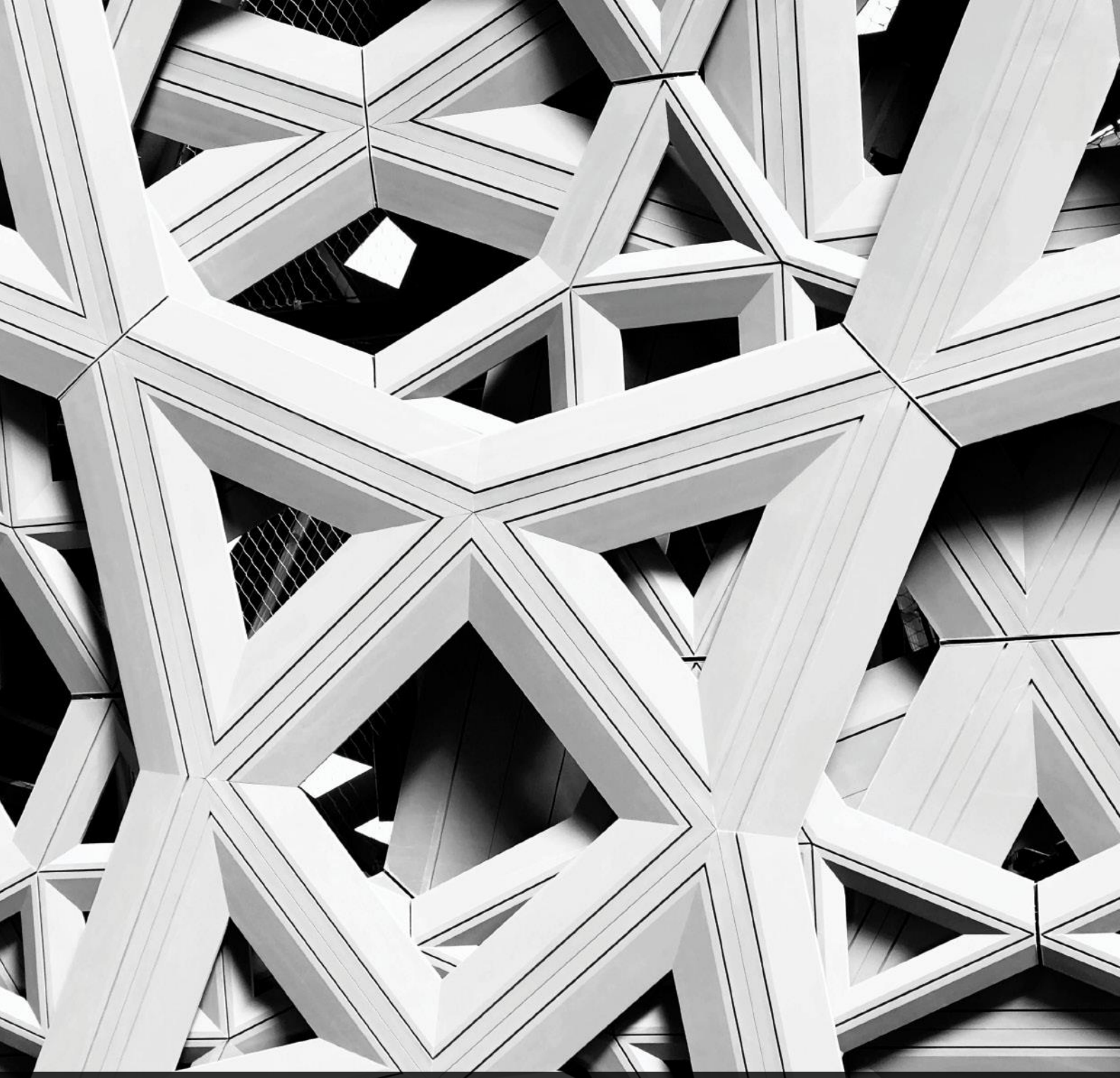


2022 S4.55(1a) BCA Assessment Report

Aspect Industrial Estate – Warehouse 2
Lots 54-58 Mamre Road, Kemps Creek

Prepared for:
Mirvac

Revision 4
11 June 2025
Reference: 220480

bmplusg.com.au

Executive Summary

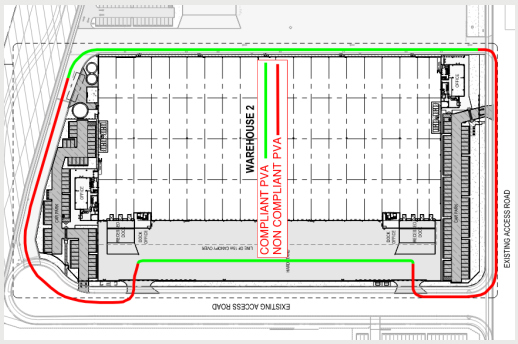
The following comprises a summary of the key compliance issues identified under the assessment in this report that will be required to be addressed prior to the Certification Applications for the project.

A. Matters requiring redesign or additional information at CC:

+ BCA (DtS) Clause		+ Description
		Base Building Issues
1.	~~**D2D7, D2D18, F4D4**~~	~~The proposed population is to be provided by Mirvac to confirm if the proposed egress dimensions & sanitary facilities achieve compliance.~~
2.	~~**Part D4 / F4D5**~~	~~Details of any proposed Clause D4D5 exemptions to be provided by the tenant.~~ ~~An Access Consultant Report is to be provided at the CC Application stage.~~
3.	~~**E1D15**~~	~~Details of the location of the proposed Fire Control Centre to serve the building are required to be provided.~~
4.	~~**E1D17**~~	~~Details of any proposed hazardous goods storage are to be considered by both the sprinkler system designer and the Fire Engineer, to confirm that the proposed firefighting systems have the required capability to address the additional hazards.~~
5.	~~**F3P1**~~	~~A Performance Solution report is to be provided by the Architect / Façade Engineer to demonstrate how the external walls & roof are designed to prevent the penetration of water into the building.~~
6.	~~**Section J**~~	~~A Section J Compliance Report or JV3 Report will be required at CC application stage.~~
		S4.55 Scope Issues
7.	**C3D4 / E1D12 / Spec. 17**	1. The sprinkler design, including any in-rack sprinklers, must be prepared by an appropriately qualified FPAS-accredited designer and submitted for review prior to the issue of the Construction Certificate. 2. Confirmation is to be provided by the Fire Engineer prior to the issue of the Construction Certificate regarding whether any re-modelling is required due to the reduction in the smoke reservoir volume for the split. It is noted that the base build considered the entire building as a single smoke reservoir, and updated modelling may be necessary if the proposed tenancy split affects the original design assumptions.
8.	**E1D2**	Fire hydrant coverage plans must be prepared by the hydraulic consultant and demonstrate compliance with the relevant standards. These plans are to be submitted prior to the issue of the Construction Certificate for the associated works.
9.	**E1D3**	Fire hose reel coverage plans must be prepared by the hydraulic consultant and demonstrate compliance with the relevant standards. These plans are to be

		submitted prior to the issue of the Construction Certificate for the associated works.
10.	**Cool Room Panels**	Certification prior to the issue of the Construction Certificate is to be provided confirm that the installation of all Insulated Sandwich Panels (ISPs) (cool room panels associated with the Temperature Controlled area) within the building comply with the Code of Practice (CoP) prepared by the Insulated Panel Council Australasia Ltd (IPCA), and any additional requirements set out in the FER. The CoP requirements include but are not limited to: + Use of suitable ISPs, complying with the specified fire hazard properties & fire ratings, + Use of 100% fire rated beads/construction joints, + All installers to be suitably accredited as required by the CoP (evidence of current accreditation to be provided), + Appropriate identification signage to be provided on all doors leading into compartments where ISPs are installed. + A key diagram to be located at the FIP showing the location and type of all ISPs in the building. Refer to the following link for further guidance. https://insulatedpanelcouncil.org/downloads#f44dbc84-4109-45fb-8c84-051555d4c10d

B. Matters requiring fire safety engineered performance solutions:

+ BCA (DtS) Clause		+ Description
		Base Building Issues
1.	~~**C3D5**~~	~~The proposed building does not comply with the provisions of C3D5 and thus the following non compliance issues are required to be addressed as a Performance Solution by the Fire Engineer to demonstrate compliance with Performance Requirement C1P9:~~  ~~Perimeter access is greater than 18 from the external part of the building along the northwest and southwest corners.~~ ~~It is noted that restriction of use or s88b instrument for the western hardstand is to be implemented prior to the subdivision of warehouse 2 or 3.~~
2.	~~**D2D5/ D2D6**~~	~~The exit travel distances are non compliant in areas which will be required to be addressed as a Performance Solution by the Fire Engineer to demonstrate compliance with Performance Requirements D1P4 & E2P2 for up to 69m to the nearest exit in the Warehouse tenancy 1 and up to 74m to the nearest exit in the Warehouse tenancy 2.~~ ~~The exit travel distances are non compliant in areas which will be required to be addressed as a Performance Solution by the Fire Engineer to demonstrate compliance with Performance Requirements D1P4 & E2P2 for up to 139m distance between alternative exits in the Warehouse tenancy 1 and up to 147m distance between alternative exits in the Warehouse tenancy 2.~~
3.	~~**E1D2**~~	~~The proposed Large Isolated Building is required to be served by a compliant hydrant system incorporating a ring main. Details demonstrating compliance with the provisions of E1D2 and AS 2419.1 2021 are required to be provided at CC Application stage.~~ ~~Additionally, it is noted a Performance Solution will be required to treat hydrants that are located outside the building which are not open to the sky (e.g. located under an awning or the like) as external hydrants and to omit the requirement for radiant heat shields to external hydrants.~~ ~~A Performance Solution is required for the design of the Hydrant System per AS 2419.1 2021 Appendix C.~~
4.	~~**E1D3**~~	~~A Performance Solution is required to justify the use of 50m fire hose reel lengths within the warehouse portions of the development in lieu of 36m.~~
5.	~~**E1D4**~~	~~A Performance Solution is required to address the **sprinkler booster location** if not proposed to comply with the location being within sight of the principle pedestrian entrance/adjacent to the site boundary for the principle vehicular~~

+ BCA (DtS) Clause		+ Description
		~~access for fire brigade pump room or not more than 20m from the facade containing the principle pedestrian entrance and not more than 20m from the principle pedestrian entrance in accordance with the provisions of cl. 7.3.1 of AS 2419.1 – 2021.~~
6.	**~~E2D3~~**	~~As the floor area and volume of the proposed building is greater than 18,000m2 and 108,000m3 respectively, an automatic smoke exhaust system is required to be provided serving all parts of the building. In this regard, consideration to a Performance Solution from the Fire Engineer may be given to demonstrate compliance with Performance Requirements D1P4 & E2P2.~~**
S4.55 Scope Issues		
7.	**D2D5 / D2D6**	The exit travel distances are non-compliant in areas which will be required to be addressed as a Performance Solution by the Fire Engineer to demonstrate compliance with Performance Requirements D1P4 & E2P2 for up to 60m to the nearest exit. The exit travel distances are non-compliant in areas which will be required to be addressed as a Performance Solution by the Fire Engineer to demonstrate compliance with Performance Requirements D1P4 & E2P2 for up to 120m distance between alternative exits.

C. Other matters requiring performance solutions:

+ BCA (DtS) Clause		+ Description
Base Building Issues		
11.	**~~F3P1~~**	~~A Performance Solution report is to be provided by the Architect / Façade Engineer to demonstrate how the external walls & roof are designed to prevent the penetration of water into the building.~~

+ Contents

+ Report Status

+ Date	11.06.2025
+ Revision	4
+ Status	S4.55(1a) Submission
+ Author	James McNeill
+ Reviewed	Dean Goldsmith

Prepared by:

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BDC No.: 0141

+ Revision History

+ Revision	0	**+ Date**	23.01.2023
+ Status	Preliminary Assessment – Draft Report for Client & Consultant Review		
+ Revision	1	**+ Date**	22.06.2023
+ Status	Updated Architectural Drawings		
+ Revision	2	**+ Date**	20.07.2023
+ Status	Updated Site Plan		
+ Revision	3	**+ Date**	20.03.2024
+ Status	S4.55(1a) Submission Update		
+ Revision	4	**+ Date**	11.06.2025
+ Status	S4.55(1a) Submission		

1.0 Description of Project

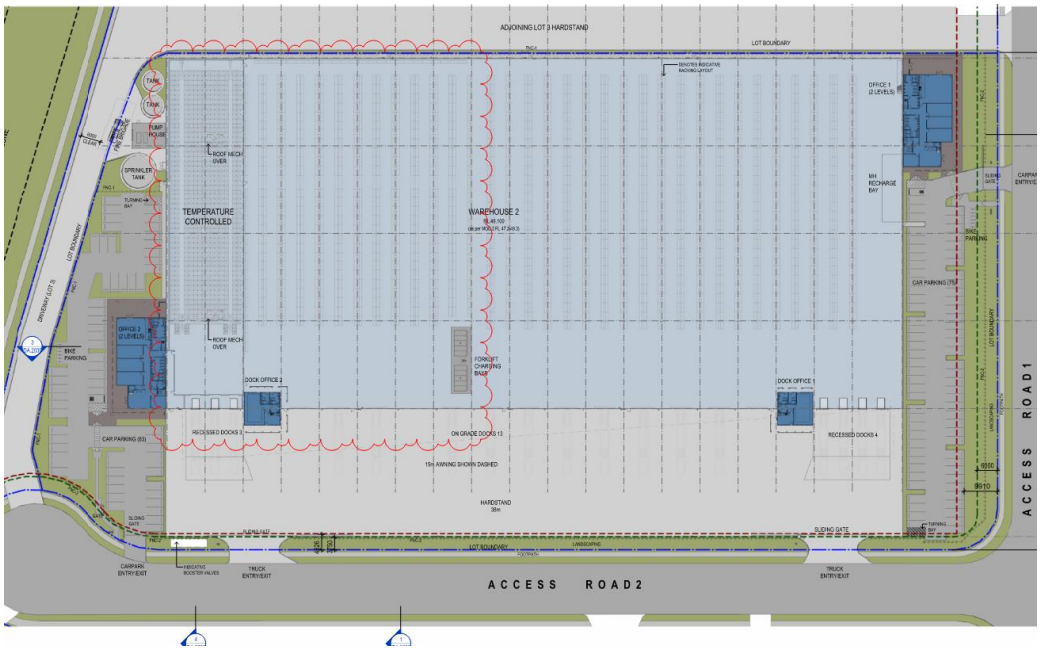
1.1 Proposal

The proposed modifications to the development will allow for additional tenancy specific requirements to be addressed within the warehouse estate including the following:

- Inclusion of a temperature-controlled space for food storage (2,300sqm),
  - Utilisation of automated racking with a crane shuttle system,
  - Increased roofline at the northern portion of the site to accommodate additional insulation,
  - Installation of two rooftop plant locations at the northern end of the Warehouse 2 roof, to facilitate temperature control within the warehouse.
- Amendment to the location of the forklift charging stations on the warehouse floor.
- Deletion of stairs from the mezzanine office to the warehouse floor which will be converted to the temperature-controlled area as these are no longer required.

The proposed changes do not seek to increase GFA, amend access or parking arrangements, landscaping or earthworks on the site. It is anticipated that these modifications will have a minor environmental impact and therefore can be assessed under Section 4.55(1A) of the Environmental Planning and Assessment Act 1979 (EP&A Act 1979).

BM+G have been commissioned by Mirvac Pty Ltd to undertake a preliminary review of the proposed development, against the Deemed-to-Satisfy (DtS) provisions of the Building Code of Australia 2022 (BCA), pursuant to the provisions of Section 19 of the *Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021* and Clauses 24 & 25 of the *Building and Development Certifiers Regulation 2020*.



SBA Architects Drawing No. DA2010 Rev. P2 dated 10.06.2025

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 2022 Volume 1.
- Identify any BCA compliance issues that require resolution/attention for the proposed development at the CC Application stage.
- Enable the certifying authority to satisfy its statutory obligations under Clause 19(1) of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021.

1.3 Project Team

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

- **James McNeill** – Report Preparation (Building Surveyor)
- **Dean Goldsmith** – Project PCA/Peer Review (Director) | Building Surveyor-Unrestricted

1.4 Referenced Documentation

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

- Building Code of Australia 2022 (BCA)
- The Guide to the Building Code of Australia 2022
- Architectural Plans prepared by Watson Young numbered:

Drawing No.	Revision	Date
DA.2010	P2	10.06.2025

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.
- 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.

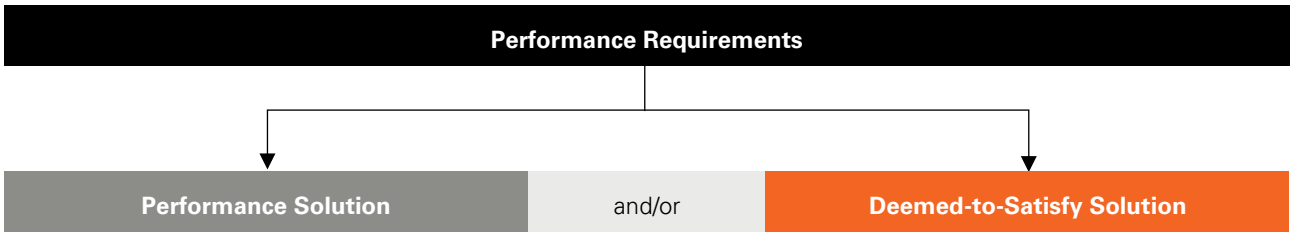
1.6 Relevant Version of the NCC Building Code of Australia

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.
- The following assessment is based upon a review of the architectural documentation.
- 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.

  Where relevant to this development, it is assumed that these assessments will be undertaken by others.
- 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:
  - NSW Public Health Act 1991 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.

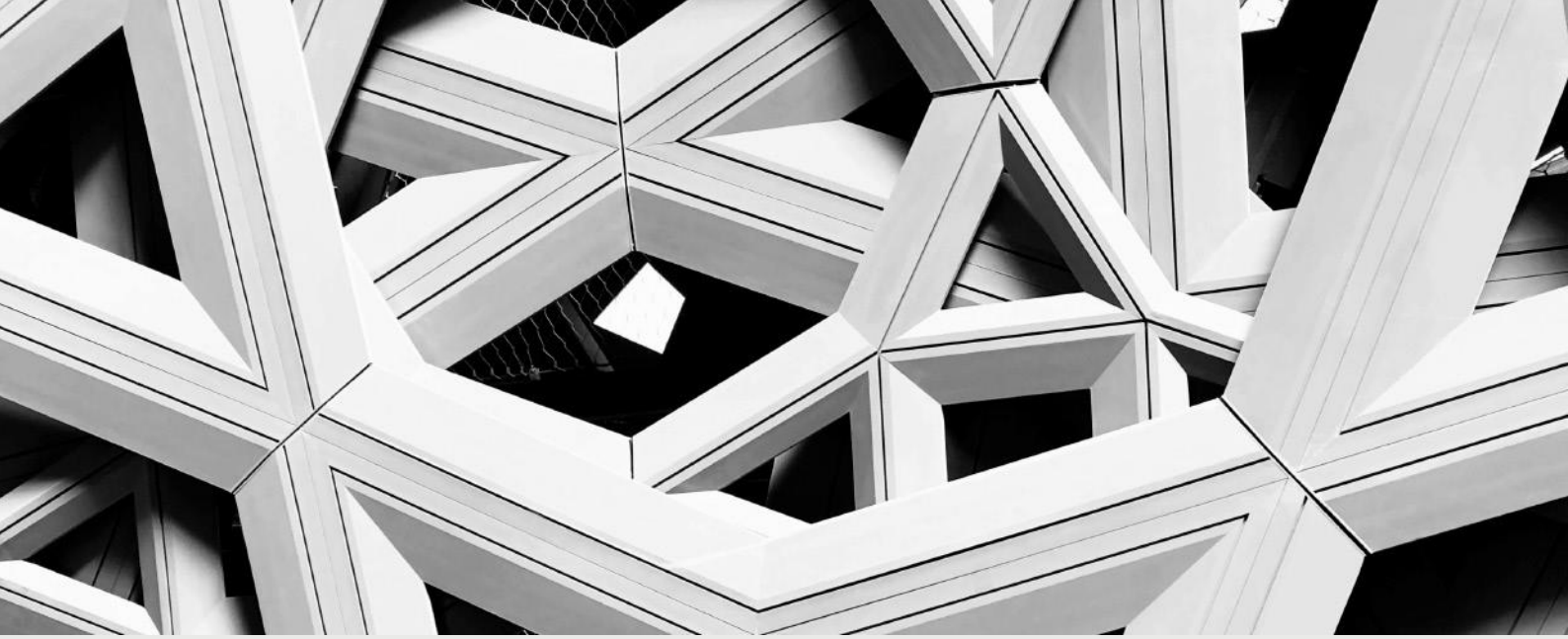
Performance-Based Design Brief – Means the process and the associated report that defines the scope of work for the performance-based analysis, the technical basis for analysis, and the criteria for acceptance of any relevant Performance Solution as agreed by stakeholders.

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 building is classified as follows:

BCA Class:	Class 5 (Office) & Class 7b (Warehouse)
Rise in Storeys:	Two (2)
Effective Height:	Less than 12m
Type of Construction:	Type C Construction
Climate Zone:	Zone 6
Maximum Floor Area:	Greater than 18,000m^2
Maximum Volume:	Greater than 108,000m^3

2.2 Fire Compartment Floor Area Limitations

Maximum size of fire compartment/atria is:

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

2.3 Distance to Fire Source Features

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

+ Elevation	+ Fire Source Feature	+ Distance
North	Northern Boundary	>3m from the allotment boundary
East	Southern Boundary	>3m from the allotment boundary
West	Eastern Boundary	>3m from the allotment boundary
South	Western Boundary	>3m from the allotment boundary

***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

Structural engineering details prepared by an appropriately qualified structural engineer to be provided to demonstrate compliance with Part B1. This will include the following Australian Standards (where relevant):

- 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 – 2021, Glass in buildings.
- AS 3660.1 – 2014, Termite control (or confirmation no primary building elements are timber).

Comments: *Structural design details and certification will be required at CC application stage. Note: Structural Importance Level 2 is applicable to the building in accordance with*

Note 1: Design certification will also be required from the Architect and Services Consultants to confirm compliance with Section 8 of AS 1170.4-2007 with regard to the design of non-structural parts and components and their fastenings for horizontal and vertical earthquake forces and inter-storey drift.

Note 2: 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 of the building.

3.2 Section C – Fire Resistance

C2D2 & Spec 5

Type of Construction Required: The building is required to comply with the requirements of Type C Construction as stated within Table C2D2 and Specification 5. The table below provides an overview of the requirements of each. Refer to Table 4 / 5 / 6 of Appendix 1 for the FRL requirements of Type C Construction.

	Type C Construction: + External walls (and columns incorporated within) need not achieve an FRL if >3m from a boundary or separate building. Where required, external walls of Type C Construction only require an FRL from the outside and not in both directions. + Floors need not achieve an FRL, subject to Cl. S5C3. + Roofs need not achieve an FRL. + Internal columns need not achieve an FRL. **Comment:** Type C Construction applies to the proposed building – see notes under Spec. 5 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:** The proposed building has a rise in storeys of two (2).
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 is required at CC application stage, and installation certification (including relevant test reports) confirming the below will required at OC stage, in the form of a detailed schedule, along with associated test reports.* ▪ Critical *radiant flux of floor linings;* ▪ Group number of wall and ceiling linings; ▪ Spread of flame index for insulation materials; ▪ Flammability index for sarking materials; ▪ Fire performance, as set out in AS 4254 for air handling ductwork. *Note that the construction surrounding hot air containment aisles must also demonstrate compliance with respect to the above. Provide details demonstrating compliance prior to the issue of the relevant CC.*
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 and provided with a 6m wide perimeter vehicular accessway in accordance with Clause C3D5(2) throughout (see notes below). This design allows for a fire compartment of unlimited size within the building. **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 building does not comply with the provisions of C3D5 and thus the following non-compliance issues are required to be addressed as a Performance Solution by the Fire Engineer to demonstrate compliance with Performance Requirement C1P9:

- Perimeter Vehicular Access is greater than 18m around the northern and southern external walls of the warehouse.

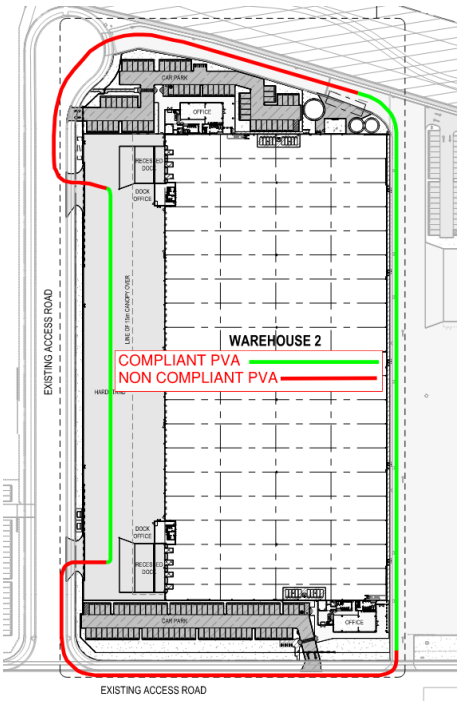


Figure 1 – Warehouse 2 Perimeter Vehicular Access per BCA C3D5.

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 to withstand a fire truck and the gradients of any ramps and swept paths should take into consideration the requirements of the FRNSW Fire Safety Guideline – Access for Fire Brigade Vehicles and Firefighters.

Note 3: It is noted that restriction of use or s88b instrument for the western hardstand is to be implemented prior to the subdivision of warehouse 2 or 3.

C3D9 & C3D10

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

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

Comment: The entirety of the proposed building is proposed to comprise of a single fire compartment, due to there being no limitations on fire compartment size for Large Isolated Buildings. As a result, C3D9(a) applies to the Class 5 Office component and as such no fire wall is required between the Office and Warehouse portions of the 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. 5, 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:** Where batteries which have a total voltage of 12V or more and a storage capacity of 200 kWh or more are installed in individual electrical switch rooms or other plant areas/enclosures, they must be separated from the remainder of the building by construction achieving an FRL as required by Specification 5, but no less than 120/120/120, and doorways protected with a self-closing fire door having an FRL of not less than -/120/30. Details demonstrating compliance are to be included in the CC Application plans.
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, emergency lifts, control & indicating equipment, EWIS. **Comment:** Where appropriate, details demonstrating compliance are to be included in the CC Application plans.
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:** Note – C3D13 & C3D14 above
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 will be subject to compliance with the Type C Construction provisions of tables S5C21a to S5C21g and based on the design and siting of the building, there are no building elements that require an FRL to comply with the provisions of Spec.5.

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: Certification will be required to be provided at both CC and OC application stages.
Spec. 8	**Performance of External Walls in Fire:** This specification contains measures to minimise in the event of fire the likelihood of external walls collapsing outwards as complete panels and the likelihood of panels separating from supporting members. Comment: Structural Design certification and details demonstrating compliance are required to be provided at CC Application Stage for the proposed warehouses.

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. **Comment:** A minimum of one exit is required from each storey in the subject building. Further details are required showing the location of all exits doors however it is believed compliance can be readily achieved in this regard.
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:** Further details are required showing the location of all exit stairs however it is noted that the stairs serving the Level 1 office will not be required to be fire isolated exits.
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 are non-compliant in areas which will be required to be addressed as a Performance Solution by the Fire Engineer to demonstrate compliance with Performance Requirements D1P4 & E2P2 for up to 69m to the nearest exit in the Warehouse tenancy 1 and up to 74m to the nearest exit in the Warehouse tenancy 2.
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 exit travel distances are non-compliant in areas which will be required to be addressed as a Performance Solution by the Fire Engineer to demonstrate compliance with Performance Requirements D1P4 & E2P2 for up to 139m distance between alternative exits in the Warehouse tenancy 1 and up to 147m distance between alternative exits in the Warehouse tenancy 2.

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 development have been calculated under D2D18 for the purposed of this assessment. These numbers however may be considered excessive and hence are to be confirmed by Mirvac/the tenant in order to determine compliance with these clauses. Final details showing compliant dimensions of all exits (including minimum 1m wide clearances and min. clear height of 2.1m) from each building are to be confirmed on the CC Application plans. In this regard however, given the number of exits proposed and the nature of use of the facility it is considered that compliance with the provisions of D2D7 to D2D11 is readily achievable. Exit corridors, 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 below.
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:** The proposed arrangement complied with the provisions 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:** The population numbers for the development have been calculated below as per table D2D18. These numbers allow for 1 person per 10m2 in the office and dock office areas and 1 person per 30m2 in the warehouse areas with 50% of the warehouse floor area being designated to racking. Note, as mentioned above these population numbers may be considered excessive and as such more realistic numbers may be provided by Mirvac/the tenant. Warehouse Area + 377 Persons North Dock Office + 7 Persons South Dock Office + 7 Persons North Office + 75 Persons South Office + 75 Persons
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: It is noted that the space under the required exit stairs from the main office in each tenancy is proposed to be enclosed to form a cupboard, and as such the enclosing walls and ceilings will need to comply with the above listed fire ratings. Details demonstrating compliance must be shown on the CC Application plans where applicable.

D3D14

Goings and Risers

This clause sets out the detailed requirements for the construction and geometry of the goings and risers in required stairways. These details are set out in sub-clauses (1) to (3) and Table D3D14 Riser and Going Dimensions.

Comment: All stairs are to have dimensions that comply with Table D3D14 (below), have solid risers, and are to have contrasting nosings and slip resistant surfaces throughout in accordance with clause 11 of AS 1428.1-2009. (See diagram in Part D4 below). Refer to the slip resistance requirements for stairs below under Clause D3D15.

Riser and Going Dimensions (mm)			
	Riser (R)	Going (G)	Quantity (2R + G)
Maximum	190	355	700
Minimum	115	250	550

Documentation is to be provided demonstrating compliance prior to the issue of the relevant CC(s).

D3D15

Landings

The dimensions and gradients of landings in stairways are set out in this clause; the configuration will depend on the proposed use of a building.

Landing surfaces must be slip resistant OR have slip resistant nosings not less than that listed in Table D3D15 when tested in accordance with AS 4586 – 2013.

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

Comment: Architect to note – design certification required at CC Application Stage. Note additional comments under Part D4, regarding accessibility.

D3D16

Thresholds

The threshold of a doorway must not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf unless –

In a building required to be accessible by Part D4, the doorway –

- Opens to a road or open space; and
- Is provided with a threshold ramp or step ramp in accordance with AS 1428.1-2009;

In other cases –

- Opens to a road or open space, external stair landing or external balcony; and
- The doorsill is not more than 190mm above the finished surface of the ground, balcony, or the like, to which the doorway opens.

Comment: Architect to note. Details demonstrating compliance will be required to be included in the CC application plans.

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.
D2D22	**Handrails:** This Clause sets out the requirements regarding the location, spacing and extent of handrails required to be installed in buildings. **Comment:** Details of the proposed handrails are to be provided for assessment with the application for the Construction Certificate. Note 1: Refer to Part D4 for additional requirements for handrails associated with accessible compliant stairways, in all areas other than those subject to a D4D5 concession. Note 2: A handrail is required where the external egress paths of access to the street have a gradient greater than 1:20. See additional comments under Clause D4D4 below, noting consideration will need to be given to the accessibility requirements of AS 1428.1-2009.
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:** Further details are to be provided showing the location of all proposed exit doors however it is believed compliance is readily achievable in this regard.
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:** Any proposed exit doors are required to swing in the direction of egress in accordance with D3D25 (a). Further details will be required to demonstrate compliance in this regard; however, it is noted that the office doors are shown as swinging in the direction of egress. The plans submitted for CC are to demonstrate compliance with the requirements of this clause. Architect to note. Details demonstrating compliance will be required to be included in the CC plans.
D4D2 & D4D3	**General Building Access Requirements:** The extent of access required depends on the classification of the building. Buildings and parts of building must be accessible as set out in sub-clauses (1)-(10) unless exempted by Clause D4D5.

	Access is required to and within all areas normally used by the occupants, for Class 5, 6, 7b & 9b buildings and any levels in a Class 7a building containing accessible carparking spaces. **Comment:** Compliant access is required throughout all areas in the building in accordance with AS 1428.1-2009 with the exception of those areas subject to a D4D5 concession. Details demonstrating that the main entrance to the building is compliant with AS 1428.1-2009 (including all security lobbies are to be provided at CC application stage. Note: It is noted than an Access consultant 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 Part D4. Note 2: The proposed pedestrian access pathway to the main entry of each office and the office entry doors must be designed in accordance with AS 1428.1-2009. Details demonstrating compliance are to be included on the CC Application plans.
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. It is noted that compliance with the requirements of D4D4 and AS 1428.1-2009 is generally achievable; however, details and design certification will be required to be provided at CC Application stage along with any proposed performance solutions relating to accessibility. The following is a summary of some of the key matters which need to be considered from Clause D4D4 and AS 1428.1-2009: + An accessway must have a minimum clear width of 1000mm and 2000mm clear height. The minimum width of an accessible doorway must have a clear opening of not less than 850mm and a minimum clear height of not less than 1980mm. + Both Offices must be served by a compliant lift in accordance with E3D7 – see details below. + All doorways on a continuous path of travel shall have a minimum luminance contrast of 30% provided between: door leaf and door jamb; or door leaf and adjacent wall; or architrave and wall; or door leaf and architrave; or door jamb and adjacent wall. The minimum width of the area of luminance contrast shall be 50mm. + 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. + Circulation space to all doorways that are required to be accessible are to comply with Section 13 of AS1428.1-2009. + Turning Spaces and Passing Spaces in all areas are required to be provided on each level of the building in accordance with Clauses 6.4 & 6.5 of AS 1428.1-2009. <u>Stairways</u> + Every stairway must be constructed in accordance with Clause 11 of AS1428.1. Details will need to be confirmed on the plans for CC. Note: Stairs in areas subject to D4D5 do not need to comply in full with AS 1428.1-2009. + Stairs shall have opaque risers (i.e. Solid) + Stair nosing's shall comply with the following diagram, which achieve a colour contrast luminance of 30% to the background (tread): + Stairways are to be served by Tactile Ground Surface Indicators in accordance with AS1428.4.1, except if they are within a fire isolated exit.

	Handrails + Handrails shall be installed along stairways as follows: + Shall be continuous through the flight and where practicable, around landings and have no obstruction on or above up to a height of 600mm, + Installed along both sides of the stairway (giving consideration also to 1m unobstructed width), + Shall have a compliant hand clearance in accordance with Figure 29 of AS 1428.1-2009.
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:** It is recommended that advice be obtained from an accredited Access Consultant at the CC Application stage, however, consideration to an exemption for the warehouse areas (on health & safety risk basis) may be appropriate on this project. Confirmation from Mirvac / tenant will be required 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:** Compliant Accessible Parking spaces are to be provided at a rate of 1 per 100 spaces for the warehouse / office areas. The most current plans comply with the requirements of this clause.
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:** Architect to note.
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:** 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 AS1428.4.1-2009.
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 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:** Glazing capable of being mistaken for an opening as listed above must be clearly marked for its full width with a solid and non-transparent contrasting line being not less than 75mm wide and the lower edge must be located between 900mm and 1000mm above the plane of the finished floor level.

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 Large Isolated Building is required to be served by a compliant hydrant system incorporating a ring main. Details demonstrating compliance with the provisions of E1D2 and AS 2419.1-2021 are required to be provided at CC Application stage. Additionally, it is noted a Performance Solution will be required to treat hydrants that are located outside the building which are not open to the sky (e.g. located under an awning or the like) as external hydrants and to omit the requirement for radiant heat shields to external hydrants. 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 building 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 coverage is achieved to all areas of the building.
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 Class 7b storage/loading dock areas are required to be provided with coverage by fire hose reels. The Class 5 Office areas are subject to the concession in E1D3(1) and are not required to be provided with fire hose reel coverage. + Plans shall be provided with the CC documentation together, with a design certificate to AS 2441-2005 demonstrating that coverage is provided by the fire hose reels on each level. + A Performance Solution is required to justify the use of 50m fire hose reel lengths within the warehouse portions of the development in lieu of 36m.
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:** The proposed Large Isolated Building is required to be sprinkler protected throughout in order to address the requirements of Clause C3D4, E1D12 and E1D13. Details demonstrating compliance are to be provided at the CC application stage. In accordance with Clause 4.14.1 of AS2118.1-2017, a Performance Solution is required to address the sprinkler booster location if not proposed to comply with the location being within sight of the principle pedestrian entrance/adjacent to the site boundary for the principle vehicular access for fire brigade pump room or not more than 20m from the facade containing the principle pedestrian entrance and not more than 20m from the principle pedestrian entrance in accordance with the provisions of cl. 7.3.1 of AS 2419.1 – 2021.
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 Table E1D14 and AS 2444-2001 including 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 floor area of the building exceeds 18,000m2, it is required to be provided with a Fire Control Centre that complies with Clauses S19C3 to S19C6 of Spec. 19. Further details which demonstrate compliance with the requirements of Spec.19 will be required to be included on the Construction Certificate 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:** Details of any proposed hazardous goods storage are to be considered by both the sprinkler system designer and the Fire Engineer, to confirm that the proposed firefighting systems have the required capability to address the additional hazards.
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. **Comment:** As the volume of the building is greater than 108,000m3, an automatic smoke exhaust system per Spec. 21 is required to be provided to the building. It is noted that a Performance Solution may be considered by the Fire Engineer to rationalise the smoke exhaust requirements in this building.
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 any proposed hazardous goods storage are to be considered by both the Mechanical Engineer and the Fire Engineer, to confirm that the proposed smoke hazard management systems have the required capability to address the additional hazards.
E3D2	**Lift Installations** An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with Specification 24. **Comment:** Design certification from the lift supplier shall be provided with the documentation submitted with the Construction Certificate application.
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:** Lift Contractor to note.

E3D6	**Landings:** Access and egress to and from lift well landings must comply with the Deemed-to-Satisfy Provisions of Parts D2 & D3. **Comment:** Architect and Lift Contractor to Note.
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:** Architect and Lift Contractor to Note. The lifts in both Offices are to comply with Table E3D7b.
E3D8	**Accessible Features Required for Passenger Lifts** In an accessible building, the passenger lifts must include all accessible features listed in Items (a) to (k) of this clause, including compliance with AS 1735.12-1999. **Comment:** Design certification from the lift supplier shall be provided with the documentation submitted with the Construction Certificate application.
E4D2	**Emergency Lighting Requirements:** Emergency lighting and exit signage to be provided in accordance with E4D2 - E4D5 complying with AS 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. Design certification required at CC Application stage.
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/NZS 2293.1 and be clearly visible at all times when the building is occupied by any person having the legal right of entry into the building. **Comment:** Electrical Consultant to note. Details demonstrating compliance will be required to be included in the CC plans.

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.
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.
F3P1	**Weatherproofing** A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause (a) Unhealthy or dangerous conditions, or loss of amenity for occupants; and (b) Undue dampness or deterioration of building elements. Note 1: The DtS provisions addressing F3P1 are very limited with respect to external walls. A Performance Solution may be required in this regard. Note 2: Refer to Clause F3D2 for DtS provisions relating to roof coverings. **Comment:** Design statement and a documented Performance Solution is to be provided with the CC application for the proposed building, either by using: + A DtS approach, or + The Verification Method set out in Clause F2V1; or + Other verification methods deemed acceptable by the Certifier; or + Evidence to support that the use of the material or product, form of construction or design meets the Performance Requirements or the DtS provisions, such as a Certificate of Conformity (e.g. CodeMark); or + By way of Expert Judgement, or + A combination of the above.
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 CC 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 to be provided in together with the F3P1 Performance Solution Report, demonstrating compliance, prior to the issue of the relevant CC(s).
F3P1 & F3D5	**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.
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:** The required sanitary facilities for the Office and Warehouse parts have been calculated based on the identified facilities. The minimum required sanitary facilities from Table F4D4a and F4D4b are detailed below for reference: As noted in D2D18 above, the population numbers have been based on the proposed facilities, more accurate populations may be provided by Mirvac/the Tenant at CC application stage in order to assess compliance with the required number of facilities under F4D4.

WH2 – Warehouse (Served by Ground Facilities Office 1 & Office 2 Facilities)

Occupancy Class as per F4D4 ***(Adequate for a total of 160 males & 180 Females)***

	Closet Pans		Urinals		Washbasins	
	Proposed Facilities	Est. Pop	Proposed Facilities	Est. Pop	Proposed Facilities	Est. Pop
Male	10	200	6	250	8	160
Female	12	180	-	-	10	200

WH2 – Office Staff (Served by Level 1 Office 1 & 2 Facilities)

Occupancy Class as per F4D4 ***(Adequate for a total of 120 Males & 120 females)***

	Closet Pans		Urinals		Washbasins	
	Proposed Facilities	Est. Pop	Proposed Facilities	Est. Pop	Proposed Facilities	Est. Pop
Male	6	120	4	150	6	180

Female	8	120	-	-	6	180

WH2 – Dock Office 1 & 2						
Occupancy Class as per F4D4 ***(Adequate for a total of 80 Males & 60 females)***						
	Closet Pans		Urinals		Washbasins	
	Proposed Facilities	Est. Pop	Proposed Facilities	Est. Pop	Proposed Facilities	Est. Pop
Male	4	80	4	150	4	120
Female	4	60	-	-	4	120

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

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

Note 3: As mentioned above, these population numbers based on the proposed facilities for the development and hence more accurate population numbers may be provided by Mirvac/the tenant.

Note 4: The accessible toilet facilities have been counted once for each sex in accordance with BCA clause F4D3.

F4D5

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

Comments: The proposed accessible toilet facilities and ambulant sanitary facilities in the building are required to achieve compliance with the provisions of F4D6 and F4D7. Details demonstrating that the design of each facility complies with AS 1428.1 are to be provided at the CC application stage, however, it is believed compliance can be readily achievable.

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 Stage for each building.

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 Stage for each building.

3.6 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 any air-conditioned spaces proposed within the proposed building. Design details and/or certification confirming that that the building envelope design complies with Part J4 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 proposed buildings. Details or certification that the proposed design complies with the requirements of Part J5 will need 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:** Details or certification demonstrating compliance will need to be submitted with the application for a Construction Certificate for each building.
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 or certification demonstrating compliance will need to be submitted with the application for a Construction Certificate for each building.
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 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 Warehouse 2 at the Aspect Industrial Estate located at Mamre Road, Kemps Creek 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: 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 2, 3, 5, 6, 7, 8 or 9b, excluding: + Class 3 accommodation for the aged; and + Class 9b	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, 6, 7, 8 or 9b schools, Unsprinklered	Walls: 1 Ceilings: 1	Walls: 1, 2 Ceilings: 1, 2	Walls: 1, 2, 3 Ceilings: 1, 2	Walls: 1, 2, 3 Ceilings: 1, 2, 3

Note: "Special areas" are defined as follows:

+ *Class 5: open plan offices with a minimum floor dimension/floor to ceiling height ratio > 5*

Table 6: Fire-Resisting Construction – Type C Construction

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

Notes:

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

+ Appendix 2 – Fire Safety Schedule

The following table is a list of the required fire safety measures within the building. These measures may be subject to further change pending the outcomes of the final Fire Safety Engineering Review to confirm the works are permissible and do not contradict the base building Performance Solutions.

Table 7: Fire Safety Schedule

+ Statutory Fire Safety Measure	+ Design/Installation Standard	+ Proposed
Alarm Signaling Equipment	AS 1670.3 – 2018	✓
Automatic Fire Detection System	BCA Spec. 20 AS 1670.1 – 2018 & AS/NZS 1668.1 – 2015	✓
Automatic Fire Suppression Systems	BCA Spec. 17 AS 2118.1 – 2017	✓
Building Occupant Warning System activated by the Sprinkler System	BCA Spec. 17, Clause 8 and/or Clause 3.22 of AS 1670.1 – 2018	✓
Emergency Lighting	BCA Clause E4D4 AS 2293.1 – 2018	✓
Exit Signs	BCA Clauses E4D5, E4D6 & E4D8 AS 2293.1 – 2018	✓
Fire Control Centre	BCA Clause E1D15 and Spec.19	✓
Fire Doors (TBC)	BCA Clause C3D13, C3D14 AS 1905.1 – 2015 Manufacturer's specification	✓
Fire Hose Reels (Class 7b parts only)	BCA Clause E1D3 AS 2441 – 2005	✓
Fire Hydrant Systems	BCA Clause E1D2 AS 2419.1 – 2021 incl. Appendix C	✓
Fire Seals (TBC)	BCA Clause C4D15 AS 1530.4 – 2014 & AS 4072.1 – 2018 Manufacturer's specification	✓
Lightweight Construction (TBC)	BCA Clause C2D9 AS 1530.4 – 2014 Manufacturer's specification	✓
Paths of Travel	EP&A (DC&FS) Regulation 2021 Clause 109	✓
Perimeter Vehicular Access	BCA Clause C3D5	✓
Portable Fire Extinguishers	BCA Clause E1D14 AS 2444 – 2001	✓
Smoke Hazard Management Systems	BCA Part E2 and Spec. 21 AS/NZS 1668.1 – 2015	✓
Warning & Operational Signs	BCA Clause D4D7 & E3D4 AS 1905.1 – 2015	✓