



BCA ASSESSMENT REPORT

Oakdale West Estate, Kemps Creek Building 2C & 2D

**Prepared For:
Goodman Property Services (Aust) Pty Ltd**

Revision 3

Date: 12 August 2022

Project No.: 220166

Address

Suite 2.01,
22-36 Mountain St
Ultimo NSW 2007

Contact

Ph: 02 9211 7777
Fax: 02 9211 7774



CONTENTS

1.0	INTRODUCTION	3
1.1	BACKGROUND/PROPOSAL	3
1.2	AIM	3
1.3	PROJECT TEAM	3
1.4	DOCUMENTATION	3
1.5	REGULATORY FRAMEWORK	4
1.6	LIMITATIONS & EXCLUSIONS	4
1.7	TERMINOLOGY	5
2.0	BUILDING CHARACTERISTICS	7
2.1	BUILDING CLASSIFICATION	7
2.2	DISTANCE TO FIRE SOURCE FEATURES	7
3.0	BCA ASSESSMENT	8
3.1	SECTION B – STRUCTURE	8
3.2	SECTION C – FIRE RESISTANCE	8
3.3	SECTION D – ACCESS & EGRESS	12
3.4	SECTION E – SERVICES AND EQUIPMENT	18
3.5	SECTION F – HEALTH & AMENITY	20
3.6	SECTION J – ENERGY EFFICIENCY	23
4.0	SUMMARY OF KEY COMPLIANCE ISSUES	25
4.1	MATTERS REQUIRING FURTHER RESOLUTION/NON-FIRE SAFETY PERFORMANCE SOLUTIONS	25
4.2	MATTERS TO BE ADDRESSED AS FIRE SAFETY ENGINEERED PERFORMANCE SOLUTIONS	25
5.0	CONCLUSION	26
6.0	APPENDIX 1 – SPEC. C1.1 FRL REQUIREMENTS	27

REPORT STATUS				
DATE	REVISION	STATUS	AUTHOR	REVIEWED
12.11.2020	0	Preliminary Assessment – Draft Report for Client & Consultant Review	DG	TJ
08.10.2021	1	Updated Assessment – design changes	DG	NQ
15.10.2021	2	Assessment of Updated Plans	DG	NQ
12.08.2022	3	Assessment of Updated Plans	JB	DG

Prepared By:

Jackson Boyd
Building Surveyor
Blackett Maguire + Goldsmith

Reviewed By:

Dean Goldsmith
Director
Blackett Maguire + Goldsmith



1.0 INTRODUCTION

1.1 BACKGROUND/PROPOSAL

Blackett Maguire + Goldsmith Pty Ltd (BM+G) have been commissioned by Goodman Property Services (Aust) Pty Ltd to undertake a preliminary review of the proposed Industrial 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 Part 4 of the *Building & Development Certifiers Regulation 2020*.

The proposed development involves the following two sites in Precinct 2:

- + Site 2C/2D – Unit 2C-1 & Unit 2C-2 Warehouse Building with offices over two levels, on grade docks, recessed docks, hardstand area, awnings and associated car parking
- + Site 2D – Warehouse Building with office over one level, on grade docks, recessed docks, dock offices, hardstand area, awnings and associated car parking

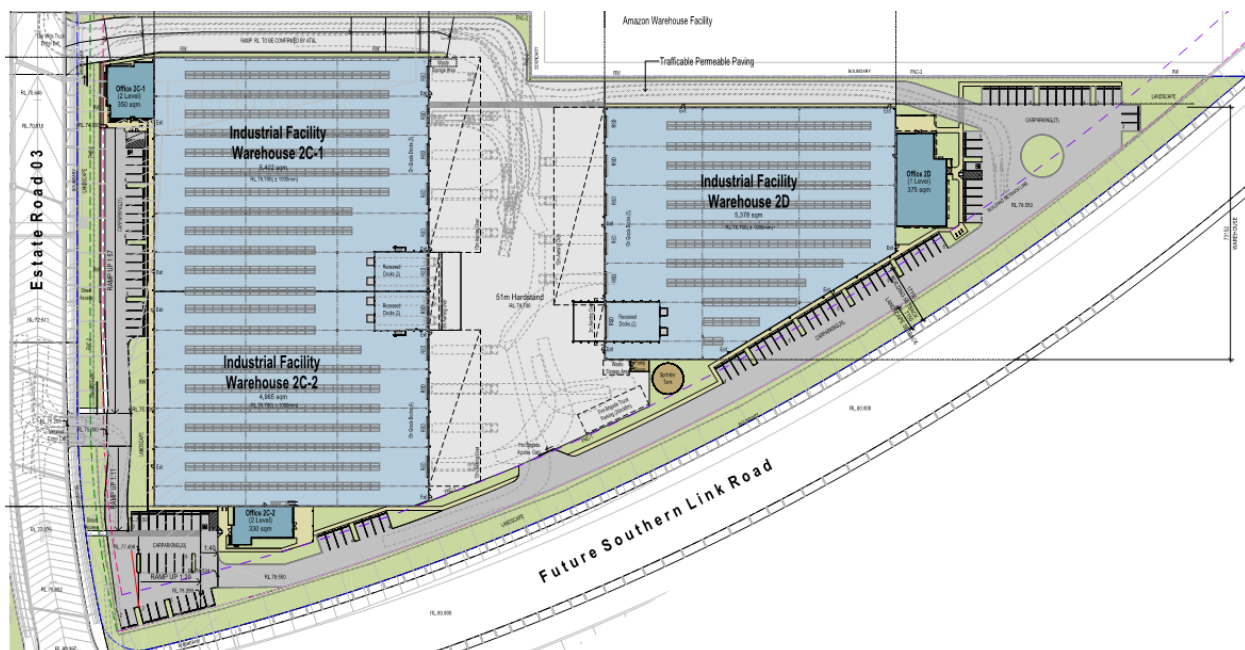


Figure 1 – Site Plan (DA20)

1.2 AIM

The aim of this report is to:

- + Undertake an assessment of the proposed warehouse facilities 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)
- + Jackson Boyd (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 SBA Architects:

Drawing No.	Rev.	Date	Drawing No.	Rev.	Date
OAK 2C & 2D DA000	D	12.10.2021	OAK 2C & 2D DA307	C	12.10.2021
OAK 2C & 2D DA001	C	12.10.2021	OAK 2C & 2D DA310	D	12.10.2021
OAK 2C & 2D DA002	PC	12.10.2021	OAK 2C & 2D DA311	D	12.10.2021
OAK 2C DA20	J	12.10.2021	OAK 2C & 2D DA312	C	12.10.2021
OAK 2C & 2D DA20	B	08.08.2022	OAK 2C & 2D DA313	C	12.10.2021
OAK 2C & 2D DA300	A	08.08.2022	OAK 2C & 2D DA314	C	12.10.2021
OAK 2C & 2D DA305	C	12.10.2021	OAK 2C & 2D DA315	B	12.10.2021
OAK 2C & 2D DA306	C	12.10.2021	OAK 2C DA400	D	12.10.2021

1.5 REGULATORY FRAMEWORK

Pursuant to clause 145 of the Environmental Planning and Assessment (EP&A) 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 (x2 buildings):

BCA Class:	Both Buildings – Class 5 (Office) & Class 7b (Warehouse)
Rise in Storeys:	Building 2C – Rise in Storeys of 2 Building 2D – Rise in Storeys of 1
Effective Height:	Both Buildings – Less than 12m
Type of Construction:	Both Buildings – Type C Construction (Large Isolated Building)
Climate Zone:	Zone 6
Maximum Floor Area:	Building 2C – Large Isolated Building – 12,325m ² – Less than 18,000m ² Building 2D – Large Isolated building – 6,650m ² – Less than 18,000m ²
Maximum Volume:	Building 2C – Large Isolated Building – Greater than 108,000m ³ – TBC by Architect Building 2D – Large Isolated Building – Less than 108,000m ³
Importance Level:	Level 2

2.2 DISTANCE TO FIRE SOURCE FEATURES

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

Warehouse 2C:

Elevation	Fire Source Feature	Distance
West	Far side of the road	>3m
North	Side or rear boundary	>3m
East	Adjacent building	>3m
South	Far side of the road	>3m

Warehouse 2D:

Elevation	Fire Source Feature	Distance
West	Adjacent building	>3m
North	Side or rear boundary	>3m
East	Far side of the road	>3m
South	Far side of the road	>3m

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



3.0 BCA ASSESSMENT

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 C Construction applies to both buildings – see notes under Spec. C1.1 below regarding applicable FRL's from Table 5 applicable to 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: Building 2C has a rise in storeys of two (2) and Building 2D has a rise in storeys of one (1).

+ **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.

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: Both of the proposed buildings are Class 5 & 7b Large Isolated Buildings of Type 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 buildings do not comply with the provisions of C2.4 and thus the following non-compliance areas are identified on the site plan (over page) that are required to be addressed as an Performance Solution by the Fire Safety Engineer for each building, as follows:

- + Perimeter Vehicular Access is greater than 18m from the external walls of Building 2C & 2D as shown in the below figure, in red.

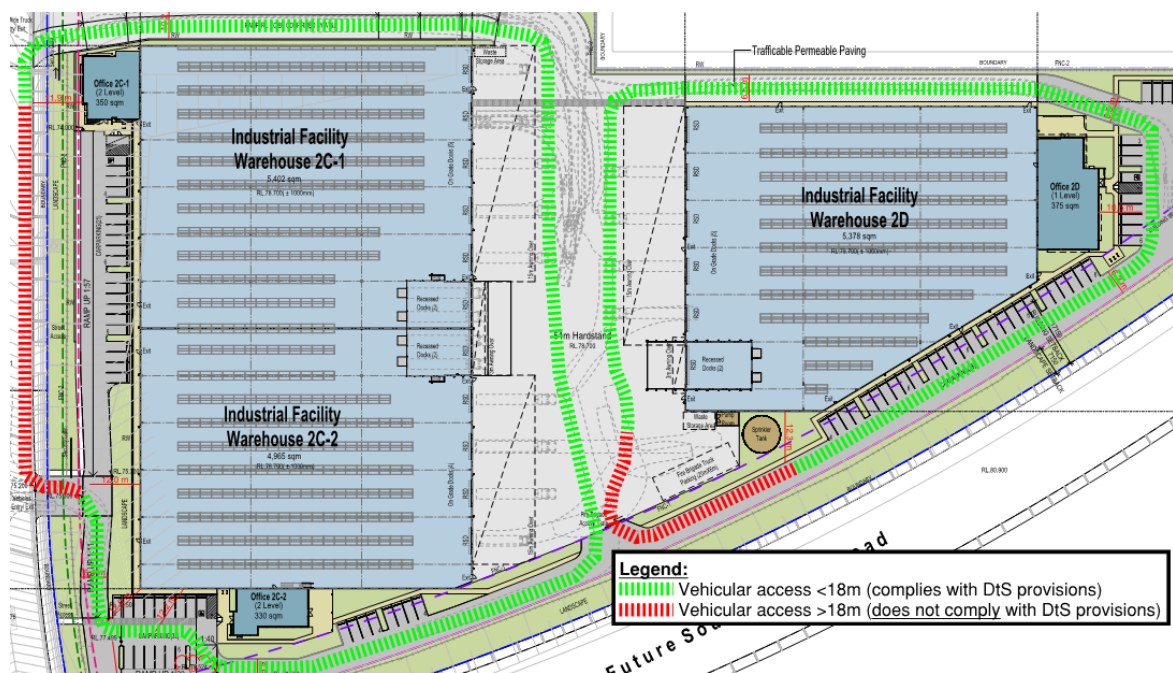


Figure 2 – Perimeter Vehicular Access per BCA C2.4.



- + *Perimeter Vehicular Access incorporates a number of tight turns in the south-western car park (see below figure). Specific confirmation is required with respect to the below from the relevant consultant. Compliance is to be confirmed prior to the issue of the relevant CC.*

Note that the vehicular path further south (shown in orange) does not comply with C2.4 and thus has not been relied upon. The orange path is >18m from the building external wall, and incorporates a path less than 6m wide.

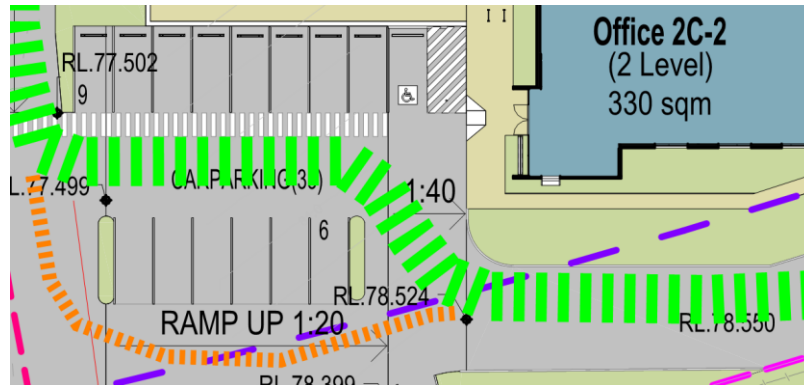


Figure 3 – Perimeter vehicle access, reduced to 5.7m in width

Note 1: The driveways providing vehicular perimeter access must be designed with adequate loading capacities and swept paths to accommodate 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 Table 5 for Type C Construction.

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

+ **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 –

- (i) an FRL as required by Specification C1.1, but not less than 120/120/120; and
- (ii) 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. Specific attention is drawn to the solar system in this regard.*



+ **Clause C2.13 – Electricity Supply System**

An electricity substation or a 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) Have any doorway in that construction protected with a self-closing fire door having an FRL of not less than 120/30.

Electrical conductors located within a building that supply an abovementioned substation or switchboard must –

- (i) Be separated from any other part of the building by construction having an FRL of not less than 120/120/120; or
- (ii) Have a classification in accordance with AS/NZS 3013 of not less than WS53W or WS52W (as applicable).

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. This is particularly relevant to the main electrical switchrooms that are required to be fire separated in accordance with the above requirements.

PROTECTION OF OPENINGS

+ **Clause C3.15 – 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. Certification and appropriate test reports will be required for assessment at OC Application stage.

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: All buildings 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 buildings 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.

+ **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 Level 1 office of Building 2C 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).

+ **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 portions. 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.

+ Tenancy 2C-1 – Up to 56m to the nearest exit from the central parts of the Warehouse.

+ Tenancy 2C-2 – Up to 56m to the nearest exit from the central parts of the Warehouse.

+ Warehouse 2D – Up to 52m to the nearest exit from the central parts of the Warehouse.

+ **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.

+ Tenancy 2C-1 – Up to 112m between alternative exits from the Warehouse

+ Tenancy 2C-2 – Up to 112m between alternative exits from the Warehouse

+ Tenancy 2D – Up to 104m between alternative exits from the Warehouse

+ **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.

+ 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 are compliant with discharge distances of D1.9.

+ 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.

A pedestrian egress path is required from the points of discharge, to the allotment boundary (public roadway). An indicative path from Office 2C-2 is shown on the provided plans, though further detail is to be provided regarding the gradients of the pathway, having regard to the various requirements relating to accessibility as well as car parking. Evidence of compliance will be required prior to the issue of the relevant CC.

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: 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:

+ Office 2C-1 – 35 persons

Warehouse 2C-1 – 91 persons

+ Office 2C-2 – 33 persons

Warehouse 2C-2 – 83 persons

+ Office 2D – 38 persons

Warehouse 2D – 90 persons

The above population numbers are considered excessive for the proposed buildings and as such, realistic proposed population numbers may be provided by Goodman at CC application stage in order to confirm compliance with 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 within 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 with a gradient steeper than 1:14	P4 or R11	P5 or R12
Ramp with a gradient between 1:20 – 1:14	P3 or R10	P4 or R11
Tread or landing surfaces	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.

Note: As the recessed docks are less than 200m² each, they are permitted to be served by the roller doors, provided they are held in the open position while that area is occupied.

+ 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).



+ **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 generally achievable; however, details and design certification will be required to be provided at CC Application stage along with any proposed performance solutions relating to accessibility.

The following is a summary of some of the key matters which need to be considered from Clause 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 AS 1428.1-2009 is required from the allotment boundary to the main entry of each office. It is noted that no such access path is currently shown from the allotment boundary to Office 2C-1. Where no path is provided, a Performance Solution will be required from the Access Consultant at CC Application stage to address the proposed design.*

It is also unclear as to whether such a path is also provided to Office 2D confirmation will be required prior to the issue of the relevant CC.



- + *An accessway complying with AS 1428.1-2009 is required between the main entries of each office. It is unclear as to whether such a path is provided from the 2C Offices to Office 2D. Confirmation as to whether a DtS or Performance Solution approach is proposed will be required prior to the issue of the relevant CC.*
- + *A lift is required to be provided to serve each storey within Building 2C as the combined area of Level 1 exceeds 200m². There is currently no lift serving the Level 1 offices, and as the storey exceeds 200m² (Level 1 offices combined) is non-compliant with the requirements of this clause. Should a lift not be proposed to these areas, a Performance Solution from an Accredited Access Consultant will be required to address this departure.*
- + *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 AS 1428.1-2009.*
- + *Turning Spaces and Passing Spaces in all areas are required to be provided on each level of the building in accordance with Clauses 6.4 & 6.5 of AS 1428.1-2009.*

Stairways

- + *Every common area stairway must be constructed in accordance with Clause 11 of 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 nosings shall comply with the following diagram, which achieve a colour contrast luminance of 30% to the background (tread).*
- + *Stairways are to be served by Tactile Ground Surface Indicators (TGSIs) in accordance with AS 1428.4.1, except if they are within a fire isolated exit (on an area which is not required to be accessible).s*

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.*
- + **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 Goodman Property Services Pty Ltd 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 e.g. 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 AS 2419.1 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 (x2) 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.

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 volume of Building 2C (Warehouses 2C-1 and 2C-2) is greater than 108,000m³, an automatic smoke exhaust system is required to be provided. BM+G is advised that 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 any proposed lifts within the Building 2C – 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: Applies to any proposed lifts within the Building 2C – 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: Applies to any proposed lifts within the Building 2C – 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

- (i) Unhealthy or dangerous conditions, or loss of amenity for occupants; and
- (ii) 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 (e.g. 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: 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 2C-1:

18 Males – 1 Closet Pan, 1 Urinal & 1 Washbasin

18 Females – 2 Closet Pans & 1 Washbasin

Class 7b Warehouse 2C-1:

46 Males – 3 Closet Pans, 2 Urinals & 3 Washbasins

46 Females – 3 Closet Pans & 3 Washbasins

Class 5 Office 2C-2:

17 Males – 1 Closet Pan, 1 Urinal & 1 Washbasin

17 Females – 2 Closet Pans & 1 Washbasin

Class 7b Warehouse 2C-2:

46 Males – 3 Closet Pans, 2 Urinals & 3 Washbasins

46 Females – 3 Closet Pans & 3 Washbasins

Class 5 Office 2D:

19 Males – 1 Closet Pan, 1 Urinal & 1 Washbasin

19 Females – 2 Closet Pans & 1 Washbasin

Class 7b Warehouse 2D:

45 Males – 3 Closet Pans, 2 Urinals, 3 Washbasins

45 Females – 3 Closet Pans & 3 Washbasins

Detailed plans are to be provided demonstrating compliance with the above, prior to the issue of the relevant CC.

As noted in D1.13 above, the population numbers for each tenancy are considered excessive for the proposed buildings and as such, realistic populations may be provided by Goodman at CC application stage in order to assess compliance with the required number of facilities under F2.3.

+ 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.

As noted above, an additional Accessible facility is required at the Level 1 2C1 and 2C-2 offices as the storey is greater than 200m². If it is not proposed to provide an accessible facility to these areas, a Performance Solution will be required from an accredited Access Consultant.

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 AS 1668.2 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; and must be interlinked by a communication system that collates the time of use energy consumption data to a single interface monitoring system.

Comments: Details or certification demonstrating compliance with J8.3(b) & (c) will need to be submitted with the application for a Construction Certificate.



4.0 SUMMARY OF KEY COMPLIANCE ISSUES

The following comprises a summary of the key compliance issues identified under the assessment contained above in this report and includes the required Performance Solutions. These matters are to be addressed prior to issue of the Construction Certificate.

4.1 MATTERS REQUIRING FURTHER RESOLUTION/NON-FIRE SAFETY PERFORMANCE SOLUTIONS

BCA Clause/s		Description
1.	C2.4	Confirmation is required regarding the compliance of the configuration of the perimeter vehicular access through the south-western carpark.
2.	D1.10	Confirmation is required regarding the compliance of the gradient between the exit from Office 2C-2
3.	D3.2	Details demonstrating compliant access paths between Offices are to be provided.
4.	D3.3 & D3.4	Details of any proposed Clause D3.4 exemptions to be provided.
5.	D3.3 & Part E3	Confirmation is required regarding whether a DtS or Performance Solution approach is proposed regarding accessibility of the Level 1 offices in warehouse 2C.
6.	FP1.4	A Performance Solution report is to be provided by the Architect/Façade Engineer to demonstrate how the external walls & roof are designed to prevent the penetration of water into the buildings.
7.	F2.3	Plans are to be provided demonstrating that the required sanitary facilities have been provided.
8.	Section J	A Section J Compliance Report or JV3 Report will be required at CC application stage for the building.

4.2 MATTERS TO BE ADDRESSED AS FIRE SAFETY ENGINEERED PERFORMANCE SOLUTIONS

BCA Clause/s		Description
1.	C2.4	Perimeter Vehicular Access is non-compliant with C2.4 to the proposed Large Isolated Building.
2.	D1.4 & D1.5	The distance to the nearest exit and between alternative exits is non-compliant in the warehouse portion of the building.
3.	E1.3	Where hydrants that are located outside the building are not open to the sky (e.g. located under an awning or the like) and 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 will be required. Additionally, details of the hydrant booster locations are to be provided to determine if it is required to be addressed as a Performance Solution. Any sharing of fire services shared across Lots will also require a Performance Solution.
4.	E1.5	The location of the sprinkler booster assembly will likely be required to be addressed as a Performance Solution. Further details to be provided. Any sharing of fire services shared across Lots will also require a Performance Solution.
5.	E2.2	BM+G are advised that a Performance Solution may be considered to rationalise the smoke hazard management requirements within Building 2C.



5.0 CONCLUSION

This report contains an assessment of the referenced architectural documentation for the proposed warehouse and distribution facilities at Kemps 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 buildings:

Statutory Fire Safety Measure	Design / Installation Standard
Alarm Signalling Equipment	AS 1670.3 – 2018
Automatic Fail-Safe Devices	BCA Clause D2.21
Automatic Fire Detection System <i>Note: This only applies to buildings where an automatic smoke exhaust system is required.</i>	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, NSW E4.6 & E4.8 AS 2293.1 – 2018
Fire Doors	BCA Clauses C2.12 & C2.13 AS 1905.1 – 2015 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 Manufacturer's specification
Lightweight Construction	BCA Clause C1.8 AS 1530.4 – 2014 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
Smoke Hazard Management Systems (Site 2C Building only)	BCA Part E2 AS/NZS 1668.1 – 2015
Warning & Operational Signs	BCA Clause D3.6 & E3.3 AS 1905.1 – 2015



6.0 APPENDIX 1 – SPEC. C1.1 FRL REQUIREMENTS

Table 5 TYPE C CONSTRUCTION: FRL OF BUILDING ELEMENTS

Building Element	Class of building — FRL: (in minutes) Structural adequacy/ Integrity/Insulation			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated within it) or other external building element, where the distance from any fire-source feature to which it is exposed is —				
For loadbearing parts—				
less than 1.5 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 —				
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	-/-/-	-/-/-	-/-/-	-/-/-

Notes:

1. An external wall required to have an FRL is only required from the outside.
2. Any lightweight construction in a fire wall or an internal wall required to have an FRL is to comply with Specification C1.8.
3. The method of attaching or installing a finish, lining, ancillary element, or service installation to a building must not reduce the fire-resistance of that element to below that required.
4. No structural elements are permitted to pass through fire-rated walls.
5. Fire rated shafts are required to be enclosed at the top and bottom by construction having an FRL of not less than what the shaft requires.