



BLACKETT
MAGUIRE+
GOLDSMITH

BCA ASSESSMENT REPORT

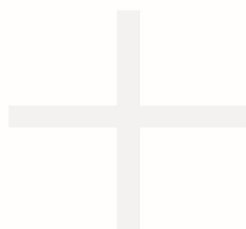
Oakdale East, Horsley Park

Client: Goodman Property Services

Revision 2

Date: 08.03.2019

Project No.: 180427



Address

Suite 2.01,
22-36 Mountain St
Ultimo NSW 2007

Contact

Ph: 02 9211 7777
Fax: 02 9211 7774



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REPORT STATUS				
DATE	REVISION	STATUS	AUTHOR	REVIEWED
05.11.2018	0	Preliminary Assessment – For DA Submission	DG	TH
11.02.2019	1	Updated Assessment – For DA Submission	DG	TH
08.03.2019	2	Updated Drawings – For DA Submission	DG	TH

Prepared by:

Dean Goldsmith

Director

Blackett Maguire + Goldsmith

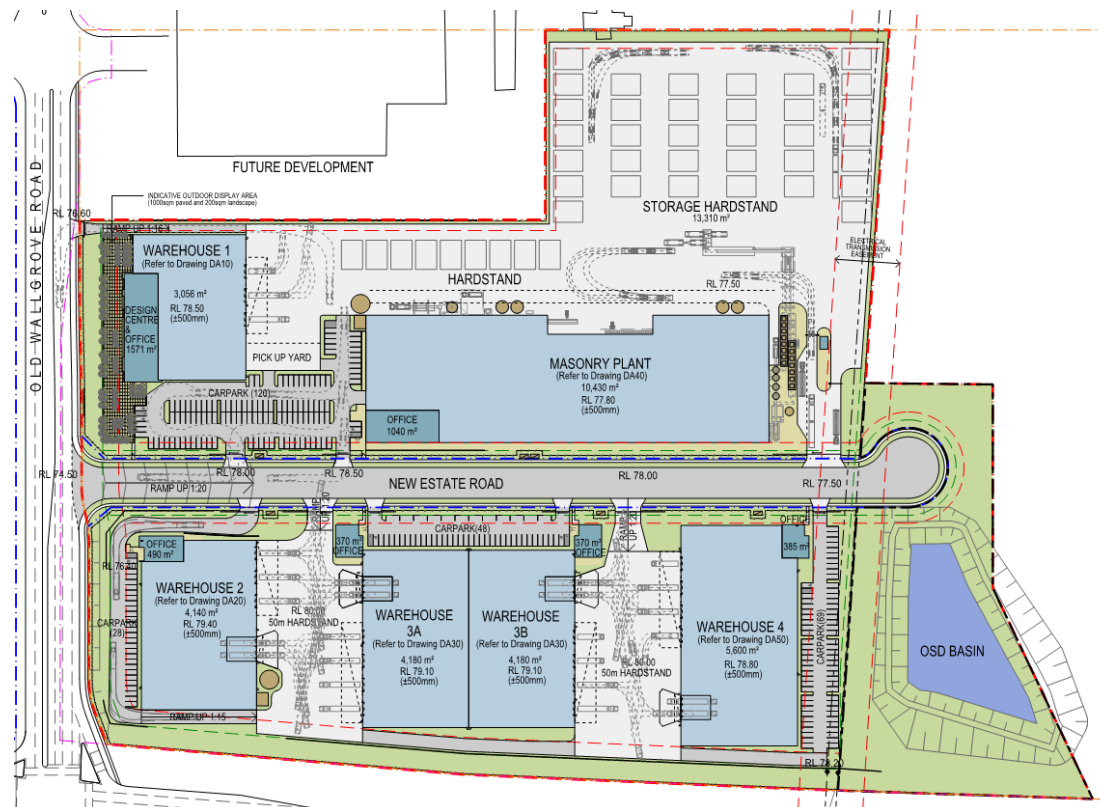


A. INTRODUCTION

A.1 BACKGROUND / PROPOSAL

Blackett Maguire + Goldsmith Pty Ltd (BM+G) have been commissioned by Goodman Property Services, to undertake a preliminary review of the proposed development, against the deemed-to-satisfy (DTS) provisions of the Building Code of Australia 2016 Amendment 1 (BCA) pursuant to the provisions of clause 145 of the *Environmental Planning & Assessment Regulation 2000* and clause 18 of the *Building Professionals Regulation 2007*.

The proposed development comprises of the construction of a masonry plant with associated office and amenities, along with four (4) warehouses with associated office, hardstand and car parking + new estate road and landscaping.



Oakdale East Site Plan - Source: SBA Architects Drawing No. OAK E-MP03 (H)

A.2 AIM

The aim of this report is to assess the proposed industrial development against the Deemed-to-Satisfy (DtS) Provisions of the BCA 2016 and Identify any 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:

- Dean Goldsmith (Director)
- Tony Heaslip (Peer Review)

A.4 DOCUMENTATION

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

- BCA 2016 Amendment 1
- Guide to the BCA 2016 Amendment 1.



- Architectural plans prepared by SBA Architects Pty Ltd, as listed below:

Drawing No.	Rev.	Date	Drawing No.	Rev.	Date
MP01	E	06.03.2019	DA32	C	06.02.2019
MP02	D	06.03.2019	DA33	B	24.01.2019
MP03	H	06.03.2019	DA34	B	24.01.2019
DA10	F	06.03.2019	DA35	B	24.01.2019
DA11	C	06.02.2019	DA36	B	24.01.2019
DA12	F	06.03.2019	DA40	D	06.03.2019
DA13	C	06.03.2019	DA42	D	06.03.2019
DA14	A	24.01.2019	DA43	B	06.03.2019
DA15	C	06.03.2019	DA44	B	06.03.2019
DA20	E	06.03.2019	DA45	B	24.01.2019
DA21	C	06.02.2019	DA50	F	06.03.2019
DA22	C	06.02.2019	DA51	E	06.03.2019
DA23	D	06.03.2019	DA52	C	06.02.2019
DA24	B	24.01.2019	DA53	C	06.02.2019
DA25	D	06.03.2019	DA54	B	24.01.2019
DA30	D	06.03.2019	DA55	C	06.02.2019
DA31	B	24.01.2019			

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.
- BM+G Pty Ltd do not guarantee acceptance of this report by Local Council, FRNSW or other approval authorities.



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A.7 TERMINOLOGY

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

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

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 Alternative 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 and masonry plant (x5 buildings):

▪ BCA Class:	Masonry Plant - Class 5 (Office) & Class 8 (Manufacturing Plant) Buildings 1-4 - Class 5 (Office) & Class 7b (Warehouse)
▪ Rise in Storeys:	All Buildings - Two (2)
▪ Effective Height:	All Buildings - Less than 12m
▪ Type of Construction:	All Buildings - Type C Construction (Large Isolated Building)
▪ Climate Zone:	Zone 6
▪ Maximum Floor Area:	Masonry Plant & Buildings 1-4 - Large Isolated Building - <18,000m ²
▪ Maximum Volume:	Buildings 1, 2 & 4 - Large Isolated Building - <108,000m ³ (Note: Architect to confirm exact volume) Masonry Plant & Building 3 - Large Isolated Building - >108,000m ³ (Note: Architect to confirm exact volume)

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 development and masonry plant.

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 - 2011, Masonry Structures
6. AS 3600 - 2009, Concrete Structures
7. AS 4100 - 1998, Steel Structures
8. AS 4600 - 2005, 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 and certification will be required at CC application stage for each building.

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 to all of the proposed buildings within the estate – 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: A Rise in Storeys of two (2) applies to each building in the estate, including the masonry plant.

4. 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.

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

Comments: Design certification required at CC application 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 (or 8) – Large Isolated Buildings with Type C Construction – 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 each of the five (5) buildings in the proposed development.

6. Clause C2.3 – Large Isolated Buildings

A Large Isolated Building that contain Class 5, 6, 7, 8n 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 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.

7. 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 issues are required to be addressed as a Performance Solution by the Fire Engineer to demonstrate compliance with Performance Requirement CP9.



Vehicular Access is provided around all of the four (4) sides of all of the proposed buildings, however it is located greater than 18m from the external walls of Buildings 1, 3, 4 & the Masonry Plant, is discontinuous in the corners of Buildings 2 & 3, and is less than 6m in width along one side of Building 1 and the Masonry Plant – refer to diagram below:

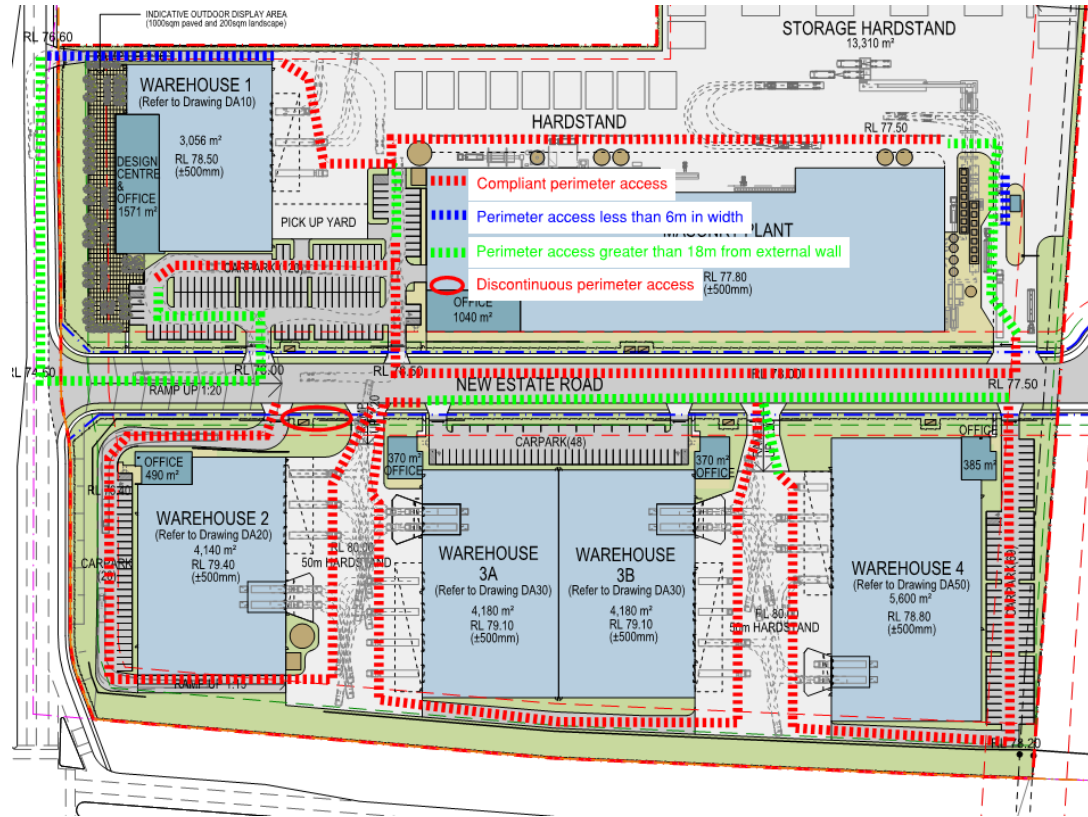


Figure 1 – Areas of Non-Compliant Perimeter Vehicular Access per BCA C2.4.

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: As all of the Buildings are of Type C Construction the same FRL requirements apply to both the Class 5 and Class 7b/8 parts. Given the above, the provisions of C2.8(a) may be applied and in turn a fire wall between the Class 5 and Class 7b/8 parts is not required.

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 24 volts and a capacity exceeding 10 ampere hours.

Note: Separating construction must have –



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

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

10. Clause C2.13 – Electricity Supply System

- (a) An electricity substation, main switchboard which sustains emergency equipment operating in the emergency mode, located within a building must –
 - (i) Be separated from any other part of the building by construction having an FRL of not less than 120/120/120; and
 - (ii) Having any doorway in that construction protected with a self-closing fire door having an FRL of not less than -/120/30
 - (i) Be separated from any other part of the building by construction having an FRL of not less than -/120/30.
 - (ii) Have any doorway in that construction protected with a self-closing fire door having an FRL of not less than -/120/30.
- (b) Electrical conductors located within a building that supply

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

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

PROTECTION OF OPENINGS

11. 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.

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: Due to the configuration and position of all of the proposed buildings on the site there are no building elements required to be fire rated under the Type C Construction provisions of Table 5 of Spec C1.1.

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 D1.3 – 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 the Level 1 of each Building connects two storeys in a sprinkler protected building and as such are not required to be fire isolated in accordance with D1.3(b).

16. 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:

- + Masonry Plant - maximum exit travel distances of 90m.
- + Building 3 - maximum exit travel distances of 50m.
- + Building 4 - maximum exit travel distances of 50m

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

Note 1: Buildings 1 & 2 are compliant with D1.4, permitting an additional egress door is located in the SW corner of the warehouse of Building 1.

Note 2: An additional egress door is required in the NE corner of Building 4 to achieve max. distance to an exit of 50m.

17. 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 in the warehouse portions of each building are considered non-compliant with the provisions of D1.5, in the following areas:

- + Masonry Plant - maximum distances between alternative exits of 120m.
- + Building 1 - maximum distances between alternative exits of 80m.
- + Building 2 - maximum distances between alternative exits of 75m.
- + Building 3 - maximum distances between alternative exits of 95m.
- + Building 4 - maximum distances between alternative exits of 95m.

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

18. Clause D1.6 – Dimensions of Exits

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



Comments: Population numbers for the proposed buildings are required to be provided by Goodman at the CC Application stage to facilitate an assessment of the provisions of D1.6. In this regard, however, it is considered that compliance is readily achievable.

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

19. 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 within each building are capable of achieving compliance with D1.9 – further details are to be provided at CC application stage.

20. 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.

21. Clause D1.13 – Number of Persons Accommodated

Clause D1.13 and Table D1.13 are used to calculate the anticipated number of people in particular types of buildings so that minimum exit widths and the required number of sanitary and other facilities can be calculated. This clause and table are not to be used for non-BCA purposes.

Comments: In accordance with the comments under D1.6 above population numbers for the proposed warehouse buildings are to be provided by Goodman at CC Application stage.

CONSTRUCTION OF EXITS

22. 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.

23. 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: Applies to the proposed stairs within each Building. Details demonstrating compliance are to be submitted with the CC Application drawings.

24. 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. Sub-clause (b) details the layout for a Class 9a building to allow for the movement of a stretcher.

Comments: Applies to the proposed stairs within each Building. Details demonstrating compliance are to be submitted with the CC Application drawings.

25. 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 –



- (i) the doorway 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 for each building.

26. 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 in sub-clauses (a) to (i) and Tables D2.16(a), D2.16(b) & D2.16(c).

Comments: Applies to the proposed stairs within each building and to any part of the site where the drop to the level below exceeds 1m. Details demonstrating compliance are to be submitted with the CC Application drawings. Note: The provisions of D2.16(g) and (h)(ii) apply to all external stairs and the stairs in the offices – ie. min. height of 1m & no gaps greater than 125mm.

27. 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. Note: Handrails serving all stairs and ramps both internally and externally are required to comply with the accessibility requirements of Clause D3.3 and AS 1428.1-2009.

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).

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 throughout all areas in the proposed buildings and between the main entries of the proposed buildings within the Estate 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.



Note: If compliant access is not proposed to be provided to the Warehouse areas in each building, comment will be required from an Access Consultant as to whether a concession under D3.4 or an alternative solution can be considered.

Comments: The following provisions of Clause D3.3 and in turn AS 1428.1-2009 are applicable to the proposed buildings:

- a. Access into the principal entrance of the ground floor main lobby of each Building will be required to comply with AS1428.1-2009. This will necessitate 1:40 cross falls / landings at the accessible entrance.
- b. An accessible pathway is required to be provided from the Estate Roads adjoining the sites to the main entry of each building. In addition, a compliant accessible path is required on the site between the main entrances of each of the buildings/tenancies to the other buildings within the Estate. Details demonstrating compliance will be required at CC Application and particular attention is drawn to the need to provide dedicated pathways that are independent of the truck accessway around the site.
- c. A passenger lift is required to serve the Level 1 Offices in each Building (as the floor area exceeds 200m²) and is to comply with BCA Clause E3.6. The lift floor dimensions must be a minimum of 1.1m wide x 1.4m deep for all lifts that travel less than 12m. Design details are also required on the Construction Certificate plans.

Details demonstrating compliance and/or design certification are to be provided at the CC Application stage.

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 recommended that advice be obtained from the Access Consultant at the CC Application stage. In this regard, however, consideration to an exemption for the warehouse areas and the Masonry Plant (on health & safety risk basis) may be appropriate on this project.

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/8 buildings 1 compliant accessible space is required for every 100 parking spaces or part thereof. In this regard, we note that the accessible parking spaces that are proposed at each proposed building/tenancy, achieve compliance with the requirements of D3.5.

SECTION E – SERVICES AND EQUIPMENT

FIRE FIGHTING EQUIPEMENT

34. Clause E1.3 - Fire hydrants

E1.3(a) – A fire hydrant system must be provided to serve a building having a total floor area greater than 500m² and where a fire brigade is available to attend a building fire.

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

Comments: The proposed Large Isolated 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.

Note: The location of the hydrant booster at each site adjoining the Estate Roads will be required to be within sight of the main entries of each building or a Performance Solution will be required from the Fire Engineer.



35. 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 buildings are required to be served by a compliant fire hose reel system. Details demonstrating compliance are to be provided at the CC application stage.

36. 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 (x5) 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. Note: The sprinkler booster assembly serving the site is required to comply with AS 2419.1-2005 in addition to AS2118.1-2017.

37. 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.

38. 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 none of the building have a floor area greater than 18,000m², the provisions of this clause are not applicable.

SMOKE HAZARD MANAGEMENT

39. 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 3 and the Masonry Plant are greater than 108,000m³ (subject to confirmation by the Architect), an automatic smoke exhaust system is required to be provided within each of these buildings. In this regard, consideration may be given to a Performance Solution to rationalise the smoke control requirements and will need to be prepared by the Fire Engineer in order to demonstrate compliance with Performance Requirement EP2.2.



PART E3 LIFT INSTALLATIONS

40. 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– applies to all of the proposed Buildings on site.

EMERGENCY LIGHTING, EXIT SIGNS AND WARNING SYSTEMS

41. 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 2293.1-2005.

42. 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.

SECTION F – HEALTH & AMENITY

DAMP AND WEATHERPROOFING.

43. Performance Requirement FP1.4

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

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

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

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

Comments: Design statement and a documented Performance Solution is to be provided with the Construction Certificate application, 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.

44. 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.

45. 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.

46. Clause F1.6 – Sarking

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

Comments: Note.

47. 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

48. 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: As indicated above proposed population numbers are to be provided by Goodman for each building to assess if the proposed toilet facilities within the buildings are adequate to achieve compliance with Table F2.3. Details are to be provided at CC Application stage, however, compliance is readily achievable based on the current sanitary facilities numbers shown on the DA plans.

49. 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 tenancy 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.

50. 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.



LIGHT AND VENTILATION

51. 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.

52. Clause F4.5 – Ventilation of Rooms

A habitable room, office, shop, factory, workroom, sanitary compartment, bathroom, shower room, laundry and any other room occupied by a person for any purpose must have natural ventilation complying with F4.6 **or** a mechanical or air-conditioning system complying with AS1668.2 and AS/NZS 3666.1.

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

Comments: Design certification to be submitted at CC Stage.

SECTION J – ENERGY EFFICIENCY

53. 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 will be required to be submitted with the application for a Construction Certificate.

54. 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 and masonry plant. Design details and/or certification of building envelope design will be required to be submitted with the application for a Construction Certificate.

55. 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 and masonry plant. Design details and/or certification of building envelope design will be required to be submitted with the application for a Construction Certificate.



56. 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.

57. Part J6 – Artificial Lighting & 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.

58. 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.

59. Part J8 – Facilities for Energy Monitoring

Provision for monitoring of energy consumption must be provided to a building where the floor area exceeds 500m², and must be capable of recording the consumption of gas and electricity. In addition, where the floor area of the building exceeds 2,500m² the energy monitoring facilities must be capable of individually recording air-conditioning, lighting, appliance power, central hot water supply, lifts/escalators, and other ancillary plant.

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



C. CONCLUSION

This report contains an assessment of the referenced architectural documentation for the proposed warehouse/industrial development at Oakdale East Precinct, Horsley Park against the Deemed-to-Satisfy Provisions of the BCA 2016 Amendment 1. Arising from the review, it is considered that the proposed development can readily achieve compliance with the relevant provisions of the BCA.

The following fire safety measures are required in each of the proposed new building:

Statutory Fire Safety Measure	Design / Installation Standard
Alarm Signaling Equipment	AS 1670.3 – 2004
Automatic Fire Detection System (Masonry Plant & Building 3 only)	BCA Spec. E2.2a & AS 1670.1 – 2015 & AS/NZS 1668.1-2015
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 – 2015
Emergency Lighting	BCA Clause E4.4 & AS 2293.1 – 2005
Exit Signs	BCA Clauses E4.5, E4.6 & E4.8; and AS 2293.1 – 2005
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
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 (Masonry Plant & Building 3 only)	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