/60 – when tested from the inside; + Stair to be non-combustible; + Exit doors to the stair is to be self-closing -/60/30 fire door; + No openings to occur in the external wall of the building within 3m for the exit. <p>If openings are within 3-6m of the exit they are to be protected in accordance with BCA Clause C4D5 (if drenchers are used, they are to be located internally). Opens are restricted from being within 0-3m of the exit.</p> <p>Comment: The eastern stair serving Level 1 is proposed to be constructed as an external stair in lieu of a fire isolated stair. In this regard it is understood that the external walls within 6m of the stair on Ground Floor & Level 1 are proposed to be fire rated in accordance with the requirements of this clause.</p>
D2D14	<p>Travel via Non-Fire Isolated Required Stairways: A non-fire-isolated stairway or non-fire-isolated ramp serving as a required exit must provide a continuous means of travel by its own flights and landings from every storey served to the level at which egress to a road or open space is provided.</p> <p>The distance from any point on the floor to a point of road or open space must not exceed 80m. The stair must discharge at a point not more than 20m to a point of road or open space, or from a fire-isolated passage, or 40m from one of two such points.</p> <p>Comment: It is noted that the provided plans for Warehouse 4 indicate that travel via the non-fire isolated stairs, after discharging onto the 'roof as open space' results in a total egress distance in excess of 80m (up to 100m). It is understood this may be addressed through design modifications and/or a Fire Engineered Performance Solution.</p>
D2D15	<p>Discharge From Exits: The path of travel to the road from a required exit leading to open space must have an unobstructed exit width of that of the required exit, or if larger, 1m.</p> <p>If the discharge point of the exit is at a different level from the road, a stairway or ramp (max. gradient of 1:14) must be provided.</p> <p>Comment: Architect to note. Plans to be provided with the CC application demonstrating compliance with the requirements of this clause.</p>
D2D18	<p>Number of Persons Accommodated: Clause D2D18 and Table D2D18 are used to calculate the anticipated number of people in particular types of buildings so that minimum exit widths and the required number of sanitary and other facilities can be calculated. This clause and table are not to be used for non-BCA purposes.</p> <p>Comment: We request that indicative population numbers be provided to inform the calculations as part of the BCA report (particularly regarding aggregate egress width & sanitary facilities).</p>
D3D3	<p>Fire Isolated Stairways & Ramps: A stairway or ramp, including landings that are required to be within a fire-resisting shaft must be constructed of non-combustible materials to protect the structural integrity of the shaft.</p> <p>Comment: To be noted by the Architect. Provide plans demonstrating compliance as part of the CC application package.</p>
D3D4	<p>Non-Fire Isolated Stairways and Ramps: In a building with a rise in storeys of more than two, required non-fire-isolated stairways and ramps must be either constructed of</p> <ul style="list-style-type: none"> + Reinforced or prestressed concrete; or

	<ul style="list-style-type: none"> + Steel at least 6mm thick at all points; or + Timber that has a finished thickness of at least 44mm, has an average density of at least 800 kg/m³ at a moisture content of 12% and has not been joined by means of glue unless it has been laminated and glued with resorcinol/phenol formaldehyde; or + Non-combustible materials, and such that if there is a structural failure it will not cause damage to or impair the fire-resistance of the shaft in which the stair is located. <p>Comment: To be noted by the Architect. Provide plans demonstrating compliance as part of the CC application package.</p>
D3D8	<p>Installations in Exits and Paths of Travel: This clause restricts the installation of certain services in fire-isolated exits, non-fire-isolated exits and certain paths of travel to exits. Sub-clauses (1) to (6) prescribe which services shall not be installed as well as the circumstances in which certain services may be installed in fire-isolated and non-fire-isolated exits.</p> <p>Comment: To be noted by the Architect. Provide plans demonstrating compliance as part of the CC application package.</p>
D3D9	<p>Enclosure of Space Under Stairs and Ramps: The space below a required, non-fire isolated stairway/ramp must not be enclosed to form a cupboard or other enclosed space, unless the cupboard is bound by construction achieving an FRL of at least 60/60/60, with a self-closing -/60/30 door.</p> <p>The space below a fire isolated stairway mustn't be enclosed to form a cupboard or the like.</p> <p>Comment: To be noted by the Architect. Provide plans demonstrating compliance as part of the CC application package.</p>
D3D13	<p>Roof as Open Space: If an exit discharges to a roof of a building, the roof must—</p> <ul style="list-style-type: none"> + Have an FRL of not less than 120/120/120; and + Not have any roof lights or other openings within 3 m of the path of travel of persons using the exit to reach a road or open space. <p>Comment: The provide plans indicate that Warehouse 4 proposes to utilise the L1 floor slab as roof as open space. It is noted that the introduction of lightwells, if proposed in this floor slab must consider the provisions of this clause.</p> <p>A technical non-compliance also exists in the provided plans whereby egress via the western non-fire isolated stair from the roof requires passing back under the building. It is understood this is either to be addressed via a Fire Engineered Performance Solution or via a design amendment.</p> <p>Additionally, a non-compliance arises with respect to the covered pathways forming part of the roof as open space, as the open space is required to be open to the sky. The below diagram shows the egress paths in red, dotted lines, with the undercover sections highlighted in pink.</p> <p>It is also understood that a Fire Engineered Performance Solution is required to be prepared to address the presence of penetrations through the roof slab (e.g. for floor wastes & services) as this is not permitted by cl. D3D13.</p>
D3D14 – D3D16 & D3D22	<p>Stairways, Balustrades and Handrails:</p> <p><u>Stairways:</u></p> <ul style="list-style-type: none"> + A stairway must have no more than 18, nor less than 2, risers in each flight. + Landings must be not less than 750mm in length. + In a Class 9b building, not more than 36 risers in consecutive flights without a change in direction of at least 30°. <p><u>Balustrades:</u></p>

	<ul style="list-style-type: none"> + All balustrades must achieve a minimum height of 1m above finished floor level. + Balustrades (except for fire-isolated stairs) must not permit a 125mm sphere to pass through any opening. + Balustrades in fire-isolated exits must comprise no gap larger than 150mm between nosing line (or landing) and bottom rail. Other openings in the balustrade must not exceed 460mm. If the fire-isolated exit also functions as a circulation stair, the 125mm gap requirement applies in lieu of these reduced provisions. <p><u>Handrails:</u></p> <ul style="list-style-type: none"> + Handrails must be located on both sides of all stairways and ramps except for fire-isolated stairs. Handrails must comply with AS 1428.1 as relevant. <p>Comment: To be noted by the Architect. Provide plans demonstrating compliance as part of the CC application package.</p>
D3D17, D3D18, D3D19, D3D20 & D3D21	<p>Balustrades or Other Barriers: These clauses detail where balustrades are required to be provided and sets out in specific detail the construction requirements. Typically, the following will apply to this class of building:</p> <ul style="list-style-type: none"> + Balustrades are required where the fall to the level below is more than 1m in height. The minimum height of a balustrade is 1m above the floor of the landing, walkway or the like; and 865mm above the floor of a stairway or a ramp. + For a fall of more than 4m to the surface level below, a window sill must be a minimum of 865mm in height above the height of the floor surface. + Where the floor is more than 4m above the surface beneath the balustrade any horizontal or near horizontal members between 150mm and 760mm above the floor must not facilitate climbing. + Balustrades must be constructed so as to not permit a sphere of 125mm diameter to pass through. The exception to this is within fire isolated exits within the building, or internal stairs within a Class 7b or 8 building, where the rails can be positioned a maximum of 460mm apart, so long as a bottom rail is located so a sphere of 150mm cannot pass through the opening between the nosing of the stair treads and the rail or between the floor of the landing, balcony or the like. + Note: Any wire barriers must be compliant with D3D21 and tables D3D21(a) to D3D21(c). <p>Comment: To be noted by the Architect. Provide plans demonstrating compliance as part of the CC application package.</p>
D3D22	<p>Handrails: This Clause sets out the requirements regarding the location, spacing and extent of handrails required to be installed in buildings.</p> <p>Comment: To be noted by the Architect. Provide plans demonstrating compliance as part of the CC application package. It is specifically noted that the central stair in the childcare centre does not incorporate an offset of the stair treads at the mid landing, which may affect the configuration of the central handrail. Additional detail is to be provided with the CC application, demonstrating compliance.</p>
D3D23	<p>Fixed Platforms, Walkways, Stairways and Ladders: A fixed platform, walkway, stairway, ladder, any going and riser, landing, handrail or barrier attached thereto may comply with AS 1657 if it only serves a machinery room, boiler house, lift-machine rooms, plant rooms or the like.</p> <p>Comments: To be noted by the Architect. Provide plans demonstrating compliance as part of the CC application package.</p>
D3D24	<p>Doorways and Doors: This clause applies to all doorways that form an exit and refers to the types of doors that cannot be used in buildings of prescribed uses, the use of power operated doors and the force required to operate sliding doors.</p> <p>If an exit door is power operated, it must be opened manually under a force of not more than 110N if there is a malfunction or failure to the power source; and it must open automatically if</p>

	<p>there is a power failure to the door and upon the activation of a fire or smoke alarm anywhere in the fire compartment served by the door.</p> <p>Comment: It is specifically noted that roller shutter doors cannot be used as egress doors. The provided plans demonstrate compliance in this regard, whereby swing doors have been provided</p>
D3D25 & D3D26	<p>Doors and Latching: All egress doorways must swing in the direction of egress and must be readily openable without a key from the side that faces a person seeking egress, by a single handed downward or pushing action on a single device which is located between 900mm and 1100mm from the floor.</p> <p>It is noted that the above does not apply to early childhood centres, so long as the door complies with either of the below:</p> <ul style="list-style-type: none"> + The door is openable by operating a fail-safe control switch, not contained within a protective enclosure, to actuate a device to unlock the door; or + By hand by a person or persons, specifically nominated by the owner, properly instructed as to the duties and responsibilities involved and available at all times when the building is lawfully occupied so that persons in the building or part may immediately escape if there is a fire. <p>Comment: To be noted by the Architect (specific attention is drawn to the requirements pertaining to early childhood centres). Provide plans demonstrating compliance as part of the CC application package.</p>
D3D27	<p>Re-Entry from Fire Isolated Exits: Doors from certain buildings providing access from fire isolated stairs mustn't be able to be locked such that re-entry from the stair back into the building is not available. Except, for an early childhood centre, the doors may be locked, so long as the locks de-activate upon fire trip.</p> <p>Comment: To be noted by the Architect. Details to be provided demonstrating compliance as part of the CC application package.</p>
D3D29	<p>Protection of Openable Windows: In a Class 9b early childhood centre, a window must be provided with protection if the floor below the window is 2m or more above the surface beneath. Where the lowest level of the window opening is less than 1.7m above the floor, a window opening must be protected.</p> <p>Comment: To be noted by the Architect. Details to be provided demonstrating compliance as part of the CC application package.</p>
D3D30	<p>Timber Stairways: This clause sets out concessions for use of fire-protected timber to construct fire isolated stairs.</p> <p>Comment: Where the above is proposed a detailed assessment against the provisions of this clause will be required.</p>
D4D2 & D2D3	<p>General Building Access Requirements: The extent of access required depends on the classification of the building. Buildings and parts of building must be accessible as set out in sub-clauses (1)-(10) unless exempted by Clause D4D5.</p> <p>Access is required to and within all areas normally used by the occupants, for Class 5, 6, 7b & 9b buildings and any levels in a Class 7a building containing accessible carparking spaces.</p> <p>Comment: Refer to commentary in the Access Report.</p>
D4D4	<p>Parts of the Building to be Accessible: This clause specifies the requirements for accessways within buildings which must be accessible. In accordance with Clause D4D4, ramps & stairways must comply with Clause 10 & 11 of AS 1428.1-2009 (respectively), whilst fire isolated stairs must comply with Clauses 11.1(f) & (g) of AS 1428.1-2009 only. In addition, any storey with a floor area more than 200m² must be served by a passenger lift that is designed to comply with Part E4, and all accessways must include passing & turning spaces per AS 1428.1-2009.</p> <p>Clause D4D4(g) and (h) requires that the pile height or pile thickness shall not exceed 11mm and the carpet backing thickness shall not exceed 4mm. Moreover, the carpet pile height or pile thickness dimension shall not exceed 11mm, the carpet backing thickness dimension shall not exceed 4mm and their combined dimension shall not exceed 15mm.</p>

	<p>Note: The exemption to not provide a ramp or lift under clause D4D4(f) can only be applied if the floor area of the entire storey in the whole building is less than 200m² and is not interpreted to be applied to each tenancy.</p> <p>Comment: It is noted that the DtS provisions of this clause allows for a building to omit access the storeys of the building which are not the entrance storey, in the case where each of the upper storeys are less than 200m². This concession cannot be applied to Buildings 3 to 8, as the upper storey (comprising mezzanine office levels) exceeds a total of 200m². It is understood that an Access Performance Solution is proposed to address the non-provision of access to each of the office mezzanine levels. Refer to additional commentary in the Access Report.</p> <p>Further design development is also understood to be proposed with respect to the provision of access from the allotment boundary, to and between the various buildings on the site.</p>
D4D5	<p>Exemptions: This clause provides details on buildings or parts of buildings not required to be accessible under the BCA where providing access would be inappropriate because of the nature of the area/use or the tasks undertaken.</p> <p>Comment: Access Consultant to advise on any areas to which this exemption is proposed to be applied.</p>
D4D6	<p>Accessible Parking: This clause provides details of the number of accessible carparking spaces required in a carpark depending on the classification of the building.</p> <p>Comment: The provided plans indicate that compliance is achieved with respect to the ratio of accessible car parking spaces required. Refer to additional commentary in the Access Report.</p>
D4D7	<p>Signage: Braille and tactile signage must be provided to required accessible sanitary facilities, spaces with hearing augmentation, ambulant sanitary facilities, pedestrian entrances that are not accessible, and to each door required by Clause E4D5 to be provided with an exit sign. The latter is to state "EXIT" and state the level e.g. "LEVEL 1".</p> <p>Comment: Refer to commentary in the Access Report.</p>
D4D8	<p>Hearing Augmentation: A hearing augmentation system must be provided where an inbuilt amplification system (excluding emergency warning systems) is present in the following areas:</p> <ul style="list-style-type: none"> + In a room in a Class 9b + In an auditorium, conference room, meeting room, or judicatory room, + In a ticket office, teller's booth, reception area of the like where the public is screened by the service provider. <p>Comment: Refer to commentary in the Access Report, though specific attention is drawn to the requirement for provision of a hearing induction loop to all in-built amplification systems in each meeting room, as well as each room in the childcare centre.</p>
D4D9	<p>Tactile Indicators: This clause provides for the installation of tactile indicators in buildings required to be accessible and must be provided to warn people who are blind or have a vision impairment that they are approaching a stairway, escalator, passenger conveyor, ramp, overhead obstruction or an accessway meeting a vehicular way, except for areas exempted by D4D5.</p> <p>Comment: Refer to commentary in the Access Report. It is however noted that TGSIs are required to the stairway serving Unit 6A, noting also that the configuration of the stair indicates that the extent of the TGSIs may be impinged upon by the adjacent wall. The plans are to be updated to demonstrate compliance in this regard and/or an Access Performance Solution prepared to address this potential deviation from the requirements of this clause.</p>
D4D12	<p>Ramps: Ramps may be used as part of an accessway where there is a change of level and must comply with the requirements set out in AS1428.1.</p> <p>Comment: Refer to commentary in the Access Report.</p>
D4D13	<p>Glazing on an Accessway: This part requires the provision of a contrasting strip, chair rail, handrail or transom across all frameless or fully glazed doorways and surrounding glazing capable of being mistaken for an opening.</p> <p>Comment: Refer to commentary in the Access Report.</p>

3.4 Section E – Services and Equipment

E1D2

Fire Hydrants:

- + E1D2(1) – A fire hydrant system must be provided to serve a building having a total floor area greater than 500m² and where a fire brigade is available to attend a building fire.
- + E1D2(2) – Requires that the fire hydrant system must be installed in accordance with the provisions of AS2419.1-2021 and details where internal hydrants must be located.
- + E1D2(3) – details concessions to AS 2419.1-2021 compliance associated with Class 8 Electricity Network Substations, and Hydrant Booster assembly locations where buildings are sprinkler protected.
- + E1D2(4) – states that internal fire hydrants must serve the level in which they are installed.

Note: Where a building exceeds 108,000m³ a Performance Solution is required for the entirety of the design of the Hydrant System per Appendix of AS 2419.1-2021.

Comment: Fire hydrant coverage is required to be provided to all warehouse buildings, throughout all parts of all storeys.

Detailed plans are to be provided demonstrating compliance as part of the CC application package. Any proposed **Fire Engineering Performance Solutions** are to be communicated to the Fire Engineer. Specific attention is drawn to the requirements pertaining to the maximum permitted distances between external hardstands & external hydrants.

Notwithstanding, it is understood that a **Fire Engineering Performance Solution** is proposed to address the design of the hydrant system of Warehouse 5 (Block 1), as it is understood to exceed a volume of 108,000m³, as the preface to AS 2419.1-2021 identifies that the standard does not apply to buildings in excess of this volume.

It is however noted that more precise volume calculations are required in order to confirm the above.

The following additional notes are provided with respect to the hydrant system:

- + Clause 2.2.2 of AS 2419.1 permits installation of external hydrants on open podiums, so long as the podiums comply as roof as open space. In this regard, any performance solution addressing roof as open space (e.g. reduction of FRLs and rationalisation of protection to openings) must also consider the indirect non-conformance with AS 2419.1.
- + External hydrants are not permitted to be installed within 10m of EV charging stations.
- + External hydrants are permitted to be installed within 10m of the external walls of the building they serve, where the building is sprinkler protected.

E1D3

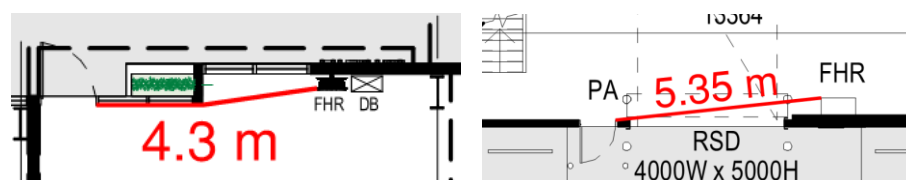
Fire Hose Reels: A fire hose reel system must be provided to serve a building where one or more internal fire hydrants are installed or in a building with a floor area greater than 500m².

This clause requires that the fire hose reel system must be installed in accordance with AS 2441 and sets out the detail for location and uses of fire hose reels.

Comment: Fire hydrant coverage is required to be provided to all warehouse buildings, to the Class 7b (warehouse) use parts only – the Class 5 (office) parts are exempt.

BM+G are to be advised where a **Fire Engineered Performance Solution** is proposed to be prepared to omit fire hose reels.

The provided plans show multiple FHRs located greater than 4m from an exit, which does not comply with E1D3. Plans demonstrating compliance are to be provided as part of the relevant CC application(s). See below examples in Building 3 Unit 03.B (left) & Building 4 Unit 04.7 (right).



NSW E1D4, E1D12, E1D13	<p>Sprinklers: A sprinkler system must be installed in a building or part of a building when required by Clauses E1D5 to E1D13 and comply with Specification 17 or 18.</p> <p>Specification 17 sets out requirements for the design and installation of sprinkler systems in Class 2-9 Buildings, and details the required design standards, including AS 2118.1-2017 and AS 2118.6-2012.</p> <p>Comment: It is understood that sprinklers are proposed to be provided to all warehouse buildings.</p> <p>Detailed plans are to be provided demonstrating compliance as part of the CC application package. Any proposed Fire Engineering Performance Solutions are to be communicated to the Fire Engineer.</p>
E1D14	<p>Portable Fire Extinguishers: To be provided and designed in accordance with Sections 1, 2 and 3 of AS 2444-2001.</p> <p>Comment: PFEs to be provided, as required.</p>
E1D15	<p>Fire Control Centre: A fire control centre is to be provided based where the total building floor area exceeds 18,000m². A fire control centre must:</p> <ul style="list-style-type: none"> + Be located in a building so that egress from any part of its floor to a public road or open space does not involve changes in level which in aggregate exceed 300mm. + Provide an area from which fire-fighting operations or other emergency procedures can be controlled. Must not be used for any other purpose. <p>Comment: None of the proposed buildings exceed 18,000m², thus no fire control centre is required. This note has been provided for compliance commentary only.</p>
E1D17	<p>Provisions for Special Hazards: Suitable additional provisions must be made for fire-fighting if unique problems could arise due to;</p> <ul style="list-style-type: none"> + The nature or quantity of materials stored, displayed or used in a building on the allotment; or + The location of the building in relation to a water supply for firefighting purposed. <p>Comment: Consideration may be given to the above with respect to any proposed fit out.</p>
E2D3	<p>General Requirements: Class 2 to 9 buildings must comply with the provisions of this Clause to remove smoke during a fire, to control the operation of air handling systems and to prevent the spread of smoke between compartments.</p> <p>Buildings must comply with the provisions of E2D4, as applicable to Class 2 to 9 buildings. It deals with the design and construction of air handling systems that are part of a smoke hazard management system and air handling system that are not part of a smoke hazard management system.</p> <p>The details relating to the installation and operation of the systems are set out in Specifications 20, 21, & 22.</p>
E2D9	<p>Smoke Hazard Management: Buildings Not More than 25m in Effective Height: Class 5, 6, 7b, 8 and 9b buildings: This clause sets out requirements for smoke hazard management in Class 5-9 buildings <25m in effective height.</p> <p>Comment: The following smoke hazard management systems are to be installed to the building and will be required throughout:</p> <ul style="list-style-type: none"> + All warehouses require automatic shut-down of mechanical air handling systems upon fire trip in accordance with Section 5 and 6 of AS 1668.1. + Additionally, due to Buildings 4 & 5 (Block 1) having a rise in storeys in excess of 2, at least of the following is required to be provided throughout; <ul style="list-style-type: none"> - Stairway Pressurisation complying with AS 1668.1 – 2015 to all fire-isolated stairs, - Zone Smoke Pressurisation between vertically separated fire compartments complying with AS 1668.1. - An Automatic Fire Detection and Alarm System and Building Occupant Warning System complying with AS 1670.1 – 2018 & Spec. 20,

	<p>– A sprinkler system (other than an FPAA101D or FPAA101H system) throughout.</p> <p>It is noted that due to the additional requirements for large isolated buildings, a sprinkler system is proposed to be provided throughout Buildings 4 & 5 (Block 1), thus meeting the requirements of this clause. Refer to additional comments under clause E2D10 for further requirements.</p>
NSW E2D10	<p>Smoke Hazard Management: Buildings <25m Effective Height: Large Isolated Buildings: This clause sets out the requirements for smoke hazard management systems for large isolated buildings with an effective height of less than 25m.</p> <p>Comment: Building 5 (Block 1) exceeds 108,000m³, and the ceiling height is not proposed to exceed 12m. Based on these parameters, either a smoke exhaust system or smoke and heat vents are required.</p> <p>BM+G are advised that a smoke exhaust system is proposed to be provided to the entirety of the building, though the system is proposed to have a reduced air exchange rate, rationalised via a Fire Engineered Performance Solution.</p> <p>It is however noted that more precise volume calculations are required in order to confirm the above.</p>
E2D14/ E2D15	<p>Smoke Hazard Management: Class 6 Buildings: These clauses set out additional provisions for Class 6 buildings in fire compartments exceeding 2,000m².</p> <p>Comment: It is understood that the Class 6 (retail) parts of Building 6 are proposed to be located within a compartment that does not exceed 2,000m², thus the provisions of this clause do not apply. This has been provided for compliance commentary only.</p>
NSW E2D19	<p>Smoke Hazard Management: Class 9b Buildings: Other Assembly Buildings: This clause sets out additional provisions for Class 9b buildings in fire compartments exceeding 2,000m², as well as additional provisions for early childhood centres of any compartment size.</p> <p>Comment: This clause requires provision of an AS1670.1 smoke detection & alarm system throughout the entirety of Building 5 (Block 1), as it comprises an early childhood centre.</p>
E2D21	<p>Provisions for special hazards: Additional smoke hazard management measures may be necessary due to the—</p> <ul style="list-style-type: none"> + Special characteristics of the building; or + Special function or use of the building; or + Special type or quantity of material stored, displayed or used in a building; or + Special mix of classifications within a building or fire compartment, which are not addressed in E2D4 to E2D20. <p>Comment: Consideration may be given to the above with respect to any proposed fit out.</p>
E3D3	<p>Stretcher Facilities in Lifts: Stretcher facilities, complying with this clause, must be provided in lifts in at least one emergency lift as required by E3.4 or in building where lifts serve any storey above an effective height of 12m.</p> <p>A stretcher facility must accommodate a raised stretcher with a patient lying on it horizontally by providing a clear space not less than 600mm wide x 2000mm long x 1400mm high above the floor level.</p> <p>Comment: Stretcher facilities are not required to any of the proposed lifts, as they do not serve any storey at an effective height in excess of 12m.</p>
E3D4	<p>Warning Against use of Lifts in Fire: Warning signs required be provided must be displayed where they can be readily seen and must comply with the details and dimensions of Figure E3D4.</p> <p>Comment: To be noted by the lift designer/installer.</p>
E3D6	<p>Landings: Access and egress to and from lift well landings must comply with the Deemed-to-Satisfy Provisions of Parts D2 & D3.</p> <p>Comment: To be noted by the lift designer/installer.</p>

E3D7	<p>Passenger Lift Types and their Limitations: In an accessible building, every passenger lift must be one of the types identified in sub-clause (1) and not rely on a constant pressure device for its operation if the lift car is fully enclosed.</p> <p>Comment: To be noted by the lift designer/installer.</p>
E3D9, E3D11, E3D12	<p>Fire Service Controls and Recall Switches: These clauses set out requirements for fire service control and recall switches for lifts serving storeys above an effective height of 12m.</p> <p>Comment: To be noted by the lift designer/installer.</p>
E4D2 – E4D8	<p>Emergency Lighting and Exits Signs: Emergency lighting and exit signage to be provided in accordance with E4D2 - E4D5 complying with AS 2293.1 – 2018.</p> <p>Comment: Emergency lighting & exit signs are required to be provided throughout Buildings 3-8.</p>
E4D4	<p>Design & Operation of Emergency Lighting: Every required emergency lighting system must comply with AS 2293.1-2018.</p> <p>Comment: Electrical Engineer/sub-contractor to note. Where any exit signs are proposed to be installed at a height in excess of 2.7m this is to be addressed via a Fire Engineered Performance Solution.</p>
E4D5	<p>Exit Signs: An exit sign must be clearly visible to persons approaching the exit and must be installed on, above or adjacent to each door providing egress from a building. Sub-clauses (a) to (d) set out the situations where exit signs are required to be installed.</p> <p>Comment: Electrical Engineer/sub-contractor to note.</p>
E4D6	<p>Direction Signs: If an exit is not readily apparent to persons occupying or visiting the building then exit signs must be installed in appropriate positions in corridors, hallways, lobbies, and the like, indicating the direction to a required exit.</p> <p>Comment: Electrical Engineer/sub-contractor to note.</p>

3.5 Section F – Health and Amenity

F1D3	<p>Stormwater Drainage: A roof balcony, podium or similar must have a system of stormwater drainage and the structural substrate must be graded with a minimum fall of 1:80 to a drainage outlet.</p> <p>Comment: Civil Engineer to note. Design certification & plans are to be provided with the CC application. Waterproofing sub-contractor(s) to note also. Certification will be required at OC stage.</p>
F1D4	<p>Exposed Joints: Exposed joints in the drainage surface on a roof, balcony, podium or similar horizontal surface part of a building must—</p> <ul style="list-style-type: none"> + Be protected in accordance with Section 2.9 of AS 4654.2; and + Not be located beneath or run through a planter box, water feature or similar part of the building <p>Comment: Waterproofing sub-contractor(s) to note. Certification will be required at OC stage.</p>
F1D5	<p>External Waterproofing Membranes: External waterproofing membranes are required to comply with AS 4654.1 & 2.</p> <p>Comment: Waterproofing sub-contractor(s) to note. Certification will be required at OC stage.</p>
F1D6	<p>Damp-Proofing:</p> <ul style="list-style-type: none"> + This sub-clause requires that moisture from the ground must be prevented from reaching certain parts of buildings as listed.

	<ul style="list-style-type: none"> + This sub-clause requires that all damp-proofing materials and termite shields used as damp-proofing must comply with AS/NZS 2904 and AS 3660.1. + This sub-clause lists the buildings and parts of a building that do not need to comply with (a). <p>Comment: Waterproofing sub-contractor(s) to note. Certification will be required at OC stage.</p>
F1D7	<p>Damp Proofing of Floors on the Ground: If the floor of a room is laid on the ground or on fill, moisture from the ground must be prevented from reaching the upper surface of the floor and adjacent walls by the insertion of a vapour barrier in accordance with AS 2870.</p> <p>Damp-proofing need not be provided if weatherproofing is not required or the floor is the base of a stair, lift or similar shaft which is adequately drained by gravitation or mechanical means.</p> <p>Comment: Waterproofing sub-contractor(s) to note. Certification will be required at OC stage.</p>
F2D3 & F2D4	<p>Wet Area Construction: These clauses set out the construction requirements for wet areas in Class 2-9 Building, in relation to floor and wall materials, surface grading, floor wastes and drainage.</p> <p>Comment: Waterproofing sub-contractor(s) to note. Certification will be required at OC stage.</p>
F2D4	<p>Floor Wastes: Where a floor waste is provided, the fall of the floor plane to the floor waste is required to be between 1:80–1:50.</p> <p>Comment: Hydraulic Engineer to note. Design details & certification will be required with the CC application.</p>
F3D2	<p>Roof Coverings: This clause details the materials and appropriate standards, with which roofs must be covered with. The roofing requirements are set out in sub-clauses (a) to (g) which identifies the types of materials that may be used and the adopted Australian Standards that apply to their quality and installation.</p> <p>Comment: Structural Engineer & roofing sub-contractor to note. Certification will be required at CC & OC stage.</p>
F3D3	<p>Sarking: Sarking-type materials used for weatherproofing of roofs must comply with AS/NZS 4200 parts 1 and 2</p> <p>Comment: Façade installer to note. Certification will be required at OC stage.</p>
F3D4	<p>Glazed Assemblies: Glazed assemblies in an external wall must comply with AS2047 requirements for resistance to water penetration for windows, sliding doors with a frame, adjustable louvres, shop fronts and windows with one-piece framing</p> <p>Comment: Glazing sub-contractors to note. Certification will be required at OC stage.</p>
F3D5	<p>Wall Cladding: The following wall cladding materials are deemed to satisfy Performance Requirement F3P1:</p> <ul style="list-style-type: none"> + Masonry, including masonry veneer, unreinforced and reinforced masonry, complying with AS 3700, + Autoclaved aerated concrete, complying with AS 5146.3, + Metal wall cladding, complying with AS 1562.1. <p>Comment: Refer to comments under Performance Requirement F3P1, below.</p>
F3P1	<p>Performance Requirement F3P1: A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause</p> <ul style="list-style-type: none"> + Unhealthy or dangerous conditions, or loss of amenity for occupants; and + Undue dampness or deterioration of building elements. <p>Note 1: There are no Deemed-to-Satisfy provisions for this Performance Requirement in respect to External Walls.</p> <p>Note 2: Refer to Clause F3D2 for roof coverings.</p>

	<p>Comment: A Performance Solution Report will be required to address the above, noting that the proposed design does not comprise of wholly DtS materials.</p>
F4D3	<p>Calculation Of Number Of Occupants And Facilities: This clause sets out the requirements for the calculation of the number of occupants and the number of sanitary facilities required to be installed in Class 2 to 9 buildings. The parameters for the calculation are set out in sub-clauses (a) to (d).</p> <p>Comment: BM+G request that occupant numbers be provided that will be reflective of the maximum occupancy envisaged in each building. Alternatively, BM+G can provide generic population calculations, based off the m² rates provided in the BCA.</p>
F4D4	<p>Facilities in Class 3 to 9 Buildings: This clause provides the requirements for sanitary facilities to be installed in Class 3-9 buildings in accordance with Tables F4D4a – F4D4l. The requirements and variations are set out in sub-clauses (1)-(11).</p> <p>Additionally, a Class 9b early childhood centre must be provided with—</p> <ul style="list-style-type: none"> + a kitchen or food preparation area with a kitchen sink, separate hand washing facilities, space for a refrigerator and space for cooking facilities, with— <ul style="list-style-type: none"> - the facilities protected by a door or gate with child proof latches to prevent unsupervised access to the facilities by children younger than 5 years old; and - the ability to facilitate supervision of children from the facilities if the early childhood centre accommodates children younger than 2 years old; and + one bath, shower or shower-bath; and + if the centre accommodates children younger than 3 years old— <ul style="list-style-type: none"> - a laundry facility comprising a washtub and space in the same room for a washing machine; and - a bench type baby bath, which is within 1m of the nappy change bench; and - a nappy changing bench which— <ul style="list-style-type: none"> ▪ Is within 1 m of separate adult hand washing facilities and bench type baby bath; and ▪ Must be not less than 0.9m² in area and at a height of not less than 850mm, but not more than 900mm above the finished floor level; and ▪ Must have a space not less than 800mm high, 500mm wide and 800mm deep for the storage of steps; and ▪ Is positioned to permit a staff member changing a nappy to have visibility of the play area at all times. <p>Comment: Based on the provision of 1x unisex accessible & 2x ambulant facilities per warehouse unit, each unit is able to accommodate a maximum occupant load of 40 persons. Confirmation regarding the proposed capacity per unit will be required in order to establish whether compliance with this clause is achieved.</p> <p>In Building 5 (Block 1), GF tenant 1 can accommodate up to 40 persons, as can GF tenant 2. The café can accommodate up to 40 staff, and 600 patrons (as there is no requirement to provide facilities dedicated to patrons where the total number of patrons does not exceed 600).</p> <p>Plans & certification demonstrating compliance with the requirements for early childhood centres will be required as per of the CC application package. Specifically, the following is to be addressed:</p> <ul style="list-style-type: none"> + If children under the age of 2 are to be accommodated; the kitchen design will not comply, as it does not have the facility to supervise children outside the kitchen. + If children under the age of 3 are to be accommodated; a bench type baby bath, which is within 1 m of the nappy change bench, which must comply with the provisions of this clause. The provided plans do not demonstrate compliance in this regard. + The total number of children accommodated is to be confirmed, noting that 1x pan & 1x basin is required for every 15 children. Each pan & basin serving children must be 'junior' style pans, washbasins with a rim height <600mm AFFL. The provided plans indicate that a total of 75 children can be accommodated.

- + The allocation of male vs. female facilities is also to be confirmed, though it is noted the provided plans indicate the childcare centre can accommodate up to 90 staff.

It is also understood that the kitchen on Ground Floor will not facilitate supervision of children, thus, if children under the age of 2 are proposed to be accommodated, a **Performance Solution** would be required for this design.

Note 1: Where sanitary compartments are noted as unisex on the floor plans they are required to be allocated as either male or female per Clause F2D4(1).

Note 2: Where individual stand-alone sanitary compartments are they must be allocated for use by males or females only unless they are designed as a unisex accessible compartment per Clause F2D4(1).

F4D5

Accessible Sanitary Facilities: Accessible unisex sanitary compartments must be provided, in accordance with F4D6 and unisex showers must be provided in accordance with Table F4D7, in buildings or parts that are required to be accessible. The details for the provision of disable facilities and the standard, AS 1428.1, are set out in sub-clauses (a) to (i).

Comments: The provided plans indicate compliance, noting that each warehouse unit is provided with a unisex accessible facility.

Plans are to be provided demonstrating compliance through the office, retail & early childhood centre parts of Building 5 (Block 1).

F4D8

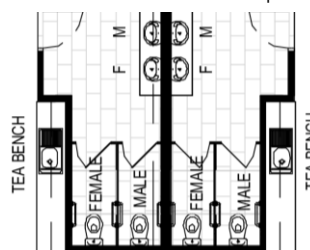
Construction of Sanitary Compartments: Other than in an early childhood centre, sanitary compartments must have doors and partitions that separate adjacent compartments and extend:

- + from floor level to the ceiling in the case of a unisex facility; or
- + a height of not less than 1.5m above the floor if primary school children are the principal users; or
- + 1.8m above the floor in all other cases.

The door to a fully enclosed sanitary compartment must open outwards; or slide: or be readily removable from the outside of the sanitary compartment, unless there is a clear space of at least 1.2m, measured in accordance with Figure F4D8 between the closet pan within the sanitary compartment and the doorway.

Comment: Architect to note (specifically with respect to the provisions relating to the early childhood centre). Design documentation demonstrating compliance is to be provided with the CC package.

Additionally, it is noted that the below pictured design of sanitary facilities in the warehouse mezzanine offices requires construction of full height walls bounding each cubicle, maintaining an sufficient level of privacy between the male & female spaces.



F5D2

Height of Rooms and Other Spaces: The ceiling heights in Class 2 to 9 buildings must not be less than required in sub-clauses (1) to (8) of this clause.

The minimum ceiling heights for a Class 5, 6 & 7 building are as follows:

- + Corridor or Passage, Bathroom, Storeroom, etc. – 2.1m
- + Remainder – 2.4m.

The minimum ceiling heights for a Class 9b building are as follows:

- + A part (including a corridor serving the part) that accommodates not more than 100 persons – 2.4m; A part (including a corridor serving the part) that accommodates more than 100 persons – 2.7m.

	<p>Comment: Architect to note. Design documentation demonstrating compliance is to be provided with the CC package.</p>
F6D2	<p>Natural Light: Class 9b buildings — to all general purpose classrooms in primary or secondary schools and all playrooms or the like for the use of children in an early childhood centre.</p> <p>Comment: Noting that natural light is required to all ‘playrooms’ in the early childhood centre, additional comments are provided under cl. F6D3 below.</p>
F6D3	<p>Methods and Extent of Natural Light: Windows or the like are to have an aggregate light transmitting area of not less than 10% of the floor area of the room.</p> <p>In a Class 9b building of a building, a required window that faces a boundary of an adjoining allotment or a wall of the same building or another building on the allotment must not be less than a horizontal distance from that boundary or wall that is the greater of—</p> <ul style="list-style-type: none"> + Generally — 1 m; and + 50% of the square root of the exterior height of the wall in which the window is located, measured in metres from its sill. <p>In a Class 9b early childhood centre, the sills of 50% of windows in children’s rooms must be located not more than 500 mm above the floor level.</p> <p>Comment: Architect to note. Design documentation & certification to be provided as part of the CC application package, though it is noted that the provided plans indicate that compliance is readily achievable as a large part of the façade is noted as being ‘aluminium framed glazing’.</p>
F6D5	<p>Artificial Lighting: Artificial lighting is required where it is necessary to minimise the hazard to occupants during an emergency evacuation. Sub-clauses (1) - (3) sets out the places where artificial lighting is always required in all classes of buildings and the standard to which it must be installed.</p> <p>Comment: Electrical Engineer to note. Design certification to be submitted at CC Application.</p>
F6D6	<p>Ventilation of Rooms: A habitable room, office, shop, factory, workroom, sanitary compartment, bathroom, shower room, laundry and any other room occupied by a person for any purpose must have natural ventilation complying with F6D7 or a mechanical or air-conditioning system complying with AS1668.2 and AS/NZS 3666.1.</p> <p>Comment: Design certification to be submitted at CC Application.</p>

3.6 Section G – Ancillary Provisions

G1D4	<p>Outdoor Play Spaces: Any outdoor play space in a Class 9b early childhood centre must be enclosed on all sides with a barrier which—</p> <ul style="list-style-type: none"> + Where the edge of the trafficable surface of the outdoor play space is at the same level or less than 2 m above the surface beneath — complies with AS 1926.1; and + Where the edge of the trafficable surface of the outdoor play space is 2 m or more above the surface beneath— <ul style="list-style-type: none"> - Is not less than 1.8 m high, as measured from above the trafficable surface; and - Is non-climbable and does not contain horizontal or other elements that could facilitate climbing; and - does not have any openings or apertures through which a 100 mm or greater sphere could pass; and - Is not within 1.8 m, as measured directly from the top of the barrier, of any elements within the outdoor play space that facilitate climbing; and - Is not within 900 mm of elements in a wall that facilitate climbing; and + Has strength and rigidity complying with AS 1926.1.
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For the purposes of compliance with AS 1926.1, this is applied as if there is a swimming pool located outside the outdoor play space, so that the barrier restricts children from exiting the premises without the knowledge of staff in the centre.

The above requirements do not apply to a wall, including doors and windows, which form part of the Class 9b early childhood centre, except where the wall is within a non-climbable zone.

Comment: Architect to note the above, having regard to the fact the fall from the outdoor play areas exceeds 2m. Design details to be provided demonstrating compliance with the Construction Certificate application.

3.7 Section J – Energy Efficiency

Part J4

Building Fabric: The provision of insulation of the building envelope will be required in the proposed Building, in accordance with Clauses J4D3 to J4D7, and the Tables therein, including Thermal Construction General, Roof and Ceiling Construction, Roof lights, Walls, and Floors. Design details and/or certification of design will be required to be provided in this regard.

Comment: This section applies to the building envelope of any air-conditioned spaces proposed within the Warehouse buildings. Design details and/or certification of building envelope design will be required to be submitted with the application for a Construction Certificate.

Part J5

Building Sealing: The provision of a compliant building sealing is required to all chimneys & flues, roof lights, windows & doors, Exhaust Fans, Ceilings Walls, & floors in accordance with Clauses J5D3 to J5D7.

Comment: This section applies to any air-conditioned spaces proposed within the Warehouses buildings. Design details and/or certification of building envelope design will be required to be submitted with the application for a Construction Certificate.

Part J6

Airconditioning & Ventilation Systems: Details and/or design certification which confirm that any proposed air-conditioning system within the proposed buildings achieves compliance with the relevant requirements of **Part J6** will be required to be provided from the Mechanical Engineer.

Comment: Details or certification demonstrating compliance will need to be submitted with the application for a Construction Certificate.

Part J7

Artificial Light & Power: Details and/or design certification which confirm that all artificial lighting, power control, and boiling/chilled water units within the proposed building achieves compliance with the relevant requirements of **Part J7** will be required to be provided from the Electrical Engineer.

Comment: Section J Consultant certification required at CC Application Stage.

Part J8

Hot Water Supply and Swimming Pool/Spa Pool Plant: Details and/or design certification which confirm that any proposed hot water supply system within the proposed building achieves compliance with the relevant requirements of **Part J8** (Section 8 of AS 3500.4) will be required to be provided from the Hydraulic Engineer.

Comment: Details and certification demonstrating compliance will need to be submitted with the application for a Construction Certificate.

Part J9

Facilities for Energy Monitoring: Provision for monitoring of energy consumption must be provided to a building where the floor area exceeds 500m², and must be capable of recording the consumption of gas and electricity. In addition, where the floor area of the building exceeds 2,500m² the energy monitoring facilities must be capable of individually recording air-conditioning, lighting, appliance power, central hot water supply, lifts/escalators, and other ancillary plant and being connected to a single interface monitoring system.

Comment: Details or certification demonstrating compliance with J9D3 for energy monitoring, J9D4 for provision for EV charging stations, and J9D5 for solar, will need to be submitted with the application for a Construction Certificate.

Specifically, it is noted that provision for EV charging is required to the following ratios:

- + 10% of car parking spaces associated with a Class 5 or 6 building,
- + 20% of car parking spaces associated with a Class 7b, 8 or 9 building.



4.0 Conclusion

This report contains an assessment of the referenced architectural documentation for the proposed 'Triple Two Nine' industrial development at 13 Endeavour Road, Caringbah against the Deemed-to-Satisfy provisions of the Building Code of Australia 2022.

Arising from the assessment, key compliance issues have been identified that require further resolution, either by way of fire engineered Performance Solutions or plan amendments prior to the Construction Certificate stage.

Notwithstanding the above, it is considered that the proposed development can readily achieve compliance with the BCA subject to resolution of the matters identified in this report.



Appendices

+ Appendix 1 – References Tables

Table 1: Non-Combustibility Requirements

+ Building Element	+ Type A Construction
External wall	Non-combustible
Common wall	Non-combustible
Floor and floor framing of lift pit	Non-combustible
All loadbearing internal walls (including those of shafts)	Concrete, masonry or fire-protected timber
Loadbearing fire walls	Concrete, masonry or fire-protected timber
Non-loadbearing internal walls required to be fire-resistant	Non-combustible
Non-loadbearing lift, ventilating, pipe, garbage and the like shafts which do not discharge hot products of combustion.	Non-combustible (subject to conditions outlined in C2D10)

Table 2: Fire Hazard Properties Requirements – Floor Linings

+ Table S7C3 of Specification 7 Critical Radiant Flux or Floor Linings and Floor Coverings			
+ Class of Building	Building Not Fitted with a Sprinkler System	Building Fitted with a Sprinkler System (other than a FPAA101D or FPAA10H System)	Fire-isolated Exits and Fire Control Rooms
Class 5, 6, 7, 8 or 9b	2.2 kW/m ²	1.2 kW/m ²	2.2 kW/m ²

Table 3: Fire Hazard Properties Requirements – Wall and Ceiling Linings

+ Table S7C4 of Specification 7 – Wall and Ceiling Lining Materials (Materials Groups Permitted)				
Class of Building	Fire-isolated Exits and Fire Control Rooms	Public Corridors	Specific Areas	Other Areas
Class 5, 6, 7 & 8 (Un-sprinklered)	Walls: 1 Ceilings: 1	Walls: 1, 2 Ceilings: 1, 2	Walls: 1, 2, 3 Ceilings: 1, 2	Walls: 1, 2, 3 Ceilings: 1, 2, 3
Class 5, 6, 7 & 8 (Sprinklered)	Walls: 1 Ceilings: 1	Walls: 1, 2, 3 Ceilings: 1, 2, 3	Walls: 1, 2, 3 Ceilings: 1, 2, 3	Walls: 1, 2, 3 Ceilings: 1, 2, 3
Class 9b (Sprinklered)	Walls: 1 Ceilings: 1	Walls: 1, 2 Ceilings: 1, 2	Walls: 1, 2, 3 Ceilings: 1, 2, 3	Walls: 1, 2, 3 Ceilings: 1, 2, 3

‘Specific Areas’ means:

- for Class 5 buildings, open plan offices with a minimum floor dimension/floor to ceiling height ratio >5;
- for Class 6 buildings, shops or other building with a minimum floor dimension/floor to ceiling height ratio >5;

Table 4: Fire-Resisting Construction – Type A Construction

+ Building Element	+ Class of Building - FRL: (in minutes) Structural adequacy/integrity/insulation			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL – (Including any column and other building element incorporated within it) or other external building element, where the distance from any fire-source feature to which it is exposed is:				
For loadbearing parts:				
Less than 1.5m	90/90/90	120/120/120	180/180/180	240/240/240
1.5 to less than 3m	90/60/60	120/90/90	180/180/120	240/240/180
3m or more	90/60/30	120/60/30	180/120/90	240/180/90
For non-loadbearing parts:				
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	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN - Not incorporated in an external wall				
For loadbearing columns	90/–/–	120/–/–	180/–/–	240/–/–
For non-loadbearing columns	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS	90/90/90	120/120/120	180/180/180	240/240/240
INTERNAL WALLS				
Fire-resisting lift and stair shafts				
Loadbearing	90/90/90	120/120/120	180/120/120	240/120/120s
Non-loadbearing	–/90/90	–/120/120	–/120/120	–/120/120
Bounding public corridors, public lobbies and the like:				
Loadbearing	90/90/90	120/–/–	180/–/–	240/–/–
Non-loadbearing	–/60/60	–/–/–	–/–/–	–/–/–
Between or bounding sole-occupancy units:				
Loadbearing	90/90/90	120/–/–	180/–/–	240/–/–
Non-loadbearing	–/60/60	–/–/–	–/–/–	–/–/–
Ventilating, pipe, garbage, and the like shafts not used for the discharge of hot products of combustion:				
Loadbearing	90/90/90	120/90/90	180/120/120	240/120/120
Non-loadbearing	–/90/90	–/90/90	–/120/120	–/120/120
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

Notes:

3. Any lightweight construction in a fire wall or an internal wall required to have an FRL is to comply with Specification 11.
4. A loadbearing internal wall and a loadbearing fire wall (including those that are part of a loadbearing shaft) must be constructed from; concrete or masonry.
5. Where a part of a building required to have an FRL depends upon direct vertical or lateral support from another part to maintain its FRL, that supporting part must typically achieve the same FRL. Where that part is also required to be non-combustible, the supporting part must also be non-combustible.
6. The method of attaching or installing a finish, lining, ancillary element, or service installation to a building must not reduce the fire-resistance of that element to below that required.
7. Fire rated shafts are required to be enclosed at the top and bottom by construction having an FRL of not less than what the shaft requires (in both directions)
8. The concession granted under S5C15 results in the roof of the building not being required to be fire rated (the building is provided throughout with sprinklers). Notwithstanding, the Atrium provisions override this general concession in BCA Specification 5.
9. Lift shafts are required to be enclosed at the top of the shaft with fire rated construction having an FRL of 120/120/120.
10. Fire isolated exits are to be provided with a fire rated "lid" that achieves an FRL of 120/120/120.
11. Where roof lights are proposed they are required to be located not less than 3 metres from a roof light in an adjoining fire separated part; and must not be more than 20% of the area of the roof.
12. Any loadbearing internal walls or loadbearing fire walls are to be masonry or concrete.
13. External walls must be non-combustible construction. Non-loadbearing parts of an external wall that are more than 3m from a fire source feature need not be fire rated.
14. Internal columns in this building (being less than 25m in effective height) that are in the storey immediately below the roof, can be constructed as follows:
 - a. Building with a rise in storeys exceeding 3 – FRL 60/60/60
 - b. Building with a rise in storeys not exceeding 3 – no FRL

Table 5: Fire-Resisting Construction – Type C Construction

+ Building Element	+ Class of Building - FRL: (in minutes) Structural adequacy/integrity/insulation			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL – (Including any column and other building element incorporated within it) or other external building element, where the distance from any fire-source feature to which it is exposed is:				
For loadbearing parts:				
Less than 1.5m	90/90/90	90/90/90	90/90/90	90/90/90
1.5 to less than 3m	-/-/-	60/60/60	60/60/60	60/60/60
3m or more	-/-/-	-/-/-	-/-/-	-/-/-
EXTERNAL COLUMN - Not incorporated in an external wall				
Less than 1.5m	90/-/-	90/-/-	90/-/-	90/-/-
1.5 to less than 3m	-/-/-	60/-/-	60/-/-	60/-/-
3m or more	-/-/-	-/-/-	-/-/-	-/-/-
COMMON WALLS and FIRE WALLS	90/90/90	90/90/90	90/90/90	90/90/90
INTERNAL WALLS				
Bounding public corridors, public lobbies and the like:	60/60/60	-/-/-	-/-/-	-/-/-
Between or bounding sole-occupancy units:	60/60/60	-/-/-	-/-/-	-/-/-
Bounding a stair if required to be rated:	60/60/60	60/60/60	60/60/60	60/60/60
ROOFS	-/-/-	-/-/-	-/-/-	-/-/-

Notes:

1. New external walls that are located 1.5m or more from an allotment boundary / fire source feature require no FRL's.
2. Where a part of a building required to have an FRL depends upon direct vertical or lateral support from another part to maintain its FRL, that supporting part must typically achieve the same FRL. Where that part is also required to be non-combustible, the supporting part must also be non-combustible.
3. An external wall required to have an FRL is only required from the outside.
4. Any lightweight construction in a fire wall or an internal wall required to have an FRL is to comply with Specification 6.
5. The method of attaching or installing a finish, lining, ancillary element, or service installation to a building must not reduce the fire-resistance of that element to below that required.
6. No structural elements are permitted to pass through fire-rated walls.

+ Appendix 2 – Fire Safety Schedule

The following table is a list of the required fire safety measures within the building. These measures may be subject to further change pending the outcomes of the final Fire Safety Engineering Review.

Table 6: Fire Safety Schedule

Building 3:

+ Statutory Fire Safety Measure	+ Design/Installation Standard	+ Proposed
Alarm Signalling Equipment	AS 1670.3 – 2018	✓
Automatic Fail Safe Devices	BCA 2022 Clause D3D26	✓
Automatic Fire Suppression Systems	BCA 2022 Spec. 17 AS 2118.1 – 2017 or AS 2118.4, 6 – 2012	✓
Building Occupant Warning System activated by the Sprinkler System	BCA 2022 Spec. 17 Clause 8 and / or Clause 3.22 of AS 1670.1 – 2018	✓
Emergency Lighting	BCA 2022 Clauses E4D2 & E4D4 AS 2293.1 – 2018	✓
Emergency Evacuation Plan	AS 3745 – 2010	✓
Exit Signs	BCA 2022 Clauses E4D5, NSW E4D6 & E4D8 AS 2293.1 – 2018	✓
Fire Blankets	BCA 2022 Clause E1D14 AS 3504 – 1995 & AS 2444 – 2001	✓
Fire Dampers	BCA 2022 Clause C4D15 AS 1668.1 – 2015 & AS 1682.1 & 2 – 2015 Manufacturer's Specification	✓
Fire Doors	BCA 2022 Clauses C3D13, C3D14, C4D3, C4D5 & C4D6 AS 1905.1 – 2015 Manufacturer's Specification	✓
Fire Hose Reels	BCA 2022 Clause E1D3 AS 2441 – 2005	✓
Fire Hydrant Systems	BCA 2022 Clause E1D2 AS 2419.1 – 2021	✓
Fire Seals	BCA 2022 Clause C4D15 AS 1530.4 – 2014 & AS 4072.1 – 2014 Manufacturer's Specification	✓
Lightweight Construction	BCA 2022 Clause C2D9 AS 1530.4 – 2014 Manufacturer's Specification	✓
Mechanical Air Handling Systems (Automatic Shutdown)	BCA 2022 Clause E2D3 AS/NZS 1668.1 – 2015 & AS 1668.2 – 2012	✓

Portable Fire Extinguishers	BCA 2022 Clause E1D14 AS 2444 – 2001	✓
Wall-Wetting Sprinklers	BCA 2022 Clause C4D5 AS 2118.2 – 2010	✓
Warning & Operational Signs	BCA 2022 Clause C4D7, D3D26, D3D28, D4D7, E4D4 & I4D14 AS 1905.1 – 2015 EP&A (DCFS) Regulation 2021 Section 108	✓
Fire Engineered Performance Solutions relating to: TBC	BCA 2022 Performance Requirements ... Fire Safety Engineering Report prepared by ... Report No. ... Revision ... dated ...	✓

Building 4:

+ Statutory Fire Safety Measure	+ Design/Installation Standard	+ Proposed
Alarm Signalling Equipment	AS 1670.3 – 2018	✓
Automatic Fail Safe Devices	BCA 2022 Clause D3D26	✓
Automatic Fire Suppression Systems	BCA 2022 Spec. 17 AS 2118.1 – 2017 or AS 2118.4, 6 – 2012	✓
Building Occupant Warning System activated by the Sprinkler System	BCA 2022 Spec. 17 Clause 8 and / or Clause 3.22 of AS 1670.1 – 2018	✓
Emergency Lighting	BCA 2022 Clauses E4D2 & E4D4 AS 2293.1 – 2018	✓
Emergency Evacuation Plan	AS 3745 – 2010	✓
Exit Signs	BCA 2022 Clauses E4D5, NSW E4D6 & E4D8 AS 2293.1 – 2018	✓
Fire Blankets	BCA 2022 Clause E1D14 AS 3504 – 1995 & AS 2444 – 2001	✓
Fire Dampers	BCA 2022 Clause C4D15 AS 1668.1 – 2015 & AS 1682.1 & 2 – 2015 Manufacturer's Specification	✓
Fire Doors	BCA 2022 Clauses C3D13, C3D14, C4D3, C4D5 & C4D6 AS 1905.1 – 2015 Manufacturer's Specification	✓
Fire Hose Reels	BCA 2022 Clause E1D3 AS 2441 – 2005	✓
Fire Hydrant Systems	BCA 2022 Clause E1D2 AS 2419.1 – 2021	✓
Fire Seals	BCA 2022 Clause C4D15 AS 1530.4 – 2014 & AS 4072.1 – 2014 Manufacturer's Specification	✓
Lightweight Construction	BCA 2022 Clause C2D9 AS 1530.4 – 2014	✓

	Manufacturer's Specification	
Mechanical Air Handling Systems (Automatic Shutdown)	BCA 2022 Clause E2D3 AS/NZS 1668.1 – 2015 & AS 1668.2 – 2012	✓
Portable Fire Extinguishers	BCA 2022 Clause E1D14 AS 2444 – 2001	✓
Wall-Wetting Sprinklers	BCA 2022 Clause C4D5 AS 2118.2 – 2010	✓
Warning & Operational Signs	BCA 2022 Clause C4D7, D3D26, D3D28, D4D7, E4D4 & I4D14 AS 1905.1 – 2015 EP&A (DCFS) Regulation 2021 Section 108	✓
Fire Engineered Performance Solutions relating to: TBC	BCA 2022 Performance Requirements ... Fire Safety Engineering Report prepared by ... Report No. ... Revision ... dated ...	✓

Building 5 (Block 1):

+ Statutory Fire Safety Measure	+ Design/Installation Standard	+ Proposed
Alarm Signalling Equipment	AS 1670.3 – 2018	✓
Automatic Fail Safe Devices	BCA 2022 Clause D3D26	✓
Automatic Fire Detection & Alarm System	BCA 2022 Spec. 20 & 23 AS 1670.1 – 2018	✓
Automatic Fire Suppression Systems	BCA 2022 Spec. 17 AS 2118.1 – 2017 or AS 2118.4, 6 – 2012	✓
Building Occupant Warning System activated by the Sprinkler System	BCA 2022 Spec. 17 Clause 8 and / or Clause 3.22 of AS 1670.1 – 2018	✓
Emergency Lighting	BCA 2022 Clauses E4D2 & E4D4 AS 2293.1 – 2018	✓
Emergency Evacuation Plan	AS 3745 – 2010	✓
Exit Signs	BCA 2022 Clauses E4D5, NSWE4D6 & E4D8 AS 2293.1 – 2018	✓
Fire Blankets	BCA 2022 Clause E1D14 AS 3504 – 1995 & AS 2444 – 2001	✓
Fire Dampers	BCA 2022 Clause C4D15 AS 1668.1 – 2015 & AS 1682.1 & 2 – 2015 Manufacturer's Specification	✓
Fire Doors	BCA 2022 Clauses C3D13, C3D14, C4D3, C4D5 & C4D6 AS 1905.1 – 2015 Manufacturer's Specification	✓
Fire Hose Reels	BCA 2022 Clause E1D3 AS 2441 – 2005	✓
Fire Hydrant Systems	BCA 2022 Clause E1D2 AS 2419.1 – 2021	✓

Fire Seals	BCA 2022 Clause C4D15 AS 1530.4 – 2014 & AS 4072.1 – 2014 Manufacturer's Specification	✓
Lightweight Construction	BCA 2022 Clause C2D9 AS 1530.4 – 2014 Manufacturer's Specification	✓
Mechanical Air Handling Systems (Automatic Shutdown)	BCA 2022 Clause E2D3 AS/NZS 1668.1 – 2015 & AS 1668.2 – 2012	✓
Perimeter Vehicular Access	BCA 2022 Clause C3D5	✓
Portable Fire Extinguishers	BCA 2022 Clause E1D14 AS 2444 – 2001	✓
Smoke Hazard Management Systems + Zone Smoke Control	BCA 2022 Part E2 AS/NZS 1668.1 – 2015	✓
Stand-by Power Systems	BCA 2022 Spec. 31 AS 3000 – 2018	✓
Wall-Wetting Sprinklers	BCA 2022 Clause C4D5 AS 2118.2 – 2010	✓
Warning & Operational Signs	BCA 2022 Clauses D3D26, D3D28, D4D7 & E3D4 AS 1905.1 – 2015 EP&A (DCFS) Regulation 2021 Section 108	✓
Fire Engineered Performance Solutions relating to: TBC	BCA 2022 Performance Requirements ... Fire Safety Engineering Report prepared by ... Report No. ... Revision ... dated ...	✓

Building 5 (Block 2):

+ Statutory Fire Safety Measure	+ Design/Installation Standard	+ Proposed
Alarm Signalling Equipment	AS 1670.3 – 2018	✓
Automatic Fail Safe Devices	BCA 2022 Clause D3D26	✓
Automatic Fire Suppression Systems	BCA 2022 Spec. 17 AS 2118.1 – 2017 or AS 2118.4, 6 – 2012	✓
Building Occupant Warning System activated by the Sprinkler System	BCA 2022 Spec. 17 Clause 8 and / or Clause 3.22 of AS 1670.1 – 2018	✓
Emergency Lighting	BCA 2022 Clauses E4D2 & E4D4 AS 2293.1 – 2018	✓
Emergency Evacuation Plan	AS 3745 – 2010	✓
Exit Signs	BCA 2022 Clauses E4D5, NSWE4D6 & E4D8 AS 2293.1 – 2018	✓
Fire Blankets	BCA 2022 Clause E1D14 AS 3504 – 1995 & AS 2444 – 2001	✓
Fire Hose Reels	BCA 2022 Clause E1D3 AS 2441 – 2005	✓

Fire Hydrant Systems	BCA 2022 Clause E1D2 AS 2419.1 – 2021	✓
Perimeter Vehicular Access	BCA 2022 Clause C3D5	✓
Portable Fire Extinguishers	BCA 2022 Clause E1D14 AS 2444 – 2001	✓
Warning & Operational Signs	BCA 2022 Clauses D3D26, D3D28, D4D7 & E3D4 AS 1905.1 – 2015	✓
Fire Engineered Performance Solutions relating to: TBC	BCA 2022 Performance Requirements ... Fire Safety Engineering Report prepared by ... Report No. ... Revision ... dated ...	✓

Building 6:

+ Statutory Fire Safety Measure	+ Design/Installation Standard	+ Proposed
Alarm Signalling Equipment	AS 1670.3 – 2018	✓
Automatic Fail Safe Devices	BCA 2022 Clause D3D26	✓
Automatic Fire Suppression Systems	BCA 2022 Spec. 17 AS 2118.1 – 2017 or AS 2118.4, 6 – 2012	✓
Building Occupant Warning System activated by the Sprinkler System	BCA 2022 Spec. 17 Clause 8 and / or Clause 3.22 of AS 1670.1 – 2018	✓
Emergency Lighting	BCA 2022 Clauses E4D2 & E4D4 AS 2293.1 – 2018	✓
Emergency Evacuation Plan	AS 3745 – 2010	✓
Exit Signs	BCA 2022 Clauses E4D5, NSWE4D6 & E4D8 AS 2293.1 – 2018	✓
Fire Blankets	BCA 2022 Clause E1D14 AS 3504 – 1995 & AS 2444 – 2001	✓
Fire Hose Reels	BCA 2022 Clause E1D3 AS 2441 – 2005	✓
Fire Hydrant Systems	BCA 2022 Clause E1D2 AS 2419.1 – 2021	✓
Perimeter Vehicular Access	BCA 2022 Clause C3D5	✓
Portable Fire Extinguishers	BCA 2022 Clause E1D14 AS 2444 – 2001	✓
Warning & Operational Signs	BCA 2022 Clauses D3D26, D3D28 & D4D7 AS 1905.1 – 2015	✓
Fire Engineered Performance Solutions relating to: TBC	BCA 2022 Performance Requirements ... Fire Safety Engineering Report prepared by ... Report No. ... Revision ... dated ...	✓

Building 7:

+ Statutory Fire Safety Measure	+ Design/Installation Standard	+ Proposed
Alarm Signalling Equipment	AS 1670.3 – 2018	✓
Automatic Fail Safe Devices	BCA 2022 Clause D3D26	✓
Automatic Fire Suppression Systems	BCA 2022 Spec. 17 AS 2118.1 – 2017 or AS 2118.4, 6 – 2012	✓
Building Occupant Warning System activated by the Sprinkler System	BCA 2022 Spec. 17 Clause 8 and / or Clause 3.22 of AS 1670.1 – 2018	✓
Emergency Lighting	BCA 2022 Clauses E4D2 & E4D4 AS 2293.1 – 2018	✓
Emergency Evacuation Plan	AS 3745 – 2010	✓
Exit Signs	BCA 2022 Clauses E4D5, NSW4D6 & E4D8 AS 2293.1 – 2018	✓
Fire Blankets	BCA 2022 Clause E1D14 AS 3504 – 1995 & AS 2444 – 2001	✓
Fire Hose Reels	BCA 2022 Clause E1D3 AS 2441 – 2005	✓
Fire Hydrant Systems	BCA 2022 Clause E1D2 AS 2419.1 – 2021	✓
Perimeter Vehicular Access	BCA 2022 Clause C3D5	✓
Portable Fire Extinguishers	BCA 2022 Clause E1D14 AS 2444 – 2001	✓
Warning & Operational Signs	BCA 2022 Clauses D3D26, D3D28 & D4D7 AS 1905.1 – 2015	✓
Fire Engineered Performance Solutions relating to: TBC	BCA 2022 Performance Requirements ... Fire Safety Engineering Report prepared by ... Report No. ... Revision ... dated ...	✓

Building 8:

+ Statutory Fire Safety Measure	+ Design/Installation Standard	+ Proposed
Alarm Signalling Equipment	AS 1670.3 – 2018	✓
Automatic Fail Safe Devices	BCA 2022 Clause D3D26	✓
Automatic Fire Suppression Systems	BCA 2022 Spec. 17 AS 2118.1 – 2017 or AS 2118.4, 6 – 2012	✓
Building Occupant Warning System activated by the Sprinkler System	BCA 2022 Spec. 17 Clause 8 and / or Clause 3.22 of AS 1670.1 – 2018	✓
Emergency Lighting	BCA 2022 Clauses E4D2 & E4D4 AS 2293.1 – 2018	✓
Emergency Evacuation Plan	AS 3745 – 2010	✓
Exit Signs	BCA 2022 Clauses E4D5, NSW4D6 & E4D8	✓

	AS 2293.1 – 2018	
Fire Blankets	BCA 2022 Clause E1D14 AS 3504 – 1995 & AS 2444 – 2001	✓
Fire Hose Reels	BCA 2022 Clause E1D3 AS 2441 – 2005	✓
Fire Hydrant Systems	BCA 2022 Clause E1D2 AS 2419.1 – 2021	✓
Perimeter Vehicular Access	BCA 2022 Clause C3D5	✓
Portable Fire Extinguishers	BCA 2022 Clause E1D14 AS 2444 – 2001	✓
Warning & Operational Signs	BCA 2022 Clauses D3D26, D3D28 & D4D7 AS 1905.1 – 2015	✓
Fire Engineered Performance Solutions relating to: TBC	BCA 2022 Performance Requirements ... Fire Safety Engineering Report prepared by Report No. ... Revision ... dated ...	✓