

BCA Assessment Report

Burrows Road – Multi-Level Industrial Facility
1-3 Burrows Road, Alexandria

Prepared for:

Goodman Property Services (Aus)
Pty Ltd

Revision 11

11th December 2024

Reference: 220279



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)	+ Description
1.	C2D10 / C2D14	External Wall Disclosure Statement to be provided by a registered architect, façade engineer, or suitably qualified design manager to confirm the non-combustibility of external wall components. In particular, details of signage proposed to the external wall to be provided to confirm if a Performance Solution is required.
2.	C3D13 / C3D14	Details of any proposed fire separation of equipment & electrical infrastructure to be provided at CC application stage.
3.	D2D5 / D2D6	Locations of egress paths and exit doors have been assumed for the purposes of this assessment as indicatively nominated on the marked-up plans. These travel distances can be revised once the location of these are nominated on the plans.
4.	D2D8, D2D18 & F4D4	The proposed population of the building is required to be confirmed by the tenant to confirm the assessment of the overall required egress widths and sanitary facility requirements.
5.	D2D12 / D2D14	Where occupant discharge paths pass within 6m of the external wall of the building (measured perpendicular to the path of travel), the external wall is to be protected with 60-minute construction and openings protected in accordance with C4D5.
6.	D3D14 – D3D22	Detailed plans of all stairways, balustrades, and handrails within the proposed development must be provided for review at CC stage.
7.	Part D4, F4D4	A separate report will be required from an Access Consultant to outline the applicable requirements for the building. Details regarding the possible application of D4D5 to the various Class 7b portions of the building will be required.
8.	D4D5	Details of any proposed Clause D4D5 exemptions to be provided.
9.	D4D6	Details of accessible carparking to be provided noting 1 accessible carpark will be required for every 100 carparks and no accessible parking spaces are currently shown on the plans.
10.	E1D17/E2 D21	Where applicable, details of additional fire services & smoke hazard management requirements to address additional hazard resulting from any proposed dangerous goods storage/use are to be provided at CC application stage.
11.	F4D4	Sanitary facilities for Warehouse 1-2 require further review upon confirmation of population numbers (refer to comments below).
12.	F6D6	Confirmation to be provided if the Warehouses are to be mechanically or naturally ventilated. Further details required confirming compliance.
13.	Section J	A Section J compliance report or JV3 report will be required at CC application stage for the building.

B. Matters requiring fire safety engineered performance solutions:

+	BCA (DtS)	+ Description
1.	C2D2 / Spec 5	Performance Solution is proposed to address the following: + Omit fire rating of secondary beams supporting Level 1 and mezzanine floor. + Omit fire rating to steel columns incorporated in the external wall. + Omit fire rating to steel columns situated directly below the warehouse roof.
2.	C2D14	Performance Solution proposed to permit illuminated tenant and wayfinding signage fitted to external walls of the building that contain combustible elements.
3.	C3D4 / C3D5	Perimeter Vehicular Access is non-compliant with C3D5 for the proposed Large Isolated Building. Refer to mark up in the clause for non-compliance locations.
4.	C4D15	Performance Solution proposed to permit service penetrations to achieve a 2-hour FRL in lieu of a 4-hour FRL.
5.	D2D4	Non-fire-isolated stairs are proposed within both the North and South Core which connect more than 3 storeys in a sprinkler protected building.
6.	D2D5, D2D6	The current plans indicate the building will contain extended exit travel distances and distances between alternative exits which will be subject to a fire engineered Performance Solution. Refer to the clause for further information. Note: The locations of egress paths and exit doors have been assumed for the purposes of this assessment. These travel distances can be revised once these locations are finalised on the plans. Fire Engineer to also confirm feasibility regarding extended travel distance from the southern plant mezzanine.
7.	D2D12	Performance Solution is required for the following: + Permit the western fire stair to discharge within the confines of the building/underneath the hardstand above and is not open for one third of its perimeter. + Permit fire-isolated stairs to open directly into SOUs which do not occupy the whole storey
8.	E1D2	Performance Solution may be required for the following aspects of the Fire Hydrant System (further details required to confirm) – + Design of the Hydrant System per AS 2419.1-2021 Appendix C as the volume of the building is in excess of 108,000 m³. + Hydrants that are located outside the building but are not open to the sky (e.g. underneath awnings) are to be treated as external for the purposes of coverage. + Hydrant booster location not in accordance with AS 2419.1 – 2021. + Additional internal fire hydrants are proposed remote from the exits.
9.	E1D3	Performance Solution required to permit fire hose reels with a hose length of 50m to serve the Class 7b areas of the building in lieu of a 36m hose length.
10.	E1D12	It is understood the sprinkler booster is proposed opposite the sprinkler tank at the Burrows Road entrance. This location will require a Performance Solution as it is not located at the principal pedestrian entrance, and noting it is not orientated towards the road.

11.	E2D2-E2D20	A Performance Solution is proposed to rationalise the following requirements associated with the automatic smoke exhaust system: + Omission of automatic smoke exhaust from offices, dispatch hardstand, end-of-trip, warehouse amenities and other ancillary areas. + Rationalised smoke exhaust extraction rate of 10,000L/s in lieu of the rates specified in BCA Spec 21. + Permit warehouse to form a single smoke reservoir in lieu of 2,000m² smoke reservoirs.
12.	Part E4	Performance Solution proposed to permit directional exit signs 4m above the finished floor level in lieu of 2.7m as required by AS 2293.1 – 2018.

C. Other matters requiring performance solutions:

+	BCA (DtS)	+ Description
1.	Part D4	Access report to be provided to determine if any access-related Performance Solutions are required.
2.	F3P1	A Performance Solution report is to be provided by the Architect / Façade Engineer to demonstrate how the external walls are designed to prevent the penetration of water into the building.
3.	Section J	A JV3 Report may be required to be provided with the CC application for the building.

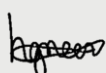
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+ Report Status

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+ Status	Updated Assessment – SSDA Architectural Drawings		
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+ Revision	7	+ Date	06.04.2023
+ Status	Updated Assessment – Conversion to BCA 2022		
+ Revision	8	+ Date	28.04.2023
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+ Status	Updated Assessment – SSDA MOD Application		
+ Revision	10	+ Date	09.10.2024
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1.0 Description of Project

1.1 Proposal

bm+g have been commissioned by Goodman Property Services to undertake an assessment of the proposed industrial facility at 1-3 Burrows Road, Alexandria against the relevant provisions of the Building Code of Australia 2022 (BCA).



Source: SBA / Welsh + Major (DA01 Rev.2)

The project is as follows:

- + Demolition of all existing structures and buildings on site.
- + Tree removal both on site and for a limited number of trees in the public domain and adjoining lot.
- + Site remediation, and establishment works, including minor excavation / bulk earthworks.
- + Design, construction and operation of a two-storey warehouse and distribution centre building with ancillary offices for each warehouse tenancy, including:
 - o Approximately 34,051 sqm of total GFA, comprising:
 - 30,389 sqm of warehouse and distribution centre GFA.
 - 3,353 sqm of GFA for ancillary office space; and
 - End of trip facilities on the ground floor of 309 sqm GFA.
 - o Maximum building height of RL 29.70 (maximum 25m from existing ground level).
 - o Operation 24 hours per day seven days a week.
- + Provision of on-grade car parking access off Burrows Road which provides 145 tenant and visitor car parking spaces (including 8 accessible bays), 14 motorcycle spaces, and bicycle parking and end-of-trip facilities (including 66 bicycle parking spaces, showers, lockers and change rooms for occupants).
- + New crossings to Burrows Road for truck and car access.
- + Single fire and utilities services ingress crossing off Canal Road.
- + Site landscaping works totalling approximately 6,856sqm (or 19.8% of the site), including:
 - o Two x 6 -metre landscaped setback areas to both the Burrows Road and Canal Road site frontages.
 - o 3,829 swm or 11.0% deep soil landscaping.
 - o 3,072 sqm or 8.7% of permeable paving; and

- 5,450 sqm or 15.7% tree canopy coverage.
- + Provision of building / business identification and wayfinding signage.

1.2 Aim

The aim of this report is to:

- + Undertake an assessment of the proposed development against the deemed-to-satisfy provisions of the BCA.
- + Identify matters that require plan amendments in order to achieve compliance with the BCA.
- + Identify matters that are to be required to be addressed by Performance Solutions.
- + Enable the certifying authority to satisfy its statutory obligations under Clause 19(1) of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021.
- + To satisfy Item 4 within the SEARS letter dated 7 February 2022 for SSD-335962232.

1.3 Project Team

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

- + **Hayden Green** – Report Preparation | Building Surveyor – Assistant
- + **Dean Goldsmith** – Peer Review (Director) | Building Surveyor-Unrestricted

1.4 Referenced Documentation

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

- + Building Code of Australia 2022 (BCA)
- + The Guide to the Building Code of Australia 2022
- + Architectural Plans prepared by SBA Architects numbered:

+ Drawing No.	+ Revision	+ Date
DA000	4	13.09.2024
DA001	2	13.09.2024
DA002	2	13.09.2024
DA003	2	13.09.2024
DA101	8	08.10.2024
DA102	3	13.09.2024
DA200	8	13.09.2024
DA201	8	03.10.2024
DA202	7	13.09.2024

+ Drawing No.	+ Revision	+ Date
DA223	2	29.07.2024
DA300	8	13.09.2024
DA301	6	13.09.2024
DA320	5	13.09.2024
DA330	2	13.09.2024
DA331	2	13.09.2024
DA701	6	03.10.2024
SK800	2	11.07.2024
SK801	1	02.07.2024

DA203	9	03.10.2024
DA204	7	13.09.2024
DA220	5	03.10.2024
DA221	5	03.10.2024
DA222	3	30.07.2024

SK802	1	02.07.2024
SK803	2	11.07.2024
SK805	1	02.07.2024
SK910	1	29.07.2024

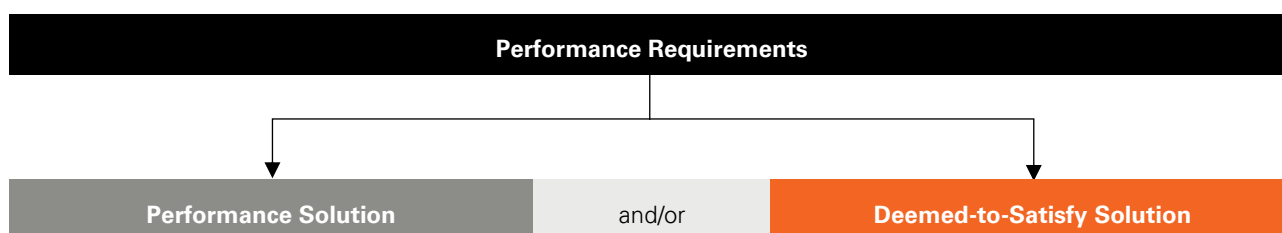
1.5 Regulatory Framework

- + Pursuant to Section 19(1) of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021 all new building work must comply with the current BCA however the existing features of an existing building need not comply with the BCA unless upgrade is required by other clauses of the legislation.
- + Pursuant to Section 60 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021, if a Certifier becomes aware of any significant fire safety issues in the process of determining a CC, there are two options:
 - Address the significant fire safety issue in the proposed development, or
 - Notify Council of the significant fire safety issue (noting Council may potentially then issue a Fire Safety Order on the building compelling the building owner to rectify the issue).
- + The 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.

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:

- + No assessment has been undertaken with respect to the Disability Discrimination Act 1992 (DDA). The building owner needs be satisfied that their obligations under the DDA have been addressed.
- + Please note that whilst the BCA specifies a minimum standard of compliance with AS1428 (Parts 1-3) and Part D4 of the BCA for access and facilities for people with disabilities, compliance with such requirements may not necessarily preclude the possibility of a future complaint made under the DDA 1992. The DDA is a complaint-based legislation and is presently not identified by the State Building Codes and Regulations. In this regard the building owner should be satisfied that their obligations under the DDA have been addressed.
- + No assessment has been undertaken with respect to SEPP (Housing) 2021. It is understood that suitably qualified consultants will be engaged to determine the relevance of any Council planning requirements or SEPP requirements and provided detailed assessment reports where applicable.

Where relevant to this development, it is assumed that these assessments will be undertaken by others.

- + This report does not consider BCA Part G5 (Volume 1) which makes provision for construction of buildings in bushfire-prone areas, therefore no assessment has been undertaken in consideration of RFS, Planning for Bushfire

Protection and AS 3959. Where Part G is applicable to the site, then it is required that assessment / due diligence is undertaken by a specialist consultant to verify compliance.

- + This report does not constitute a detailed assessment of the architectural documentation against the requirements of Section J. It is understood that a suitably qualified consultant will be engaged to determine compliance in this regard.
- + **bm+g** has not undertaken an assessment of any Performance Solution Reports at the time of the preparation of this report.
- + The Report does not address matters in relation to the following Local Government Act and Regulations:
 - Work Health and Safety Act and Regulations.
 - Work Cover Authority requirements.
 - Water, drainage, gas, telecommunications and electricity supply authority requirements.
 - Disability Discrimination Act 1992.
- + **bm+g** cannot guarantee acceptance of this report by Local Council, Fire & Rescue NSW or other approval authorities.
- + No part of this document may be reproduced in any form or by any means without written permission from **bm+g**. This report is based solely on client instructions, and therefore should not be used by any third party without prior knowledge of such instructions.

1.9 Report Terminology

Building Code of Australia – Document published on behalf of the Australian Building Codes Board. The BCA is a uniform set of technical provisions for the design and construction of buildings and other structures throughout Australia and is adopted in NSW under the provisions of the Environmental Planning & Assessment Act & Regulation.

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

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

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

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

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

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

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

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

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

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

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

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

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

and expressed in that order.

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

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

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

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

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

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

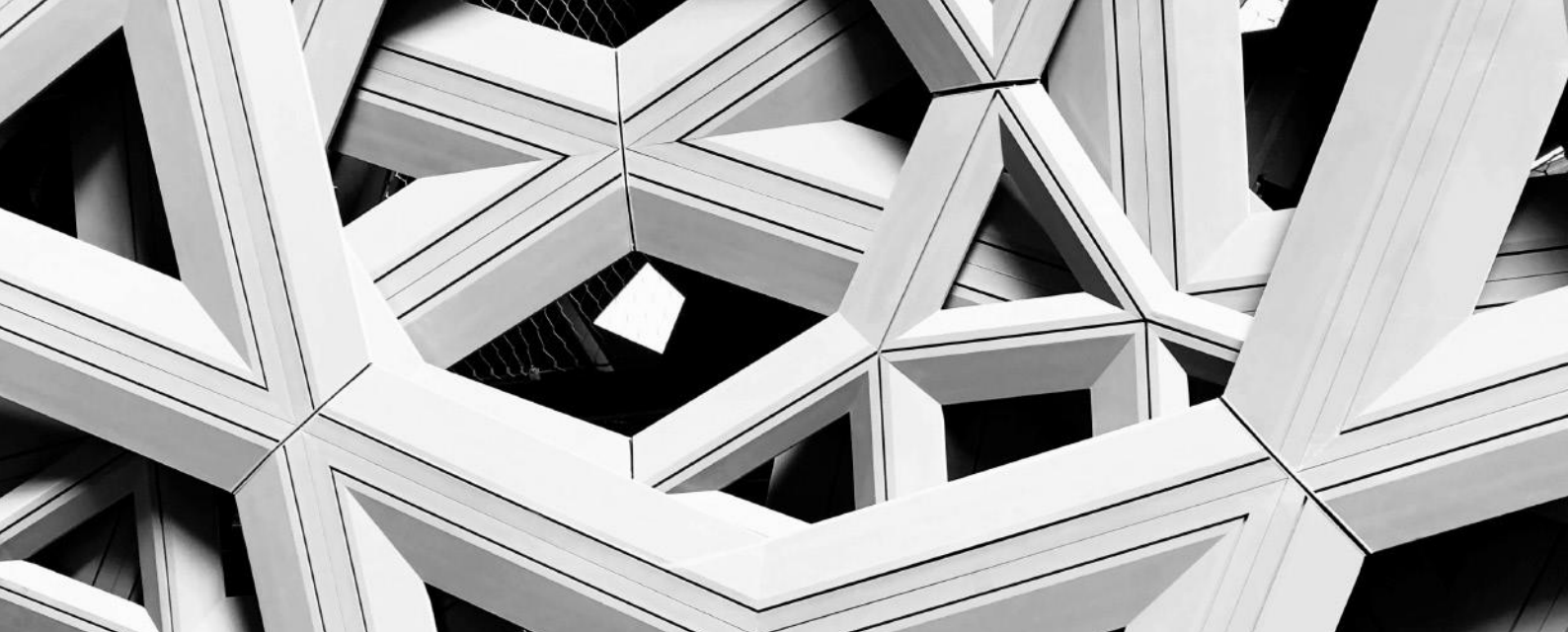
Performance-Based Design Brief – Means the process and the associated report that defines the scope of work for the performance-based analysis, the technical basis for analysis, and the criteria for acceptance of any relevant Performance Solution as agreed by stakeholders.

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

Compliance with the Performance Requirements can only be achieved by-

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

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



2.0 Building Characteristics

2.1 Proposed Development

The proposed development consists of the construction of one (1) new warehouse building containing two (2) warehouse levels and two (2) office mezzanine levels with associated parking, hardstands, and light duty pavements.

The building is classified as follows:

+ BCA Classifications:	Class 5 (Office) Class 7a (Carpark) Class 7b (Warehouse)
+ Rise in storeys:	Four (4) Note: In a Class 7 building, storeys containing an average internal height greater than 6m are counted as 2 storeys.
+ Storeys Contained:	Four (4)
+ Type of Construction:	Type A Construction
+ Importance Level (Structural)	Level 2 (TBC by structural engineer)
+ Sprinkler Protected Throughout	Yes
+ Effective Height	18.7m (RL3.200 – RL21.900)
+ Floor Area	~53,765m ² (TBC by architect)
+ Volume	>108,000m ³ (TBC by architect)
+ Climate Zone	Zone 5

2.2 Fire Compartment Floor Area Limitations

Maximum size of fire compartment/atria permissible in Table C3D3 is:

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

Note: Table C3D3 is not applicable to a Large Isolated Building.

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	Side or rear boundary	>3m
East	Side or rear boundary	>3m
West	Far side of the road	>6m
South	Far side of the road	>6m

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

3.0 BCA Assessment

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

3.1 Section B – Structure

Part B1

- + New building works are to comply with the structural provisions of the BCA 2022 and the following referenced standards including:
 - o AS 1170.0 – 2002 General Principles
 - o AS 1170.1 – 2002, including certification for balustrades (dead and live loads)
 - o AS 1170.2 – 2021, Wind loads
 - o AS 1170.4 – 2007, Earthquake loads
 - o AS 3700 – 2018, Masonry Structures
 - o AS 3600 – 2018, Concrete Structures
 - o AS 4100 – 1998, Steel Structures and/or
 - o AS 4600 – 2018, Cold formed steel Structures
 - o AS 2159 – 2009, Piling Design & Installation
 - o AS 1720 – 2010, Design of Timber Structure
 - o AS/NZS 1664.1 & 2 – 1997, Aluminium Structures
 - o AS 2047 – 2014, Windows and External Glazed Doors in buildings
 - o AS 1288 – 2006, Glass in buildings
 - o AS 3660.1 – 2014, Termite control (or confirmation no primary building elements are timber).
- + Design certification will also be required from the Architect and Services Consultants to confirm compliance with Section 8 of AS1170.4-2007 with regard to the design of non-structural parts and components and their fastenings for horizontal and vertical earthquake forces and inter-storey drift.
- + In accordance with B1D3(a)(iv) a notional additional load of not less than 0.15kPa to support the addition of solar photovoltaic panels is to be applied to the roof structure.
- + The Importance Level provisions of BCA (Section B) are to be acknowledged by the Structural Engineer and addressed to the degree necessary.

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

3.2 Section C – Fire Resistance

C2D2 & Spec 5

Type of Construction Required: The building is required to comply with the requirements of Type A Construction as stated within Specification 5. The table below provides an overview of the requirements of each. Refer to Table 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) need not achieve an FRL if >3m from a boundary or separate building per Table S5C11b.
+	All external load-bearing columns must achieve an FRL per Table S5C11c.
+	Fire Walls must achieve an FRL per Table S5C11d.
+	All Services risers, lift and stair shafts, must achieve an FRL per Table S5C11e & f.
+	Floors and all internal load-bearing elements (columns, beams, walls, etc.) must achieve an FRL per Table S5C11g.
+	Roof must be of non-combustible construction per S5C15 and combustible Roof Lights must not exceed 20% of the roof area).
+	Internal columns on the floor immediately below the roof need only achieve a 1hr FRL per S5C17.

Comment: Type A Construction applies to the building – refer to Specification 5 for fire-resistance levels required.

Fire engineered Performance Solution is proposed to address the following:

- +- Omit fire rating of secondary beams supporting Level 1 and mezzanine floor.
- +- Omit fire rating to steel columns incorporated in the external wall.
- +- Omit fire rating to steel columns situated directly below the warehouse roof.

C2D3

Calculation of Rise in Storeys: The rise in storeys of a building is the sum of the greatest number of storeys at any part of the external walls of the building and any storeys within the roof space calculated in accordance with the requirements set out in this clause.

Comment: The proposed building has a rise in storeys of four (4). This is on the understanding the internal heights underneath the offices is <6m. Note the warehouse parts containing internal heights greater than 6m are considered as two (2) rise in storeys.

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:

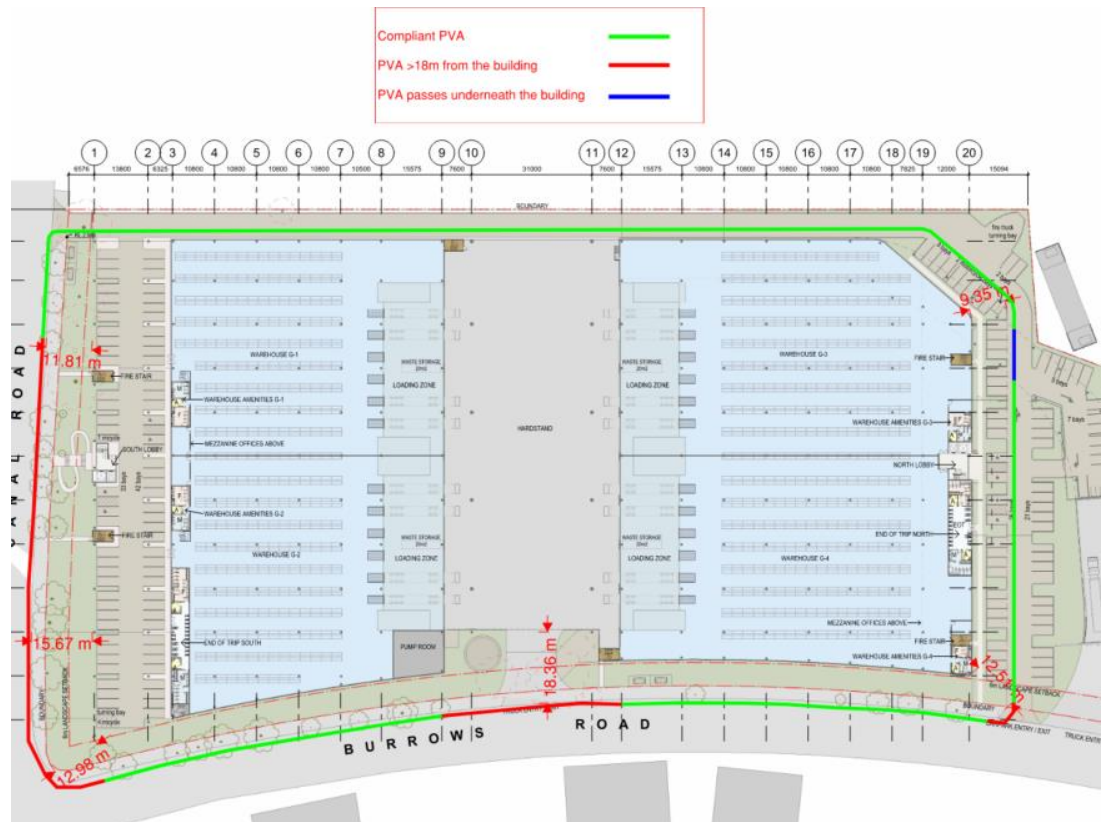
- +- Any external wall claddings.
- +- Any framing or integral formwork systems. I.e. timber framing, sacrificial formwork, etc.
- +- Any external linings or trims. I.e. external UPVC window linings, timber window blades, etc.
- +- Any sarking or insulation contained within the wall assembly.

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: Further details of external walls to be provided at CC stage to confirm compliance. External Wall Disclosure Statement to be provided by a registered architect, façade engineer, or suitably qualified design manager to confirm the non-combustibility of all external wall components.

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 will be required at CC application stage and installation certification (including relevant test reports confirming the critical radiant flux of floor linings and group number of wall and ceiling linings) required at OC 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: Further details of external wall attachments to be provided at CC stage to confirm compliance. External Wall Disclosure Statement to be provided to confirm the non-combustibility of external wall attachments. Performance Solution proposed to permit illuminated tenant and wayfinding signage fitted to external walls of the building that contain combustible elements.
C3D3	General Floor Area and Volume Limitations: The building is to achieve fire compartment sizes not in excess of the DtS requirements of this clause. Comment: The proposed building is a Class 7b Large Isolated Building and as such the provisions for maximum fire compartment size under Table C3D3 do not apply. Refer to comments under C3D4 & C3D5 below in relation to the Large Isolated Building provisions applicable to the proposed development.
C3D4	Large Isolated Buildings: A Large Isolated Building that contains Class 5, and 7 parts, is required to be— + Protected throughout with a sprinkler system complying with Specification 17; and + Provided with a perimeter vehicular access complying with C3D5(2). Comment: The building is required to be sprinkler protected and provided with a 6m wide perimeter vehicular accessway in accordance with Clause C3D5(2) throughout (see notes below). Note 1: Any proposed gates are to achieve no less than 6m unobstructed width or the reduced width will need to be included in the above Performance Solution. Note 2: The driveways providing vehicular perimeter access must be designed with adequate loading capacities, gradients and swept paths to accommodate a fire truck, having regard to the FRNSW Fire Safety Guideline – Access for Fire Brigade Vehicles and Firefighters. Note 3: The Trial Design for the Fire Engineered Performance Solution must take into consideration and detail the proposed security access to the site and how this may impact on FRNSW vehicular access.
C3D5	Requirements for Open Spaces and Vehicular Access: Open space and vehicular access required by C3D4 must comply with the requirements of sub-clauses (a) & (b) of this Part whereby they must be 6m wide within 18m of the external walls of the building and of a suitable bearing capacity and unobstructed height to permit the operation and passage of FRNSW vehicles. Comment: Refer to markup below of approximate locations where non-compliant perimeter vehicular access is provided and will be subject to a fire engineered Performance Solution. Location of the edge of the road and line of building over is to be clearly nominated to confirm these distances.



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: The building is protected with a sprinkler system and so the requirements of this clause are not applicable.

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: Details of any proposed fire walls to be provided at CC 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.

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

Comment: The higher FRL's applicable to the Class 7b part may apply throughout unless fire separated from the adjacent Class 5 areas.

C3D11

Separation of Lift Shafts: The lift shafts are required to achieve a 2-hour FRL as they connect greater than 3 storeys.

Comment: Note.

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: Note.
C3D13	Separation of Equipment: Equipment as listed below must be separated from the remainder of the building with construction that achieves an FRL of 120/120/120 (or that required by Spec. 5, whichever is greater) and doorways being self-closing -/120/30 fire doors: + Lift motors and lift control panels; or + Emergency generators used to sustain emergency equipment operating in emergency mode; or + Central smoke control plant; or + Boilers; or + A battery or battery system installed in the building that has a voltage of 12 volts or more and a storage capacity of 200kWh or more. Confirmation is required as to whether any of the above will be applicable to this development. Comment: Where appropriate, details demonstrating compliance are to be provided at CC application.
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 than -/120/30 Electrical conductors which supply a substation or main switchboard sustaining emergency equipment operating in the emergency mode — + Have a classification in accordance with AS/NZS 3013 of not less than— - o If located in a position that could be subject to damage by motor vehicles — WS53W; or - o Otherwise — WS52W; or + Be enclosed or otherwise protected by construction having an FRL of not less than 120/120/120. Where emergency equipment is required in a building, all switchboards in the electrical installation, which sustain the electricity supply to the emergency equipment switchgear must be separated from the non-emergency equipment switchgear by metal partitions designed to minimise the spread of fault from the non-emergency equipment switchgear. Note: For the purpose of this clause, 'emergency equipment' includes (but is not limited to) fire pumps, air handling systems for smoke control, emergency lifts, control & indicating equipment, EWIS. Comment: Where appropriate, details demonstrating compliance are to be provided at CC application.
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: The building is not within 3m of an allotment boundary or 6m of the far side of the road.
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: Fire compartmentation plan to be provided as applicable to confirm compliance.

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: Fire compartmentation plan to be provided as applicable to confirm compliance.
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: Details to be provided as applicable to confirm compliance.
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: Note.
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: Note.
C4D13	Openings in Floors and Ceilings for Services: This clause applies to the floors and ceilings in buildings of Types A, B & C Construction and sets out the methods required to limit the spread of fire through openings in these building elements, required to resist the spread of fire. Comment: Note.
C4D15	Openings for Services Installations: All opening for services installations in building elements required to be fire-resisting with respect to integrity and insulation must be protected in accordance with the provisions of Spec. 13. Comment: Note. Performance Solution proposed to permit service penetrations to achieve a 2-hour FRL in lieu of a 4-hour FRL.
Spec. 5	Fire Resisting Construction: The new building works are required to comply with the requirements detailed under Specification 5. The below details the FRL requirements for building elements for each proposed warehouse. Comment: The proposed building will be subject to compliance with the Type A Construction provisions of tables S5C11a to S5C11g as summarised below: + All loadbearing external walls & loadbearing elements incorporated in or attached to an external wall are to achieve the required FRL per Table S5C11a. + All non-loadbearing parts of external walls are to achieve the required FRL per Table S4C11b. + All loadbearing external columns are to achieve the required FRL per Table S5C11c. + Any Fire Walls that are proposed to separate different classifications per C3D9 above are to achieve the required FRL per Table S5C11d for Class 7b. + Lift shafts are to achieve the required FRL per Table S5C11e (for loadbearing lift shafts) and S5C11f (for non-loadbearing lift shafts). + Fire stair shafts are to achieve the required FRL per Table S5C11e (for loadbearing fire stairs) and S5C11f (for non-loadbearing fire stairs).

	+ Services shafts are to achieve the required FRL per Table S5C11e (for loadbearing service shafts) and S5C11f (for non-loadbearing service shafts). + All loadbearing internal columns, walls, beams and trusses throughout are to achieve the required FRL per Table S5C11/ S5C11f. + Floors are to achieve the required FRL per Table S5C11f and not less than the FRL of the classification with the highest FRLs in the storey below. + The roof is required to achieve the required FRL per Table S5C11g or the coverings are required to be non-combustible in accordance with Clause S5C15. + 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. 8	Performance of External Walls in Fire: This specification contains measures to minimise in the event of fire the likelihood of external walls collapsing outwards as complete panels and the likelihood of panels separating from supporting members. Comment: Structural Design certification and details demonstrating compliance are required to be provided at CC Application Stage for the proposed warehouse.

3.3 Section D – Access and Egress

D2D3	Number of Exits Required: The building is required to be provided with one (1) exit from each storey. Comment: Compliance readily achievable. Location of exits from southern plant space to be nominated.
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: Non-fire-isolated stairs are proposed within both the North and South Core which connect more than 3 storeys in a sprinkler protected building. This may be able to be addressed under a Performance Solution – fire engineer to advise feasibility. Note these stairs have been assessed as non-fire-isolated for the purposes of our assessment.
D2D5	Exit Travel Distances: 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 building is currently subject to the following extended travel distances which will need to be addressed under a fire engineered Performance Solution: + Ground Level – – Warehouse G-1 – 79m to an exit in lieu of 40m – Warehouse G-2 – 75m to an exit in lieu of 40m – Warehouse G-3 – 74m to an exit in lieu of 40m

- Warehouse G-4 – 64m to an exit in lieu of 40m
- Hardstand – 60m to an exit in lieu of 40m
- Carpark EOT – 23m to a point of choice in lieu of 20m
52m to an exit in lieu of 40m
- + Ground Level Mezzanine –
 - North Plant space – 23m to an exit in lieu of 20m
 - South Plant mezzanine – 36m to an exit in lieu of 20m (FE to confirm feasibility)
- + Level 1 –
 - Warehouse 1-1 – 65m to an exit in lieu of 40m
 - Warehouse 1-2 – 87m to an exit in lieu of 40m
 - Warehouse 1-3 – 80m to an exit in lieu of 40m
 - Warehouse 1-4 – 62m to an exit in lieu of 40m
 - Hardstand – 61m to an exit in lieu of 40m

Locations of egress paths and exit doors have been assumed for the purposes of this assessment as indicatively nominated on the marked-up plans. These travel distances can be revised once these locations are finalised on the plans. Fire Engineer to also confirm feasibility regarding extended travel distance from the southern plant mezzanine.

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 building is currently subject to the following extended distances between alternative exits which will need to be addressed under a fire engineered Performance Solution:

- + Ground Level –
 - Warehouse G-1 – 157m between exits in lieu of 60m
 - Warehouse G-2 – 149m between exits in lieu of 60m
 - Warehouse G-3 – 147m between exits in lieu of 60m
 - Warehouse G-4 – 136m between exits in lieu of 60m
 - Hardstand – 102m between exits in lieu of 60m
- + Level 1 –
 - Warehouse 1-1 – 130m between exits in lieu of 60m
 - Warehouse 1-2 – 174m between exits in lieu of 60m
 - Warehouse 1-3 – 159m between exits in lieu of 60m
 - Warehouse 1-4 – 123m between exits in lieu of 60m
 - Hardstand – 124m between exits in lieu of 60m

Locations of egress paths and exit doors have been assumed for the purposes of this assessment as indicatively nominated on the marked-up plans. These travel distances can be revised once these locations are nominated on the plans.

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: 1m clear egress paths to be nominated on the plans, including around racking. Refer to below population calculations based on population densities listed in Table D2D18. These numbers may be considered excessive and will be subject to further assessment and confirmation by Goodman at the CC application stage.

+ Area	+ Occupant Numbers	+ Required Agg. Egress Width	+ Complies
Ground Level – Warehouse & Carpark	350	3m	Yes
Ground Level Mezzanine – Office	154	2m	Yes
Level 1 – Warehouse	318	3m	Yes
Level 1 Mezzanine – Office	195	2m	Yes

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 office core stairs serving the building have not been assessed as fire-isolated stairs as per Clause D2D4.

Where occupant discharge paths pass within 6m of the external wall of the building (measured perpendicular to the path of travel), the external wall is to be protected with 60-minute construction. This will be confirmed once the location of the exit and egress paths are nominated throughout.

Fire engineered Performance Solution will also be required for the following:

- + Permit the western fire stair to discharge within the confines of the building/underneath the hardstand above and is not open for one third of its perimeter.
- + Permit fire-isolated stairs to open directly into SOUs which do not occupy the whole storey

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 paths from the non-fire-isolated stairs to be nominated. Noting compliance with this clause will be confirmed once the egress paths from the southern carpark to the road are nominated.

D2D15

Discharge From Exits: Requires that an exit must not be blocked at the point of discharge.

Comment: Bollards around exit doors and external fire hydrants prone to vehicle damage to be nominated on CC application plans.

D2D18

Number of Persons Accommodated: Clause D2D18 and Table D2D18 are used to calculate the anticipated number of people in particular types of buildings so that minimum exit widths and the required number of sanitary and other facilities can be calculated. This clause and table are not to be used for non-BCA purposes.

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

Warehouse Number of Persons Accommodated as Per Table D2D18					
	Area	Population		Area	Population
Ground Level – Warehouse G-1	Warehouse	65	Level 1 – Warehouse 1-1	Warehouse	83
Ground Level – Warehouse G-2	Warehouse	65	Level 1 – Warehouse 1-2	Warehouse	93
Ground Level – Warehouse G-3	Warehouse	79	Level 1 – Warehouse 1-3	Warehouse	63
Ground Level – Warehouse G-4	Warehouse	76	Level 1 – Warehouse 1-4	Warehouse	79
Ground Level Total = 285 people			Level 1 Total = 318 people		
Office Number of Persons Accommodated as Per Table D2D18					
	Area	Population		Area	Population
Ground Level Mezz – Office G-1	Office	46	Level 1 Mezz – Office 1-1	Office	43
Ground Level Mezz – Office G-2	Office	44	Level 1 Mezz – Office 1-2	Office	58
Ground Level Mezz – Office G-3	Office	21	Level 1 Mezz – Office 1-3	Office	32
Ground Level Mezz – Office G-4	Office	43	Level 1 Mezz – Office 1-4	Office	62
Ground Level Mezzanine Total = 154 people			Level 1 Mezzanine Total = 195 people		
Carpark Number of Persons Accommodated as Per Table D2D18					
	Area		Population		
Ground Level Carpark	Carpark		65		

- + Note 1 – The population for the warehouse and offices have been calculated based on a population density of 30m²/person and 10m²/person respectively.
- + Note 2 – 50% of the floor area of the warehouse's have been attributed to racking and circulation, and so have not been considered in usable floor area.
- + Note 3 – The Ground Level and Level 1 hardstands are assumed to be for circulation or the like and so no population has been attributed to these spaces.

D3D3

Fire-isolated Stairways & Ramps: This clause includes requirements on the materials a fire-isolated stair and ramp are to be constructed of to protect the structural integrity of the shaft.

Comment: Compliance readily achievable.

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: Compliance readily achievable.
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: Cupboards containing electrical distribution boards or comms equipment that are in a path of travel to an exit are to be smoke sealed and enclosed in non-combustible construction.
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: Details of proposed cupboards underneath stairs to be provided at CC stage.
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: All stairs are to have dimensions that comply with Table D3D14, have solid risers, and are to have contrasting nosing strips and slip resistant surfaces throughout in accordance with Clause 11 of AS 1428.1 – 2009. Details of all proposed stairs to be provided at CC stage.
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 any horizontal or near horizontal members between 150mm and 760mm above the floor must not facilitate climbing. + Balustrades must be constructed to not permit a sphere of 125mm diameter to pass through, except where located within fire isolated exit, 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: Further details to be provided at CC application stage.

D2D22	Handrails: This Clause sets out the requirements regarding the location, spacing and extent of handrails required to be installed in buildings. Comment: Further details to be provided at CC application stage. Note the recessed loading dock ramps, where used for egress, will require handrails.
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: Further details to be provided at CC application stage.
D3D24	Doorways and Doors: This clause applies to all doorways that form an exit and refers to the types of doors that cannot be used in buildings of prescribed uses, the use of power operated doors and the force required to operate sliding doors. If an exit door is power operated, it must be opened manually under a force of not more than 110N if there is a malfunction or failure to the power source; and it must open automatically if there is a power failure to the door and upon the activation of a fire or smoke alarm anywhere in the fire compartment served by the door. Comment: Further details to be provided at CC application stage.
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: Exit doors, including into fire stairs, are to swing in the direction of egress. Note that further details are to be provided at CC application stage.
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. Comment: Compliant access is required from the allotment boundary to the main entry of each tenancy in the building, from accessible parking spaces in the building and throughout all areas in accordance with AS 1428.1-2009. Refer to D4D4 and D4D5 below and Access Consultant's Report.
D4D4	Parts of the Building to be Accessible: This clause specifies the requirements for accessways within buildings which must be accessible. In accordance with Clause D4D4; ramps & stairways must comply with Clause 10 & 11 of AS 1428.1-2009 (respectively), whilst fire isolated stairs must comply with Clauses 11.1(f) & (g) of AS 1428.1-2009 only. In addition, any storey with a floor area more than 200m² must be served by a passenger lift that is designed to comply with Part 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: As indicated above, the proposed building is required to be accessible throughout in accordance with AS1428.1-2009 – Refer to Access Consultant Report for further details.
D4D5	Exemptions: This clause provides details on buildings or parts of buildings not required to be accessible under the BCA where providing access would be inappropriate because of the nature of the area/use or the tasks undertaken. Comment: Consideration to an exemption for the warehouse areas (on health & safety basis) may be appropriate on this project. Confirmation to be provided by the tenant 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 these areas.

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: Details of accessible carparking to be provided noting 1 accessible carpark will be required for every 100 carparks and no accessible parking spaces are currently shown on the plans.
D4D7	Signage: Braille and tactile signage must be provided to required accessible sanitary facilities, spaces with hearing augmentation, ambulant sanitary facilities, pedestrian entrances that are not accessible, and to each door required by Clause E4D5 to be provided with an exit sign. The latter is to state EXIT and state the level e.g. LEVEL 1. Comment: Architect to note.
D4D9	Tactile Indicators: This clause provides for the installation of tactile indicators in buildings required to be accessible and must be provided to warn people who are blind or have a vision impairment that they are approaching a stairway, escalator, passenger conveyor, ramp, overhead obstruction or an accessway meeting a vehicular way, except for areas exempted by D4D5. Comment: Stairways and ramps serving the buildings, any overhead projections less than 2m in height, and any paths of travel leading directly to a driveway or roadway without a kerb will need to be provided with Tactile Ground Surface Indicators in accordance with AS 1428.1 – 2009.
D4D12	Ramps: Ramps may be used as part of an accessway where there is a change of level and must comply with the requirements set out in AS1428.1. Comment: Architect to note.
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 for 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: Design and certification of fire hydrant system to be provided by suitably qualified design consultant at CC stage. Note that Performance Solutions may be required for the following aspects of the Fire Hydrant System (further details required to confirm) – + Design of the Hydrant System per AS 2419.1-2021 Appendix C as the volume of the building is in excess of 108,000 m³. + Hydrants that are located outside the building but are not open to the sky (e.g. underneath awnings) are to be treated as external for the purposes of coverage. + Hydrant booster location not in accordance with AS 2419.1 – 2021. + Additional internal fire hydrants are proposed remote from the exits. Details of egress path from fire pump room to also be provided noting egress path is required to the road without passing back underneath the building.
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E1D3	Fire Hose Reels: A fire hose reel system must be provided to serve a building where one or more internal fire hydrants are installed or in a building with a floor area greater than 500m². This clause requires that the fire hose reel system must be installed in accordance with AS 2441 and sets out the detail for location and uses of fire hose reels. Comment: Fire hose reels are required to serve the Class 7 areas including the warehouse and undercroft carpark. Design and certification of fire hose reel system to be provided by suitably qualified design consultant at CC stage. Performance Solution required to permit fire hose reels with a hose length of 50m to serve the Class 7b areas of the building in lieu of a 36m hose length.
NSW E1D4, E1D12	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: Design and certification of sprinkler system to be provided by suitably qualified design consultant at CC stage. It is understood the sprinkler booster is proposed opposite the sprinkler tank at the Burrows Road entrance. This location will require a Performance Solution as it is not located at the principal pedestrian entrance, and noting it is not orientated towards the road.
E1D14	Portable Fire Extinguishers: To be provided and designed in accordance with Sections 1, 2 and 3 of AS 2444-2001. Comment: Fire extinguishers are to be installed in the proposed building in accordance with the requirements of this clause, including to Class 5 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: A fire control centre is to be provided within the building as it has a floor area greater than 18,000m². Location of the fire control centre is to be nominated on the plans at the CC stage.
E1D17	Provisions for Special Hazards: Suitable additional provisions must be made for fire-fighting if unique problems could arise due to; + The nature or quantity of materials stored, displayed or used in a building on the allotment; or + The location of the building in relation to a water supply for firefighting purposed. Comment: Details of the proposed additional firefighting systems are required to address the additional hazard resulting from the proposed storage or use of the building.
E2D3	General Requirements: Class 2 to 9 buildings must comply with the provisions of this Clause to remove smoke during a fire, to control the operation of air handling systems and to prevent the spread of smoke between compartments. Buildings must comply with the provisions of E2D4, as applicable to Class 2 to 9 buildings. It deals with the design and construction of air handling systems that are part of a smoke hazard management system and air handling system that are not part of a smoke hazard management system. The details relating to the installation and operation of the systems are set out in Specifications 20, 21, & 22.

E2D4, E2D9, E2D12	Smoke Hazard Management: The following smoke hazard management systems are to be installed to the building and will be required throughout: + Air pressurisation system to any fire-isolated corridor greater than 60m in length. Comment: Note.
E2D10	Buildings <25m Effective Height – Large Isolated Buildings: This clause sets out the requirements for smoke hazard management systems for large isolated buildings with an effective height of less than 25m. This clause requires the following systems to be provided – + An Automatic Fire Detection and Alarm System and Building Occupant Warning System complying with AS 1670.1 – 2018 and S20C4 (5m grid) S20C6 (10m grid) (to activate the smoke exhaust system). + An automatic smoke exhaust system in accordance with Specification 21 Comment: Design and certification of systems to be provided by suitably qualified design consultant at CC stage. A Performance Solution is proposed to rationalise the following requirements associated with the automatic smoke exhaust system: + Omission of automatic smoke exhaust from offices, dispatch hardstand, end-of-trip, warehouse amenities and other ancillary areas. + Rationalised smoke exhaust extraction rate of 10,000L/s in lieu of the rates specified in BCA Spec 21. + Permit warehouse to form a single smoke reservoir in lieu of 2,000m² smoke reservoirs.
E2D21	Provisions for Special Hazards: Additional smoke hazard management measures may be necessary due to the— + Special characteristics of the building; or + Special function or use of the building; or + Special type or quantity of material stored, displayed or used in a building; or + Special mix of classifications within a building or fire compartment, which are not addressed in E2D4 to E2D20. Comment: Details of the proposed additional smoke hazard management systems are required to address the additional hazard resulting from the proposed storage or use of the building.
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: 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: Note.
E3D7	Passenger Lift Types and Their Limitations: In an accessible building, every passenger lift must be one of the types identified in sub-clause (1) and not rely on a constant pressure device for its operation if the lift car is fully enclosed. Comment: Design and certification to be provided at CC stage from suitably qualified lift consultant.
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: 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 plans demonstrating compliance to be provided at CC stage.
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 plans demonstrating compliance to be provided at CC stage. Performance Solution proposed to permit directional exit signs 4m above the finished floor level in lieu of 2.7m as required by AS 2293.1 – 2018.

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: Design and certification to be provided by suitably qualified consultant at CC stage.
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 horizontal surfaces to be provided at CC stage.
F1D5	External Waterproofing Membranes: External waterproofing membranes are required to comply with AS 4654.1 & 2. Comment: Details to be provided at CC stage.
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: Details required at CC stage to confirm compliance.
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: Details required at CC stage to confirm compliance.
F1D8	Subfloor Ventilation: The sub-floor space between the suspended floor of a building and the ground must be in accordance with sub-clauses (a) to (g). This clause specifies the minimum sub-floor ventilation openings and the height of sub-floor timbers above the ground level for the three climatic zones set out in Table F1D8 of the BCA. Comment: No subfloor areas are proposed.

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: Details required at CC stage to confirm compliance.
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: Details required at CC stage to confirm compliance.
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 required at CC stage to confirm compliance.
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 required at CC stage to confirm compliance.
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: Note.

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.

+ Sanitary Facility Calculations – Warehouse							
	Closet Pans		Urinals		Washbasins		Complies
	Required	Proposed	Required	Proposed	Required	Proposed	Yes/No
+ Warehouse G-1 (65 employees)							
Male	2	4	2	2	2	3	Yes
Female	3	5	-	-	2	4	Yes
+ Warehouse G-2 (65 employees)							
Male	2	4	2	2	2	3	Yes
Female	3	5	-	-	2	4	Yes
+ Warehouse G-3 (79 employees)							
Male	2	2	2	2	2	3	Yes
Female	3	4	-	-	2	3	Yes
+ Warehouse G-4 (76 employees)							
Male	2	2	2	2	2	3	Yes
Female	3	4	-	-	2	3	Yes
+ Warehouse 1-1 (83 employees)							
Male	3	3	2	2	3	4	Yes
Female	3	5	-	-	3	4	Yes
+ Warehouse 1-2 (93 employees)							
Male	3	3	2	1	3	3	No
Female	4	4	-	-	3	3	Yes
+ Warehouse 1-3 (63 employees)							
Male	2	2	2	2	2	3	Yes
Female	3	4	-	-	2	3	Yes
+ Warehouse 1-4 (79 employees)							
Male	2	2	2	2	2	3	Yes
Female	3	4	-	-	2	3	Yes

+ Sanitary Facility Calculations – Offices							
	Closet Pans		Urinals		Washbasins		Complies
	Required	Proposed	Required	Proposed	Required	Proposed	Yes/No
+ Office G-1 (46 employees)							
Male	2	4	1	2	1	4	Yes
Female	2	6	-	-	1	4	Yes
+ Office G-2 (44 employees)							
Male	2	4	1	2	1	4	Yes
Female	2	6	-	-	1	4	Yes
+ Office G-3 (21 employees)							
Male	1	3	1	2	1	4	Yes
Female	1	5	-	-	1	4	Yes
+ Office G-4 (43 employees)							
Male	2	3	1	2	1	4	Yes
Female	2	5	-	-	1	4	Yes
+ Office 1-1 (43 employees)							
Male	2	2	1	2	1	3	Yes
Female	2	4	-	-	1	3	Yes
+ Office 1-2 (58 employees)							
Male	2	2	2	2	1	3	Yes
Female	2	4	-	-	1	3	Yes
+ Office 1-3 (32 employees)							
Male	1	3	1	1	1	3	Yes
Female	2	4	-	-	1	3	Yes
+ Office 1-4 (62 employees)							
Male	2	2	2	2	2	3	Yes
Female	3	4	-	-	2	3	Yes

Insufficient sanitary facilities have been provided for Warehouse 1-2. Updated plans required or the tenant is required to confirm population numbers so these calculations may be revised.

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

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

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

F4D5

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

Comments: Details of accessible sanitary facilities to be provided at CC stage to confirm compliance.

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 required at CC stage demonstrating compliance.
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 <u>Class 9b building</u> 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: Details, including design certification, to be provided at CC stage. Elevations showing ventilation openings are required to confirm compliance where the warehouse is naturally ventilated.

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 building. 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 industrial facility against the Deemed-to-Satisfy provisions of the Building Code of Australia 2022.

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

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



Appendices

+ Appendix 1 – References Tables

Table 1: Non-Combustibility Requirements

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

Table 2: Fire Hazard Properties Requirements – Floor Linings

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

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

+ Table S7C4 of Specification 7 – Wall and Ceiling Lining Materials (Materials Groups Permitted)				
Class of Building	Fire-isolated Exits and Fire Control Rooms	Public Corridors	Special Areas	Other Areas
Class 5, 7m, Sprinklered	Walls: 1 Ceilings: 1	Walls: 1, 2, 3 Ceilings: 1, 2, 3	Walls: 1, 2, 3 Ceilings: 1, 2, 3	Walls: 1, 2, 3 Ceilings: 1, 2, 3

Table 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 Fire Safety Engineering Review.

Table 5: Fire Safety Schedule

+ Statutory Fire Safety Measure	+ Design/Installation Standard	+ Existing	+ Proposed
Access Panels, Doors & Hoppers	BCA 2022 Clause C4D14 AS 1530.4 – 2014 Manufacturer's Specifications		✓
Alarm Signalling Equipment	AS 1670.3 – 2018		✓
Automatic Fail-Safe Devices	BCA 2022 Clause D3D26		✓
Automatic Fire Detection & Alarm System	BCA 2022 Spec. 20 & 23 AS 1670.1 – 2018		✓
Automatic Fire Suppression Systems	BCA 2022 Spec. 17 & BCA Spec 18 AS 2118.1 – 2017 or AS 2118.4, 6 – 2012		✓
Building Occupant Warning System activated by the Sprinkler System	BCA 2022 Spec. 17 Clause 8 and / or Clause 3.22 of AS 1670.1 – 2018		✓
Emergency Lighting	BCA 2022 Clause E4D2 & E4D4 AS 2293.1 – 2018		✓
Exit Signs	BCA 2022 Clauses E4D5, NSW E4D6 & E4D8 AS 2293.1 – 2018		✓
Fire Control Centres / Rooms	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		✓

Lightweight Construction	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		✓
Perimeter Vehicular Access	BCA 2022 Clause C3D5		✓
Portable Fire Extinguishers	BCA 2022 Clause E1D14 AS 2444 – 2001		✓
Required Exit Doors (Power Operated)	BCA 2022 Clause D3D24(2)		✓
Smoke Hazard Management Systems + Smoke Exhaust	BCA 2022 Part E2 AS/NZS 1668.1 – 2015		✓
Smoke and/or Heat Detectors (auto shutdown or smoke exhaust)	BCA 2022 Spec. 20 Clause S20C6 AS 1668.1 – 2015		✓
Stand-by Power Systems	BCA 2022 Spec 31 AS 3000 – 2018		✓
Wall-Wetting Sprinklers	BCA 2022 Clause C4D5 AS 2118.2 – 2010		✓