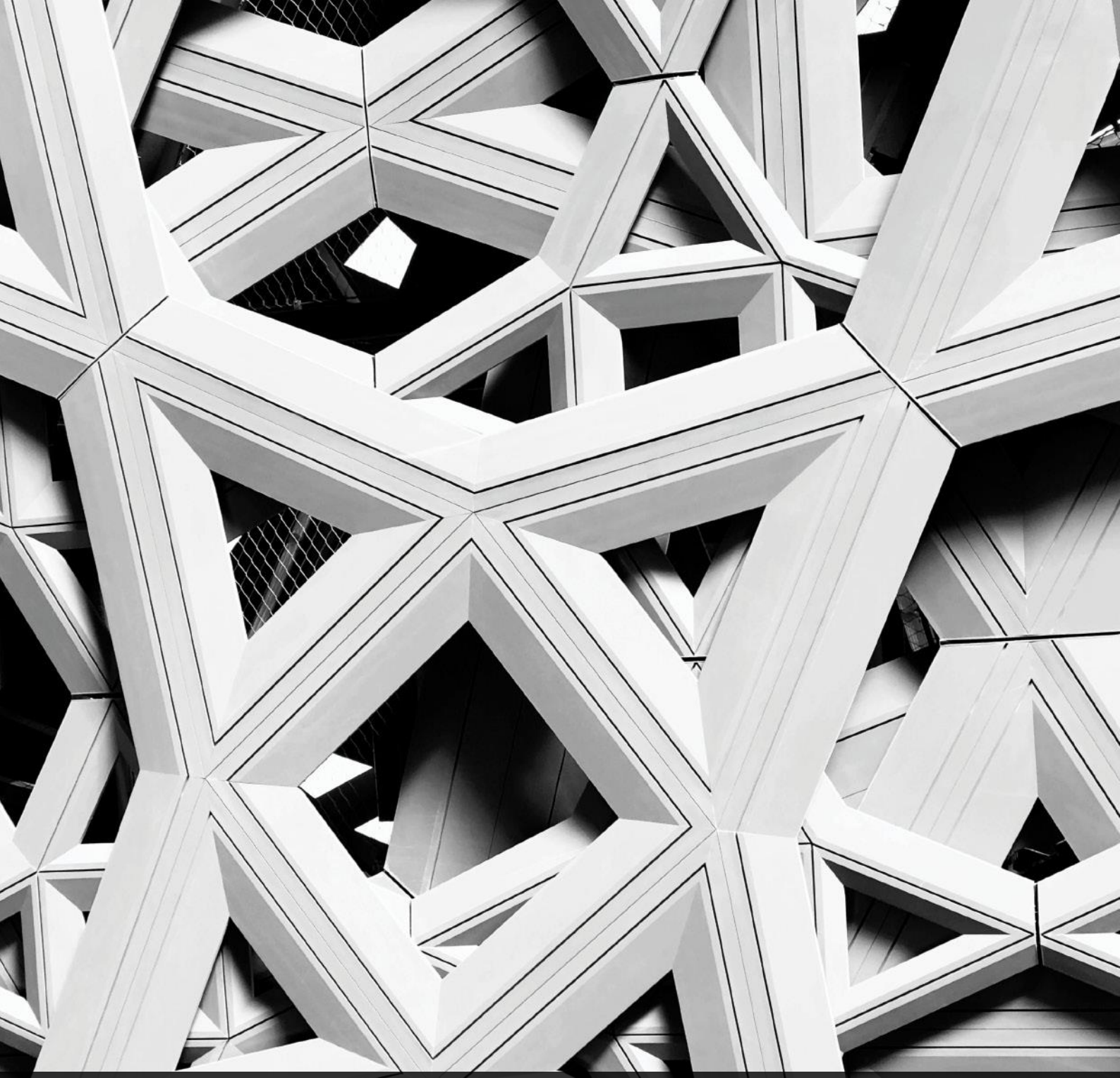


BCA & Accessibility Assessment Report

Multi-Level Industrial Unit Development
14 Aquatic Drive, Frenchs Forest

Prepared for:
Goodman

Revision 0
18 March 2025
Reference: 240215

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
1.	**C2D10, C2D14**	Details of the non-combustible external walls, including all ancillary elements and attachments are required to be provided for assessment.
2.	**C3D3, & Spec 5**	Detailed FRL plans are to be provided with the CC Application to demonstrate compliance with both Spec. 5 and C3D3/C4D4. In addition, the Architect is required to confirm the exact floor area and volume of each proposed fire compartment on Ground Floor Level and Level 1 / Level 1 Mezzanine.
3.	**C3D13, C3D14**	Details of any proposed Fire Separation of Equipment & Electrical infrastructure to be provided at CC Application stage.
4.	**D2D7, D2D8, D2D18 & F4D4**	The proposed population of the building is required to be confirmed by Goodman to facilitate an assessment of the overall required egress widths and sanitary facility requirements.
5.	**D2D4**	The stairs serving the lobby connect greater than 3 storeys in a sprinkler protected building and as such is required to be fire isolated. The stairs are currently not documented as fire-isolated stairs.
6.	**D2D15**	Exit doors located within vehicular movement areas on Level 1 & Level 2 are to be protected with bollards.
7.	**D3D14 – D3D22**	Detailed plans of all stairways, balustrades and handrails within the proposed development must be provided for review.
8.	**D3D4**	Details of the design of all accessible areas demonstrating compliance with AS 1428.1-2009, in relation to accessible pathways, stairs, ramps, handrails, doorways, etc. to be provided at CC Application stage.
9.	**D4D5**	Consideration to an exemption to the Warehouse areas may be appropriate on this project. Confirmation from the building owner 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.
10.	**E1D2, E1D3**	+ Fire hydrant coverage plans are to be provided for review. + Fire hose reel coverage plans are to be provided for review.
11.	**E1D2, E1D4**	The proposed location of the hydrant and sprinkler booster is to be indicated on the plans.
12.	**E1D15 & Spec 15**	Details of the proposed Fire Control Centre location to be provided for review along with confirmation that access does not include a change in level greater than 300mm.

B. Matters requiring fire safety engineered performance solutions:

+ BCA (DtS) Clause		+ Description
1.	**Spec 5 C2D2**	Consideration may be given to a Performance Solution from the Fire Engineer to rationalise the FRL requirements of certain building elements.
2.	**C2D14**	TBC – Combustible elements in building signage attached as an ancillary element to the building façade.
3.	**C3D3, C4D5**	To allow openings on the western vehicle ramps to not be protected to exposure from the side boundary.
4.	**C4D6**	Fire Shutters installed in Fire Walls that do not achieve the required -/240/30 FRL.
5.	**C4D13, C4D15**	TBC - Fire stopping of service penetrations in 240/240/240 FRL building elements.
6.	**D2D4**	The office lobby stairs are to be fire isolated as they pass through more than 3 storeys in a sprinkler protected building. The stairs are currently not documented as Fire Isolated Stairs and as such a Performance Solution from the Fire Engineer may be considered to address this non-compliance.
7.	**D2D5, D2D6**	The current plans indicate that exit travel distances, and distances between alternative exits within the building will not comply with D2D5 & D2D6.
8.	**D2D14**	The Discharge point of a number of the Level 1 Mezzanine Stairs is greater than 40m from an exit to open space. The discharge path to open space from a number of the Level 1 Mezzanine Stairs in the Western fire compartment require travel via a secondary stair located on Grids D-E/1-2 via a Horizontal Exit.
9.	**D3D9**	The FIP cupboard located under the non-fire isolated stair in the office is required to have enclosing walls and ceilings achieving and FRL of 60 minutes and a self-closing -/60/30 fire door. Note: This is to be included in the Performance Solution addressing the non-compliance under D2D4.
10.	**D3D13**	The roof as Open Space (Level 2 Hardstand) serving as an exit from the Level 2 Units discharges to the Ground via 2 non-fire isolated stairs, which requires re-entry into the building rather than a continuous discharge via open space. The Performance Solution will also need to address the non-fire isolated stairs in the North-Eastern corner which discharges within 3m of openings in the external wall on Ground floor.
11.	**E1D3**	Consideration may be given to a Performance Solution for the use of 50m hose reel lengths to achieve coverage.
12.	**E1D15 & Spec 19**	Where access into the Fire Control Centre results in a level change that exceeds 300mm (ie. via an accessible ramp at the lobby entry) a Performance Solution will be required.

C. Other matters requiring performance solutions (including Accessibility):

+	BCA (DtS) Clause	+ Description
1.	**D4D3 & D4D4**	+ The main pedestrian entrance point from Aquatic Drive to the main lobby and self-storage units does not have an AS 1428.1 compliant continuous accessible path of travel due to the existing site conditions, in relation to grades, and the provision for compliant wheelchair passing spaces. + A continuous path of travel is not provided from the accessible car parking spaces on site to the self-storage units on Ground Level. + A lift is not proposed to provide access to the Level 1 & 2 Office Mezzanines, and the aggregate floor area of each level exceeds 200m^2. + The self-storage units are proposed to be accessed via roller shutters in lieu of doors with compliant door hardware
2.	**F3P1**	A Performance Solution report is to be provided by the Architect / Façade Engineer to demonstrate how the external walls and Level 2 hardstand are designed to prevent the penetration of water into the building.
3.	**Section J**	A Section J Compliance Report or JV3 report will be required with the CC application

+ Contents

+ Report Status

+ Date	18.03.2025
+ Revision	0
+ Status	Preliminary Assessment Review
+ Author	Dean Goldsmith
+ Reviewed	Jack Nicolaou

Prepared by:

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

Reviewed by:

Jack Nicolaou
Assistant Building Surveyor
bm+g

+ Revision History

+ Revision	0	**+ Date**	18.03.2025
+ Status	Preliminary Assessment Review		

1.0 Description of Project

1.1 Proposal

bm+g have been commissioned by Goodman to undertake an assessment of the multi-level industrial unit development at 14 Aquatic Drive, Frenchs Forest against the relevant provisions of the Building Code of Australia 2022 (BCA) and the Disability (Access to Premises – Buildings) Standards 2010.

Figure 1 – Architects Impression

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.
- Undertake an assessment of the proposed development against the Disability (Access to Premises – Buildings) Standards 2010.
- Undertake an assessment of the proposed development against the Part D4 deemed-to-satisfy provisions of the BCA;
- Identify matters that require plan amendments in order to achieve compliance with the Access to Premises Standard and Part D4 of 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 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:

- **Dean Goldsmith** – Report Preparation (Director) | Building Surveyor-Unrestricted
- **Jack Nicolaou** –Peer Review (Assistant 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)
- The Guide to the Building Code of Australia 2022
- Disability (Access to Premises – Buildings) Standards 2010
- AS 1428.1:2009 Design for access and mobility - General requirements for access - New building work
- AS1428.2:1992 Design for access and mobility - Enhanced and additional requirements - Buildings and facilities
- AS1428.4.1:2009 Design for access and mobility - Means to assist the orientation of people with vision impairment - Tactile ground surface indicators
- HB198:2014 Guide to the specification and testing of slip resistance of pedestrian surfaces
- Architectural Plans prepared by SBA Architects numbered:

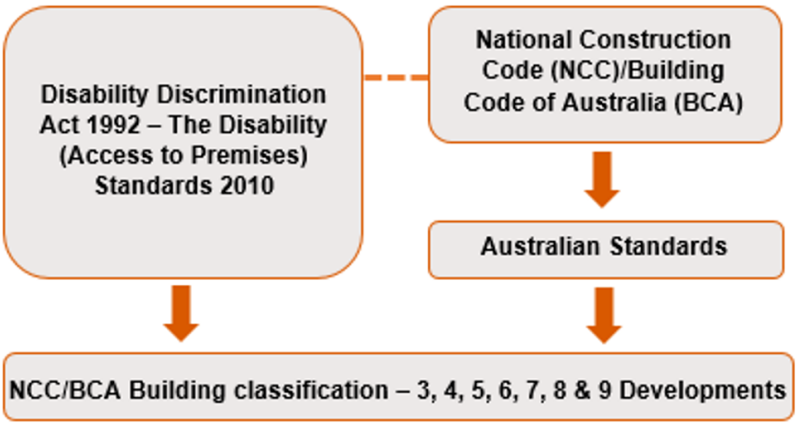
+ Drawing No.	+ Revision	+ Date
DA100	P3	14.02.2025
DA101	P3	14.02.2025
DA102	P3	14.02.2025
DA200	P4	14.02.2025

+ Drawing No.	+ Revision	+ Date
DA201	P3	14.02.2025
DA202	P3	14.02.2025
DA203	P3	14.02.2025
DA204	P3	14.02.2025

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 below figure represents the statutory framework addressing accessibility as noted in the below Act, Code and Standards.



The Disability Discrimination Act 1992 (DDA) is Commonwealth legislation enacted in 1993 that seeks to ensure that all new building infrastructure, refurbishments, services and transport projects provide independent and equitable access. The DDA is a complaints based legislation administered by the Australian Human Rights Commission (AHRC).

Subordinate to the DDA are the Disability Standards, which include; Disability (Access to Premises – Buildings) Standards 2010, Disability Standards for Education 2005, and the Disability Standards for Accessible Public Transport 2002. These Disability standards refer back to the AS 1428 suite of standards and Building Code of Australia.

Since 2011, the Building Code of Australia has adopted the key accessibility provisions of the Disability (Access to Premises – Buildings) Standards 2010, with compliance with AS 1428.1 – 2009, AS 1428.4.1 – 2009, and AS 2890.6 – 2009 becoming mandatory. As such, compliance with the relevant sections of the BCA ensures compliance with the Disability (Access to Premises – Buildings) Standards 2010 and vicariously the DDA.

With respect to existing works, there are statutory upgrade requirements within the Disability (Access to Premises – Buildings) Standards 2010 that apply to all building works which require consent (including Crown building work). This relates to the upgrade of any 'affected part' of the building, which includes;

+ The principal pedestrian entry (i.e. entry door and ramp), and
+ The pathway / corridor / lift / ramp which form an accessible path of travel to any area of new work (note: only one accessible path of travel is required to any new part under this requirement).

Section 23 of the Disability Discrimination Act DDA 1992 states;

It is unlawful for a person to discriminate against another person on the ground of the other person's disability:

- *By refusing to allow the other person access to, or the use of, any premises that the public or a section of the public is entitled or allowed to enter or use (whether for payment or not); or*
- *In the terms or conditions on which the first-mentioned person is prepared to allow the other person access to, or the use of, any such premises; or*
- *In relation to the provision of means of access to such premises.*

The DDA Act 1992 is a complaints-based legislation whilst compliance with The Disability (Access to Premises) Standards 2010 affords some certainty regarding the minimum compliance requirements it does not prevent a claim being made under the DDA Act 1992. Whilst implementing the minimum compliance requirements under the Disability (Access to Premises) Standards 2010 and BCA will satisfy the minimum compliance requirements there is nothing preventing a greater degree of access than those minimum requirements specified.

Note: The below report also includes recommendations for best practice/non mandatory items for consideration by the project team stakeholders and as applicable have been identified in the below report in *italics.*

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

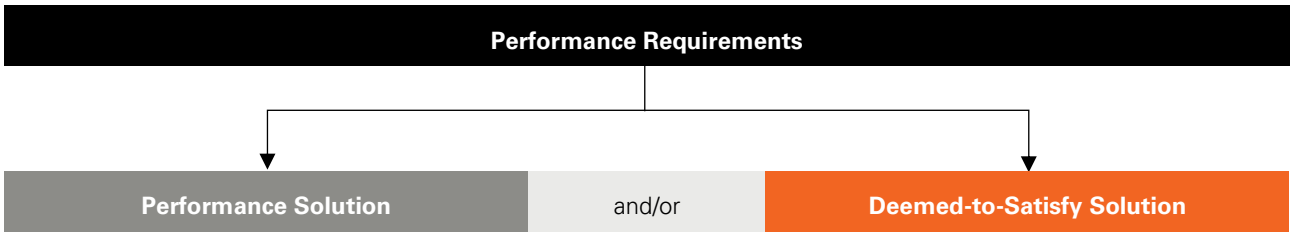
Pursuant to Section 19 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021 the proposed building is subject to compliance with the relevant requirements of the BCA as in force at the day on which the application for the Construction Certificate is 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.

Pursuant to Section 137 of the Environmental Planning and Assessment 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 Complying Development 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 likely be lodged before / 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.
- 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.
- Evacuation of occupants with a disability. No assessment has been undertaken to consider the equitable evacuation of all occupants.
- This report is based on a review of the referenced documents. At this point in time, no inspection has been undertaken to ascertain the current level of DDA compliance.
- No assessment has been undertaken unless it explicitly relates to the Access to Premises Standard of Part D4 of the BCA. As an example, AS 1428.2-1992 has not been assessed.
- Please note that whilst the BCA specifies a minimum standard of compliance 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.
- This report does not consider BCA Part G5 (Volume 1) which makes provision for construction of buildings in bushfire-prone areas, therefore no assessment has been undertaken in consideration of RFS, Planning for Bushfire Protection and AS 3959. Where Part G is applicable to the site, then it is required that assessment / due diligence is undertaken by a specialist consultant to verify compliance.
- This report does not constitute a detailed assessment of the architectural documentation against the requirements of Section J. It is understood that a suitably qualified consultant will be engaged to determine compliance in this regard.
- bm+g has not undertaken an assessment of any Performance Solution Reports at the time of the preparation of this report.
- The Report does not address matters in relation to the following Local Government Act and Regulations:
  - Work Health and Safety Act and Regulations.
  - Work Cover Authority requirements.
  - Water, drainage, gas, telecommunications and electricity supply authority requirements.

- Disability Discrimination Act 1992.

+ bm+g cannot guarantee acceptance of this report by Local Council, Fire & Rescue NSW or other approval authorities.

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1.9 Report Terminology

Access for People with Disabilities - Access to a building which is planned to minimise obstacles or hazard to disabled persons.

Accessible – Means having features to permit use by people with disabilities

Accessway – Means a continuous accessible path of travel to or within a building suitable for people with disabilities as defined in AS 1428.1

Braille – A system of touch reading for the blind, which employs raised dots that are evenly arranged in quadrangular letter spaces or cells.

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.*

Dedicated Parking Space – a parking space set aside exclusively for the parking of a single vehicle for a person with a disability.

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.

Hearing Augmentation – The communication of information for people who are deaf or hearing impaired by using a combination of audio, visual, and tactile means

Luminance Contrast - The light reflected from one surface or component, compared to the light reflected from another surface or component.

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.

People with Ambulant Disabilities - People who have a mobility disability but are able to walk.

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-

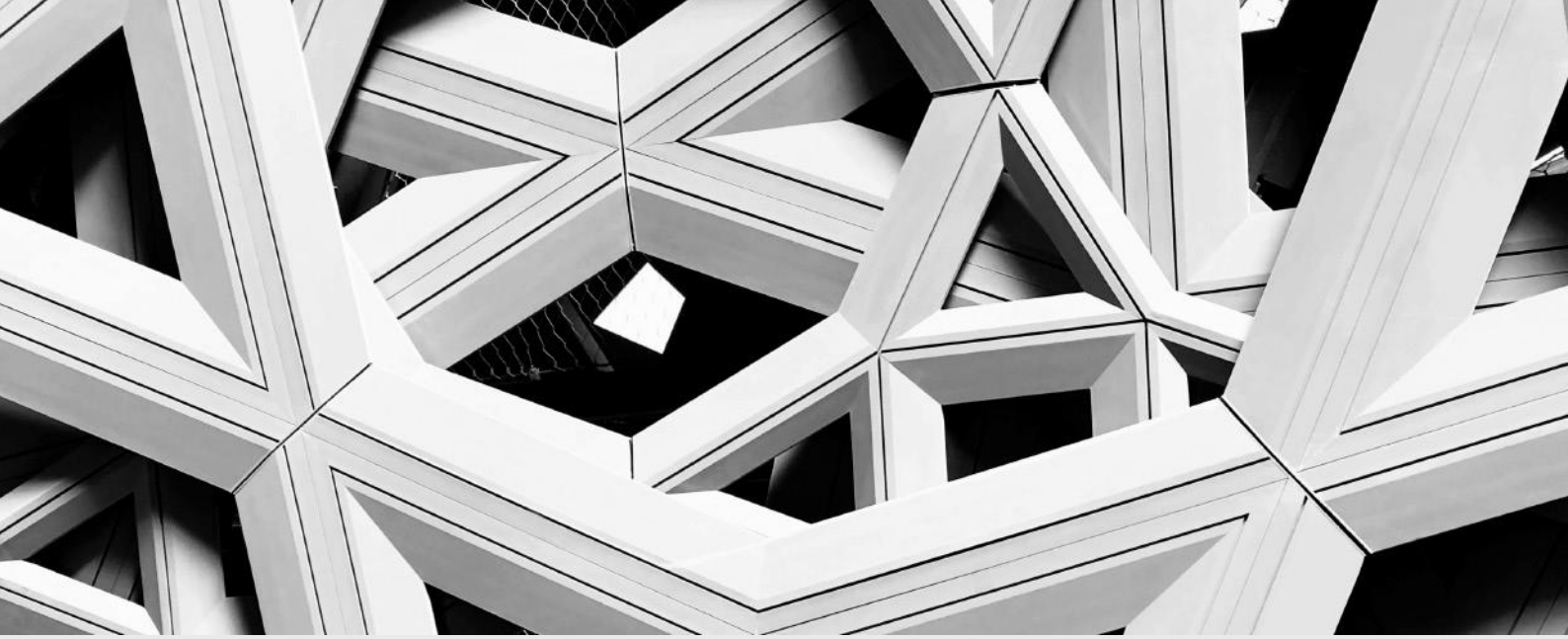
- complying with the Deemed-to-Satisfy Provisions; or
- formulating an Performance Solution which-
  - complies with the Performance Requirements; or
  - is shown to be at least equivalent to the Deemed-to-Satisfy Provisions; or
- a combination of (a) and (b).

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

Sensory Impairment - Any significant loss of hearing or vision.

Shared Area (for carparking) – An area adjacent to a dedicated space provided for access or egress to or from a parked vehicle and which may be shared with any other purpose that does not involve other than transitory obstruction of the area, e.g. a walkway, a vehicular aisle, dual use with another adjacent dedicated space.

Slip Resistant – A property of a surface having a frictional force-opposing movement of an object across a surface.



2.0 Building Characteristics

2.1 Proposed Development

The proposed development consists of the construction of basement self-storage units, and 2 levels of warehouse units with mezzanine offices.

The building is classified as follows:

BCA Classifications:	Class 5 (Office) Class 7b (Self Storage and Warehouse Units) Class 10a (Pump room, Sprinkler Tank)
Rise in storeys:	5 (Five)
Storeys Contained:	5 (Five)
Type of Construction:	Type A Construction
Importance Level (Structural)	2 (TBC by Structural Engineer)
Sprinkler Protected Throughout	Yes
Effective Height	13.2m (RL156.200 – RL143.000)
Floor Area	>18,000m^2
Volume	>108,000m^2
Largest Fire Compartment Size	Less than 5,000m^2 & 30,000m^2 (See C3D3 below)
Climate Zone	Zone 5

2.2 Fire Compartment Floor Area Limitations

Maximum size of fire compartment/atria permitted by Table C3D3 is as follows:

+ 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	Far side of the road	>6m
East	Side or rear boundary	<1.5m
West	Side or rear boundary	>6m
South	Side or rear boundary	<1.5m

***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.
- New building works to the existing building must be compliant with earthquake provisions of AS1170.4 – Earthquake Actions in Australia.

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 4 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) must achieve an FRL where located <3m from a side or rear allotment boundary 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 building – see notes under Spec 5, C2D10 & C2D14 below. FRL plans to be provided at CC Application stage to confirm compliance with Spec. 5
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 5 (five) 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 building's 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 Goodman/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 following maximum fire compartment sizes apply to each portion of the building: + Class 5: 8,000m^2 & 48,000m^3 + Class 7: 5,000m^2 & 30,000m^3 It is noted that fire compartmentation is proposed on the Ground Floor Level, Level 1 and Level 1 Mezzanine. The location of required Fire Walls on these levels are identified in C3D8 Figures 2-5 below. The Architect is required to confirm the exact floor area and volume of each compartment.
C3D7	**Vertical Separation of Openings in External Walls:** In a building of Type A construction, any part of a window or other opening in an external wall is above another opening in the storey next below and its vertical projection falls no further than 450 mm outside the lower opening (measured horizontally), the openings must be separated by a fire-rated spandrel, or a horizontal fire-rated extension. **Comment:** As the new building is proposed to be sprinkler protected, fire rated spandrels between windows or other openings in the external walls are not required.
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:** The proposed Fire Walls (shown in Figures 2-5 below) are required from the floor slab to the underside of the slab above with no proposed structural elements crossing the wall. See proposed compartmentation strategy below. Details to be provided at CC Application stage.

Fig. 2 - Ground Floor Compartmentation

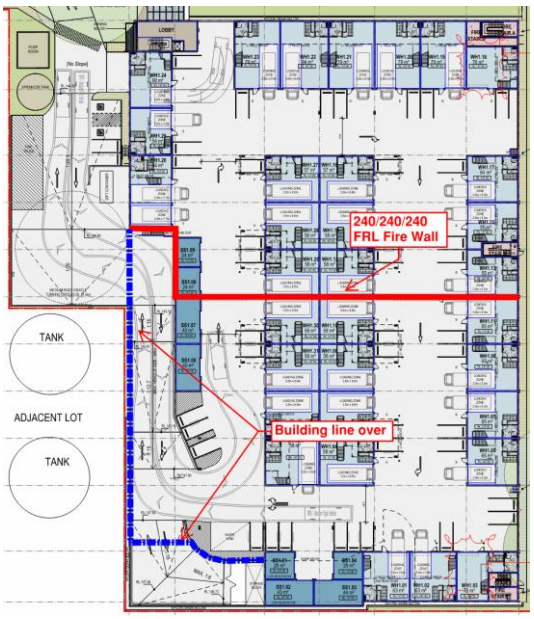


Fig. 3 - Level 1 Compartmentation

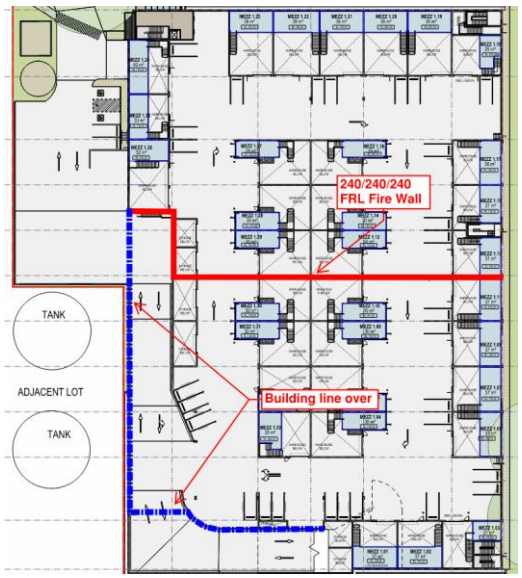


Fig. 4 - Level 1 Mezz Compartmentation

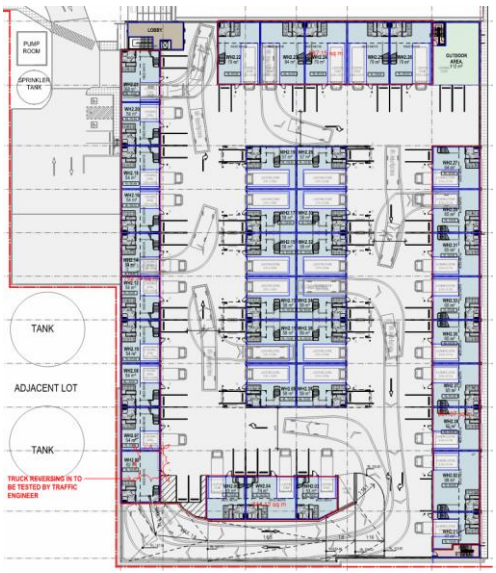


Fig. 5 – No Fire Walls required on Level 2

Design certification is to be provided by the Architect confirming compliance with C3D8 (1) & (3) at the CC application stage.

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.

Comment: No fire separation is required between the proposed Class 5 and Class 7b areas as the higher FRL's applicable to Class 7b will also apply to the office areas. See Spec. 5 details in Appendix 1 for FRL requirements applicable to each classification.

C3D11

Separation of Lift Shafts: The lift shafts are not required to achieve an FRL as they connect connect 3 storeys.

Comment: The proposed lift shaft connects 4 storeys in a building proposed to be sprinkler protected and as such the lift is required to be fire isolate with construction that achieves an FRL per Spec. 5.

C3D12

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

Comment: Further detailed fire compartment plans are to be provided to indicate that the lift is not within the same shaft as the adjacent fire-isolated stairways.

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: Details demonstrating compliance are to be submitted with the CC Application plans for the proposed 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, emergency lifts, control & indicating equipment, EWIS. **Comment:** The above requirements will need to be taken into consideration as part of the design of the main switch room serving the building. Where appropriate, details demonstrating compliance are to be included in the CC Application plans for the warehouse building.
C4D3 & C4D5	**Protection of Openings in External Walls:** Openings that are less than 3m from the allotment boundary are required to be protected in accordance with BCA Clause C4D5. **Comment:** A fire engineered performance solution is required to allow the openings on the southern vehicle ramps leading from Level 1 up into Level 2 to not be protected when they are located within 3m of the side boundary. See below exposure areas marked in Figure 6 & 7.

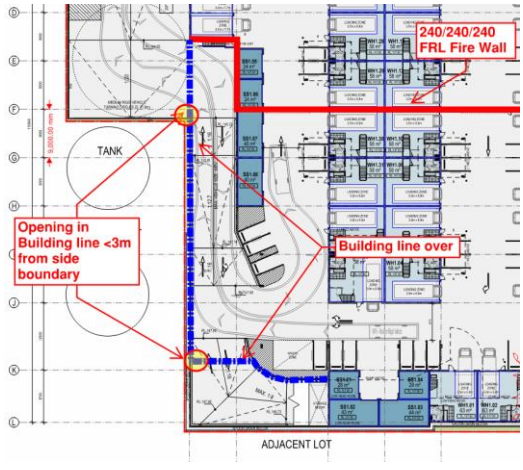


Fig. 6 – Level 1 Exposure to side boundary

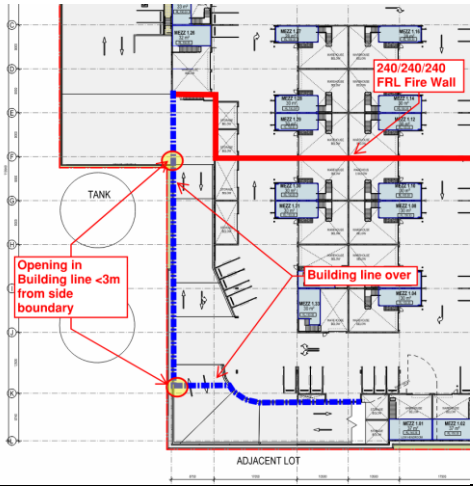


Fig. 7 – Level 1 Mezzanine Exposure to side boundary

In addition to the above, it is noted that the fire stair opening/door in the NW corner of Level 2 (adjacent to Unit WH2.01 is located within 3m of the side allotment boundary and as such will be required to be protected with a fire door.

Details demonstrating compliance are to be included on the CC Application plans.

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:** The proposed compartmentation strategy indicates no external walls of different fire compartments are exposed to each other and therefore comply with the requirements of this clause.
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:** The proposed doors and fire shutters in the Fire Walls on Ground Level and Level 1 are required to comply with the requirements of this clause. Note: The use of Fire Shutters may require the provision of a Performance Solution from the Fire Engineer given that fire shutter do not generally provide an FRL incorporating the required 30min. insulation rating.
C4D8	**Protection of Doorways in Horizontal Exits:** A doorway that is part of a horizontal exit must be protected by: + A fire door with an FRL as required for the wall under Spec 5, except that the door must have an insulation level of at least 30; or; + Class 7 / 8 – Two fire doors, one on each side of the doorway, achieving ½ the FRL required for the wall under Spec 5, except that the door must have an insulation level of at least 30. + Be self-closing, or automatic-closing activated by heat or smoke detector activation and the activation of an applicable sprinkler system. **Comment:** The doorways forming part of the Horizontal Exit on Level 1 (located adjacent to WH1.11 & WH1.13) are to be protected in accordance with this clause. Details demonstrating compliance are to be included on the CC Application plans.
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.
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 building will be subject to compliance with the Type A Construction provisions of Tables S5C11a to S5C11g – refer to Appendix 1 for the required FRL of each element listed 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. + 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.
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. 12	**Fire Doors, Smoke Doors, Fire Windows and Shutters:** Fire doors and smoke doors must comply with the requirements of this specification.

	Comment: Fire shutters are to be indicated on the plans as per the compartmentation strategy above (see C3D8). Details to be provided prior to CC application stage.

3.3 Section D – Access and Egress

D2D3	**Number of Exits Required:** The building is required to be provided with 1 exits to each storey. **Comment:** The building has been provided with at least 1 exit from each storey, and therefore compliance is achieved.
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 lobby stairs located in the SW corner of the building are required to be fire isolated as they pass through more than 3 storeys in a sprinkler protected building. The stairs are currently not documented as Fire Isolated Stairs and as such a Performance Solution from the Fire Engineer may be considered to address this non-compliance or redesign will be required.
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 potential Performance Solution from the Fire Engineer and further design development. Note: The external areas of Level 2 have been assessed as Roof as Open Space and as such are utilised for egress purposes from the Level 2 units (including mezzanines). **Ground Floor :** + 35m to a point of choice in lieu of the DtS 20m from the western fire compartment.** + 60m to an exit in lieu of the DtS 40m from the western fire compartment. + 73m to an exit from the SE corner of the eastern fire compartment **Level 1:** + 25m to a point of choice in lieu of the DtS 20m from the western fire compartment. + 60m to an exit in lieu of the DtS 40m from the western fire compartment. + 45m to a point of choice in lieu of the DtS 20m from the eastern fire compartment.** + 58m to an exit from the SE corner of the eastern fire compartment. **Note: Comment form Fire Engineer required on potential Performance Solutions.
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 exit on each level are found to not comply with the requirements of Clause D2D6. A summary of the non-compliances are listed below, though it is understood these are subject to potential Performance Solution from the Fire Engineer and further design development.

	Ground Floor: + 80m distance between exits in lieu of the DtS 60m in the western fire compartment. + 122m distance between exits in lieu of the DtS 60m in the eastern fire compartment. **Level 1:** + 77m distance between exits in lieu of the DtS 60m in the western fire compartment. + 65m distance between exits in lieu of the DtS 60m in the eastern fire compartment.
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.
D2D12	**Travel via Fire Isolated Exits:** A fire isolated stairway is required to 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:** The stair located within the Lobby in the SW corner of the building connects 4 storeys in a sprinkler protected building and as a result is required to be fire isolated. It is noted that the design does not incorporate a fire isolated shaft around this stair and as such this stair will require a Performance Solution from the Fire Engineer. All other stairs serving the other portions of the building are not required to be fire-isolated as they connect 3 storeys or less, however, if they are proposed to be fire-isolated the requirements of this clause regarding protection and discharge will apply.
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:** Egress via the non-fire isolated stairs discharging externally and serving the and Level 2 Office Mezzanines are capable of achieving compliance. Details to be provided with the CC Application. A Fire Engineered Performance Solution is required to address the following non-compliances: + Discharge point of a number of the Level 1 Mezzanine Stairs being greater than 40m from an exit to open space. + The discharge path to open space from a number of the the Level 1 Mezzanine Stairs in the Western fire compartment require travel via a secondary stair located on Grids D-E/1-2 via a Horizontal Exit.

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 with bollards in accordance with the requirements of this clause.

The path of travel from the Level 2 Hardstand (which acts as open space for the Level 1 Warehouses and Mezzanine Offices) to the road via two enclosed stairs, a Performance Solution will be required from the Fire Engineer to address this non-compliance.

D2D16

Horizontal Exits: Horizontal exits must not comprise more than half of the required exits from any part of a storey divided by a fire wall.

Comment: The two doors in the fire wall dividing the Level 1 fire compartments are considered to form a horizontal exit for each compartment. The horizontal exit on the northern side has been assessed as serving the western fire compartment and the door on the southern side serving the eastern fire compartment – see diagram below.

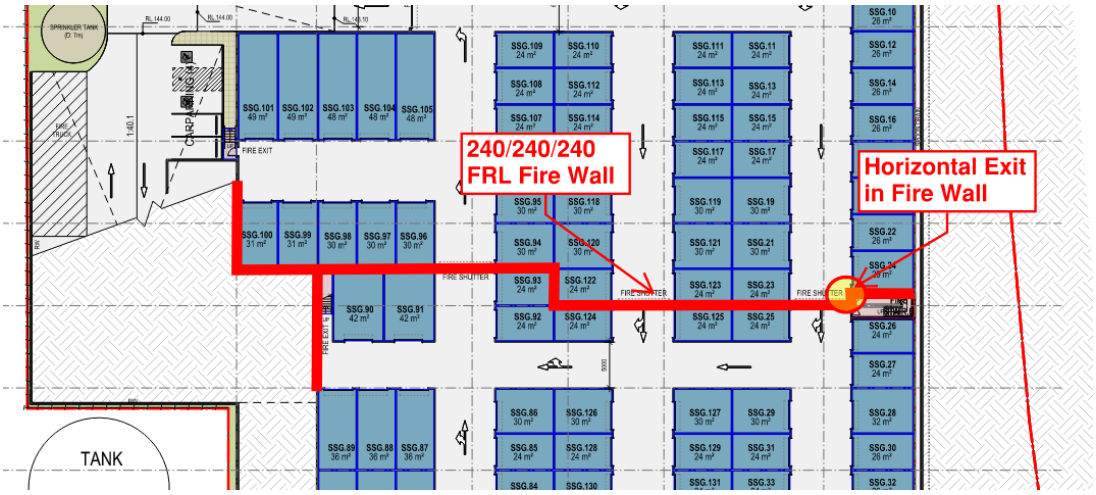


Fig. 8 – Ground Level Horizontal Exits

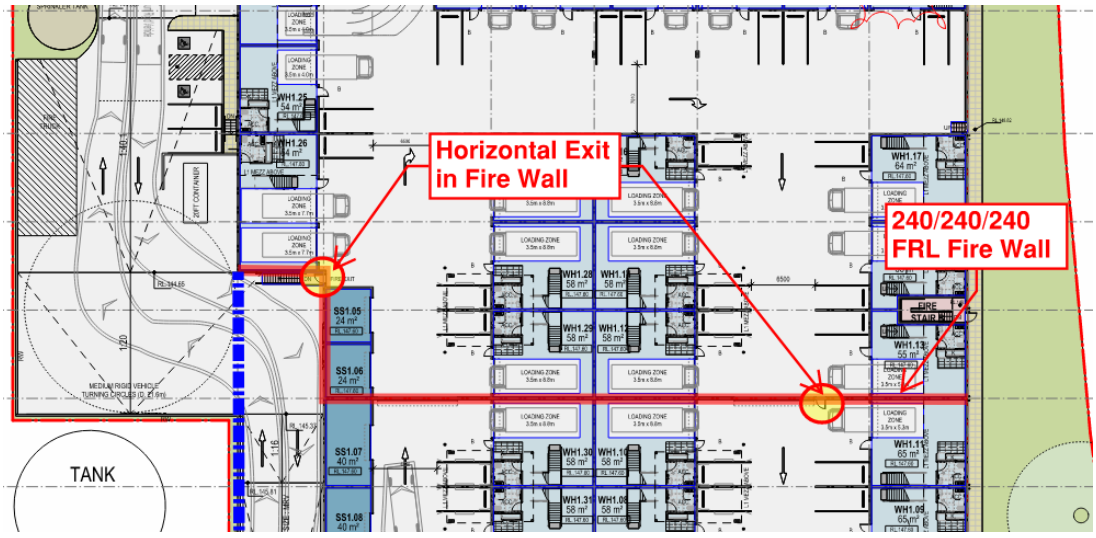


Fig. 9 – Level 1 Horizontal Exits

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 following population numbers have been calculated using the BCA ratios of 1 person per 10m2 of office area and 1 person per 30m2 of warehouse area:

Population Numbers as Per Table D2D18	
Area	**Persons Accomodated**
Units: 1.04, 1.06, 1.08, 1.10, 1.12, 1.13, 1.14, 1.15, 1.16, 1.25, 1.26, 1.27, 1.28, 1.29, 1.30, 1.31, 1.32, 1.33, 2.01, 2.03, 2.05, 2.07, 2.08, 2.09, 2.10, 2.11, 2.12, 2.13, 2.14, 2.15, 2.16, 2.17, 2.18, 2.19, 2.20, 2.28, 2.30, 2.34, 2.36, 2.38.	5 persons per unit
Units: 1.01, 1.02, 1.03, 1.05, 1.07, 1.09, 1.11, 1.17, 1.18, 1.19, 1.20, 1.21, 1.22, 1.23, 1.24, 2.21, 2.27, 2.29, 2.31, 2.33, 2.35, 2.37, 2.39.	6 persons per unit
Units: 2.02, 2.04, 2.06, 2.22, 2.23, 2.24, 2.25, 2.26.	7 persons per unit

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 if any fire-isolated stairs are proposed.

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: All non-fire isolated stairways associated are to be constructed in accordance with the requirements of this clause. Details to be provided prior to CC application stage.

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: The plans currently indicate that compliance is achieved.

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: The FIP cupboard located under the non-fire isolated stair in the office is required to have enclosing walls and ceilings achieving and FRL of 60 minutes and a self-closing -/60/30 fire

	door. Note: This is to be included in the Performance Solution addressing the non-compliance under D2D4. Details demonstrating compliance are to be shown on the CC Application plans where applicable.
D3D13	**Roof as Open Space:** If an exit discharges to a roof, it must have an FRL of at least 120/120/120 and not have any roof-lights or other openings within 3m of the path of travel of persons using the exit to reach a road or open space. Comment: The carparking & hardstand area on Level 2 in front of the units have been considered as Roof as Open Space for the purpose of our egress assessment. As the discharge path from the Level 2 hardstand area to the roadway requires travel via the enclosed fire stairs a Performance Solution will be required from the Fire Engineer to address this configuration along with the discharge from the stairs on Level 1. The Performance Solution will also need to address the non-fire isolated stairs in the North-Eastern corner which discharges within 3m of openings in the external wall on Ground floor
D3D14 – D3D16	**Stairways, Landings, and Thresholds:** + Stairway dimensions must comply with Table D3D14. + 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. + Slip Resistance of stair nosings and landings must comply with Table D3D15. + A step is not permitted on either side of a doorway, closer than the width of the door swing. Doorways leading to external areas are exempted if the step down is ≤190mm, though an accessible threshold ramp is required in accessible areas (refer to Part D4). **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.
D2D22	**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.
D2D23	**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.
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 proposed egress doors are required to swing in the direction of egress in accordance with this clause – compliance is readily achievable.
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 to the main building lobby of the building (in the SE corner) from Aquatic Drive and from the accessible parking spaces on the site. In addition, compliant access is required into the main entry of each warehouse unit on Level 1 and 2. Based on our assessment of the current design, the following Performance Solutions from an Accredited Access Consultant will be required at CC Application stage to address the following non-compliances with D4D3: + The main pedestrian entrance point from Aquatic Drive to the main lobby and self-storage units does not have an AS 1428.1 compliant continuous accessible path of travel due to the existing site conditions, in relation to grades, and the provision for compliant wheelchair passing spaces. + A continuous path of travel is not provided from the accessible car parking spaces on site to the self-storage units on Ground Level.
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 E3, 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:** The following is a summary of key matters to be considered with respect to the design of the building to achieve compliance with D4D4 requirements. Details demonstrating compliance will be required at the CC Application stage. + An accessible path of travel complying with AS 1428.1-2009 is to be provided from the allotment boundary and from the accessible car spaces and is to be detailed on the Construction Certificate plans. Where a kerb is proposed, a kerb ramp is to be provided so the accessible path is free from steps. + Every ramp, except a fire-isolated ramp, must comply with clause 10 in AS 1428.1-2009. + Every stairway, except a fire-isolated stairway, must comply with clause 11 of AS 1428.1-2009. + Every fire-isolated stairway must comply with clause 11.1(f) and (g) of AS 1428.1-2009. + Every passenger lift must comply with clause E3D7 and E3D8.

- Accessways must have passing spaces complying with AS1428.1-2009 at a maximum 20m intervals on those parts of the accessway where a direct line of sight is not available and turning spaces complying with AS1428.1-2009 within 2m of the end of accessways and at a maximum 20m intervals along the accessway.
- 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.
- The minimum width of an accessible doorway must have a clear opening width of not less than 850mm in accordance with AS 1428.1.
- 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.
- Circulation space to the 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.

Stairways

- Every common area stairway must be constructed in accordance with Clause 11 of AS 1428.1-2009, except if they serve the areas in the building that a D4D5 Exemption has been applied to. Details will need to be confirmed on the plans for CC.
- Stairs shall have opaque risers (i.e. solid).
- Stair nosings shall comply with Figure 27 in AS 1428.1-2009, 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 AS 1428.4.1, except if they are within a fire isolated exit.

Ramps

- Every common area and entry ramp must be constructed in accordance with Clause 10.3 of AS 1428.1-2009, except if they serve the areas in the building that a D4D5 Exemption has been applied to or are located in fire isolated exits. Details will need to be confirmed on the CC Application plans.
- The design of the landing at the main Ground Floor Lobby entry does not provide for both a compliant landing with handrails at the top of the ramp that takes into consideration the required circulation space to operate the entry door.

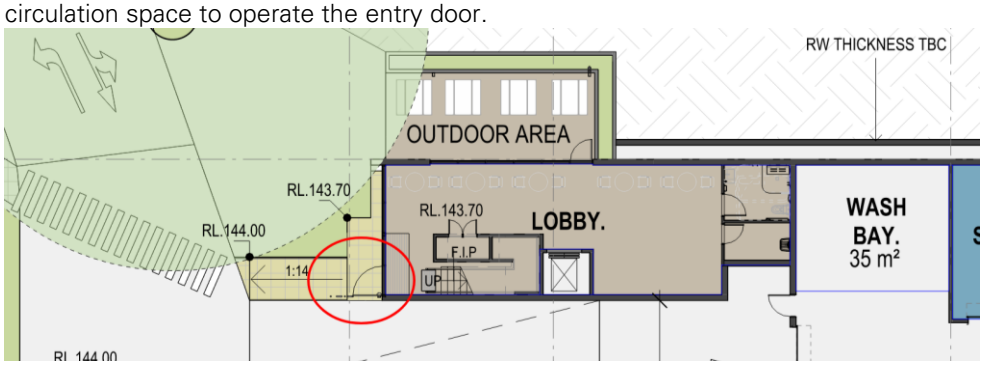


Fig. 10 – Ground Level Main Entry Door Circulation Space at top of ramp

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.

Based on our assessment of the current design, the following Performance Solutions from an Accredited Access Consultant will be required at CC Application stage to address the following non-compliances with D4D3:

	+ A lift is not proposed to provide access to the Level 1 & 2 Office Mezzanines, and the aggregate floor area of each level exceeds 200m^2. + The self-storage units are proposed to be accessed via roller shutters in lieu of doors with compliant door hardware.
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:** Consideration to an exemption to the Warehouse areas may be appropriate on this project. Confirmation from Goodman/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. 140 carparking spaces have been provided within the development which requires 2 accessible carparking spaces. Four (4x) accessible carparking spaces have been provided and thus 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:** Signage will be required to identify exits, accessible facilities, an ambulant accessible facility and the paths to accessible pedestrian entries (where required).
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 building is required to be served by a fire hydrant system, designed in accordance with AS 2419.1-2021. 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. A Performance Solution is likely to be required for the location of the hydrant booster if it is to be positioned adjacent to the Pump Room within the site rather than at the Aquatic Drive entry.
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). Details demonstrating compliance are to be provided at the CC application Stage. Consideration may be given to a Fire Engineered Performance Solution for the use of 50m hose reel lengths to achieve coverage.
E1D4 & 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 fire compartments of the Class 7b parts of the building are greater 2,000m^2 and 12,000m^3 sprinkler protection will be required at address the Occupancy of Excessive Hazard provisions of the E1D13(2)(b). Details demonstrating compliance are required to be submitted with the CC application. In accordance with Clause 4.14.1 of AS 2118.1-2017, 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.
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:** The proposed development exceeds 18,000m² and as such is required to be provided with a Fire Control Centre that complies with Clauses S19C2 to S19C5 of BCA Spec. 19. Details demonstrating compliance are to be included on the CC Application plans showing the location of the Fire Control Centre.
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: Where Hazardous/Dangerous Goods are proposed to be stored/utilised in significant quantities, details will be required from both the Fire Systems designers and the Fire Engineer, confirming that the proposed firefighting systems have the required capability to address the additional hazard.
E2D3	**General Requirements:** The design of air handling systems that are not part of a smoke hazard management system that recycle air from one fire compartment to another within a building, must operate in a manner to prevent the spread of smoke between compartments must incorporate appropriate measures to do so, including smoke dampers, and automatic shutdown facilities. **Comment:** Mechanical Engineer to note – details demonstrating compliance are to be submitted at the CC Application stage.
E2D9	**Smoke Hazard Management:** One of the following smoke hazard management systems are to be installed in the building and will be required throughout: + An Automatic Fire Detection and Alarm System and Building Occupant Warning System complying with Specification 20, or + A zone pressurisation system between vertically separated fire compartments in accordance with AS 1668.1, or + Stairway Pressurisation complying with AS 1668.1 – 2015, or + A Sprinkler System complying with Specification 17. **Comment:** The proposed building is required to be sprinkler protected (in accordance with Spec. 17) and as such complies with the requirements of E2D9.
E2D12	**Class 7a Carpark Buildings - Smoke Hazard Management:** A Class 7a Carpark provided with a mechanical exhaust / ventilation system per AS 1668.2-2012, must comply with the requirements of Clause 5.5 of AS 1668.1-2015 (Carpark Ventilation Systems). **Comments:** Mechanical Engineer to note – details demonstrating compliance are to be submitted at the CC Application stage.
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:** Where Hazardous/Dangerous Goods are proposed to be stored/utilised in significant quantities, details will be required from the Mechanical Engineer and Fire Engineer on the required smoke hazard management measures to address the hazards.
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 lift within the building serves storeys above an effective height of 12m and as such is 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.
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.
E3D9, E3D11, E3D12	**Fire Service Controls and Recall Switches:** These clauses set out requirements for fire service control and recall switches for lifts serving storeys above an effective height of 12m. **Comment:** Lift contractor to note.
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.
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.

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:** The Level 2 hardstand is to comply with the requirements of this clause. Details of how weatherproofing will be achieved through the F3P1 performance solution report. 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:** The Level 2 hardstand is to comply with the requirements of this clause. Details of how weatherproofing will be achieved through the F3P1 performance solution report. 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 the be provided together with the F3P1 Performance Solution Report, demonstrating compliance, prior to the issued 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.
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 D218 above.
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:** Based on the population numbers calculated under D2D18, the required sanitary facilities for the proposed development have been calculated as per Tables F4D4a and F4D4b and are as follows: + All warehouse units are found to not have more than 10 people and thus can rely on the singular accessible WCs which have been provided to each unit. + Goodman to confirm staff population for self-storage lobby on Ground Floor. The plans indicate an accessible WC which allows a maximum of 10 staff to use this bathroom. Noter: Due to the nature of the self-storage units it is not considered necessary to provide customer sanitary facilities.
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 disabled facilities and the standard, AS 1428.1, are set out in sub-clauses (a) to (i). **Comments:** The accessible sanitary facilities provided throughout the building are considered to adequately achieve compliance with the requirements of F4D6 and F4D7, subject to the provision of an even number of left and right-handed mirror facilities per F4D5(g). Design certification confirming compliance with the requirements of AS1428.1-2009 shall be provided with the documentation submitted with the CC application. We note that there are no separate stand-along Male & Female Sanitary facilities (only unisex accessible) and as such dedicated Ambulant compliant facilities will not be required.
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 from the Mechanical Engineer.
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.
F6D11	**Carparks:** Mechanical Ventilation that is compliant with AS 1668.2012 or a system Natural Ventilation complying with Section 4 of AS 1668.4-2012 is required in all designated carpark areas within a building. **Comment:** Mechanical Ventilation Systems are required in the driveway and carparking areas on the Ground Level and Level 1. Design certification to be submitted at CC Application.

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 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 self-storage, and warehouse building at 14 Aquatic Drive, Frenchs Forest 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 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, 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

Note: "Special areas" are defined as follows:

+ *Class 5:*

Table 4: Fire-Resisting Construction – Type A Construction

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

Notes:

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.

Table 5: 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 Suppression Systems	BCA 2022 Spec. 17 AS 2118.1 – 2017 or AS 2118.6 – 2012	✓
Building Occupant Warning System activated by the Sprinkler System	BCA 2022 Spec. 17 Clause 8 and / or Clause 3.22 of AS 1670.1 – 2018	✓
Emergency Lighting	BCA 2022 Clause E4D2 & E4D4 AS 2293.1 – 2018	✓
Exit Signs	BCA 2022 Clauses E4D5, NSW E4D6 & E4D8 AS 2293.1 – 2018	✓
Fire Control Centres	BCA 2022 Spec 19	✓
Fire Dampers	BCA 2022 Clause C4D15 AS 1668.1 – 2015 & AS 1682.1 & 2 – 2015 Manufacturer's Specification	✓
Fire Doors	BCA 2022 Clauses C3D13, C3D14, C4D3, C4D5, C4D6, C4D7, C4D8 & C4D12 AS 1905.1 – 2015 and Manufacturer's Specification	✓
Fire Hose Reels	BCA 2022 Clause E1D3 AS 2441 – 2005	✓
Fire Hydrant Systems	BCA 2022 Clause E1D2 AS 2419.1 – 2021	✓
Fire Seals	BCA 2022 Clause C4D15, AS 1530.4 – 2014 & AS 4072.1 – 2014 and Manufacturer's Specification	✓
Fire Shutters	BCA 2022 Spec. 12 AS 1905.2 – 2005	✓
Lightweight Construction - TBC	BCA 2022 Clause C2D9 AS 1530.4 – 2014 and Manufacturer's Specification	✓
Mechanical Air Handling Systems (Automatic Shutdown)	BCA 2022 Clause E2D3 AS/NZS 1668.1 – 2015 & AS 1668.2 – 2012	✓
Portable Fire Extinguishers	BCA 2022 Clause E1D14	✓

	AS 2444 – 2001	
Smoke and/or Heat Detectors (auto shutdown or smoke exhaust)	BCA 2022 Spec. 20 Clause S20C6 AS 1668.1 – 2015	✓
Wall-Wetting Sprinklers - TBC	BCA 2022 Clause C4D5 AS 2118.2 – 2010	✓
Warning & Operational Signs	BCA 2022 Clause C4D7, D3D28, D4D7, & E4D4 AS 1905.1 – 2015 EP&A (DCFS) Regulations 2021 Section 108	✓
Fire Engineered Performance Solutions	TBC	✓