



**BLACKETT
MAGUIRE+
GOLDSMITH**

BCA ASSESSMENT REPORT

**Metcash Distribution Centre
Bungarribee Industrial Estate Huntingwood NSW**

PROJECT MUSTANG

Prepared for: Goodman

Project No. 120462

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Revision 1

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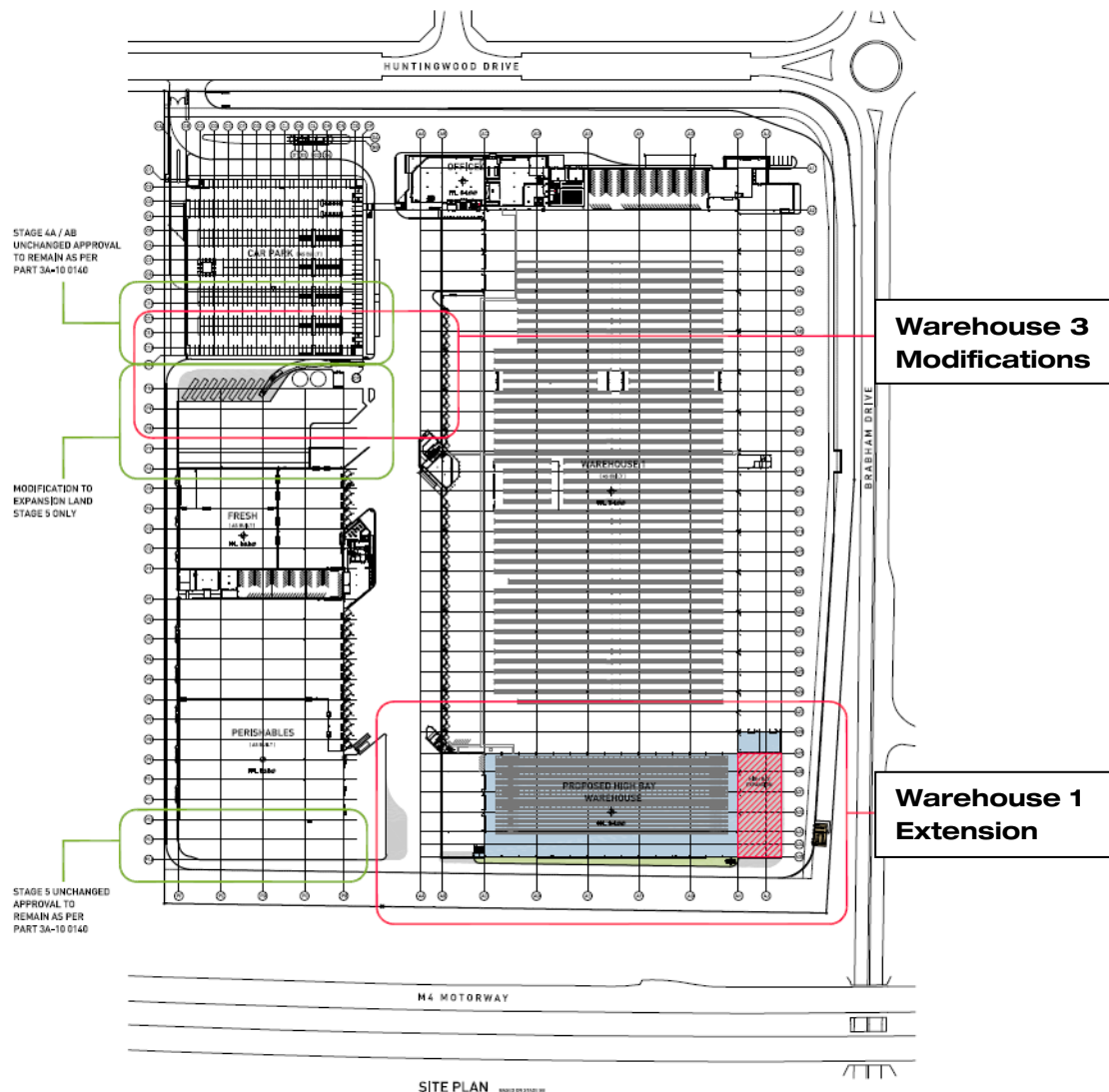
A. INTRODUCTION

A.1 BACKGROUND

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 2012 (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 the construction of a new warehouse addition to the South of the existing Warehouse 1 building, new substation/switchroom structure and an external modification to the Stage 5 Expansion of Warehouse 3. The addition to Warehouse 1 is approximately 8,900m² of additional Warehouse floor area. We understand that the proposal includes a high bay automated storage system, that contains stairs and multiple maintenance access platform levels up to a height of 22.34m. It is noted from advice from Metcash Representatives that these maintenance platforms are an open grid style structure that will not be occupied at any time except in infrequent circumstances where breakdowns or irregular serving occurs.

Figure 1 – Site Plan detailing the extent of the warehouse addition.





A.2 Aim

The aim of this report is to:

- Undertake an assessment of the proposed warehouse addition against the deemed-to-satisfy provisions of the BCA.
- Identify any BCA compliance/fire safety issues that require attention/action for at the Construction Certificate Application stage.

A.3 PROJECT TEAM

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

- Report Preparation – Dean Goldsmith (Director)
- Quality Assurance – Tony Heaslip (Senior Building Surveyor)

A.4 DOCUMENTATION

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

- Building Code of Australia 2012 (BCA)
- Guide to the Building Code of Australia.
- Information/documentation provided by the Client
- Architectural plan prepared by Giles Tribe Architects
Drawing No. 12051 01(C), 12051 02(C), 12051 03(C), 12051 04(C), 12051 05(C), 12051 06(C), 12051 06a(A), 12051 07(C), 12051 08(C), 12051 09(C), 12051 10(C), and 12051 11(C) dated 24 October 2012

A.5 LIMITATIONS & EXCLUSIONS

The limitations and exclusions of this report are as follows:

- The following assessment is based upon a review of the architectural plans for the proposed building only – no site inspection or review of other consultant's drawings have been carried out at this stage.
- The Report does not address matters in relation to the following:
 - i. Local Government Act and Regulations.
 - ii. Occupational Health and Safety Act and Regulations.
 - iii. WorkCover Authority requirements.
 - iv. Water, drainage, gas, telecommunications and electricity supply authority requirements.
- Blackett Maguire + Goldsmith Pty Ltd do not guarantee acceptance of this report by Local Council, NSW Fire Brigades or other approval authorities.
- No part of this document may be reproduced in any form or by any means without written permission from Blackett Maguire + Goldsmith 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.
- In relation to the automated racking system proposed as part of the Warehouse 1 extension our assessment report below is based upon verbal advice from Sean Wildblood (Metcash Representative) during meetings on 20.9.12 and 21.08.12 in relation to the proposed nature of use, occupancy and platform design. In this regard we have been advised that the automated area will be fully fenced, will be in-accessible to staff at all times during operation of the facility, and will only be access infrequently for maintenance under strictly controlled conditions. Because of the nature of this enclosure/equipment we have not applied our BCA assessment to the internal parts of the enclosure as the BCA provisions applicable to the base building warehouse use are not considered to be appropriate to apply to such a unique structure within a building.

A.6 TERMINOLOGY

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

Construction Certificate – Building Approval issued by the Certifying Authority pursuant to Part 4A of the Environmental Planning & Assessment regulation 1979.



Fire Resistance Level (FRL) - means 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 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.

Occupation Certificate - Building Occupation Approval issued by the Principal Certifying Authority pursuant to Part 4A of the Environmental Planning & Assessment regulation 1979.

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

Performance 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 Deemed-to-Satisfy 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 Deemed-to-Satisfy Provisions; or
- (c) a combination of (a) and (b).

Sole occupancy unit - means 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. ASSESSMENT

The following is a summary of relevant areas of BCA Compliance that would need to be addressed prior to the submission of the Construction Certificate Application.

In summary, the key building characteristics have been identified as follows for the proposed warehouse addition:

BCA Classification:	Class 7b (Warehouse), Class 5 (Level 1 Office/Viewing Room) & Class 10a (Switch Room & Substation Building)
Rise in Storeys:	Two (2)
Type of Construction:	Type C (Large Isolated Building)
Effective Height:	Less than 12 metres
Floor Area/Volume:	Existing Building: 76,400m ² and Approx. 915,000m ³ New Addition: 9,285m ² and Approx. 235,000m ³ Total: 85,685m ² and Approx. 1,150,000m ³
Climate Zone	Zone 6

BCA SECTION C - FIRE RESISTANCE

1. BCA Clause C1.2 - Rise in Storeys

As detailed above the automated racking structure to be constructed within the Warehouse 1 extension will be approx. 22.34m in height and will contain a number of access platforms (and ancillary stairs) for the servicing of the picking equipment for irregular maintenance



and/or breakdowns. These platforms are to be constructed of an open steel mesh type material, will not be occupied at any time (other than as detailed above), and will contain no fuel load. Therefore, these platforms do not meet the definition of a floor pursuant to A1.1 and have not been considered in the assessment of the Rise in Storeys of the building (and subsequent designation of Type C Construction).

2. BCA Clause C1.10: Early Fire Hazard Properties

Floor, wall and ceiling linings are required to comply with the requirements under specification C1.10. Certification of design will be required at CC Application stage and test certificates of the proposed linings will be required to be submitted prior to issue of the Occupation Certificate.

3. BCA Clause C1.11: Performance of External Walls

Concrete external walls are required to be designed to minimize the likelihood of collapsing outwards in the event of a fire. Design Certification will be required to be submitted by a Structural Engineer confirming compliance with Specification C1.11 at the CC Application stage.

4. BCA Clause C2.2: General Floor Area and Volume Limitations

The proposed floor area and volume of the existing building, including the proposed addition, exceeds the limitations for all Types of Construction under Table C2.2, and as such the building, will be defined as a "Large Isolated Building" - see comments under C2.3 and C2.4 below.

5. BCA Clause C2.3: Large Isolated Buildings

As discussed under C2.2, the building is deemed to be a Large Isolated Building and therefore there are no limitations on fire compartment size. We have noted that the new addition will include an addition 9,265m² of Floor Area and approximately 235,000m³ of Volume to the existing building. It should be noted that the height of the new addition is 26.845 metres above Ground Floor level.

Given the compartment size of existing building, including the proposed addition exceeds 18,000m² and 108,000m³ and the maximum ceiling height is greater than 12m both the provision of sprinklers, complying with Specification E1.5 and AS 2118.1 – 1999 and a smoke exhaust system (required under Table E2.2a and Specification E2.2b) will apply – refer to comments under Section E below.

Note 1: We understand that the provision for smoke exhaust will be subject to an Alternative Solution to address Performance Requirement EP2.2 in line with the base building Fire Engineering Report.

Note 2: Perimeter vehicular access is also required to be provided to the new addition in accordance with C2.4 below.

6. BCA Clause C2.4: Requirements for Open Spaces and Vehicular Access

A roadway for emergency vehicles with a minimum unobstructed width of 6m is required around the building with no part of its furthest boundary more than 18m from the building. Furthermore, vehicular access must have a load bearing capacity and unobstructed height to permit the operation and passage of fire brigade vehicles.

Details are to be provided with the Construction Certificate application confirming the width of the perimeter roadway and the setback from the proposed addition.

Note 1: The perimeter access road in the South East corner of the new addition appears to be greater than 18 metres from the building. As such, either design changes or modifications to the Base Building Fire Engineered Alternative Solution addressing the Performance Requirement CP9 is required in consultation with Fire & Rescue NSW.

Note 2: The proposed modifications to the north-west corner of Warehouse 3 (stage 5) are compliant with the provisions of C2.4.



7. BCA Clause C2.13: Electricity Supply System

Where an electricity substation is proposed to be located within the warehouse addition, it will be required to be separated from the remainder of the building in construction having an FRL of not less than 120/120/120 and provided with a self-closing -/120/30 fire door.

8. BCA Spec C1.1: Fire Resisting Construction

The proposed Warehouse addition is required to satisfy the requirements of of Spec. C1.1 as applicable to Type C Construction. In this regard, the external walls are greater than 3 metres from a Fire Source Feature, hence no fire ratings are required to the external walls or any other primary building elements pursuant to Table 5 of Spec. C1.1.

BCA SECTION D – ACCESS AND EGRESS

9. BCA Clause D1.4: Exit Travel Distance

Having regards to the size of the new addition, the exit travel distances will not comply with the 40 metre requirement to an exit. In this regard we note that egress distances from the staging area directly to the north of the caged automated enclosure is approximately 140m to an exit from the worst affected central areas of the warehouse and there is also a potential point of choice to alternative exits non-compliance of up to 30m. Fully detailed design of this staging area is required to determine the exact egress distances from this area at the CC stage and prior to the development of the Fire Engineering Brief.

As indicated above an Alternative Solution is required to address the Performance Requirements DP4 and EP2.2 in consultation with Fire and Rescue NSW, in relation to the egress distances associated with the warehouse extension and the areas around the installation of the automated racking system.

Note 1: No assessment of the egress distances has been carried out on the areas and platforms within the fully enclosed automated racking system, as we have been advised by Metcash that this area is fully fenced, and is in-accessible to staff during operation of the facility. In this regard, we have been advised that the only access into this enclosure is under strictly controlled circumstances where infrequent maintenance is required and special OH&S procedures will be implement to fully manage this process.

Note 2: Further details are required on the configuration of the automated storage system, having regards to how it is accessed by maintenance staff, along with the height of the conveyor systems and the design of any proposed stair walk overs required to reduce egress distances in the staging area. Although we have not assessed the egress distances within the caged area or on the maintenance platforms, it is considered appropriate that the controlled access into the caged areas needs to be clearly documented in the Fire Engineered alternative solution report and specific information provided on the emergency management procedures that are to be implemented if a fire event occurred whilst the automated racking system is shut down and being accessed by maintenance staff.

Note 3: The proposed alterations to the NW corner of Warehouse 3 will not alter the previous base building worst case egress distances within the building, however, at the CC Application stage for these works, revised Fire Modelling & a revised base building FER will be necessary to address the proposed configuration change in relation to the previous egress assessment.

10. BCA Clause D1.5: Distances Between Alternative Exits

The proposed addition does not comply with the DTS maximum 60m distance required between alternative exits under this clause.

Similarly to our assessment under D1.4, the staging area to the north of the enclosed automated racking system is non-compliant and has distance between alternative exits of up to 220m, when measured clear of awnings on each side of the building.

An Alternative Solution is required to address Performance Requirements DP4 and EP2.2 in consultation with Fire and Rescue NSW, in relation to the subject non-compliances identified.



Note: The notes under D1.4 above are also applicable to our assessment of D1.5.

11. BCA Clause D1.6: Dimensions of Exits

The minimum clear height in a path of travel to an exit must not be less than 2m. In addition, the width of a path of travel to an exit must not be less than 1 metre. Further details on the automated storage and retrieval system and areas accessed by staff are to be provided for our review under this clause.

It is considered that the aggregate egress widths from the new addition can achieve compliance with the requirements under this clause particularly given the a large proportion of the floor area is unoccupied space within the enclosed automated racking system. Regardless, details are required on the maximum number of additional staff within the new addition for our review.

Note: Any stairs proposed over conveyers etc. are required to have a clear width of not less than 1 metre measured between handrails.

12. BCA Clause D1.10: Discharge from Exits

Suitable barriers such as bollards are to be installed to prevent exits from being blocked by vehicles and/or storage, both internally and externally to the building.

13. BCA Part D2: Construction of Exits

The stair treads and risers, stair landings, door thresholds, balustrades and handrails are required to comply with this part.

Note 1: Further details will be required prior to issue of the Construction Certificate demonstrating compliance with the above.

Note 2: The provisions of Part D2 are not considered applicable to the internal parts of the automatic racking system as these areas are in-accessible to the occupants of the building, except in the case of maintenance where trained staff access the area under strictly controlled conditions.

14. BCA Clause: D2.20 Swinging Doors

All exit doors are required to swing in the direction of egress. Details are to be provided with the Construction Certificate drawings.

15. BCA Clause: D2.21 Operation of Latch

A door in a required exit, forming part of a required exit or in the 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 hand downward action or pushing action on a single device which is located between 900mm and 1100mm from the floor.

16. BCA Part D3: Access for People with Disabilities

Having regards to the "Affected Part" provisions under the Disability (Access to Premises) Standard, access is required for people with disabilities through the main entry of the building to the new addition in accordance with the requirements under AS 1428.1 – 2009. A review of the existing entry and the path of travel to the new addition would be required in this regard.

We understand that an Alternative Solution by an Access Consultant current is in place for the Base Building works. In this regard, further advice and comments may be required in relation to access form the main entry to the new addition.

Note: Where the areas associated with the new addition would be deemed to be inappropriate for people with a disability due to the particular purpose for which the area is used or would pose a health or safety risk to people with a disability, access would not be required from the main entry to the new addition. Details are to be provided by Metcash to the Access Consultant for review and comment.



BCA SECTION E – SERVICES AND EQUIPMENT

17. Clause E1.3: Hydrants

The new addition is required to be provided with Hydrant coverage complying with AS 2419.1 – 2005. Details and design certification is to be provided by the Hydraulic Consultant for review and comment as part of the Construction Certificate assessment.

Note 1: We understand that an Alternative Solution is being considered for Hydrant coverage to the new addition in relation to coverage within the automated racking system enclosure. In this regard, advice will be required from the Fire Safety Engineer and Fire and Rescue NSW and the relevant Performance Requirement is EP1.3.

Note 2: External Hydrants are to be located not less than 10 metres from the external walls of the subject building or within 10 metres of an electrical substation. In addition, an external hydrant may be located against the external wall of the building and protected by a radiant heat shield with an FRL of not less than 90/90/90 for a distance of 2 metres either side of the outlets and 3 metres above the external ground level. Please note Hydrant located under awnings will be considered as an internal hydrant having regards to coverage.

Note 3: the Hydrant Block Plan at the Hydrant Booster, Pump Room and FIP are required to be upgraded having regards to the new addition, any additional Hydrants and the location of isolation valves.

18. Clause E1.4: Fire Hose Reels

The buildings are required to be served by Fire Hose Reels complying with this clause and AS 2441 – 2005. Details and design certification is to be provided by the Hydraulic Consultant for review and comment as part of the Construction Certificate assessment.

Note 1: Hose Reels are required to be located within 4 metres of an exit.

Note 2: We understand that an Alternative Solution is proposed to reduce or delete the number of Hose Reels provided within the new addition in the internal parts of the new automated racking system enclosure. In this regard, advice is required from the Fire Safety Engineer and Fire and Rescue NSW and the relevant Performance Requirement is EP1.1.

19. Clause E1.5: Sprinklers

Having regards to our comments under C2.3 above, the building requires sprinkler protection under the Large Isolated Building provisions. As such, the sprinkler system is required to be designed in accordance with BCA Specification E1.5 and AS 2118.1 – 1999.

Note 1: We understand that an appropriately designed suppression system is proposed to serve the new addition including the automated racking system and that system will be compliant with Spec E1.5 and AS 2118.1 – 1999.

20. Clause E1.6: Portable Fire Extinguishers

Portable fire extinguishers are to be provided in accordance with AS 2444.

21. Part E2.2: Smoke Hazard Management

Under Table E2.2a, Large Isolated Buildings which exceed 18,000m² in floor area or 108,000m³ in volume must be provided with automatic smoke exhaust complying with Specification E2.2b.

We understand that an Alternative Solution (per the base building FER) is proposed to provide Manual Smoke Clearance fans in lieu of Smoke Exhaust under this clause addressing the Performance Requirements EP2.2.

22. Clauses E4.2 & E4.5: Exit Signs and Emergency Lighting

Exit Signs and Emergency Lighting are required to be provided in accordance with AS 2293.1 – 2005 throughout the new portion of the building and particularly in the staging areas that will be regularly utilised by staff during normal operating hours of the facility.



Note: All exit signs must be located not higher than 2.7 metres above floor level.

BCA SECTION F – HEALTH AND AMENITY

23. Clause F2.3: Facilities in Class 3 to 9 Buildings

Details of proposed additional staff numbers are required from Metcash to confirm the to assess the adequacy of the existing number of sanitary facilities, having regard to the provisions of Table F2.3.

Note: We understand that the new addition does not include additional toilet facilities.

24. Clause F2.4: Accessible Sanitary Facilities

We have noted that the existing building is served by an accessible toilet facility complying with AS 1428.1 within the main office portion of the building. In this regard there is no requirement under Table F2.4 to provide additional compliant accessible facilities as part of the proposed warehouse extension.

Note: We understand that the new addition does not include additional toilet facilities.

25. Part F4: Light and Ventilation

Artificial lighting is to be provided in the building in accordance with AS/NZS 1680.0. Certification will be required from an Electrical Consultant at CC Application stage and from the Contractor prior to the issue of the Occupation Certificate.

The building is required to be ventilation in accordance with AS 1668.2. Certification will be required from a Mechanical Consultant at CC Application stage and from the Contractor prior to the issue of the Occupation Certificate.

BCA SECTION J: ENERGY EFFICIENCY

26. Section J – Energy Efficiency

The warehouse addition is required to satisfy the Energy Efficiency requirements under this section. We understand that the proposed addition will not be a Conditioned Space and therefore the requirements Parts J1 (Building Fabric), J2 (External Glazing), J3 (Building Sealing), and J5 (Air-conditioning & Ventilation Systems) will not apply.

In addition, details and design certification is to be provided from the Electrical and Hydraulic Consultants in relation to Part J6 (Artificial Lighting and Power) and Part J7 (Hot Water Supply).

C. CONCLUSION

Based upon the above comments and our assessment of the preliminary drawings it is considered that compliance with the relevant DTS provisions and Performance Requirements identified within this report is achievable, however full details demonstrating compliance are required to be submitted with the Construction Certificate Application.