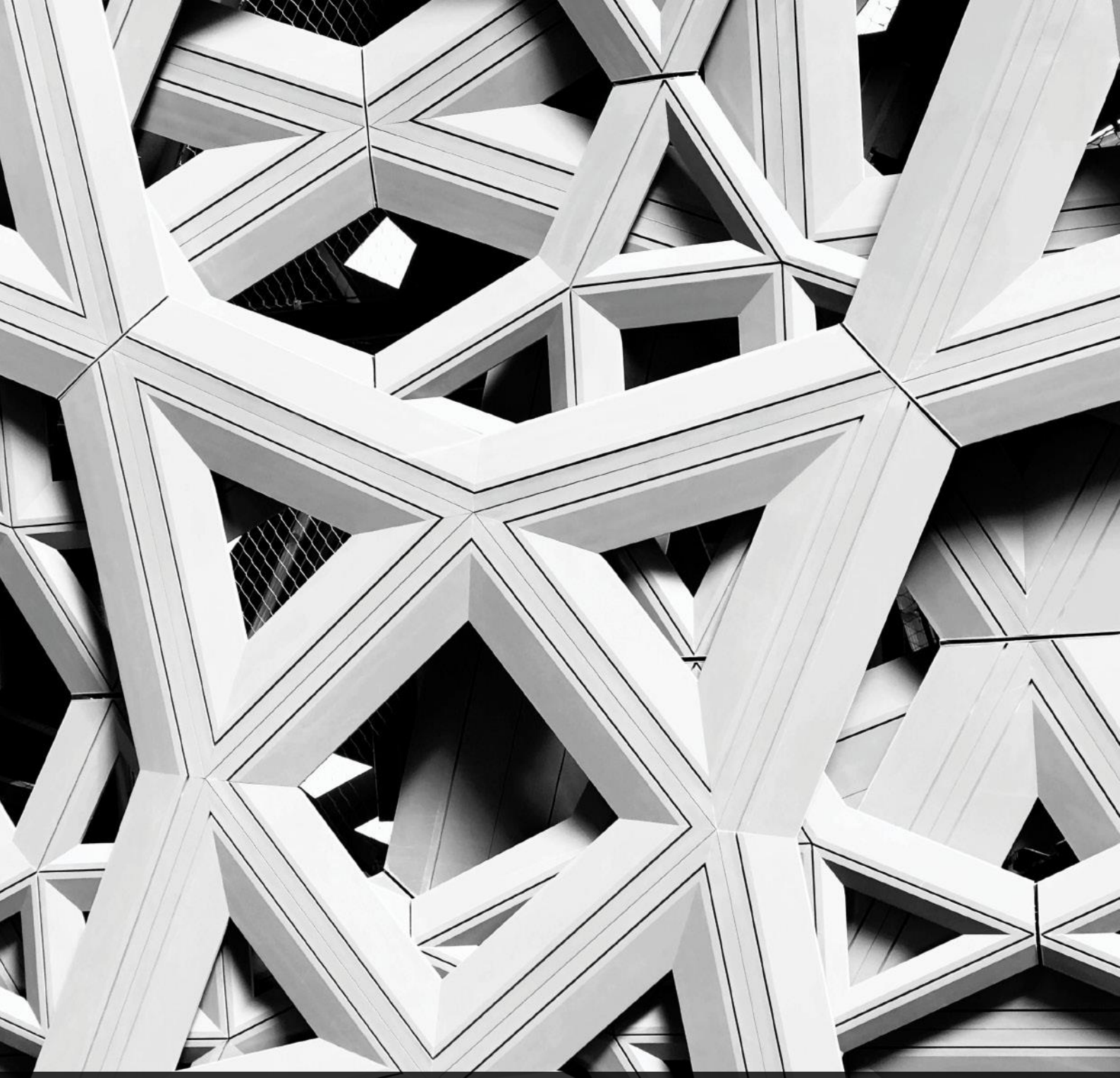

BCA Assessment Report

Proposed Multi Level Warehouse Facility
49 Stephen Rd. Banksmeadow, NSW 2019

Prepared for:
ESR

Revision 5
21 October 2024
Reference: 230396

bmplusg.com.au

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 Construction Certificate for the project.

A. Matters requiring redesign or additional information at CC:

+	+ BCA (DtS) Clause	+ Description
1.	**C2D10 & C2D14**	Details of the non-combustible external walls, including all ancillary elements and attachments, to the Offices and Warehouses are required to be provided for assessment.
2.	**C3D8, C3D9, C3D10, C4D4 & Spec. 5**	Confirmation is required as to whether the proposed fire safety strategy includes the provision of a 4hr Fire Wall between the Class 7b & Class 5/6 parts of the building in order to confirm compliance with the FRL requirements of Spec. 5 and the protection between fire compartment requirements of C4D4.
3.	**D2D5**	Any exit travel distances that exceed 100m may require further review and comment by the Fire Engineer
4.	**D2D12** **E2D4**	As more than 2 access doorways open into the fire-isolated exits, and the length of the fire-isolated passageways exceed 60m, an automatic air pressurisation system must be provided to serve the entirety of the fire-isolated exits (including associated passageways). Details are to be provided as the design progresses to confirm compliance.
5.	**D3D14**	Provide details of the stairs, demonstrating compliance with the requirements of this clause, and having consideration to construction tolerances.
6.	**D3D25 & D3D26**	The egress gate at the main entry is to swing in the direction of egress. This door is to be openable from the inside at all times or is to unlock upon fire trip.
7.	**Part D4 & AS 1428.1-2009**	Refer to BM+G's Access Report.
8.	**D4D5**	Consideration to an exemption for accessibility to the warehousing areas may be appropriate on this project. Confirmation from ESR stating where this would be applied and the reasons why it would be inappropriate for access for people with disabilities within the facility to be provided at CC application stage.
9.	**E1D15**	Details of the proposed Fire Control Centre location to be provided for review.
10.	**E3D3/E3D5**	Stretcher & Emergency Lift requirements to be detailed at each lift within the building.
11.	**F4D4**	The required number of sanitary facilities have been provided for each warehouse and office level in the report below. These numbers may be revised once confirmation on population numbers have been provided by ESR. Sanitary facilities reflecting compliant numbers are to also be nominated on the plans.

B. Matters requiring fire safety engineered performance solutions:

+	BCA (DtS) Clause	+ Description
1.	**C2D2** **Spec 5**	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. Where composite steel and concrete construction is proposed, a performance solution may be implemented to omit the protection of secondary steel elements.
2.	**C3D5**	A performance solution is required to address the Perimeter Vehicular Access where the path is further from the buildings than what is permitted under the DtS provisions and where there is a localised reduction in width to the accessway.
3.	**C4D15**	Any services penetrations through elements with a 240/240/240 FRL may require a Performance Solution, given the lack of tested systems for fire stopping that will achieve a 4hr insulation rating in accordance with this requirement. It is recommended that this be incorporated generically in any Fire Engineering Performance Solution to avoid non-compliance issues at OC stage.
4.	**D2D5 & D2D6**	The current plans indicate that exit travel distances and distances between alternative exits within the building will not comply with D2D5 & D2D6– respectively. These non-compliant travel distances have been nominated in the report below and will be revised as the layout and the location of the exits are confirmed. (note that the central 3 stairs are non-required, non-fire isolated stairs which have been fire rated only for compartmentation purposes).
5.	**D2D12**	Discharge of the fire isolated stairs are subject to the following performance solutions: + Fire stairs discharge within the confines of the building which is further than 20m from open space and is not open for two-thirds of its perimeter. Fire stairs also pass by external walls which are not rated for 60 minutes. + Sole-occupancy units which don't occupy all of the storey (i.e. tenanted warehouses) open directly into the fire-isolated exits. (note that the central 3 stairs are non-required, non-fire isolated stairs which have been fire rated only for compartmentation purposes).
6.	**E1D2**	Design of fire hydrant systems per AS 2419.1-2021 Appendix C as the volume of the building is >108,000m^3. Note: The scope of AS 2419.1 – 2021 does not apply to fire hydrant installations for class 7b or 8 buildings having a total volume more than 108 000 m^3.
7.	**E1D3**	Confirmation is to be provided if 50m fire hose reels are proposed to be utilised in the Class 7b areas of the buildings to determine if a Performance Solution is required from the Fire Engineer.
8.	**E1D2 & E1D4**	Further design development is required with respect to the location of the sprinkler booster assembly to determine whether a Fire Engineered Performance Solution is required.
9.	**E2D2–E2D20**	The following Smoke Hazard Management Performance Solutions may be considered: + Rationalise the smoke exhaust system throughout the Warehouse + Non-provision of smoke exhaust to the offices

+ BCA (DtS) Clause		+ Description
		+ Zone smoke control system to be omitted from the warehouse parts (provided to the office parts). + Rationalise the smoke exhaust system to the communal hardstand areas.

C. Other matters requiring performance solutions:

+ BCA (DtS) Clause		+ Description
1.	**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 the building.
2.	**Section J**	A separate report will be required from an Energy Efficiency consultant to outline the applicable requirements for the building.

+ Contents

+ Report Status

+ Date	21.10.2024
+ Revision	5
+ Status	Revised Concept Design Review
+ Author	Rick Beardwood
+ Reviewed	Dean Goldsmith

Prepared by:

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Building Surveyor
bm+g

Reviewed by:

Dean Goldsmith
Director
bm+g
Building Surveyor-Unrestricted (NSW)
BDC No.: 0141

+ Revision History

+ Revision	1	**+ Date**	27.06.2024
+ Status	Concept Design Review – for Client & Consultant Review		
+ Revision	3	**+ Date**	19.08.2024
+ Status	Revised Concept Design Review – for Client & Consultant Review		
+ Revision	4	**+ Date**	09.09.2024
+ Status	Revised Concept Design Review		
+ Revision	5	**+ Date**	21.10.2024
+ Status	Revised Concept Design Review – Updated Plans		

1.0 Description of Project

1.1 Proposal

bm+g have been commissioned by ESR to undertake an assessment of the proposed development at 49 Stephen Rd. Banksmeadow against the relevant provisions of the Building Code of Australia 2022 (BCA).

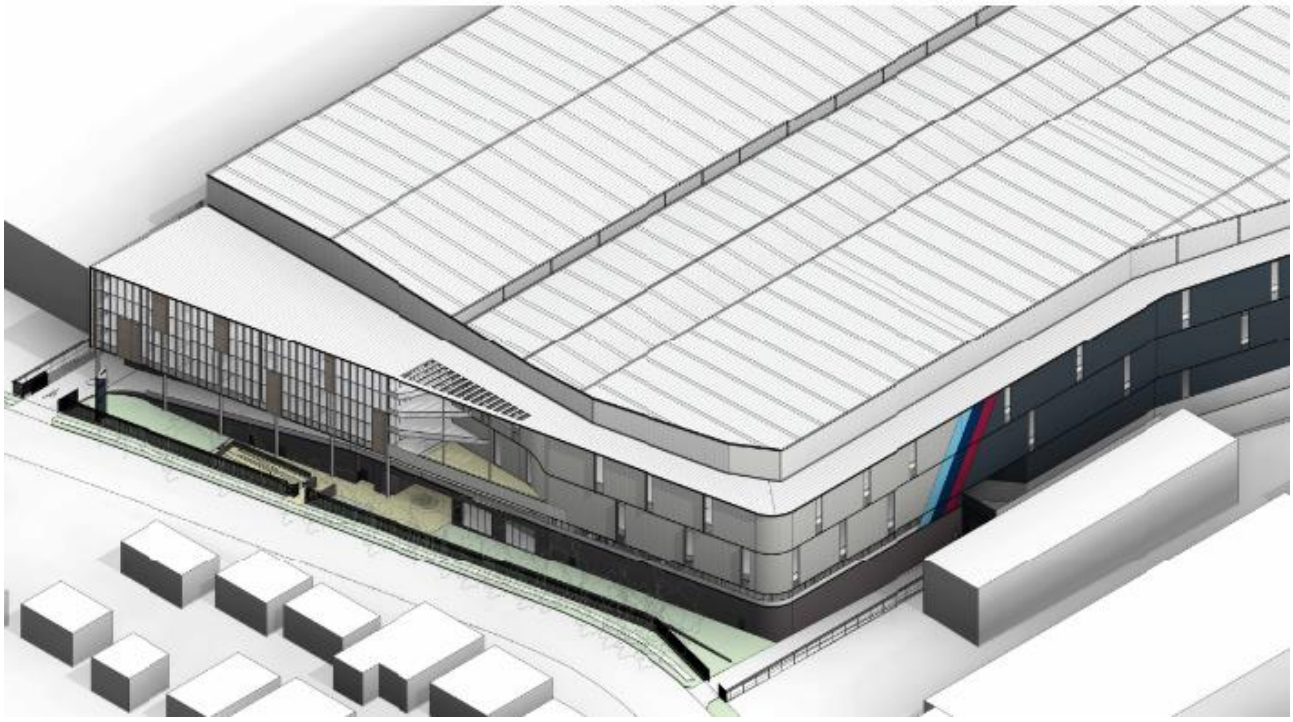


Figure 1: 3D Figure, Source: SBA Architects

The project comprises:

- Demolition of all existing built form.
- Site preparation works, bulk earthworks and infrastructure/service provisions and/or augmentation.
- Removal of 90 trees on site.
- Extensive remediation of the site.
- Construction and operation of two three-storey warehouse and distribution centre buildings including the following key components:
    - Approximately 57,034m^2 of total GFA comprising:
        - 51,195m^2 of warehouse area.
        - 4,775m^2 of office area.
        - 964m^2 of lobby space.
        - 100m^2 café.
    - Two warehouse buildings of three storeys containing:
        - Twelve (12) units within Warehouse A (3 levels).
        - Twelve (12) units within Warehouse B (3 levels).
- 243 car spaces provided on the ground floor mezzanine carparking area.

- 50 ground floor carpark spaces off Coal Pier Road.
- 20 motorbike parking spaces.
- End of trip facilities.
- Site landscaping works totalling 5,327m2 (11.06% of the site), and
- Provision of building/business identification signage.

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.

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 30 January 2023 and issued for the SSDA (SSD-65924461).

1.3 Project Team

The following bm+g team members have contributed to this Report:

+ **Dean Goldsmith** – Director | Building Surveyor-Unrestricted
+ **Rick Beardwood** – Building Surveyor

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 SBA Architects numbered:

+ Drawing No.	+ Name	+ Revision
DA000	COVER SHEET	P9
DA001	SITE PLAN & SUMMARY	P11
DA002	3D PERSPECTIVE	P8
DA003	3D PERSPECTIVE 2	P6
DA004	3D SECTION	P8
DA005	3D RENDERS	P2

DA010	DEMOLITION PLAN	P3
DA100	GROUND FLOOR PLAN	P16
DA101	GROUND FLOOR MEZZANINE PLAN	P13
DA102	LEVEL 1 FLOOR PLAN	P14
DA103	LEVEL 1 MEZZANINE FLOOR PLAN	P13
DA104	LEVEL 2 FLOOR PLAN	P14
DA105	LEVEL 2 MEZZANINE FLOOR PLAN	P12
DA106	ROOF PLAN	P7
DA110	WAREHOUSE SECTIONS	P9
DA111	WAREHOUSE ELEVATIONS	P7
DA112	BREEZEWAY ELEVATIONS	P6
DA113	OFFICE SECTIONS	P3
DA200	GROUND LEVEL AMENITIES	P5
DA201	GROUND MEZZANINE OFFICE	P5
DA202	LEVEL 1 OFFICE AND AMENITIES	P5
DA203	LEVEL 1 MEZZANINE OFFICE	P5
DA204	LEVEL 2 OFFICE AND AMENITIES	P5
DA205	LEVEL 2 MEZZANINE OFFICE	P4
DA500	SHADOW DIAGRAMS	P4
DA501	SHADOW DIAGRAM W 9-11.30AM	P1
DA600	GFA CALCULATION	P5
DA601	GLA CALCULATION	P6

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).
  - the building will, whether or not any building work is carried out—
- Pursuant to Section 14 of the Environmental Planning and Assessment Regulation 2021, a certifier must not issue a construction certificate for building work under a development consent that authorises a change of building use unless—
  - the fire protection and structural capacity of the building will be appropriate to its new use, and
  - the building will comply with such of the Category 1 fire safety provisions as are applicable to the new use.

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.

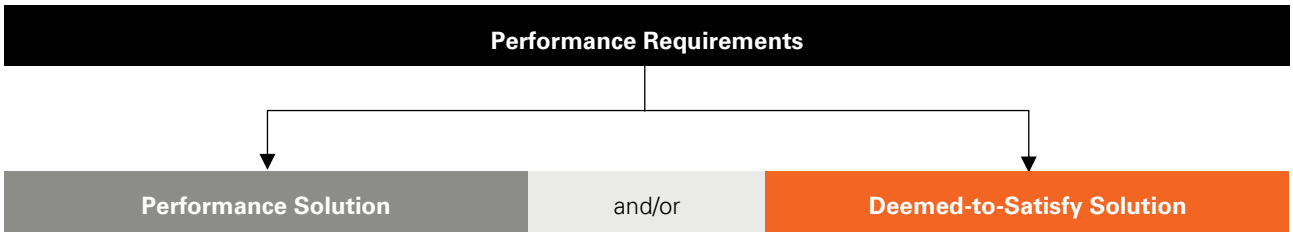
1.6 Relevant Version of the NCC Building Code of Australia

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.
- No part of this document may be reproduced in any form or by any means without written permission from bm+g. This report is based solely on client instructions, and therefore should not be used by any third party without prior knowledge of such instructions.

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 buildings 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.

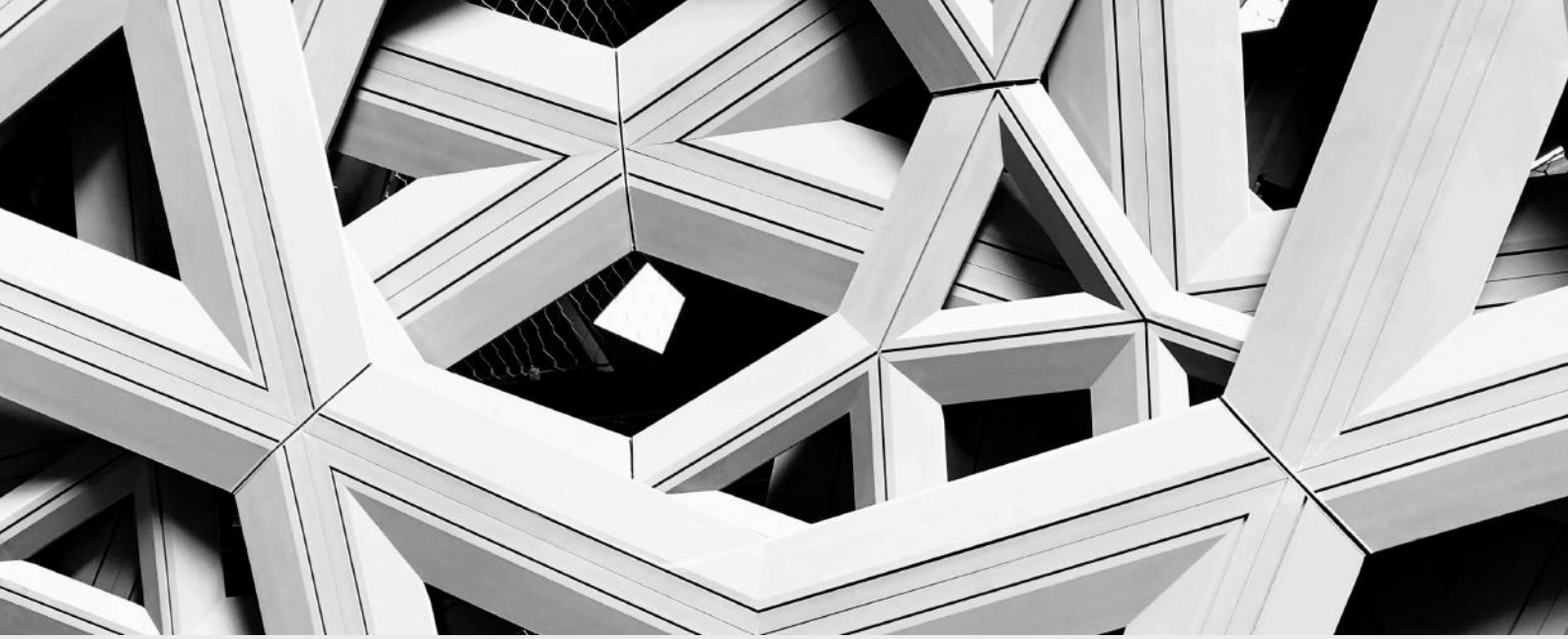
Performance Requirements of the BCA – A Building Solution will comply with the BCA if it satisfies the Performance Requirements. A

Performance requirement states the level of performance that a Building Solution must meet.

Compliance with the Performance Requirements can only be achieved by-

+ complying with the Deemed-to-Satisfy Provisions; or
+ 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
+ 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 the construction of a two (2), storey warehouse building consisting of twelve (12) warehouse units, each with mezzanine offices, car parking, shared hardstand and awnings.

The building is classified as follows:

BCA Classifications:	Class 5 (Office) Class 6 (Café) Class 7a (Parking Mezzanine) Class 7b (Warehouse)
Rise in storeys:	7 (Seven)
Storeys Contained:	7 (Seven)
Type of Construction:	Type A Construction
Importance Level (Structural)	Importance Level 2 (TBC by Structural Engineer)
Sprinkler Protected Throughout	Yes (See comments under C3D4 & E1D4)
Effective Height	26.45m (RL33.2 – RL6.75)
Floor Area	>18,000m^2
Volume	>108,000m^3
Largest Fire Compartment Size	8,000m^2 & 48,000m^3 (Class 5) 3,000m^2 & 18,000m^3 (Class 7a & 7b) – Refer to Large Isolated Building provisions below
Climate Zone	Zone 6

2.2 Fire Compartment Floor Area Limitations

Maximum size of fire compartment/atria is:

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

Note: *The above fire compartmentation sizes do not apply to large isolated buildings, i.e. Warehouses.*

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
North	Northern Allotment Boundary	>6m
East	Eastern Allotment Boundary	>6m
West	Far Side of Horsley Road	>6m
South	Southern Allotment Boundary	>6m

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 1170.4 – 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 building is required to comply with the requirements of Type A Construction as stated within Specification 5. The table below provides an overview of the requirements of each. Refer to Table 5 of Appendix 1 for the FRL requirements of Type A Construction.

Type A Construction:
+ Load-bearing external walls and columns must achieve an FRL regardless of distance from boundary / separate building per Table S5C11a.
+ Non-load-bearing external walls (and columns incorporated within) need not achieve an FRL if >3m from a boundary or separate building per Table S5C11b.
+ All external load-bearing columns must achieve an FRL per Table S5C11c.
+ Fire Walls must achieve an FRL per Table S5C11d.
+ All Services risers, lift and stair shafts, must achieve an FRL per Table S5C11e & f.
+ Floors and all internal load-bearing elements (columns, beams, walls, etc.) must achieve an FRL per Table S5C11g.
+ Roof must be of non-combustible construction per S5C15 and combustible Roof Lights must not exceed 20% of the roof area).
+ Internal columns on the floor immediately below the roof need only achieve a 1hr FRL per S5C17.

Comment: Type A Construction applies to the Warehouse / Office Building – see notes under Spec.5, C2D9 & C2D14 below.

C2D3

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.

Comment: A rise in storey of 7 (seven) applies to the proposed warehouse building.

C2D10

Non-Combustible Building Elements: All materials and or components incorporated in an external wall or fire-rated wall must be non-combustible. This includes but not limited to:

+ 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.

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 Construction Certificate.

Refer to Table 1 in Appendix 1 for the elements required to be non-combustible.

Comment: The external walls of the building (including all elements incorporated in the walls), the lift pits, the non-loadbearing internal walls that are required to be fire rated, any proposed fire walls and all services risers are required to be of non-combustible construction in accordance with C2D10 (1) & (2). See additional comments under C2D14 below regarding attachments to the external walls. Details are to be submitted with the CC application for assessment.

C2D11 & Spec. 7

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:

+ 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 certification required at CC application stage.
C2D14	**Ancillary Elements:** An ancillary combustible element must not be fixed, installed or attached to the internal or external parts of a non-combustible wall unless it is one of the concession items listed in items (a) to (p). **Comment**: The architectural elements in the warehouse and office facades will require review to confirm that the proposed external attachments to the external walls achieve compliance with the non-combustibility requirements of this clause – see comments under C2D10 also. Note: Particular attention is drawn to any proposed signage in this regard – details to be provided by ESR/the tenant.
C3D3	**General Floor Area and Volume Limitations:** The building is to achieve fire compartment sizes not in excess of the DtS requirements of this clause. **Comment**: The proposed building is a Class 7b Large Isolated Building and as such the provisions for maximum fire compartment size under Table C3D3 do not apply. Refer to comments under C3D4 & C3D5 below in relation to the Large Isolated Building provisions applicable to the proposed development.
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 warehouse building is required to be sprinkler protected throughout and provided with perimeter vehicular access in accordance with Clause C3D5 (see notes below) pursuant to the Large Isolated Building designation under this clause. **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 they must be 6m wide within 18m of the external walls of the building and of a suitable bearing capacity and unobstructed height to permit the operation and passage of FRNSW vehicles. **Comment**: The proposed warehouse building complies with the provisions of C3D5 except for the areas shown in red on the mark-up below. These non-compliances (including the vehicular access being greater than 18m from the external wall in some points around the perimeter and less than 6m wide in a number of locations) will be required to be addressed as a performance solution by the Fire Safety Engineer to demonstrate compliance with C1P9.

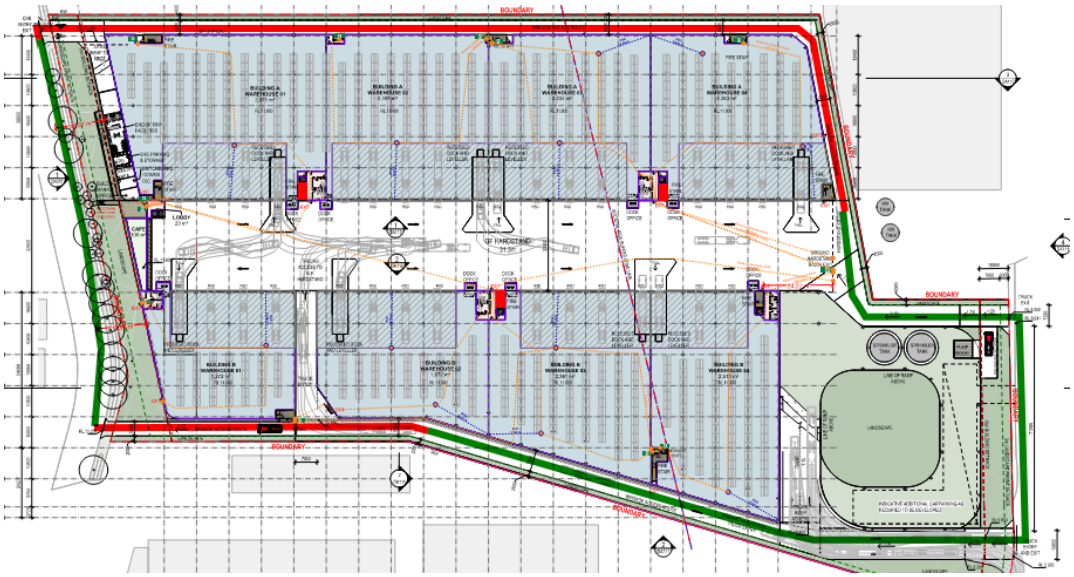


Figure 2: Perimeter Vehicular Access Assessment

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:** It is understood there are no fire walls proposed under the proposed design. Refer to comments in C3D9 below.
C3D9	**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**: Confirmation is required as to whether the proposed fire safety strategy includes the provision of a 4hr Fire Wall between the Class 7a/7b & Class 5/6 parts of the building in order to confirm compliance with the FRL requirements of Spec. 5. Where there is no fire separation proposed between the Class 5 and Class 7a/7b areas, the higher FRL's applicable to the Class 7b warehouse will apply to the adjoining Class 5/6 Office/Cafe area. See Spec. 5 details in Appendix 1 for FRL requirements applicable to each classification.
C3D11	**Separation of Lift Shafts:** The lift shafts are required to achieve a -/120/120 FRL as they connect greater than 3 storeys. **Comment:** The passenger lifts in the building serving the mezzanine office levels are required to be fire isolated where they connect more than 3 storeys in a sprinkler protected building.
C3D13	**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 C1.1, whichever is greater) and doorways being self-closing -/120/30 fire doors: + 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. Confirmation is required as to whether any of the above will be applicable to this development. **Comment:** Details demonstrating compliance are to be submitted with the CC Application plans for the proposed building. A fire engineered performance solution will be required for the fire pump room which does not provide the fire brigade with direct access to open space or a fire-isolated passageway. Noting that open space must be directly connected to the road without necessitating passage through a building.
C3D14	**Electricity Supply System:** An electricity substation, electrical conductors & main switchboards which sustain 'emergency equipment' operating in the emergency mode, located within a building must– + 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 then -/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— 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. 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. **Note:** For the purpose of this clause, 'emergency equipment' includes (but is not limited to) fire pumps, air handling systems for smoke control, and control & indicating equipment. **Comment:** The above requirements will need to be taken into consideration as part of the design of the main switch rooms serving the buildings. Where appropriate, details demonstrating compliance are to be included in the CC Application plans for the warehouse building.
C4D4	**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. **Comment:** Compliance with this clause will be assessed once the fire safety strategy for the building is confirmed. Where there is no fire wall proposed between the Class 7a/7b and Class 5 parts, the requirements of C4D4 will not be applicable.
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:** It is noted that Fire Walls between the Class 7b/7a & Class 5 parts of the building are currently proposed.

C4D9	**Openings in Fire-Isolated Exits:** Specifies that the doorways that open into fire-isolated exits must be protected by-/60/30 fire doors that are self-closing or automatic. This clause also details the deemed-to-satisfy methods of activation. This does not apply to doors opening to a road or open space. A window in the external walls of fire-isolated exits must be protected in accordance with C4D5 if it is within 6m of and exposed to a window or other opening in a wall of the same building other than in the same fire-isolated enclosure. **Comment:** Fire Doors are required to be provided to each of the door openings into the fire isolated exit stairs and passageways. Details of the proposed -/60/30 FRL fire door locations are to be provided with the CC application plans in accordance with this requirement. It is also understood the -/60/- FRL lift doors opening into the fire-isolated passageway will not achieve the required 30-minute insulation rating. This may be addressed under a performance solution by the fire engineer.
C4D10	**Service Penetrations in Fire-isolated Exits:** Fire isolated exits must not be penetrated by any services other than electrical wiring as permitted by D3D8(6), ducting associated with a pressurisation system or water supply pipes for fire services. **Comment:** Services Consultants to note and ensure compliance with regards to restriction of services penetrating the fire isolated stairs and passageway.
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:** Details are to be included on the Architectural Plans and certification from the lift consultant to confirm compliance is to be provided with the construction certificate application.
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 though openings in these building elements, required to resist the spread of fire. **Comment:** Certification will be required at OC application stage – see note below under C4D15 regarding the requirement for a Performance Solution for fire stopping in 240/240/240 FRL building elements.
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:** Any services penetrations through elements with a 240/240/240 FRL may require a Performance Solution, given the lack of tested systems for fire stopping that will achieve a 4hr insulation rating in accordance with this requirement. It is recommended that this be incorporated generically in any Fire Engineering Performance Solution to avoid non-compliance issues 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**: The proposed warehouse facility will be subject to compliance with the Type A Construction provisions of tables S5C11a to S5C11g as summarised below: + 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. Note: Combustible rooflights are not permitted to occupy more than 20% of the roof area. + 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. 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. Where composite steel and concrete construction is proposed, a performance solution may be implemented to rationalise the fire rating requirement of any secondary steel structures.
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 S7C2 outlines the applicable requirements of Spec. 7 to the different types of Linings, Materials and Assemblies. Comment: Refer to comments under Clause C2D11 above – certification will be required at both CC and OC Application stages.

3.3 Section D – Access and Egress

D2D3	**Number of Exits Required:** The building is required to be provided with 2 exits to each storey where the effective height is greater than 25m. **Comment:** Details demonstrating compliance are to be included in the CC application stage, noting compliance is readily achievable.
D2D4	**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. **Comment:** The Fire isolated stairs serving the building connect more than 3 storeys in a sprinkler protected building and as such are required to be fire isolated. Details demonstrating compliance with the FRL requirements of this clause are to be provided at CC Application stage.
D2D5	**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. 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 2 or more alternative exits are available for egress. **Comment:** The exit travel distances on each level are found to not comply with the requirements of Clause D2D5. A summary of the non-compliances are listed below, though it is understood these are subject to further design development. Note that assumptions have been made to some of the exit locations where not detailed on the plans. It is expected that these figures will be updated as the plan develops.

Warehouse Areas:

Ground Floor
Up to 90m to an exit from Warehouse 1 (A).
Up to 70m to an exit from Warehouse 2 (A).
Up to 95m to an exit from Warehouse 3 (A).
Up to 75m to an exit from Warehouse 4 (A).
Up to 80m to an exit from Warehouse 1 (B).
Up to 72m to an exit from Warehouse 2 (B).
Up to 100m to an exit from Warehouse 3 (B).
Up to 76 m to an exit from Warehouse 4 (B).
Up to 127m to an exit from the shared driveway/amenity areas

Mezzanine Carpark
Up to 40m to a point of choice
Up to 60m to an exit.

Level 1
Up to 80m to an exit from Warehouse 5 (A) – additional access to stair required.
Up to 86m to an exit from Warehouse 6 (A)
Up to 80m to an exit from Warehouse 7 (A)
Up to 90m to an exit from Warehouse 8 (A)
Up to 67m to an exit from Warehouse 5 (B)
Up to 90m to an exit from Warehouse 6 (B)
Up to 90m to an exit from Warehouse 7 (B)
Up to 65m to an exit from Warehouse 8 (B)
Up to 118m to an exit from the shared driveway/amenity areas
Up to 35m to a point of choice from the outdoor area

Level 2
Up to 80m to an exit from Warehouse 9 (A) – additional access to stair required.
Up to 86m to an exit from Warehouse 10 (A)
Up to 80m to an exit from Warehouse 11 (A)
Up to 90m to an exit from Warehouse 12 (A)
Up to 67m to an exit from Warehouse 9 (B)
Up to 90m to an exit from Warehouse 10 (B)
Up to 90m to an exit from Warehouse 11 (B)
Up to 65m to an exit from Warehouse 12 (B)
Up to 118m to an exit from the shared driveway/amenity areas
Up to 35m to a point of choice from the outdoor area

Office Areas:
Level 1 – 6
Up to 25m to a point of choice
Up to 45m to an exit
Up to 35m to a point of choice from outdoor terrace.

D2D6

Distance Between Alternative Exits: Exits required as alternative exits must be –

- Distributed as uniformly as practicable within or around the storey served and in positions where unobstructed access to at least 2 exits is readily available from all points on the floor including lift lobby areas; and
- 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.

Comment: The distances between alternative exits in the warehouse building are considered to be non-compliant with the requirements of Clause D2D6. The extent of non-compliances are

	detailed below; however, they will be required to be addressed as Performance Solutions by the Fire Safety Engineer to demonstrate compliance with Performance Requirements D1P4 & E2P2. Note that assumptions have been made to some of the exit locations where not detailed on the plans. It is expected that these figures will be updated as the plan develops. Warehouse Areas: *Ground Floor* Up to 147m between exits from Warehouse 1 (A). Up to 129m between exits from Warehouse 2 (A). Up to 173m between exits from Warehouse 3 (A). Up to 184m between exits from Warehouse 4 (A). Up to 110m between exits from Warehouse 1 (B). Up to 220m between exits from Warehouse 2 (B). Up to 221m between exits from Warehouse 3 (B). Up to 134m between exits from Warehouse 4 (B). Up to 235m between exits from the shared driveway areas *Mezzanine Carpark* Up to 90m between exits *Level 1* Up to 156m between exits from Warehouse 5 (A). (utilising additional exit) Up to 163m between exits from Warehouse 6 (A) Up to 157m between exits from Warehouse 7 (A) Up to 170m between exits from Warehouse 8 (A) Up to 117m between exits from Warehouse 5 (B) Up to 185m between exits from Warehouse 6 (B) Up to 200m between exits from Warehouse 7 (B) Up to 96m between exits from Warehouse 8 (B) Up to 235m between exits from the shared driveway/amenity areas. *Level 2* Up to 156m between exits from Warehouse 9 (A). (utilising additional exit) Up to 163m between exits from Warehouse 10 (A) Up to 157m between exits from Warehouse 11 (A) Up to 170m between exits from Warehouse 12 (A) Up to 117m between exits from Warehouse 9 (B) Up to 185m between exits from Warehouse 10 (B) Up to 200m between exits from Warehouse 11 (B) Up to 96m between exits from Warehouse 12 (B) Up to 235m between exits from the shared driveway/amenity areas.
D2D7 – D2D11	**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. **Comment:** Population numbers for the proposed building have been calculated based on the square metre rates listed in Table D2D18 to facilitate an assessment of the provisions of D2D7 to D2D11 – see D2D18 below - and as a result it is considered that compliance with D2D7 to D2D11 is readily achievable. Exit corridors and stairs and other paths of travel are to be a minimum 1m in width and 2m in height clear of any obstructions. The unobstructed height of any doorway may be reduced to not less than 1980mm and the width may be reduced by 250mm from the required exit dimensions listed above. Warehouse Ground Level 671 occupants = 6m required. Warehouse Level 1 656 occupants = 6m required Warehouse Level 2 638 occupants = 6m required

	Minimum 6m exit width provided from each warehouse level (note that some exits have been assumed). Office 1 109 occupants = 2m required Typical remainder offices <100 occupants = 1m required 2m exit width provided. Carpark Mezzanine Level 251 occupants = 3m required 3m exit width provided.
D2D12	**Travel via Fire Isolated Exits:** A doorway from a room must not open directly into a stairway, passageway or ramp that is required to be fire-isolated unless it is from – + A public corridor, public lobby or the like; or + A sole-occupancy unit occupying all of a storey; or + A sanitary compartment, airlock or the like. A fire isolated stairway must also provide independent egress from each storey that it serves and discharge directly – + To a road open space; or + To a point – - 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 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. **Comment:** Several non-compliances have been identified in relation to the fire-isolated stairs, which may be subject to a fire engineered performance solution. These non-compliances have been identified below: + Fire stairs discharge within the confines of the building which is further than 20m from open space and is not open for two-thirds of its perimeter + Fire stairs discharge internally + Sole-occupancy units which don't occupy all of the storey (i.e. tenanted warehouses) open directly into the fire-isolated exits + Lift shafts open directly into fire-isolated passageways without a public lobby *Note (See Part E2 below): As more than 2 access doorways open into the fire-isolated exits, and the length of the fire-isolated passageways exceed 60m, an automatic air pressurisation system must be provided to serve the entire fire-isolated exit (including associated passageways).*
D2D14	**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. 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. **Comment:** No non-fire isolated stairs are included in the design.
D2D15	**Discharge from Exits:** Requires that an exit must not be blocked at the point of discharge. Barriers such as bollards must be installed to prevent vehicles from blocking the discharge from exits.

This clause also provides the methods of construction, location and separation, at exit discharge points for all building Classes.

Comments: All exit discharge points from the buildings are required to be protected in accordance with the requirements of this clause.

D2D18

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.

Comment: As indicated in the comments under D2D7 to D2D11 above the population numbers have been calculated for each level in accordance with Table D2D18 as follows:

Warehouse Number of Persons Accommodated as Per Table D2D18	
Area	Population
Building A	
Warehouse 01	54
Warehouse 02	40
Warehouse 03	40
Warehouse 04	42
Warehouse 05/09	42
Warehouse 06/10	40
Warehouse 07/11	40
Warehouse 08/12	42
Building B	
Warehouse 01	24
Warehouse 02	30
Warehouse 03	42
Warehouse 04	44
Warehouse 05/09	20
Warehouse 06/10	22
Warehouse 07/11	36
Warehouse 08/12	40

Office Number of Persons Accommodated as Per Table D2D18		
	Area	Population
Building A Office 1 – 6	Office	100 (x4 Levels)
Carpark Number of Persons Accommodated as Per Table D2D18		
Carpark	Area	Population
	Mezzanine Car park	243
	Car Park	50

Note: These numbers have been calculated based on the floor area of each warehouse excluding the racking. No population has also been attributed to the shared connecting hardstand areas.

The above population numbers may be considered excessive as such more accurate numbers may be provided by ESR/the tenant.

D3D3

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.

Comment: Architect & Structural Engineer to note. Details are to be provided with the Construction Certificate documentation.

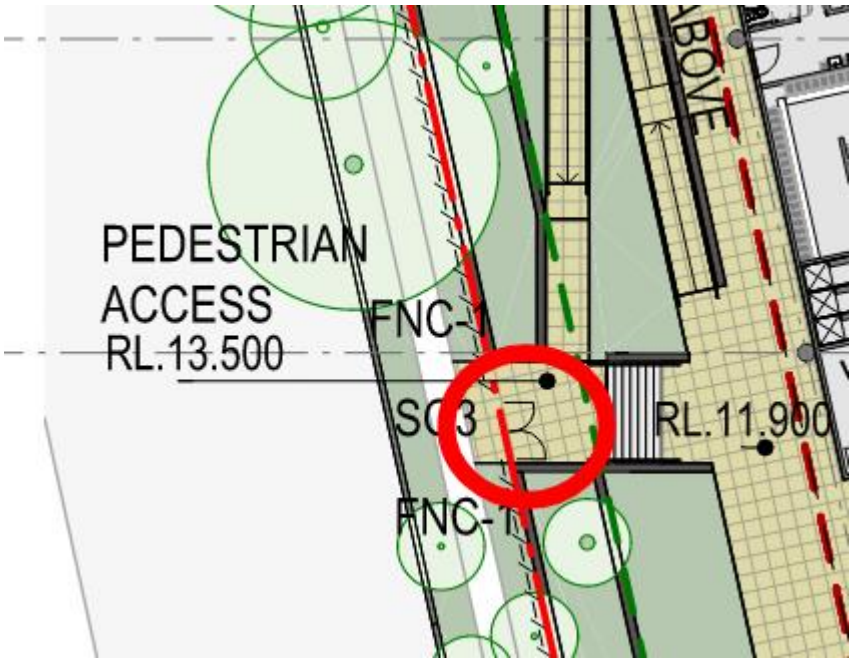
D3D4

Non-Fire Isolated Stairways and Ramps: In a building with a rise in storeys of more than 2, required non-fire-isolated stairways and ramps must be either constructed of

+ Reinforced or prestressed concrete; or
+ 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. **Comment:** No non-fire isolated stairs are shown.
D3D5	**Separation of Rising and Descending Flights:** If a stairway is serving as an exit is required to be fire isolated – here must be no direct connection between— (a) a flight rising from a storey below the lowest level of access to a road or open space; and (i) a flight descending from a storey above that level; and (ii) any construction that separates or is common to the rising and descending flights must be— (b) non-combustible; and (i) smoke proof in accordance with S11C2. **Comment:** All fire stairs are currently shown to discharge at Ground Level. Compliance will be ensured as the design progresses.
D3D8	**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. **Comment:** This requirement applies to all cupboards containing electrical distribution boards or comms. equipment that are located in a path of travel to an exit. In this regard, such cupboards are to be enclosed in non-combustible materials and are to be suitably sealed against the spread of smoke.
D3D9	**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. **Comment:** If the space under any of the required exit stairs are proposed to be enclosed to form a cupboard or the like, the enclosing walls and ceilings will need to achieve an FRL of 60 minutes and the doorway will need to be fitted with a self-closing -/60/30 fire door. Details demonstrating compliance are to be shown on the CC Application plans where applicable.
D3D14, D3D15, D3D16 & D3D22	**Stairways, Balustrades, and Handrails:** <u>Stairways:</u> + 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°. <u>Balustrades:</u> + 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. <u>Handrails:</u> + 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.

	Comment: Details demonstrating compliance are to be submitted with the CC Application drawings for assessment against the above criteria.
D3D17 – D3D21	**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: + 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 complaint with D3D21 and tables D3D21(a) to D3D21(c). **Comment:** Details demonstrating compliance are to be submitted with the CC Application drawings for assessment against the above criteria.
D3D22	**Handrails:** This Clause sets out the requirements regarding the location, spacing and extent of handrails required to be installed in buildings. **Comment:** Architect to note, details demonstrating compliance will be required to be included in the CC plans. Handrails serving all stairs and ramps both internally and externally to the buildings are required to comply with the accessibility requirements of Clause D4D4 and AS 1428.1-2009.
D3D23	**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. **Comments:** Details of where any AS 1657 compliant stairs or ladders are to be used for access/egress in the building are to be included on the CC Application plans. It is understood these provisions may be applied to any maintenance ladders or walkways used to access mechanical equipment in the warehouse areas.
D3D24	**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. 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 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. **Comment:** Architect to note – compliance readily achievable.
D3D25 & D3D26	**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. **Comment:** The egress gate at the main entry is to swing in the direction of egress. This door is to always be openable from the inside or is to unlock upon fire trip.



Doorways are not yet shown in full – further assessment required as the design progresses.

D4D3

Access to Buildings Accessways must be provided to accessible buildings from the main points of pedestrian entry at the allotment boundary and any accessible car parking space or accessible associated buildings connected by a pedestrian link.

An accessway must be provided to a building required to be accessible-

- From the main points of a pedestrian entry at the allotment boundary; and
- From another accessible building connected by a pedestrian link; and
- From any required accessible car parking space on the allotment.

In a building required to be accessible, an accessway must be provided through the principal pedestrian entrance and through not less than 50% of all pedestrian entrances including the principal pedestrian entry.

Comment: Compliant access is required from the allotment boundary to the main entry of each tenancy in the building, from accessible parking spaces in the building and throughout all areas in accordance with AS 1428.1-2009. Refer to D4D4 and D4D5 below and BM+G's Access Report.

D4D4

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.

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.

Comment: As indicated above, the proposed building is required to be accessible throughout in accordance with AS1428.1-2009 – Refer to BM+G's Access Report for further details.

D4D5

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.

Comment: Refer to BM+G's Access Report. Note: Consideration to an exemption to the Warehouse areas may be appropriate on this project. Confirmation from ESR/the tenant will be required at the CC Application stage that includes a request for concession, where this would be

	applied and the reasons why it would be inappropriate for access for people with disabilities within the facility.
D4D6	**Accessible Parking:** This clause provides details of the number of accessible carparking spaces required in a carpark depending on the classification of the building. **Comment:** In the case of Class 5 & 7b buildings 1 compliant accessible space is required for every 100 parking spaces or part thereof. 243 carparking spaces have been provided within the development which requires 3 accessible carparking spaces. More than 3 have been provided.
D4D7	**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. **Comment:** Signage will be required to identify exits, accessible facilities, an ambulant accessible facility and the paths to accessible pedestrian entries (where required) – Refer to BM+G's Access Report.
D4D9	**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. **Comment:** Subject to D4D5 above, stairways and ramps serving the building, any overhead projections less than 2m in height and any paths leading directly to a driveway or roadway without a kerb will need to be provided with Tactile Ground Surface Indicators in accordance with AS1428.4. Details and design certification demonstrating compliance will be required to be included in the CC plans.
D4D12	**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. **Comment:** Architect to note, details and design certification demonstrating compliance will be required to be included in the CC plans.
D4D13	**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. **Comment:** Architect to note.

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. **Comment:** The proposed warehouse building is required to be served by a fire hydrant system, designed in accordance with AS 2419.1-2021 Appendix C. Due to the volume of the Warehouse exceeding 108,000m³, a Performance Solution is required to facilitate the design of the system. Detailed plans showing the hydrant system layout (incl. the booster assembly and pumps) are to be provided with the relevant CC application(s). The plans must also demonstrate how coverage

	is achieved to all areas of the building. Note: A performance solution may be required from the Fire Engineer for the lack of compliant hydrant coverage to any automation areas in the warehouse.
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:** The proposed building is required to be served by a compliant fire hose reel system within the Class 7a & 7b areas only (excluding the Class 5 Office areas). Note: A performance solution may be required from the Fire Engineer for the lack of compliant hose reel coverage to any areas in the warehouse. Details demonstrating compliance are to be provided at the CC application Stage.
NSW E1D4, E1D12 & E1D13	**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. 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. **Comment:** As the building is designated as a Large Isolated Building, it is required to be sprinkler protected throughout in accordance with Spec.17. Details demonstrating compliance are required to be submitted with the CC application. In accordance with Clause 4.14.1 of AS2118.1-2017, sprinkler boosters are required to comply with the requirements of AS2419.1-2021 for a hydrant booster. The compliance of the booster assembly will be reviewed further once the location is confirmed, noting that it must be situated within sight of the main entrance of the building and not more than 10m from a hardstand. Note that the building is over 25m effective height and will require a dual water supply.
E1D14	**Portable Fire Extinguishers:** To be provided and designed in accordance with Sections 1, 2 and 3 of AS 2444-2001. **Comment:** Fire extinguishers will be required to be installed in the proposed building in accordance with sub-clauses (1), (3) & (5) and AS 2444-2001 in the class 5 office areas.
E1D15	**Fire Control Centre:** A fire control centre is to be provided based on the total building floor area comprising more than 18,000m². A fire control centre must: + 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. **Comment:** As the total floor area of the building exceeds 18,000m² and the effective height is greater than 25m it is required to be provided with a Fire Control Centre that complies with Spec 19 (Clauses S19C2 – S19C5). Further details which demonstrate compliance with the requirements of Spec. 19 will be required to be included on the CC Application plans.
E1D17	**Provisions for Special Hazards:** Suitable additional provisions must be made for fire-fighting if unique problems could arise due to; + 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. **Comment:** It is noted that if Hazardous/Dangerous Goods are proposed to be stored/utilised in significant quantities, details will be required from both the sprinkler system designer and the Fire Engineer, confirming that the proposed firefighting systems have the required capability to address the additional hazard resulting from the Hazardous/Dangerous Goods storage.
E2D3	**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.

	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. The details relating to the installation and operation of the systems are set out in Specifications 20, 21, & 22.
E2D2	**General Requirements (Smoke Hazard Management):** Any air handling system which does not form part of a smoke hazard management system and which recycles air from one fire compartment to another fire compartment or operates in a way that may spread smoke between compartments (refer to the comments under cl. C3D9, regarding the possibility of Fire Walls to separate different classifications on each storey) must be designed to operate as a smoke control system in accordance with AS 1668.1-2015 OR incorporate smoke dampers where the ducts penetrate separating elements in the fire compartments and the mechanical system shutdown and the smoke dampers activate to close automatically by smoke detectors complying with Clause 7.5 of AS 1670.1-2018. **Comment:** Details and Design Certification required at the CC Application stage.
E2D4 **E2D6** **E2D10**	**Smoke Hazard Management – Fire Isolated Exits, Buildings >25m Effective Height & Large Isolated Buildings:** These clauses set out the requirements for smoke hazard management systems for fire isolated exits, large isolated buildings and buildings with an effective height of more than 25m. **Comment:** As the floor area of the building exceeds 18,000m^2 an automatic smoke exhaust system complying with Spec. 21 (incorporating a smoke detection system) is required to be provided. As the effective height is greater than 25m the building will also require a Zone Pressurisation System to vertically separated fire compartments (not within the same storey) and all fire stairs (and fire isolated passageways that are greater than 60m in length) will require pressurisation in accordance with AS/NZS 1668.1-2015. The building will also require an Automatic Smoke Detection & Alarm system throughout I accordance with Spec.20 incorporating EWIS per E4D9 – see notes below. Details and design certification shall be provided with the CC application. Consideration to a Performance Solution addressing the required smoke hazard management systems may be given. Such a Performance Solution would need to be prepared by the Fire Engineer to demonstrate compliance with Performance Requirement E2P2.
E2D21	**Provisions for Special Hazards:** Additional smoke hazard management measures may be necessary due to the— + 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. **Comment:** Details of the proposed additional smoke hazard management systems are required to address the additional hazard resulting from the proposed storage or use of the building.
E3D3	**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. 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 2000mmm long x 1400mm high above the floor level. **Comment:** The lifts within the building serve storeys above an effective height of 12m and as such are required to accommodate a stretcher in accordance with the requirements of the clause above. Design certification required at CC Application stage.

E3D4	**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. **Comment:** Applies to the proposed lift in the building - Lift Contractor to note.
E3D5	**Emergency Lifts:** Where a building is greater than 25m effective height, the lifts must be designated as emergency lifts and located in separate fire isolated shafts. Where multiple lifts are provided in multiple shafts at least one emergency lift must be provided per shaft to serve all levels in the building. **Comment:** An emergency lift strategy for the building must be developed further. All lifts appear to be located within different shafts and service all levels, meaning every lift is required to be an emergency lift.
E3D6	**Landings:** Access and egress to and from lift well landings must comply with the Deemed-to-Satisfy Provisions of Parts D2 & D3. **Comment:** Design certification from the lift supplier shall be provided with the documentation submitted with the Construction Certificate application.
E3D7	**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. **Comment:** Design certification from the lift supplier shall be provided with the documentation submitted with the Construction Certificate application.
E4D2 – E4D8	**Emergency Lighting and Exits Signs:** Emergency lighting and exit signage to be provided in accordance with E4D2 - E4D5 complying with AS 2293.1 – 2018. **Comments:** Emergency Lighting is required throughout the building in accordance with E4D2, E4D4 and AS/NZS 2293.1-2018.
E4D4	**Design & Operation of Emergency Lighting:** Every required emergency lighting system must comply with AS 2293.1-2018. **Comment:** Electrical Consultant to note.
E4D5	**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. **Comment:** Electrical Consultant to note. Details demonstrating compliance will be required to be included in the CC plans.
E4D6	**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. **Comment:** Electrical Consultant to note. Details demonstrating compliance will be required to be included in the CC plans.
E4D8	**Design & Operation of Exit Signs:** Every required exit sign must comply with AS 2293.1-2018 and be clearly visible at all times when the building is occupied by any person having the legal right of entry into the building. **Comments:** Electrical Consultant to note, details demonstrating compliance will be required to be included in the CC plans.
E4D9	**Emergency Warning & Intercom System (EWIS):** Where a building has an effective height of more than 25m it will require an EWIS system to be installed throughout in accordance with AS 1670.4-2018. **Comments:** Dry Fire Consultant to note, details demonstrating compliance will be required to be included in the CC Application.

3.5 Section F – Health and Amenity

F1D3	**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. **Comment:** Details of stormwater disposal are required to be prepared by a suitably qualified consultant and submitted with documentation for the CC.
F1D4	**Exposed Joints:** Exposed joints in the drainage surface on a roof, balcony, podium or similar horizontal surface part of a building must— + 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 **Comment:** Details of compliance with the above are to be prepared by a suitably qualified consultant and submitted with documentation for the CC.
F1D5	**External Waterproofing Membranes:** External waterproofing membranes are required to comply with AS 4654.1 & 2. **Comment:** Details of compliance with the above are to be prepared by a suitably qualified consultant and submitted with documentation for the CC.
F1D6	**Damp-Proofing:** + This sub-clause requires that moisture from the ground must be prevented from reaching certain parts of buildings as listed. + 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). **Comment:** Note.
F1D7	**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. 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. **Comment:** Note.
F2D3 & F2D4	**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. **Comment:** Note- Design Certification required at CC Application stage.
F2D4	**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. **Comment:** Note.
F3D2	**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. **Comment:** Note- design certification required at CDC Application stage.
F3D3	**Sarking:** Sarking-type materials used for weatherproofing of roofs must comply with AS/NZS 4200 parts 1 and 2 **Comment:** Note.

F3D4

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

Comment: Details to be provided with the application for the Construction Certificate.

F3D5

Wall Cladding: The following wall cladding materials are deemed to satisfy Performance Requirement F3P1:

- 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.

Comment: Details are the be provided together with the F3P1 Performance Solution Report, demonstrating compliance, prior to the issued of the relevant CC(s).

F3P1

Performance Requirement F3P1: A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause

- Unhealthy or dangerous conditions, or loss of amenity for occupants; and
- Undue dampness or deterioration of building elements.

Note 1: There are limited Deemed-to-Satisfy provisions for this Performance Requirement in respect to External Walls. DtS wall types include; masonry; autoclaved aerated concrete; and metal wall cladding only.

Note 2: Refer to Clause F3D2 for roof coverings.

Comment: A Performance Solution Report will be required to address the above, noting that the proposed design does not comprise of wholly DtS materials.

F4D3

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).

Comment: Noted – refer to D2D18, confirmation of population numbers are required.

F4D4

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).

Comment: As indicated in D2D18 above the proposed population numbers have been calculated per Table D2D18 and have been subsequently used to assess the required toilet facilities within the building to achieve compliance with Table F4D4. Based on the aggregate population numbers, for each proposed use in the building the following minimum sanitary facilities apply. The proposed sanitary facilities numbers on each floor exceed the minimum numbers required as listed below and as such are compliant with Table F4D4.

Warehouse Areas								
Occupancy Class as per F4D4 (Employees) – Note this is assuming a central bank of amenities not individual.								
Type		Closet Pans		Urinals		Washbasins		Complies
		Required	Proposed	Required	Proposed	Required	Proposed	Yes/No
BA WH01/02	Male – 47	3	2	2	2	3	2	No
	Female – 47	4	3	-	-	3	2	No
BA WH03/04	Male – 41	3	2	2	2	3	2	No
	Female – 41	3	3	-	-	3	2	No
BB WH01	Male – 12	1	1	1	1	1	1	Yes
	Female – 12	1	2	-	-	1	1	Yes
	Male – 36	2	2	2	2	2	2	Yes

BB WH02/03	Female – 36	3	3	-	-	2	2	Yes
BB WH04	Male – 22	2	1	1	1	2	1	No
	Female – 22	2	2	-	-	2	1	No
BA WH05/06	Male – 41	3	2	2	2	3	2	No
	Female – 41	3	3	-	-	3	2	No
BA WH07/08	Male – 41	3	2	2	2	3	2	No
	Female – 41	3	3	-	-	3	2	No
BB WH05	Male – 10	1	1	0	1	1	1	Yes
	Female – 10	1	2	-	-	1	1	Yes
BB WH6/07	Male – 29	2	2	2	2	2	2	Yes
	Female – 29	2	3	-	-	2	2	Yes
BB WH08	Male – 20	1	1	1	1	1	1	Yes
	Female – 20	2	2	-	-	1	1	Yes
BA WH09/10	Male – 41	3	2	2	2	3	2	No
	Female – 41	3	3	-	-	3	2	No
BA WH11/12	Male – 41	3	2	2	2	3	2	No
	Female – 41	3	3	-	-	3	2	No
BB WH09	Male – 10	1	1	0	1	1	1	Yes
	Female – 10	1	2	-	-	1	1	Yes
BB WH10/11	Male – 29	2	2	2	2	2	2	Yes
	Female – 29	2	3	-	-	2	2	Yes
BB WH12	Male – 20	1	1	1	1	1	1	Yes
	Female – 20	2	2	-	-	1	1	Yes
Office (Typical)	Male – 50	3	4	2	3	3	3	Yes
	Female – 50	4	4	-	-	3	3	Yes

Note 1: Where sanitary compartments are noted as Unisex on the floor plans, they may be allocated as one facility for each gender 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).

Note 3: As mentioned under D2D18 above, these population numbers may be considered excessive for the development and hence more accurate population numbers may be provided by ESR/the tenant.

Note 4: The design suggests a central bank of amenities per level – therefore the calculation has been prepared accordingly.

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:** It is noted there are no accessible toilets provided to the warehouse areas. This is allowed provided a D4D5 exemption is actioned for all the warehouse areas. Accessible unisex sanitary compartments are required at each bank of toilets where one or more toilets is provided. In addition to an accessible unisex sanitary compartment at that bank of toilets, an ambulant sanitary facility is required to be provided for use by male and female persons per AS 1428.1-2009. Where multiple banks of toilets are provided on a storey, at least 50% of the banks must comply with the above. Additionally, at least 1 accessible unisex sanitary compartment must be provided on every storey containing sanitary compartments, including Level 1 & 2. Design certification is to be provided at CC application stage demonstrating that the design of each facility complies with AS 1428.1-2009, however, it is considered compliance is readily achievable based on the current design. It is noted that an Access Consultant's Report is to be obtained for this project and as such reference should be made to that report in relation to compliance with the provisions of Clauses F4D5 to F4D7.
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:** Details to be provided at CC application stage confirming compliance with the above requirements.
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. **Comment:** Architect to ensure compliance. Ceiling heights are to be reviewed at the Construction Certificate state with the detailed section drawings.
F6D5	**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. **Comment:** Design certification to be submitted at CC Application.
F6D6	**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. **Comment:** Design certification to be submitted at CC Application.

F6D8	**Ventilation Borrowed from Adjoining Room:** Natural ventilation must consist of openings, windows, doors or other devices which can be opened— with a ventilating area not less than 5% of the floor area of the room required to be ventilated. Additionally, open to a suitably sized space open to the sky or an adjoining room in accordance with F6D8. **Comment:** Design certification to be submitted at CC Application.

3.6 Section G – Ancillary Provisions

G6D1	**Occupiable Outdoor Areas:** The Deemed-to-Satisfy Provisions of this Part apply to buildings containing an occupiable outdoor area in addition to the other Deemed-to-Satisfy Provisions of the BCA. For the purposes of the Deemed-to-Satisfy provisions of Parts C2, C3, D2, D3, E1, E3, and E4, a reference to a storey includes an occupiable outdoor area. **Comment:** The outdoor terraces are considered an occupiable outdoor area for the purposes of this section. Details will be required at CC stage to confirm compliance.

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, Rooflights, 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 or unit within the proposed building 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:** Consultant certification required at CC Application Stage.
Part J8	**Hot Water Supply, & 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.

4.0 Conclusion

This report contains an assessment of the referenced architectural documentation for the proposed Multi Level Warehouse Facility at 49 Stephen Rd. Banksmeadow 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 of 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 & 7:	2.2 kW/m2	1.2 kW/m2	2.2 kW/m2

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**	**Special Areas**	**Other Areas**
Class 5 & 7 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

Table 5: 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:

1. Any lightweight construction in a fire wall or an internal wall required to have an FRL is to comply with Specification 11.
2. 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.
3. 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.
4. 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.
5. 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)
6. 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.
7. Lift shafts are required to be enclosed at the top of the shaft with fire rated construction having an FRL of 120/120/120.
8. Fire isolated exits are to be provided with a fire rated "lid" that achieves an FRL of 120/120/120.
9. 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.
10. Any loadbearing internal walls or loadbearing fire walls are to be masonry or concrete.
11. 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.
12. 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

+ 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 to confirm the works are permissible and do not contradict the base building Performance Solutions.

Table 6: Fire Safety Schedule

+ Statutory Fire Safety Measure	+ Design/Installation Standard	+ Proposed
Access Panels, Doors & Hoppers	BCA 2022 Clause C4D14 AS 1530.4 – 2014 Manufacturer's Specifications	✓
Alarm Signalling Equipment	AS 1670.3 – 2018	✓
Automatic Fail Safe Devices	BCA 2022 Clause D3D26	✓
Automatic Fire Detection & Alarm System	BCA 2022 Spec. 20 AS 1670.1 – 2018	✓
Automatic Fire Suppression Systems	BCA 2022 Spec. 17 AS 2118.1 – 2017	✓
Emergency Lighting	BCA 2022 Clause E4D2 & E4D4 AS 2293.1 – 2018	✓
Emergency Lifts (incl. Stretcher Lift)	BCA 2022 Clause E3D3 & E3D5	✓
Emergency Evacuation Plan	AS 3745 - 2010	✓
EWIS	BCA 2022 Clause E4D9 AS 1670.4-2108	✓
Exit Signs	BCA 2022 Clauses E4D5, NSW E4D6 & E4D8 AS 2293.1 – 2018	✓
Fire Control Centre	BCA 2022 Spec. 19	✓
Fire Doors	BCA 2022 Clauses C3D13, C3D14, C4D3, C4D5, C4D6, C4D7, C4D8 & C4D12 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 Appendix C	✓
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	✓

+ Statutory Fire Safety Measure	+ Design/Installation Standard	+ Proposed
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	✓
Required Exit Doors (Power Operated)	BCA 2022 Clause D3D24(2)	✓
Smoke Hazard Management Systems + Smoke Exhaust + Zone Pressurization + Fire Stair & Passageway Pressurization	BCA 2022 Part E2 Spec 21 AS/NZS 1668.1 –2015	✓
Warning & Operational Signs	BCA 2022 Clause D3D28, D4D7 & E4D4. AS 1905.1 – 2015 EP&A (DCFS) Regulations 2021 Section 108	✓