



BLACKETT
MAGUIRE+
GOLDSMITH

BCA ASSESSMENT REPORT

Aspect Industrial Estate
Mamre Road, KEMPS CREEK

PREPARED FOR:
Mirvac

Revision 3

Date: 16th October 2020

Project No.: 190472

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REPORT STATUS				
DATE	REVISION	STATUS	AUTHOR	REVIEWED
08.01.2020	0	Preliminary Assessment – For Client & Consultant Review	PW	DG
28.05.2020	1	Final for DA Submission	PW	DG
13.10.2020	2	Updated Architectural Plans	DG	TH
16.10.2020	3	Updated Architectural Plans	DG	TH

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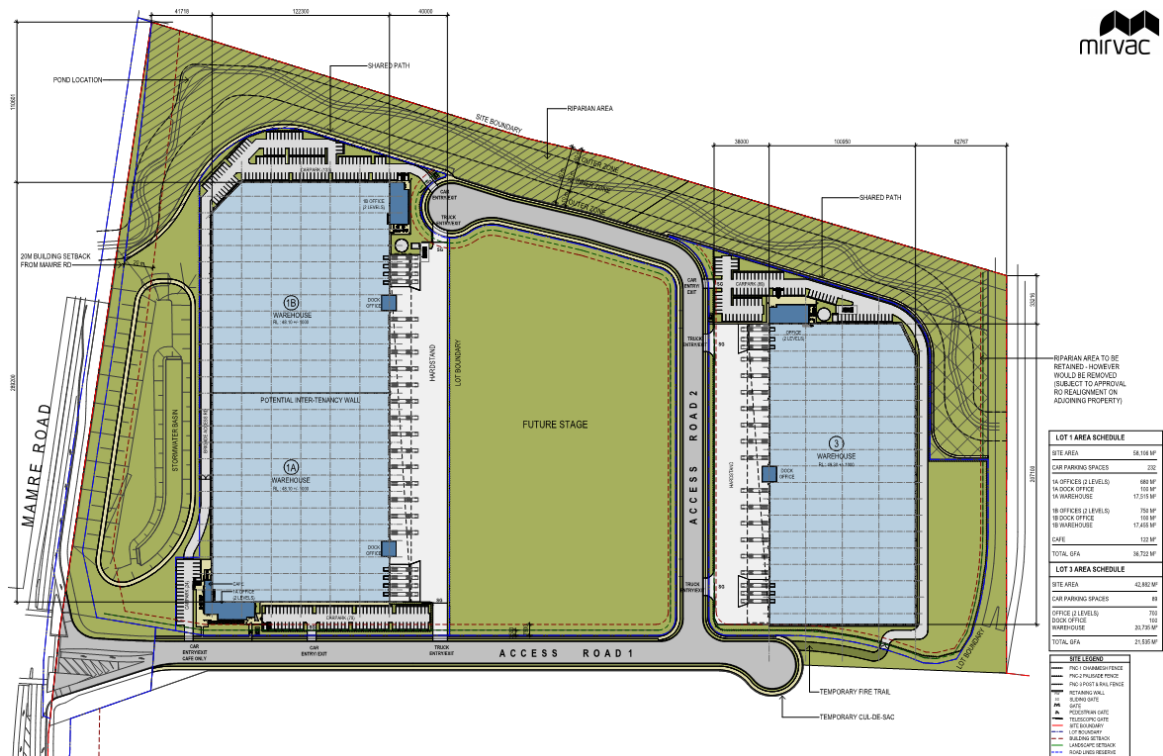
A. INTRODUCTION

A.1 BACKGROUND / PROPOSAL

Blackett Maguire + Goldsmith Pty Ltd (BM+G) have been commissioned by Mirvac to undertake a preliminary review of the proposed 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 the *Building & Development Certifiers Act 2018 & Regulation 2020*.

This report relates to the proposed industrial precinct at Kemps Creek which consists of –

- + Building 1 – Warehouse 1A (17,515m² warehouse, 100m² Dock Office and 680m² office); and Warehouse 1B (17,455m² warehouse, 100m² Dock Office and 750m² office).
- + Building 3 – Warehouse 3 (20,735m² warehouse, 100m² Dock Office and 700m² office).



Source: SBA Architects Drawing DA100 (E) 14.10.2020

A.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 to identify the key issues that are relevant to the project.
- + Identify any BCA compliance issues that require resolution/attention for the proposed development at the CC Application stage.

A.3 PROJECT TEAM

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

- + Assessment – Dean Goldsmith (Director)
- + Peer Review – Tony Heaslip (Director)

A.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 SBA Architects:

Drawing No.	Revision	Date	Drawing No.	Revision	Date
DA000	D	14.10.2020	DA120	D	08.10.2020
DA001	C	08.10.2020	DA130	C	08.10.2020
DA002	C	08.10.2020	DA140	C	08.10.2020
DA100	E	14.10.2020	DA141	C	08.10.2020
DA101	A	14.10.2020	DA310	E	14.10.2020
DA110	E	14.10.2020	DA311	B	08.10.2020
DA111	B	08.10.2020	DA315	B	08.10.2020
DA115	B	08.10.2020	DA320	D	08.10.2020
DA116	B	08.10.2020	DA330	C	08.10.2020
DA117	B	08.10.2020	DA340	C	08.10.2020

A.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.

A.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:
 - i. Local Government Act and Regulations.
 - ii. NSW Public Health Act 1991 and Regulations.
 - iii. Occupational Health and Safety (OH&S) Act and Regulations.
 - iv. Work Cover Authority requirements.
 - v. Water, drainage, gas, telecommunications and electricity supply authority requirements.
 - vi. DDA 1992.
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- 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.

A.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 4A 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 4A 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.

B. BUILDING CHARACTERISTICS

B.1 BUILDING CLASSIFICATION

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

▪ BCA Class:	Class 5 Office (both buildings) Class 7b Warehouse (both buildings)
▪ Rise in Storeys:	Two (2) (both buildings)
▪ Effective Height:	Less than 12m (both buildings)
▪ Type of Construction:	Type C Construction (both buildings)
▪ Climate Zone:	Zone 6
▪ Maximum Floor Area:	Greater than 18,000m ² (both buildings)
▪ Maximum Volume:	Greater than 108,000m ³ (both buildings)
Note: The buildings are designated as a Large Isolated Building under BCA Clause C2.3.	
Note: The Building 1 café has not been separately classified as it is less than 10% of the total floor area of the building.	

B.2 FIRE SOURCE FEATURE

The distances from the nearest Fire Source Features are:

Boundary	Distance to Fire Source Feature
Northern Boundary	>3m (Both buildings)
Southern Boundary	>3m (Both buildings)
Eastern Boundary	>3m (Both buildings)
Western Boundary	>3m (Both buildings)

C. BCA ASSESSMENT

C.1 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 warehouse facility.

SECTION B- STRUCTURE

1. 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):

1. AS 1170.0 – 2002 General Principles



2. AS 1170.1 – 2002, including certification for balustrading (dead and live loads)
3. AS 1170.2 – 2011, Wind Actions
4. AS 1170.4 – 2007, Earthquake Actions in Australia
5. AS 3700 – 2018, Masonry Structures
6. AS 3600 – 2018, Concrete Structures
7. AS 4100 – 1998, Steel Structures
8. AS 4600 – 2018, Cold Formed Steel Structures.
9. AS 2159 – 2009, Piling – Design and Installation
10. AS 1720.1 – 2010, Design of Timber Structure
11. AS/NZS 1664.1 and 2 – 1997, Aluminium Structures
12. AS 2047 – 2014, Windows and External Glazed Doors in Buildings
13. AS 1288 – 2006, Glass in Buildings - Selection and Installation

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

SECTION C – FIRE RESISTANCE

FIRE RESISTANCE AND STABILITY

2. 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 C Construction applies the proposed warehouse buildings as both buildings have a rise in storeys of two (2) – see notes under Spec. C1.1 below.

3. 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 buildings have a rise in storeys of two (2).

4. Clause C1.10 – Fire Hazard Properties

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

Note: See NSW C1.10(a) & (b).

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) are required at OC stage.

COMPARTMENTATION AND SEPARATION

5. 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: The proposed buildings are Class 5 & 7b Large Isolated Building of Type C construction and 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 warehouse.

6. Clause C2.3 – Large Isolated Buildings

A Large Isolated Building that contains 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 the Large Isolated Building designation under this clause.



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 in the following areas which will need to be addressed as a Performance Solution from the Fire Engineer to demonstrate compliance with Performance Requirement CP9:

- + *The furthest part of the vehicular access path is greater than 18m from the external wall at the northern and southern portions of each building (see diagram below).*
- + *Portions of the vehicular perimeter access will be provided via adjacent lots.*

Note 1: Any gates are required 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 (including the temporary fire trail) 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.

8. 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: The provisions of C2.8(a) could be applied to the warehouse and office parts as the different classifications have the same FRL requirements under Table 5 of Spec. C1.1.

9. 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 or batteries installed in the building that have a voltage exceeding 12 volts and a storage capacity exceeding 200kWh.



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 the proposed warehouse buildings.

10. Clause C2.13 – Electricity Supply System

To ensure certain types of electrical equipment to operate during an emergency the requirements of sub-clauses (a), (b), (c), (d) & (e) must be complied with relating to sub-stations, sub-mains and main switchboards.

- (a) An electricity substation 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
 - (b) A main switchboard located within the building which sustains emergency equipment operating in the emergency mode must –
 - (i) Be separated from any other part of the building by construction having an FRL of not less than 120/120/120.
 - (ii) Have any doorway in that construction protected with a self-closing fire door having an FRL of not less than -/120/30.
 - (c) Electrical conductors located within a building that supply –
 - (i) A substation located within the building which supplies a main switchboard covered by (b); or
 - (ii) A main switchboard covered by (b),
- Must –
- (iii) Have a classification in accordance with AS/NZS 3013 of not less than –
 - (A) If located in a position that could be straight to damage by motor vehicles – WS53W; or
 - (B) Otherwise – WS52W; or
 - (iv) Be enclosed or otherwise protected by construction having an FRL of not less than 120/120/120

Comments: Where appropriate, details demonstrating compliance are to be included in the CC Application plans for the proposed warehouse buildings.

PROTECTION OF OPENINGS

11. Clause C3.15 – Openings for Services Installations

All openings 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 – Certification and appropriate test reports will be required for assessment at OC Application stage.

SPECIFICATIONS

12. 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: Given the location of the proposed building on the site there are no fire rating requirements in Table 5 of Spec. C1.1 that are applicable.

13. 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.

14. 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.

SECTION D – ACCESS & EGRESS

PROVISION FOR ESCAPE

15. 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 the building are considered to be non-compliant with the requirements of Clause D1.4, in the following areas:

- + Warehouse 1 – 98m to an exit from the central warehouse areas.
- + Warehouse 3 – 75m to an exit from the central warehouse areas.

The above non-compliances are required to be addressed as a Performance Solution prepared by the Fire Safety Engineer to demonstrate compliance with Performance Requirements DP4 & EP2.2.

Note: The Warehouse 1 egress distances are based upon door locations previously detailed.

16. 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 distances between alternative exits are considered non-compliant with the provisions of D1.5, in the following areas:

- + Warehouse 1 – 200m between alternative exits measured through the central portion of the warehouse.
- + Warehouse 3 – 150m between alternative exits through the central portion of the warehouse.

The above non-compliance is required to be addressed as a Performance Solution prepared by the Fire Safety Engineer to demonstrate compliance with Performance Requirements DP4 & EP2.2.

Note: The Warehouse 1 egress distances are based upon door locations previously detailed.

17. 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 building are detailed under D1.13 below and based on these numbers compliance with D1.6 is readily achievable. Final details showing compliant dimensions of all exits (including minimum 1m wide clearances and min. clear height of 2.1m) from each building are to be confirmed on the CC Application plans.

18. 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 proposed exit stairs from the Level 1 office areas are compliant with discharge distances of D1.9.

19. 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 discharge points from the buildings are required to be protected in accordance with the requirements of this clause. In addition, as egress from each of the buildings will necessitate passing through adjacent lots, a Performance Solution will be required from the Fire Safety Engineer demonstrating compliance with BCA Performance Requirement DP4.

20. 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: The following population numbers have been calculated in accordance with Table D1.13 based on 10m² person in the office areas; and 30m² per person for the warehouse with 50% of the warehouse being allocated to circulation space and racking structures:

- + Building 1A Offices – 68 persons;
- + Building 1A Warehouse – 293 persons
- + Building 1B Offices – 75 persons;
- + Building 1B Warehouse – 292 persons
- + Building 3 Office– 70 persons
- + Building 3 Warehouse – 348 persons

CONSTRUCTION OF EXITS

21. 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.

22. 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.

Note: NSW D2.13(a)(ix)(x)(xi).

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). 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

23. 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

24. 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.

25. 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.

26. 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: Details of the proposed handrails are to be provided for assessment with the application for the Construction Certificate. Note: Refer to Part D3 for additional requirements for handrails associated with accessible compliant stairways.

27. 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.

Comments: Architect to note – compliance readily achievable.



28. 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) – in this regard the exit doors are compliant with the requirements of this clause.

29. 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

30. Clause D3.2 – Access to Buildings

This part requires accessways to be provided to accessible buildings from the main points of pedestrian entry at the allotment boundary and any accessible car parking space or accessible associated buildings connected by a pedestrian link.

Comments: Compliant Access is required to the office entries of both Buildings and throughout all areas in the proposed building in accordance with AS 1428.1-2009. Refer to D3.3 and D3.4 below.

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

This part specifies the requirements for accessways within buildings which must be accessible.

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:

- + *A lift complying with Clause E3.6 is required to each of the Level 1 office areas as they have a floor area greater than 200m². Further details are to be provided at CC Application Stage.*
- + *The minimum width of an accessible doorway must have a clear opening width of not less than 850mm in accordance with AS1428.1.*
- + *All doorways on a continuous path of travel shall have a minimum luminance contrast of 30% provided between: door leaf and door jamb; or door leaf and adjacent wall; or architrave and wall; or door leaf and architrave; or door jamb and adjacent wall. The minimum width of the area of luminance contrast shall be 50mm.*
- + *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 doorways are to comply with Section 13 of AS1428.1-2009, as detailed below:*



Diagram showing a doorway with a partition wall on the left. The dimensions are labeled: W_H (width of the partition wall), D (depth of the doorway), W_L (width of the doorway), and L (height of the doorway). Arrows indicate traffic flow from left to right.

Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1670	660	900
900	1670	610	900
950	1670	560	900
1000	1670	510	900

Diagram showing a doorway with a partition wall on the right. The dimensions are labeled: W_H (width of the partition wall), D (depth of the doorway), W_L (width of the doorway), and L (height of the doorway). An arrow indicates traffic flow from left to right.

Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1450	110	530
900	1450	110	530
950	1450	110	530
1000	1450	110	530

Diagram showing a doorway with a partition wall on the left. The dimensions are labeled: W_H (width of the partition wall), D (depth of the doorway), W_L (width of the doorway), and L (height of the doorway). Arrows indicate traffic flow from right to left.

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

Diagram showing a doorway with a partition wall on the right. The dimensions are labeled: D (depth of the doorway), W_L (width of the doorway), and L (height of the doorway). An arrow indicates traffic flow from right to left.

Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1450	0	510
900	1450	0	510
950	1450	0	510
1000	1450	0	510

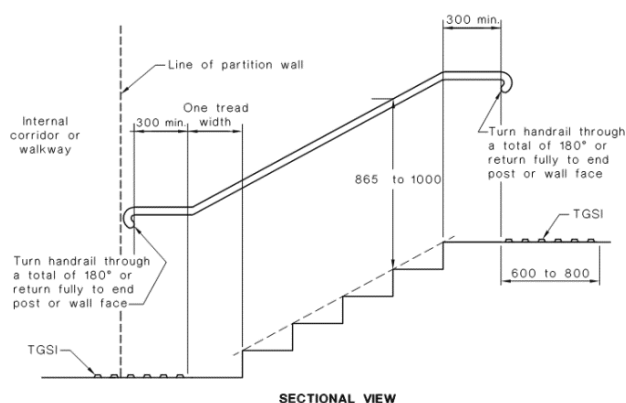
Circulation space requirements at doorways

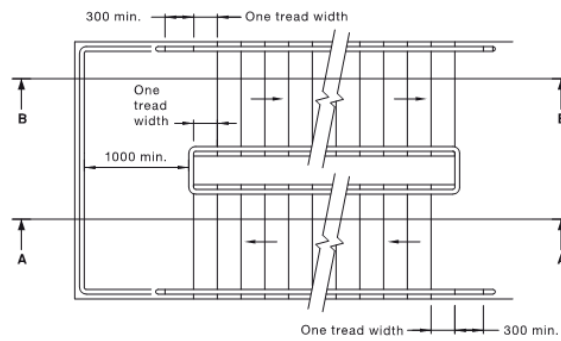
Particular consideration should be given to the bi-fold doors to the courtyard areas to ensure that compliant circulation space is achieved on both sides of the sliding doors.

- + 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 (including exit stairs) must be constructed in accordance with Clause 11 of AS1428.1. As such, the stairways must be designed to comply with the accessibility requirements of Clause 11 of AS1428.1-2009 and details will need to be confirmed on the plans for CC. This should be reviewed prior to submission.

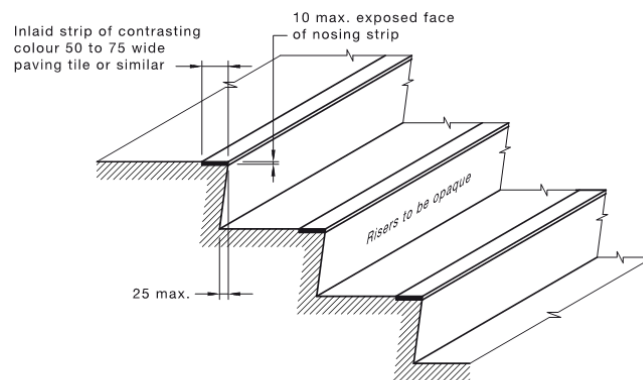




(a) Plan

DIMENSIONS IN MILLIMETRES

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

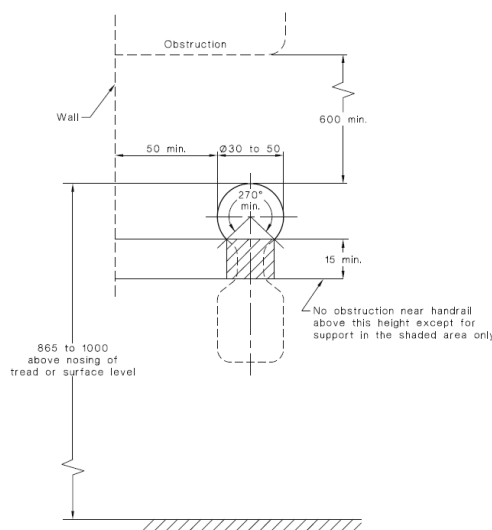


DIMENSIONS IN MILLIMETRES

- + Stairways are to be served by Tactile Ground Surface Indicators in accordance with AS1428.4.1.

Handrails

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





32. Clause D3.4 – Exemptions

This part provides exemptions to the Deemed-to-Satisfy provisions for access by people with a disability. This part 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 or the tasks undertaken.

Comments: It is noted that an exemption for the warehouse areas, and associated external hardstand areas (on health & safety risk basis) may be considered – details of which are to be provided at the CC Application stage.

33. Clause D3.5 – Accessible Carparking

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

Comments: In the case of Class 5 & 7b building, 1 compliant accessible space is required for every 100 parking spaces or part thereof. In this regard, the design is currently compliant with 3 accessible spaces provided across the site.

34. Clause D3.6 – Signage

This section provides requirements for signage in buildings required to be accessible by Part D3.

Comments: Signage will be required to identify accessible facilities, an ambulant accessible facility and the paths to accessible pedestrian entries (where required).

35. 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: Compliant tactile indicators are required in all areas of the building to all ramps, stairs, paths approaching a driveway and any overhead obstructions less than 2m in height.

36. 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.

37. Clause D3.12 – Glazing on an Accessway

On an accessway, where there is no chair rail handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, must be clearly marked in accordance with AS 1428.1.

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.

SECTION E – SERVICES AND EQUIPMENT

FIRE FIGHTING EQUIPEMENT

38. 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: Each of the proposed warehouse buildings are required to be served by a compliant hydrant system incorporating a ring main. Details demonstrating compliance with the provisions of AS 2419.1-2005 are required to be provided at CC Application stage.

It is assumed that the Hydrant booster assembly will not be located within sight of each entry on Lot 1. Additionally, it is assumed that external hydrants that are located under an awnings and are to be treated



as external hydrants for coverage purposes. A Performance Solution from the Fire Engineer is required to demonstrate compliance with Performance Requirement EP1.3 for the above non-compliances.

39. 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, whereas the office areas do not require compliant coverage as they are subject to the Class 5 concession. Details demonstrating compliance are to be provided at the CC application stage.

40. 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 require 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 are required to be sprinkler protected throughout in order to address the requirements of Clause C2.3 and Table E1.5. Details demonstrating compliance with AS2118.1-2017 are to be provided at the CC application stage.

Note: The sprinkler booster assembly is required to comply with the above referenced requirements for a hydrant booster per AS 2419.1-2005.

As the Sprinkler Booster locations will not comply with the provisions of AS2419.1-2005, a Performance Solution will need to be prepared by the Fire Engineer.

41. 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 building in accordance with Table E1.6 including to the Class 5 Office areas.

42. 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 buildings exceed 18,000m², they are required to be provided with Fire Control Centres that comply 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 Performance Solution to demonstrate compliance with Performance Requirement EP1.6 will be required.

SMOKE HAZARD MANAGEMENT

43. 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 / volume of the warehouse buildings are greater than 18,000m² / 108,000m³ and the ceiling height of the fire compartment exceeds 12m, an automatic smoke exhaust system in accordance with Spec E2.2b is required. In this regard, consideration may be given to an alternative solution to rationalise the required smoke hazard management requirements and in turn any such alternative solution will need to be prepared by the Fire Engineer and will need to demonstrate compliance with Performance Requirement EP2.2.

LIFT INSTALLATIONS

44. 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: Lift Contractor to note.

45. Clause E3.5 – Landings

Access and egress to and from lift well landings must comply with the DTS Provisions of Part D.

Comments: Lift Contractor to note.

46. 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. Minimum lift floor dimensions of 1100mm wide x 1400mm deep required.

EMERGENCY LIGHTING, EXIT SIGNS AND WARNING SYSTEMS

47. 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.

48. 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.

49. 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.

Note: NSW E4.6.

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

SECTION F – HEALTH & AMENITY

DAMP AND WEATHERPROOFING

50. Clause F1.1 – Stormwater drainage

Stormwater drainage must comply with AS/NZ 3500.3.

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



51. 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.

52. Clause F1.6 – Sarking

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

Comments: Note.

53. 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.

SANITARY AND OTHER FACILITIES

54. Clause F2.2 – Calculation of Number of Occupants & 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).

Comments: Noted – refer to D1.13.

55. 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) to (h).

Comments: The required sanitary facilities for the Office and Warehouse parts have been calculated as an aggregate across all banks of toilets based on the proposed population numbers detailed under Clause D1.13 above. The minimum required sanitary facilities from Table F2.3 are detailed below for reference:

Class 5 Office – Building 1A

- + 38 Males – 2 Closet Pans, 2 Urinals, 2 Washbasins
- + 38 Females – 3 Closet Pans & 2 Washbasins

Class 7b Warehouse – Building 1 A

- + 146 Males – 8 Closet Pans, 4 Urinals, 8 Washbasins
- + 146 Females – 10 Closet Pans & 8 Washbasins

Class 5 Office – Building 1B

- + 38 Males – 2 Closet Pans, 2 Urinals, 2 Washbasins
- + 38 Females – 3 Closet Pans & 2 Washbasins

Class 7b Warehouse – Building 1 B

- + 146 Males – 8 Closet Pans, 4 Urinals, 8 Washbasins
- + 146 Females – 10 Closet Pans & 8 Washbasins

Class 5 Office – Building 3

- + 33 Males – 2 Closet Pans, 2 Urinals, 2 Washbasins
- + 33 Females – 3 Closet Pans & 2 Washbasins



Class 7b Warehouse – Building 3

- + 174 Males – 9 Closet Pans, 5 Urinals, 9 Washbasins
- + 174 Females – 12 Closet Pans & 9 Washbasins

The current plans do not comply with the sanitary facilities required by BCA F2.3. The populations calculated in accordance with D1.13 (above) are considered excessive and as such, proposed population numbers are to be provided by Mirvac in order to calculate required facilities.

In addition, currently the Building 1 café is provided with 1 Accessible WC. In order to achieve compliance with the required number of facilities for population calculated per D1.13 (100 persons) an additional male ambulant and female ambulant facility, each with wash basins would be required. Alternatively, proposed population numbers could be provided by Mirvac as per above.

56. 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 disabled facilities and the standard, AS 1428.1, are set out in sub-clauses (a) to (i).

Comments: The accessible sanitary compartments and ambulant cubicles to each bank of sanitary compartments on the ground floor of each office are considered compliant with the requirements of this clause.

An additional Accessible WC is required to be added to each Level 1 office in order to achieve compliance with Table F2.4(a).

The proposed accessible toilet facilities and ambulant sanitary facilities 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 CC application stage, however, compliance is readily achievable.

57. Clause F2.5 – Construction of Sanitary Compartments

- (a) Other than in an early childhood centre sanitary compartments must have doors and partitions that separate adjacent compartments and extend –
 - (i) from floor level to the ceiling in the case of a unisex facility; or
 - (ii) a height of not less than 1.5m above the floor if primary school children are the principal users; or
 - (iii) 1.8 above the floor in all other cases.
- (b) The door to a fully enclosed sanitary compartment must-
 - (i) open outwards; or
 - (ii) slide; or
 - (iii) 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 F2.5** between the closet pan within the sanitary compartment and the doorway.

Comments: Details demonstrating compliance are to be submitted with documentation for the CC Application.

58. 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 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

59. 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.

60. 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 3666.1 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.

SECTION J – ENERGY EFFICIENCY

61. 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 warehouse buildings. Design details and/or certification of building envelope design (or JV3 Performance Solution) will be required to be submitted with the application for a Construction Certificate.

62. Part J2 – Glazing

Glazing within the external building envelope will be required to be assessed/designed to achieve compliance with **Clauses J2.0 to J2.5**, including the **Tables therein**, having regard to the maximum aggregate air-conditioning energy attributable to each façade of the proposed building. A calculation demonstrating that the proposed design of the building complies with the requirements of **Part J2** is required to be provided in this regard.

Comments: This section applies to any air-conditioned spaces proposed within the warehouse buildings. A calculation demonstrating that the proposed design of the glazing in the building complies with the requirements of **Part J2** (or JV3 Performance Solution) is required to be submitted with the application for a Construction Certificate.

63. 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 warehouse buildings. Details or certification that the proposed design complies with the requirements of **Part J3** (or JV3 Performance Solution) will need to be submitted with the application for a Construction Certificate.

64. 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: Consultant certification required at CC Application Stage.

65. 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: Consultant certification required at CC Application Stage.



66. 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: *Consultant certification required at CC Application Stage.*

67. 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: *Consultant certification required at CC Application Stage.*



C. CONCLUSION

This report contains an assessment of the referenced architectural documentation for the proposed industrial development at Kamps Creek 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 building works:

Statutory Fire Safety Measure	Design / Installation Standard
Alarm Signaling Equipment	AS 1670.3 – 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 Doors	BCA Clause C2.12, C2.13 and AS 1905.1 – 2015 and manufacturer's specification
Fire Hose Reels	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
Mechanical Air Handling Systems	BCA Clause E2.2, AS/NZS 1668.1 – 2015 & AS 1668.2 – 2012
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
Smoke Hazard Management Systems**	BCA Part E2 & AS/NZS 1668.1 – 2015
Warning & Operational Signs	Section 183 of the EP&A Regulation 2000, AS 1905.1 – 2015, BCA Clause D3.6 E3.3

**Note: Fire Safety Measures identified with double asterix are the subject of proposed Performance Solutions.



Appendix 1

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	—/—/—	—/—/—	—/—/—	—/—/—