



BLACKETT
MAGUIRE+
GOLDSMITH

BCA ASSESSMENT REPORT

Stage 3 SSD, Sydney Business Park, Marsden Park

Prepared For:
Sydney Business Park

Revision 1

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REPORT STATUS				
DATE	REVISION	STATUS	AUTHOR	REVIEWED
20.07.2020	0	Preliminary Assessment – Draft Report for Client & Consultant Review	DG	TJ
23.07.2020	0	Final Assessment	DG	TJ

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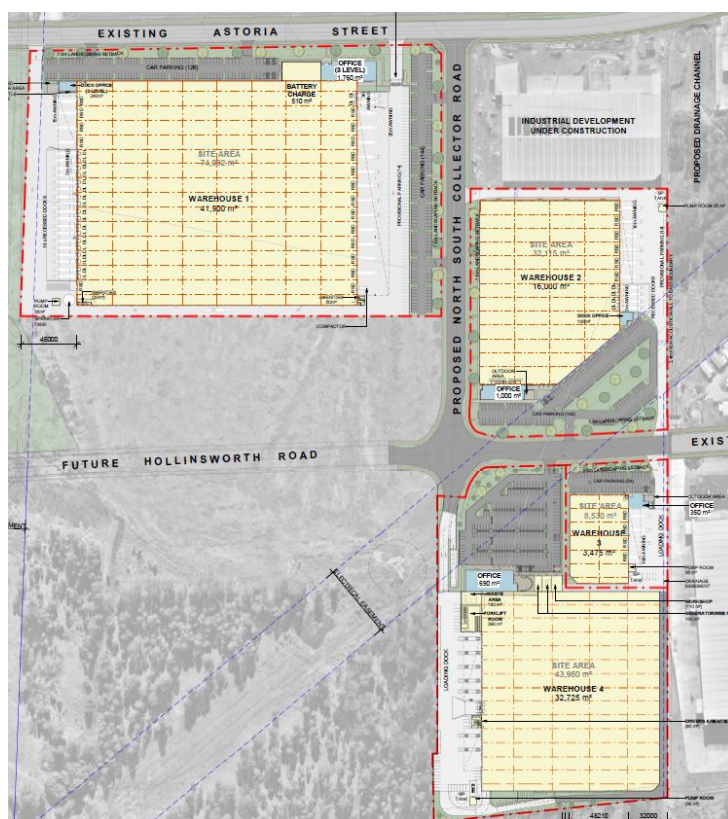


1.0 INTRODUCTION

1.1 BACKGROUND / PROPOSAL

Blackett Maguire + Goldsmith Pty Ltd (BM+G) have been commissioned by Sydney Business Park to undertake a preliminary review of the proposed Stage 3 Masterplan development, against the deemed-to-satisfy (DTS) provisions of the Building Code of Australia 2019 Amendment 1 (BCA) pursuant to the provisions of Clause 145 of the *Environmental Planning & Assessment Regulation 2000* and Clause 18 of the *Building Professionals Regulation 2007*.

The proposed development involves the construction of four (4) warehouse buildings, each with ancillary office, carparking and hardstand areas. It is noted that the design of each building includes some unique elements as follows: Warehouse 1 includes a 3 storey office, 2 storey dock office, warehouse racking and battery charge enclosure; Warehouse 2 includes a 2 storey office and single storey dock office; Warehouse 3 includes a 2 storey office and limited perimeter vehicular access; and Warehouse 4 includes a single storey office, warehouse mezzanine, basement warehouse, automated sortation & storage equipment, and forklift charging enclosure.



Source: Reid Campbell Drawing No. A0003 'Stage 3 Master Plan' issue J dated 21.07.2020

1.2 AIM

The aim of this report is to:

- Undertake an assessment of the proposed warehouse facility against the Deemed-to-Satisfy (DtS) Provisions of the BCA 2019 Amendment 1.
- Identify any BCA compliance issues that require resolution/attention for the proposed development at the CC Application stage.

1.3 PROJECT TEAM

The following BM+G Team Members have contributed to this Report:

- Dean Goldsmith (Director)
- Tom Johnston (Building Surveyor)
- Sabine Blakeman (Cadet Building Surveyor)



1.4 DOCUMENTATION

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

- BCA 2019 Amendment 1
- Guide to the BCA 2019 Amendment 1.
- Architectural Plans prepared by Reid Campbell and SBA Architects:

Drawing No.	Rev.	Date	Drawing No.	Rev.	Date
DA100	P6	16.07.2020	DA701	P3	16.07.2020
DA200	P4	16.07.2020	A0003	J	21.07.2020
DA202	P3	16.07.2020	A1001	G	10.07.2020
DA205	P5	16.07.2020	A1002	E	10.07.2020
DA206	P5	16.07.2020	A1101	E	10.07.2020
DA207	P3	16.07.2020	A1102	D	10.07.2020
DA208	P3	16.07.2020	A1103	E	10.07.2020
DA301	P3	16.07.2020	A2001	C	10.07.2020
DA401	P3	16.07.2020	A2102	C	10.07.2020
DA402	P3	16.07.2020	A3001	C	10.07.2020
DA500	P3	16.07.2020	A3102	C	10.07.2020
DA700	P5	16.07.2020			

1.5 REGULATORY FRAMEWORK

Pursuant to clause 145 of the Environmental Planning and Assessment (EPA) Regulation 2000 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.

1.6 LIMITATIONS & EXCLUSIONS

The limitations and exclusions of this report are as follows:

- The following assessment is based upon a review of the architectural documentation.
- No assessment has been undertaken with respect to the Disability Discrimination Act (DDA) 1992. The building owner should be satisfied that their obligations under the DDA have been addressed. In this regard, however, the provisions of the DDA Access to Premises – Buildings Standards have been considered as they are generally consistent with the accessibility provisions of the BCA.
- The Report does not address matters in relation to the following:
 - Local Government Act and Regulations.
 - NSW Public Health Act 1991 and Regulations.
 - Occupational Health and Safety (OH&S) Act and Regulations.
 - Work Cover Authority requirements.
 - Water, drainage, gas, telecommunications and electricity supply authority requirements.
 - DDA 1992.
- BM+G Pty Ltd do not guarantee acceptance of this report by Local Council, FRNSW 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 Pty Ltd. This report is based solely on client instructions, and therefore, should not be used by any third party without prior knowledge of such instructions.
- This report is intended to cover the key issues associated with the masterplan of the site and as such, separate BCA assessment reports will be required to be undertaken for each building individually.

1.7 TERMINOLOGY

+ Alternative Solution / Performance Solution

A Building Solution which complies with the Performance Requirements other than by reason of satisfying the DtS Provisions.



- + **Building Code of Australia (BCA)**

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 New South Wales (NSW) under the provisions of the EPA Act and Regulation. Building regulatory legislation stipulates that compliance with the BCA Performance Requirements must be attained and hence this reveals BCA's performance-based format.
- + **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 C1.1 and Specification C1.1, except as allowed for—

 - (i) certain Class 2, 3 or 9c buildings in C1.5; and
 - (ii) a Class 4 part of a building located on the top storey in C1.3(b); and
 - (iii) open spectator stands and indoor sports stadiums in C1.7.

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

Is an area defined in BCA Figure A1.1 and in Table A1.1 for specific locations, having energy efficiency provisions based on a range of similar climatic characteristics.
- + **Deemed to Satisfy Provisions (DtS)**

Provisions which are deemed to satisfy the Performance Requirements.
- + **Effective Height**

The height to 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) from the floor of the lowest storey providing direct egress to a road or open space.
- + **Fire Resistance Level (FRL)**

The grading periods in minutes for the following criteria-

 - (a) structural adequacy; and
 - (b) integrity; and
 - (c) insulation,

and expressed in that order.
- + **Fire Source Feature (FSF)**

The far boundary of a road which adjoins 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 01 May 2011 by the Council of Australian Governments. The BCA Volume One (Class 2 to 9 Buildings) is now referenced as the National Construction Code Series Volume One — BCA.
- + **Occupation Certificate**

Building Occupation Approval issued by the Principal Certifying Authority pursuant to Part 6 of the EPA Act 1979.
- + **Open Space**

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 Requirements of the BCA**

A Building Solution will comply with the BCA if it satisfies the Performance Requirements. A Performance requirement states the level of performance that a Building Solution must meet. Compliance with the Performance Requirements can only be achieved by-

 - (a) complying with the DtS Provisions; or
 - (b) formulating an Performance Solution which-
 - (i) complies with the Performance Requirements; or
 - (ii) is shown to be at least equivalent to the DtS Provisions; or
 - (c) a combination of [\(a\)](#) and [\(b\)](#).



+ Sole Occupancy Unit (SOU)

A room or other part of a building for occupation by one or joint owner, lessee, tenant, or other occupier to the exclusion of any other owner, lessee, tenant, or other occupier and includes a dwelling.



2.0 BUILDING CHARACTERISTICS

2.1 BUILDING CLASSIFICATION

The following table presents a summary of relevant building classification items of the proposed warehouse development (x4 buildings):

BCA Class:	All Warehouses (1-4) – Class 5 (Office) & Class 7b (Warehouse)
Rise in Storeys:	Warehouse 1 – Three (3) Warehouse 2 – Two (2) Warehouse 3 – Two (2) Warehouse 4 – Three (3)
Effective Height:	Warehouse 1 – Less than 12m (TBC - Architect to confirm RL of Level 2 Office) Warehouse 2 – Less than 12m Warehouse 3 – Less than 12m Warehouse 4 – Greater than 12m (TBC - Architect to confirm RL of proposed warehouse mezzanine)
Type of Construction:	Warehouse 1 & 4 – Type B Construction (Large Isolated Building) Warehouse 2 & 3 – Type C Construction (Large Isolated Building)
Climate Zone:	Zone 6
Maximum Floor Area:	Warehouse Buildings 1 & 4 – Large Isolated Building – Greater than 18,000m ² Warehouse Building 2 & 3 – Large Isolated Building – Less than 18,000m ² .
Maximum Volume:	Warehouse Buildings 1, 2 & 4 – Large Isolated Building – Greater than 108,000m ³ Warehouse Building 3 – Large Isolated Building – Less than 108,000m ³

3.0 BCA ASSESSMENT

BCA DEEMED-TO-SATISFY COMPLIANCE ISSUES

The following comments have been made in relation to the relevant BCA provisions relating to the compliance issues associated with the proposed industrial estate.

3.1 SECTION B – STRUCTURE

PART B1 – STRUCTURAL PROVISIONS

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

- AS 1170.0 – 2002 General Principles
- AS 1170.1 – 2002, including certification for balustrades (dead and live loads)
- AS 1170.2 – 2011, Wind loads
- AS 1170.4 – 2007, Earthquake loads
- AS 3700 – 2018, Masonry Structures
- AS 3600 – 2018, Concrete Structures
- AS 4100 – 1998, Steel Structures and/or
- AS 4600 – 2018, Cold formed steel Structures.
- AS 2159 – 2009, Piling Design & Installation
- AS 1720 – 2010, Design of Timber Structure
- AS/NZS 1664.1 & 2 – 1997, Aluminium Structures
- AS 2047 – 2014, Windows and External Glazed Doors in buildings.



- AS 1288 – 2006, Glass in buildings.
- AS 3660.1 – 2014, Termite control (or confirmation no primary building elements are timber).

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

3.2 SECTION C – FIRE RESISTANCE

FIRE RESISTANCE AND STABILITY

+ Clause C1.1 – Type of Construction Required

The minimum type of fire-resisting construction of a building must be that specified in Table C1.1 and Specification C1.1 except as allowed for in this clause.

Comments: Type B Construction applies to Warehouse 1 & 4 as both have a rise in storeys of three (3); whilst Type C Construction applies to Warehouse 2 & 3 as both have a rise in storeys of two (2) – see notes under Spec. C1.1 below regarding applicable FRL's from both Table 4 & 5 applicable to the Type B & Type C Construction buildings.

+ Clause C1.2 – 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.

Comments: The proposed warehouse buildings each has a rise in storeys as follows:

- Warehouse 1 & 4 – Three (3)
- Warehouse 2 & 3 – Two (2)

+ Clause C1.9 – Non-Combustible Building Elements

In a building of Type A or Type B Construction a number of building elements are required to be non-combustible including external walls & common walls (including elements incorporated in them including the façade coverings, framing and insulation), lift pit flooring and floor framing, services risers, load-bearing internal walls and fire walls. Note: C1.9(e) provides a list of materials that may be deemed as non-combustible without the need for verification testing per AS 1530.1.

Comments: The external walls of Warehouses 1 & 4 (including all elements incorporated in the walls) are required to be of non-combustible construction in accordance with C1.9 (a) & (b). See additional comments under C1.14 below regarding internal and external attachments to the external walls.

Note: Particular attention is drawn in this regard to the proposed use of any other combustible insulated cladding, internal insulation products or translucent wall cladding, that will require the provision of a Performance Solution from the Fire Engineer or substitution for a compliant a product.

+ Clause C1.10 – Fire Hazard Properties

The fire hazard properties of the following linings, materials and assemblies in a Class 2 to 9 building must comply with **Specification C1.10** and the additional requirements of the **NSW Provisions** of the Code.

Comments: Design certification 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.

+ Clause C1.14 – 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 (b) – (m).

Comments: The elements in the facades of Warehouses 1 & 4 will require review to confirm that the proposed internal & external attachments to the external walls achieve compliance with the non-combustibility requirements of this clause – see comments under C1.9 also.

Note: Particular attention is drawn in this regard to any external signage, dock covers and awnings/sunshades etc. attached to the external walls which must be non-combustible or comply with C1.14(h) and C1.14(i) respectively.



COMPARTMENTATION AND SEPARATION

+ Clause C2.2 – General Floor Area and Volume Limitations

Sets out the parameters for the area and volume of Class 5, 6, 7, 8 & 9 buildings as required by sub-clauses (a), (b) & (c). Note: Table C2.2 maximum size of Fire Compartments or Atriums.

Comments: All proposed buildings are Class 5 & 7b Large Isolated Buildings of Type B/C Construction (as identified under Clause C1.1 above) – as such the provisions for maximum fire compartment size under Table C2.2 do not apply. Refer to comments under C2.3 & C2.4 below in relation to the Large Isolated Building provisions applicable to the proposed development.

+ Clause C2.3 – Large Isolated Buildings

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

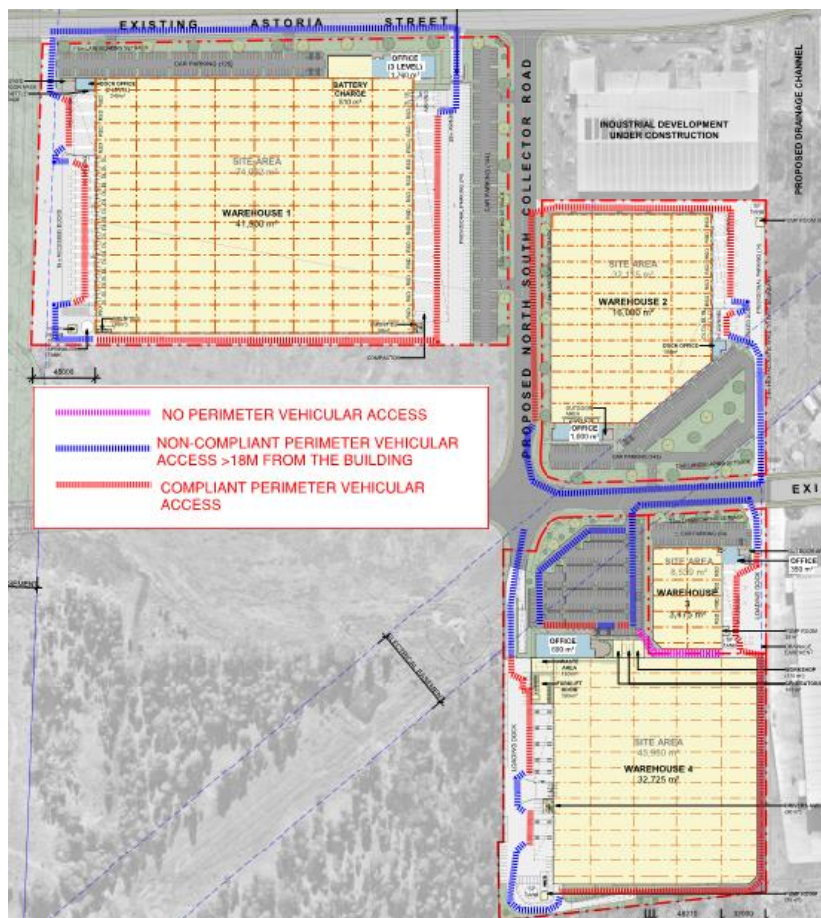
- (i) protected throughout with a sprinkler system complying with Specification E1.5; and
- (ii) provided with a perimeter vehicular access complying with C2.4(b).

Comments: The proposed warehouse buildings are required to be sprinkler protected throughout, and provided with perimeter vehicular access in accordance with Clause C2.4 (see notes below) pursuant to their Large Isolated Building designation under this clause.

+ Clause C2.4 – Requirements for Open Spaces & Vehicular Access

An open space and vehicular access required by C2.3 must comply with the requirements of sub-clauses (a) & (b) of this Part as that they must be 6m wide within 18m of the building and of a suitable bearing capacity and unobstructed height to permit the operation and passage of F&RNSW vehicles.

Comments: The proposed warehouse buildings do not comply with the provisions of C2.4 and thus the following non-compliance areas are identified on the site plan that are required to be addressed as an Performance Solution by the Fire Safety Engineer for each building:





Note 1: The driveways providing vehicular perimeter access must be designed with adequate loading capacities to withstand a fire truck and the gradients of the ramps should take into consideration to the FRNSW Policy 4 Vehicular Access Guideline.

Note 2: If the perimeter access paths are reduced to less than 6m in width to accommodate pedestrian egress paths per Clause D1.10 below, this will need to be documented in the Performance Solution.

+ Clause C2.8 – Separation of Classifications in the Same Storey

If a building has parts of different classifications located alongside one another in the same storey, each element must have the required higher FRL for the classifications concerned.

Alternatively, the parts must be separated by a fire wall having the higher FRL for the classifications prescribed in Table 3 or 4 of BCA Specification C1.1 (for Type a or Type B Construction), or Table 5 for Type C Construction.

Comments: Where there are multiple classifications in the same storey of each building, the building elements on those storeys are required to achieve the higher FRL prescribed in Table 4 of Specification C1.1 for the different classifications in accordance with C2.8(a). In this regard, the building elements on Ground Floor of each building are required to achieve the FRL requirements of the Class 7b Warehouse.

+ Clause C2.12 – Separation of Equipment

Equipment as listed below must be separated from the remainder of the building with construction complying with (d), if that equipment comprises –

- (i) Lift motors and lift control panels; or
- (ii) Emergency generators used to sustain emergency equipment operating in the emergency mode; or
- (iii) Central smoke control plant; or
- (iv) Boilers; or
- (v) A battery system installed in the building that has a voltage of 12 volts or more and a storage capacity of 200kWh or more.

Note: Separating construction must have –

- (A) an FRL as required by Specification C1.1, but not less than 120/120/120; and
- (B) any doorway protected with a self-closing fire door having an FRL of not less than -/120/30.

Comments: Where appropriate, details demonstrating compliance are to be included in the CC Application plans for each building.

+ Clause C2.13 – Electricity Supply System

(a) An electricity substation, main switchboard which sustains emergency equipment operating in the emergency mode, located within a building must –

- (i) Be separated from any other part of the building by construction having an FRL of not less than 120/120/120; and
- (ii) Having any doorway in that construction protected with a self-closing fire door having an FRL of not less than -/120/30
- (i) Be separated from any other part of the building by construction having an FRL of not less than -/120/30.
- (ii) Have any doorway in that construction protected with a self-closing fire door having an FRL of not less than -/120/30.

(b) Electrical conductors located within a building that supply

Note: Where emergency equipment is required in a building, all switchboards in the electrical installation, which sustain the electricity supply to the emergency equipment switchgear is separated from the non-emergency equipment switchgear by metal partitions designed to minimise the spread of fault from the non-emergency equipment switchgear.

Comments: Where appropriate, details demonstrating compliance are to be included in the CC Application plans for each building.

PROTECTION OF OPENINGS

+ Clause 3.15 – 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. C3.15.



Comments: Note – see C2.12 & C2.13.

SPECIFICATIONS

+ Specification C1.1 – Fire Resisting Construction

The new building works are required to comply with the requirements detailed under Table 5 of Specification C1.1 for Type C Construction. In this regard the proposed building elements are required to comply.

Comments: Warehouse 1 & 4 will be subject to compliance with the Type B Construction provisions of Table 4 of Spec. C1.1 – see Appendix 1. The building elements that will need to achieve an FRL in accordance with Table 4 are as follows:

- + Loadbearing external walls & loadbearing columns incorporated in or attached to all external walls within 18m of a fire source feature – FRL between 240/240/240 and 240/60/- for the Warehouse and any Office parts depending on the distance to a fire source feature. This will apply to the external walls of Warehouse 1 within 18m of the southern allotment boundary; and the external walls of Warehouse 4 within 18m of the eastern and southern allotment boundaries and within 18m of Warehouse 3 directly to the north.*
- + External columns within 18m of a fire source feature – FRL of 240/-/-. The current plans show an external column to the awning in the SE corner of Warehouse 1 that may require compliance an FRL.*
- + Internal columns supporting warehouse and office floors (including mezzanine structure in Warehouse 4) – FRL of 240/-/-.*

Note 1: Consideration may be given to a Performance Solution from a Fire Engineer for the rationalisation of the required FRLs for Warehouse 1 & 4 noting the relevant Performance Requirements are CP1 & CP2.

Warehouse 2 & 3 will be subject to the compliance with the Type C Construction provisions of Table 5 of Spec. C1.1 – see Appendix 1. Based on the location/siting of these building there are no building elements (in addition to those identified under C2.12 & C2.13 above) that require an FRL.

+ Specification C1.10 – Fire Hazard Properties.

This Specification sets out requirements in relation to the fire hazard properties of linings, materials and assemblies in Class 2 to 9 buildings as set out in the Tables.

Comments: Refer to comments under Clause C1.10 above – certification will be required at both CC and OC Application stages.

+ Specification C1.11 – 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.

Comments: Structural Design certification and details demonstrating compliance are required to be provided at CC Application stage.

3.3 SECTION D – ACCESS & EGRESS

PROVISION FOR ESCAPE

+ Clause D1.2 – Number of Exits Required

This clause requires the provision of sufficient exits to enable safe egress in case of an emergency. D1.2 provides that all buildings must have at least one exit from each storey and sets out circumstances in which more than one exit may be required.

Note 1: Not less than 2 exits must be provided from any storey that involves a vertical rise within the building of more than 1.5m unless the floor area of the storey is not more than 50m² and the distance of travel from any point on the floor to a single exit is not more than 20m.

Comments: The number of exits provided to each building complies with the requirements of this Clause.

Note: Not less than 2 exits are required from the Basement in Warehouse 4 – compliance has been achieved. In addition, compliant personnel egress doors are required to be provided from Battery Charge area in Warehouse 1.

+ Clause D1.3 – When Fire Isolated Stairways & 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.



Comments: The exit stairs serving each building will not connect more than 3 storeys in a sprinkler protected building and as such are not required to be fire isolated in accordance with D1.3(b). Note: The enclosed stairs serving the Basement Level of Warehouse 4 have not been assessed as fire isolated exits – see further comments under D1.9 assessment.

+ **Clause D1.4 – Exit Travel Distances**

This clause specifies the permitted travel distances allowable from Class 2 to Class 9 buildings. Sub-clauses (a) to (f) specify the maximum distances to be taken into account for the various uses in each Class of building.

Comments: The exit travel distances in each of the proposed buildings are non-compliant within the Warehouse areas of all buildings and the Office of Warehouse 1. In this regard the following non-compliance issues will be required to be addressed as Performance Solutions by the Fire Safety Engineer to demonstrate compliance with Performance Requirements DP4 & EP2.2.

- Warehouse 1 – Up to 107m to the nearest exit from the central parts of the Warehouse and up to and 45m to an exit from the Level 2 outdoor terrace area of the office.
- Warehouse 2 – Up to 75m to the nearest exit from the central parts of the Warehouse.
- Warehouse 3 – Up to 23m to a single exit from the Level 1 Office.
- Warehouse 4 - Up to 95m to the nearest exit from the central parts of the Warehouse, up to 30m to a point of choice between alternative exits from the Forklift Room and up to 125m to the nearest exit and 30m to a point of choice to alternative exits from the Basement Warehouse. Note: Further details of the proposed mezzanine and warehouse automation equipment are required to complete an egress assessment of these parts of the building.

+ **Clause D1.5 – Distances Between Alternative Exits**

Exits required as alternative exits must be –

- (a) not less than 9m apart; and
- (b) not more than – 60m apart.
- (c) Located so that the alternative paths of travel do not converge such that they become less than 6m apart.

Comments: The distance between alternative exits are non-compliant within the Warehouse areas of all buildings. In this regard the following non-compliance issues will be required to be addressed as Performance Solutions by the Fire Safety Engineer to demonstrate compliance with Performance Requirements DP4 & EP2.2.

- Warehouse 1 – Up to 220m between alternative exits from the Warehouse
- Warehouse 2 – Up to 145m between alternative exits from the Warehouse.
- Warehouse 3 – Up to 78m between alternative exits from the Warehouse.
- Warehouse 4 - Up to 190m between alternative exits from the Warehouse and up to 205m between alternative exits from the Basement Warehouse. Note: Further details of the proposed mezzanine and warehouse automation equipment are required to complete an egress assessment of these parts of the building.

+ **Clause D1.6 – Dimensions of Exits**

This clause details the minimum dimensions such as height and width of paths of travel from Class 2 to 9 buildings. It also specifies the minimum dimensions of doorways from the various compartments and the width of exit doors from buildings depending on the uses and functions carried out within them.

Comments: Population numbers for the proposed buildings are required to be provided by Sydney Business Park at the CC Application stage to facilitate an assessment of the provisions of D1.6. In this regard, the number of exits provided indicates that compliance with D1.6 is readily achievable.

In addition to the above, it is to be noted that all exit paths are required to have a minimum clear width of 1m and height of 2m and 1980mm through doorway openings per D1.6(a).

+ **Clause D1.9 – Travel by Non-fire-isolated Stairways or Ramps**

Sub-clauses (a) to (f) set out the prescribed travel distances to be provided in required exits of Class 2 to 9 buildings and Class 4 parts of buildings. The sub-clauses set out the maximum distances to be taken into account for the various uses in each Class of building.

Comments: The total distance to open space from the Warehouse 4 Mezzanine & Automation Equipment and the distance from the base of the mezzanine exit stairs to open space will exceed the maximum



requirements of D1.9(c) & (e) respectively and are required to be addressed as a Performance Solution from the Fire Engineer.

+ Clause D1.10 – Discharge from Exits

Requires that an exit must not be blocked at the point of discharge. Barriers such as bollards must be installed to prevent vehicles from blocking the discharge from exits.

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

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

Note: The external egress paths around each building to the road must achieve minimum 1m unobstructed width.

+ Clause D1.13 – Number of Persons Accommodated

Clause D1.13 and Table D1.13 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.

Comments: In accordance with the comments under D1.6 above population numbers for the proposed warehouse buildings are to be provided by Sydney Business Park at CC Application stage, in order to assess compliance with Clauses D1.6 and F2.3.

CONSTRUCTION OF EXITS

+ Clause D2.3 – Non-fire-isolated Stairways & Ramps

This clause requires that required non-fire-isolated stairways and ramps must be either constructed in accordance with D2.2 or the alternative options set out in D2.3 (a) to (c).

Comments: The requirements of D2.3 apply to the proposed stairs in each building. Details are to be provided of the stair design at CC application stage.

+ Clause D2.7 – Installations in Exits & 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 (a) to (e) prescribes 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.

Comments: This requirement applies to all cupboards containing electrical distribution boards or comms. equipment that are located in a path of travel to an exit. In this regard, such cupboards are to be enclosed in non-combustible materials and are to be suitably sealed against the spread of smoke.

+ Clause D2.8 – Enclosure of Space under Stairs and Ramps

The space below a required fire-isolated stairway or ramp in a fire-isolated shaft must not be enclosed to form a cupboard or other enclosed space. If the required stairway or ramp is non-fire-isolated, (including an external stairway) any cupboard underneath must have an FRL of 60/60/60, with a self-closing -60/30 door.

Comments: If the space under any of the required exit stairs are proposed to be enclosed to form a cupboard or the like, the enclosing walls and ceilings will need to achieve an FRL of 60 minutes and the doorway will need to be fitted with a self-closing -60/30 fire door.

Details demonstrating compliance are to be shown on the CC Application plans where applicable.

+ Clause D2.13 – Goings & Risers

This clause sets out the detailed requirements for the construction and geometry of the goings and risers in required stairways. These details are set out in sub-clauses (a) to (c) and Table D2.13 Riser and Going Dimensions.

Comments: All stairs are to have dimensions that comply with Table D.13 (below), have solid risers, and are to have contrasting nosings and slip resistant surfaces throughout in accordance with clause 11 of AS1428.1-2009. (See diagram in Part D3 below).

Note: Refer to the slip resistance requirements for stairs below under Clause D2.14.



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

+ Clause D2.14 – Landings

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

Landing surfaces must be slip resistant OR have slip resistant nosings not less than that listed in Table D2.14 when tested in accordance with AS4586.

Comments: Architect to note.

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

+ Clause D2.15 – Thresholds

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

In a building required to be accessible by Part D3, the doorway –

- (i) Opens to a road or open space; and
- (ii) Is provided with a threshold ramp or step ramp in accordance with AS1428.1;

In other cases –

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

Comments: Architect to note, details demonstrating compliance will be required to be included in the CC plans.

+ Clause D2.16 – Balustrades or Other Barriers

This clause details where balustrades are required to be provided and sets out in specific detail the construction requirements. Typically, the following will apply to this class of building:

- Balustrades are required where the fall to the level below is more than 1m in height. The minimum height of a balustrade is 1m above the floor of the landing, walkway or the like; and 865mm above the floor of a stairway or a ramp.
- For a fall of more than 4m to the surface level below, a window sill must be a minimum of 865mm in height above the height of the floor surface.
- Where the floor is more than 4m above the surface beneath the balustrade any horizontal or near horizontal members between 150mm and 760mm above the floor must not facilitate climbing.
- Balustrades must be constructed so as to not permit a sphere of 125mm diameter to pass through. The exception to this is within fire isolated exits within the building, or internal stairs within a Class 7b or 8 building, where the rails can be positioned a maximum of 460mm apart, so long as a bottom rail is located so a sphere of 150mm cannot pass through the opening between the nosing of the stair treads and the rail or between the floor of the landing, balcony or the like. External stairs associated with a Class 7b or 8 building are required to have gaps no greater than 125mm.

Comments: Details demonstrating compliance are to be submitted with the CC Application drawings for assessment against the above criteria.



+ Clause D2.17 – Handrails

This Clause sets out the requirements regarding the location, spacing and extent of handrails required to be installed in buildings.

Comments: Architect to note, details demonstrating compliance will be required to be included in the CC plans. Handrails serving all stairs and ramps both internally and externally to the buildings are required to comply with the accessibility requirements of Clause D3.3 and AS 1428.1-2009.

+ Clause D2.19 – Doorways and Doors

This clause applies to all doorways 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 the door is also 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; or upon the activation of a fire or smoke alarm anywhere in the fire compartment served by the door.

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

+ Clause D2.20 – Swinging Doors

A swinging door in a required exit or forming part of a required exit must be installed to the requirements of sub-clauses (a), (b) & (c). This clause only applies to swinging doors in doorways serving a required exit or forming part of a required exit. It does not apply to other doorways – see notes in the Guide to the BCA.

Comments: The proposed egress doors are required to swing in the direction of egress in accordance with D2.20(a) – compliance is readily achievable.

+ Clause D2.21 – Operation of Latch

A door in a required exit or forming part of a required exit and in a path of travel to a required exit must be readily openable without a key from the side that faces a person seeking egress, by a single downward action or pushing action on a single device which is located between 900mm & 1.1m from the floor. This clause prohibits the use of devices such as deadlocks and knobs where knobs must be operated in a twisting motion in accordance with sub-clauses (a) & (b). D2.21 also sets out exceptions in relation to buildings where special security arrangements are required in relation to the uses carried out.

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

ACCESS FOR PEOPLE WITH A DISABILITY

+ Clause D3.2 – General Building Access Requirements for People with Disabilities

Access must be provided to and within all areas normally used by occupants (as required by Clause D3.1) within this building from the main points of pedestrian entry at the allotment boundary; from another accessible building connected by a pedestrian link; and any accessible car parking space.

Access must be provided through the principal pedestrian entrance and through not less than 50% of all pedestrian entrances (including the principal pedestrian entry). In addition, as the buildings are greater than 500m², the non-accessible entrance must not be greater than 50m from an accessible entrance.

Comments: Compliant access is required from the allotment boundary to the main entry of each building, between buildings connected by a pedestrian link, from accessible parking spaces to each building and throughout all areas in each building in accordance with AS 1428.1-2009. Refer to D3.3 and D3.4 below.

+ Clause D3.3 – Parts of the Building to be Accessible

This part specifies the requirements for accessways within buildings which must be accessible. In accordance with Clause D3.3; 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 Clause E3.6, and all accessways must include passing & turning spaces per AS 1428.1-2009.

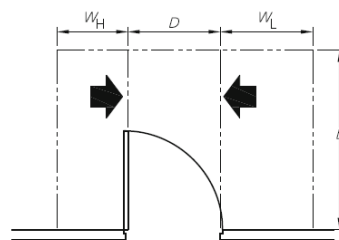
Clause D3.3(g) and (h) requires that the pile height or pile thickness shall not exceed 11mm and the carpet backing thickness shall not exceed 4mm. Moreover, the carpet pile height or pile thickness dimension shall not exceed 11mm, the carpet backing thickness dimension shall not exceed 4mm and their combined dimension shall not exceed 15mm.



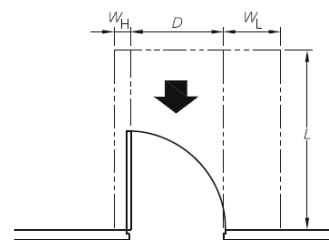
Comments: As indicated above, the proposed buildings are required to be accessible throughout in accordance with AS1428.1-2009. It is noted that compliance with the requirements of D3.3 and AS 1428.1-2009 is readily achievable; however, details and design certification will be required to be provided at CC Application stage.

The following is a summary of some of the key matters which need to be considered from Clause D3.3 and AS 1428.1-2009:

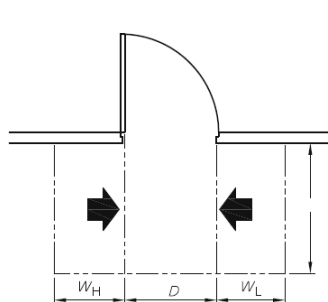
- Access for persons with disabilities must be provided, at a minimum, to and within all areas normally used by the occupants, unless a D3.4 concession is applied – see D3.4 below.
- An accessway complying with AS1428.1-2009 is required from the allotment boundary to the main entry of each office. It is noted that this is not currently shown on the drawings.
- A lift is required to be provided to serve each storey within each building. If lift access is not proposed to the basement or mezzanine in Warehouse 4, an exemption request will be required in accordance with Clause D3.4 below.
- The minimum width of an accessible doorway must have a clear opening of not less than 850mm and a minimum clear height of not less than 1980mm. An accessway must have a minimum clear width of 1000mm and 2000mm clear height
- All doorways on a continuous path of travel shall have a minimum luminance contrast of 30% provided between: door leaf and door jamb; or door leaf and adjacent wall; or architrave and wall; or door leaf and architrave; or door jamb and adjacent wall. The minimum width of the area of luminance contrast shall be 50mm.
- Clause D3.3(g) and (h) requires that the pile height or pile thickness shall not exceed 11mm and the carpet backing thickness shall not exceed 4mm. Moreover, the carpet pile height or pile thickness dimension shall not exceed 11mm, the carpet backing thickness dimension shall not exceed 4mm and their combined dimension shall not exceed 15mm.
- Circulation space to the new doorways that are required to be accessible are to comply with Section 13 of AS1428.1-2009, as detailed below:



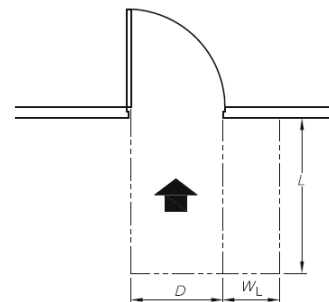
Dimension D	Dimension L	Dimension WH	Dimension WL
850	1670	660	900
900	1670	610	900
950	1670	560	900
1000	1670	510	900



Dimension D	Dimension L	Dimension WH	Dimension WL
850	1450	110	530
900	1450	110	530
950	1450	110	530
1000	1450	110	530



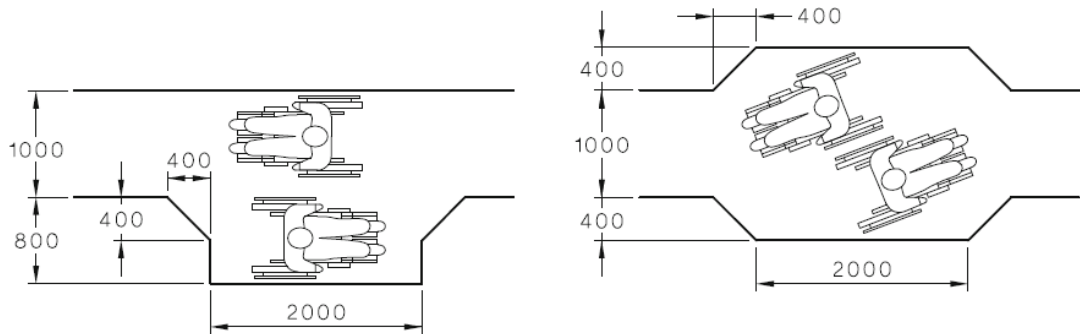
Dimension D	Dimension L	Dimension WH	Dimension WL
850	1240	560	660
900	1210	510	660
950	1175	460	660
1000	1155	410	660



Dimension D	Dimension L	Dimension WH	Dimension WL
850	1450	0	510
900	1450	0	510
950	1450	0	510
1000	1450	0	510

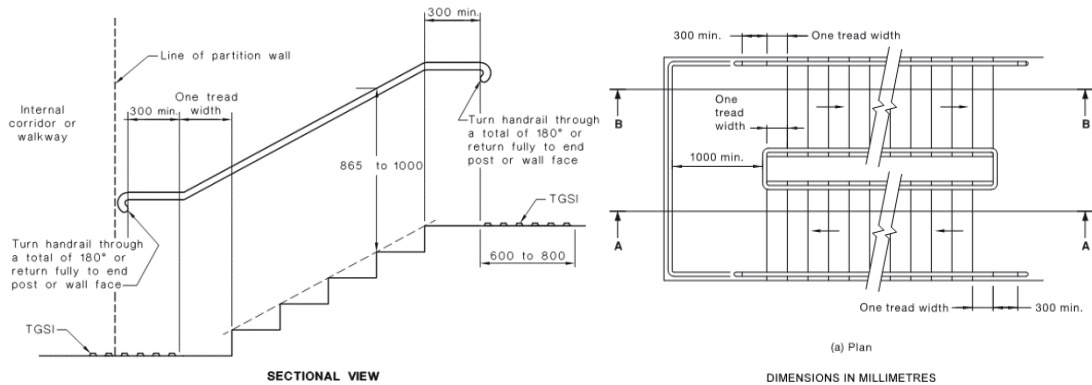


- Turning Spaces and Passing Spaces in all areas are required to be provided on each level of the building in accordance with Clauses 6.4 & 6.5 of AS 1428.1-2009.

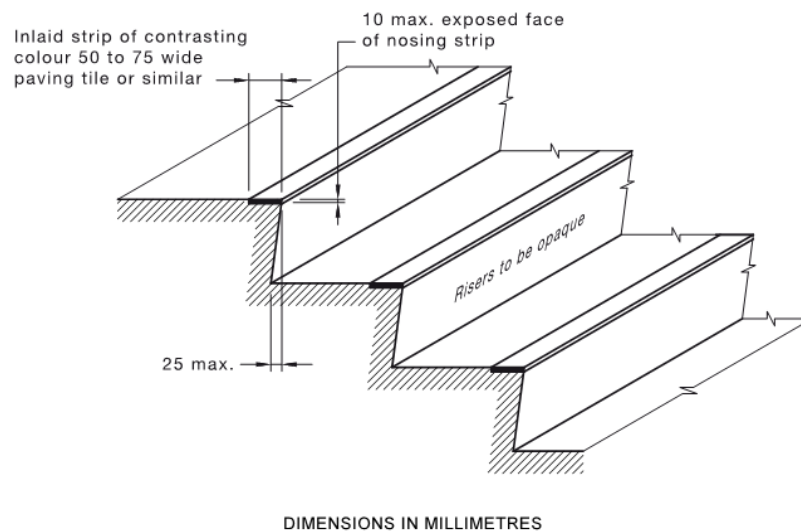


Stairways

- Every common area stairway must be constructed in accordance with Clause 11 of AS1428.1, except if they are within a fire isolated exit (which need to comply with Clause 11.1f & g only) or serve the areas in the building that a D3.4 Exemption has been applied to. Details will need to be confirmed on the plans for CC.



- Stairs shall have opaque risers (i.e. Solid)
- Stair nosing's shall comply with the following diagram, which achieve a colour contrast luminance of 30% to the background (tread):



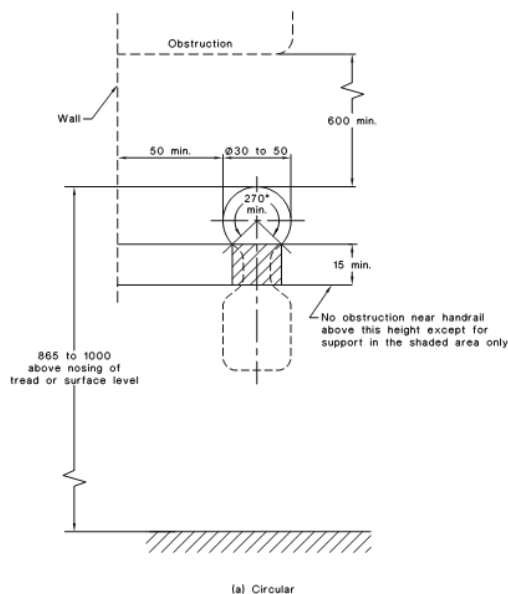
Stairway nosing requirements



- Stairways are to be served by Tactile Ground Surface Indicators in accordance with AS1428.4.1, except if they are within a fire isolated exit.

Handrails

- Handrails shall be installed along stairways as follows:
 - Shall be continuous through the flight and where practicable, around landings and have no obstruction on or above up to a height of 600mm,
 - Installed along both sides of the stairway (giving consideration also to 1m unobstructed width),
 - Shall have a compliant hand clearance in accordance with Figure 29 of AS 1428.1-2009.



(a) Circular
DIMENSIONS IN MILLIMETRES
FIGURE 29 (in part) HANDRAILS

+ **Clause D3.4 – 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.

Comments: It is recommended that advice be obtained from an accredited Access Consultant at the CC Application stage, however, consideration to an exemption for the warehouse areas (on health & safety risk basis) may be appropriate on this project. Confirmation from Sydney Business Park will be required that includes a request for concession, where this would be applied and the reasons why it would be inappropriate for access for people with disabilities within the facility.

+ **Clause D3.5 – Accessible Parking**

This clause provides details of the number of accessible carparking spaces required in a carpark depending on the classification of the building.

Comments: Compliant Accessible Parking spaces are to be provided at a rate of 1 per 100 spaces for the warehouse / office areas. The plans comply with the requirements of this clause.

+ **Clause D3.6 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 E4.5 to be provided with an exit sign. The latter is to state EXIT and state the level eg. LEVEL 1.

Comments: Architect to note.

+ Clause D3.8 – 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 D3.4.

Comments: Stairways and ramps serving the buildings, any overhead projections less than 2m in height and any paths leading directly to a driveway or roadway without a kerb - will need to be provided with Tactile Ground Surface Indicators in accordance with AS1428.4.

+ Clause D3.11 – 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.

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

+ Clause D3.12 – 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.

Comments: Glazing capable of being mistaken for an opening as listed above must be clearly marked for its full width with a solid and non-transparent contrasting line being not less than 75mm wide and the lower edge must be located between 900mm and 1000mm above the plane of the finished floor level.

3.4 SECTION E – SERVICES AND EQUIPMENT

FIRE FIGHTING EQUIPEMENT

+ Clause E1.3 – Fire Hydrants

E1.3(a) – 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.

E1.3(b) – Requires that the fire hydrant system must be installed in accordance with the provisions of AS2419.1 and also details where internal hydrants must be located.

Comments: The proposed buildings are required to be served by a compliant hydrant system incorporating ring mains. Details demonstrating compliance with the provisions of E1.3 and AS 2419.1-2005 are required to be provided at CC Application stage.

Hydrant booster assemblies are required to be accessible to the brigade, located within sight of the main entry of each building, at least 10m from any proposed substation, and adjacent to the main vehicular and pedestrian entry into the site.

Where the location of hydrant boosters departs from the above provisions, it will need to be addressed as a Fire Engineered Performance Solution to demonstrate compliance with Performance Requirement EP1.3.

Additionally, where hydrants that are located outside the building but are not open to the sky (e.g. located under an awning or the like) are proposed to be treated as external hydrants, and/or where external hydrants are not proposed to be provided with a radiant heat shield, a Performance Solution from the Fire Engineer will be required demonstrating compliance with Performance Requirement EP1.3.

+ Clause E1.4 – 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.

Comments: The proposed Warehouse portions of the buildings are required to be served by a compliant fire hose reel system; however, the Office areas do not require coverage as they are subject to the Class 5 concession. Details demonstrating compliance are to be provided at the CC application stage.



+ **Clause E1.5 – Sprinklers**

A sprinkler system must be installed in a building or part of a building when required by Table E1.5 and comply with Specification E1.5. Table E1.5 sets out which types of building occupancies and Classes which are required to have sprinkler systems installed in them.

Specification E1.5 sets out requirements for the design and installation of sprinkler systems.

Comments: The proposed Large Isolated Buildings (x4) are required to be sprinkler protected throughout in order to address the requirements of Clause C2.3 and Table E1.5. Details demonstrating compliance are to be provided at the CC application stage.

In accordance with Clause 4.14.1 of AS2118.1-2017, sprinkler boosters are required to comply with the requirements of AS2419.1-2005 for a hydrant booster – see comments under E1.3 above regarding potential booster Performance Solution.

+ **Clause E1.6 – Portable fire extinguishers**

Portable fire extinguishers must be provided as listed in Table E1.6 and must be selected, located and distributed in accordance with Sections 1, 2, 3 and 4 of AS 2444.

Comments: Fire extinguishers will be required to be installed in the proposed buildings in accordance with Table E1.6 and AS 2444-2001 including the Class 5 Office areas.

+ **Clause E1.8 – Fire Control Centres**

A fire control centre facility in accordance with Specification E1.8 must be provided for a building having an effective height of more than 25m and in a Class 6, 7, 8 or 9 building with a total floor area of more than 18,000m².

Specification E1.8 describes the construction and content of required fire control centres or rooms.

Comments: As the floor area of the Warehouse Buildings 1 & 4 exceeds 18,000m², they are required to be provided with a Fire Control Centre facility that complies with Clauses 2-5 of Spec. E1.8. Further details which demonstrate compliance with the requirements of Spec. E1.8 will be required to be included on the Construction Certificate application plans.

Note: If access into the Fire Control Centre results in a level change that exceeds 300mm a Fire Engineered Alternative Solution to demonstrate compliance with Performance Requirement EP1.6 will be required.

SMOKE HAZARD MANAGEMENT

+ **Clause E2.2 – 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 **Table E2.2a**, 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 E2.2a, E2.2b** and **E2.2c**.

Comments: As the floor area and / or volume of Warehouse 1, 2 & 4 are greater than 18,000m² and / or 108,000m³ respectively, an automatic smoke exhaust system is required to be provided to each warehouse. Consideration to a Performance Solution addressing the required smoke hazard management systems may be given which would need to be prepared by the Fire Engineer to demonstrate compliance with Performance Requirement EP2.2.

LIFT INSTALLATIONS

+ **Clause E3.3 – 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 3.3**.

Comments: Applies to all lifts in the proposed buildings – Lift Contractor to note.

+ **Clause E3.5 – Landings**

Access and egress to and from lift well landings must comply with the Deemed-to-Satisfy Provisions of Part D, including the accessibility requirements of AS 1428.1-2009.



Comments: Architect and Lift Contractor to Note.

+ Clause E3.6 – Passenger Lifts

In an accessible building, every passenger lift must be one of the types identified in **Table E3.6a**, have accessible features in accordance with **Table E3.6b** and not rely on a constant pressure device for its operation if the lift car is fully enclosed.

Comments: Lift Contractor to note.

EMERGENCY LIGHTING, EXIT SIGNS AND WARNING SYSTEMS

+ Clause E4.2 – Emergency Lighting Requirements

This clause details when emergency lighting must be installed in Class 2 to 9 buildings. The requirements for buildings and parts of buildings are detailed in sub-clauses (a) to (i) and each sub-clause must be considered as more than one may apply to any single building

Comments: Emergency Lighting is required throughout the buildings in accordance with E4.2, E4.4 and AS/NZS 2293.1-2018.

+ Clause E4.4 – Design & Operation of Emergency Lighting

Every required emergency lighting system must comply with AS2293.1.

Comments: Electrical Consultant to note.

+ Clause E4.5 – 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.

Comments: Electrical Consultant to note, details demonstrating compliance will be required to be included in the CC plans.

+ Clause E4.6 – 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.

Comments: Electrical Consultant to note, details demonstrating compliance will be required to be included in the CC plans.

+ Clause E4.8 – Design & Operation of Exit Signs

Every required exit sign must comply with AS/NZS 2293.1 and be clearly visible at all times when the building is occupied by any person having the legal right of entry into the building.

Comments: Electrical Consultant to note, details demonstrating compliance will be required to be included in the CC plans.

3.5 SECTION F – HEALTH & AMENITY

DAMP AND WEATHERPROOFING.

+ Performance Requirement FP1.4

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

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

Note 1: There are no Deemed-to-Satisfy provisions for this Performance Requirement in respect to External Walls.

Note 2: Refer to Clause F1.5 for roof coverings.

Comments: Design statement and a documented Performance Solution is to be provided with the Construction Certificate application for each building, either by using:



- *The Verification Methods in Clause FV1; or*
- *Other verification methods deemed acceptable by the Certifier; or*
- *Evidence to support that the use of the material or product, form of construction or design meets the Performance Requirements or the DTS provisions, such as a Certificate of Conformity (eg. CodeMark); or*
- *By way of Expert Judgement.*

+ Clause F1.1 – Stormwater drainage

Stormwater drainage must comply with AS/NZ 3500.3.

Comments: Details of stormwater disposal, from a suitably qualified consultant are required to be submitted with documentation for the CC.

+ Clause F1.5 – 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), (b) (c), (d), (e) & (f) which set out the types of materials that may be used and the adopted Australian Standards that apply to their quality and installation.

Comments: Note – design certification required at CC Application stage.

+ Clause F1.6 – Sarking

Sarking-type materials used for weatherproofing of roofs must comply with AS/NZS 4200 parts 1 and 2.

Comments: Note.

+ Clause F1.7 – Waterproofing of Wet Areas

This clause requires that wet areas in Class 2 to 9 buildings must be waterproofed. It prescribes the standards to which the work must be carried out in sub-clauses (a) to (e) with emphasis in sub-clauses (c), (d) & (e) on the construction of rooms containing urinals and their installation.

Note: Figures F1.7(1) & F1.7(2) of the Guide to the BCA contain diagrams indicating the areas of walls and floors to be protected around baths, washbasins and showers.

Comments: Note.

+ Clause F1.13 – 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

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

SANITARY AND OTHER FACILITIES

+ Clause F2.3 – Facilities in Class 3 to 9 Buildings

This clause provides the requirements for sanitary facilities to be installed in Class 3, 5, 6, 7, 8 and 9 buildings in accordance with **Table F2.3**. The requirements and variations are set out in sub-clauses (a)-(h).

Comments: As indicated under D1.6 & D1.13 above, the proposed population numbers are to be provided by Sydney Business Park at the CC application stage for each building to assess if the proposed toilet facilities within each building are adequate to achieve compliance with Table F2.3.

Note: A preliminary assessment of the proposed sanitary facilities indicates that compliance is readily achievable.

+ Clause F2.4 – Accessible Sanitary Facilities

Accessible unisex sanitary compartments must be provided, in accordance with **Table F2.4(a)** and unisex showers must be provided in accordance with **Table F2.4(b)**, in buildings or parts that are required to be accessible. The details for the provision of disable facilities and the standard, AS 1428.1, are set out in sub-clauses (a) to (i).

Comments: The proposed accessible toilet facilities and ambulant sanitary facilities in each building are required to achieve compliance with the provisions of Table F2.4. Details demonstrating that the design of



each facility complies with AS 1428.1 are to be provided at the CC application stage, however, compliance is readily achievable.

ROOM HEIGHTS

+ Clause F3.1 – Height of Rooms and Other Spaces

The ceiling heights in Class 2 to 9 buildings must not be less than required in sub-clauses (a) to (f) of this clause.

The minimum ceiling heights for a Class 5, 7 & 8 building are as follows:

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

Comments: Architect to ensure compliance. Ceiling heights to be reviewed at the CC application stage with the detailed section drawings.

LIGHT AND VENTILATION

+ Clause F4.4 – Artificial Lighting

Artificial lighting is required where it is necessary to minimise the hazard to occupants during an emergency evacuation. Sub-clauses (a), (b) & (c) sets out the places where artificial lighting is always required in all classes of buildings and the standard to which it must be installed.

Comments: Design certification to be submitted at CC Application Stage for each building.

+ Clause F4.5 – 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 F4.6 or a mechanical or air-conditioning system complying with AS1668.2 and AS/NZS 3666.1.

Note: NSW F4.5(b) a mechanical ventilation or air-conditioning system complying with AS 1668.2 – the reference to AS/NZS 2666.1 is deleted from the BCA in NSW as the need to comply with this standard is regulated under the relevant section of the Public Health Act 1991.

Comments: Design certification to be submitted at CC Stage for each building.

3.6 SECTION J – ENERGY EFFICIENCY

+ Part J1 – Building Fabric

The provision of insulation of the building envelope will be required in the proposed Building, in accordance with **Clauses J1.0 to J1.6**, 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.

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

+ Part J3 – Building Sealing

The proposed building envelope will be required to be sealed to prevent air infiltration in accordance with the requirements of **Clauses J3.0 to J3.6**. Details or certification that the proposed building design complies with the requirements of **Part J3** is required to be provided.

Comments: This section applies to any air-conditioned spaces proposed within the proposed buildings. Details or certification that the proposed design complies with the requirements of **Part J3** will need to be submitted with the application for a Construction Certificate.

+ Part J5 – Air-Conditioning & 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 J5** will be required to be provided from the mechanical engineer.

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



+ Part J6 – 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 J6** will be required to be provided from the electrical engineer.

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

+ Part J7 – 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 J7** (Section 8 of AS 3500.4) will be required to be provided from the hydraulic engineer.

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

+ Part J8 – 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.

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



4.0 CONCLUSION

This report contains an assessment of the referenced architectural documentation for the proposed Stage 3 Masterplan warehouse and distribution facilities at Sydney Business Park, Marsden Park against the Deemed-to-Satisfy Provisions of the BCA 2019 Amendment 1. Arising from the review, it is considered that the proposed development can readily achieve compliance with the relevant provisions of the BCA. Where compliance matters are proposed to comply with the Performance Requirements (rather than DtS Provisions), the development of a Performance Solution Report will be required prior to the issue of the Construction Certificate.

The following fire safety measures are required for the new buildings:

Statutory Fire Safety Measure	Design / Installation Standard
Alarm Signaling Equipment	AS 1670.3 – 2018
Automatic Fail-Safe Devices	BCA Clause D2.21
Automatic Fire Detection & Alarm System Note: This only applies to buildings where an automatic smoke exhaust system is required.	BCA Spec. E2.2a & AS 1670.1 – 2018
Automatic Fire Suppression Systems	BCA Spec. E1.5 & AS 2118.1 – 2017
Building Occupant Warning System activated by the Sprinkler System	BCA Spec. E1.5, Clause 8 and / or Clause 3.22 of AS 1670.1 – 2018
Emergency Lighting	BCA Clause E4.4 & AS 2293.1 – 2018
Exit Signs	BCA Clauses E4.5, E4.6 & E4.8; and AS 2293.1 – 2018
Fire Dampers	BCA Clause C3.15, AS 1668.1 – 2015 & AS 1682.1 & 2 – 2015 and manufacturer's specification
Fire Control Centre (Buildings 1 & 4 only)	BCA Spec. E1.8
Fire Doors	BCA Clause C2.12, C2.13 and AS 1905.1 – 2015 and manufacturer's specification
Fire Hose Reels (Class 7b parts only)	BCA Clause E1.4 & AS 2441 – 2005
Fire Hydrant Systems	BCA Clause E1.3 & AS 2419.1 – 2005
Fire Seals	BCA Clause C3.15, AS 1530.4 – 2014 & AS 4072.1 – 2005 and manufacturer's specification
Lightweight Construction	BCA Clause C1.8 & AS 1530.4 – 2014 and manufacturer's specification
Paths of Travel	EP&A Regulation Clause 186
Perimeter Vehicular Access	BCA Clause C2.4
Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001
Required Exit Doors (power operated)	BCA Clause D2.19(b)
Smoke Hazard Management Systems (Buildings 1, 2 & 4 only)	BCA Part E2 & AS/NZS 1668.1 – 2015
Warning & Operational Signs	AS 1905.1 – 2015, BCA Clause D3.6 & E3.3



5.0 APPENDIX 1 – SPEC. C1.1 FRL REQUIREMENTS (TYPE B CONSTRUCTION)

Table 4 TYPE B CONSTRUCTION: FRL OF BUILDING ELEMENTS

Building element	Class of building—FRL: (in minutes)			
	<u>Structural adequacy/ Integrity/ Insulation</u>			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any <u>fire-source feature</u> to which it is exposed is—				
For <u>loadbearing</u> parts—				
less than 1.5 m	90/ 90/ 90	120/120/120	180/180/180	240/240/240
1.5 to less than 3 m	90/ 60/ 30	120/ 90/ 60	180/120/ 90	240/180/120
3 to less than 9 m	90/ 30/ 30	120/ 30/ 30	180/ 90/ 60	240/ 90/ 60
9 to less than 18 m	90/ 30/–	120/ 30/–	180/ 60/–	240/ 60/–
18 m or more	–/–/–	–/–/–	–/–/–	–/–/–
For non- <u>loadbearing</u> parts—				
less than 1.5 m	–/ 90/ 90	–/120/120	–/180/180	–/240/240
1.5 to less than 3 m	–/ 60/ 30	–/ 90/ 60	–/120/ 90	–/180/120
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN not incorporated in an <u>external wall</u> , where the distance from any <u>fire-source feature</u> to which it is exposed is—				
less than 3 m	90/–/–	120/–/–	180/–/–	240/–/–
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS—	90/ 90 / 90	120/120/120	180/180/180	240/240/240
INTERNAL WALLS—				
<u>Fire-resisting</u> lift and stair <u>shafts</u> —				
<u>Loadbearing</u>	90/ 90/ 90	120/120/120	180/120/120	240/120/120
<u>Fire-resisting</u> stair <u>shafts</u>				
Non- <u>loadbearing</u>	–/ 90/ 90	–/120/120	–/120/120	–/120/120
Bounding <u>public corridors</u> , public lobbies and the like—				
<u>Loadbearing</u>	60/ 60/ 60	120/–/–	180/–/–	240/–/–
Non- <u>loadbearing</u>	–/ 60/ 60	–/–/–	–/–/–	–/–/–
Between or bounding <u>sole-occupancy units</u> —				
<u>Loadbearing</u>	60/ 60/ 60	120/–/–	180/–/–	240/–/–
Non- <u>loadbearing</u>	–/ 60/ 60	–/–/–	–/–/–	–/–/–
OTHER LOADBEARING INTERNAL WALLS and COLUMNS—				
	60/–/–	120/–/–	180/–/–	240/–/–
ROOFS	–/–/–	–/–/–	–/–/–	–/–/–



6.0 APPENDIX 2 – SPEC. C1.1 FRL REQUIREMENTS (TYPE C CONSTRUCTION)

Table 5 TYPE C CONSTRUCTION: FRL OF BUILDING ELEMENTS

Building element	Class of building—FRL: (in minutes)			
	<u>Structural adequacy/ Integrity/ Insulation</u>			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any fire-source feature to which it is exposed is—				
Less than 1.5 m	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
1.5 to less than 3 m	—/—/—	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
3 m or more	—/—/—	—/—/—	—/—/—	—/—/—
EXTERNAL COLUMN not incorporated in an external wall , where the distance from any fire-source feature to which it is exposed is—				
Less than 1.5 m	90/—/—	90/—/—	90/—/—	90/—/—
1.5 to less than 3 m	—/—/—	60/—/—	60/—/—	60/—/—
3 m or more	—/—/—	—/—/—	—/—/—	—/—/—
COMMON WALLS and FIRE WALLS—	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
INTERNAL WALLS-				
Bounding public corridors , public lobbies and the like—	60 / 60/ 60	—/—/—	—/—/—	—/—/—
Between or bounding sole-occupancy units —	60/ 60/ 60	—/—/—	—/—/—	—/—/—
Bounding a stair if required to be rated—	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
ROOFS	—/—/—	—/—/—	—/—/—	—/—/—