BLACKETT MAGUIRE+ GOLDSMITH

BCA Assessment Report

Building 5, Interlink Industrial Estate
Mamre Road, Erskine Park

Goodman Property Services (Aust) Pty Ltd

31 October 2011

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A. INTRODUCTION

A.1 BACKGROUND

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 development, against the deemed-to-satisfy (DTS) provisions of the Building Code of Australia 2010 (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/ industrial unit facility, which comprises 3 industrial units with an approx. total floor area of 30,972m², with each industrial unit containing a warehouse, ancillary two storey offices, external carparking and hardstand areas.

Note: It is understood that the project may be constructed in two stages that relate to the construction of proposed Unit 1 prior to the construction of Units 2 and 3 (refer to drawing INT DA501C). In this regard, please note specific comments in the report below that relate to staging refer to the potential construction of the three industrial units as two independent stages of the project.

A.2 AIM

The aim of this report is to:

- Undertake an assessment of the proposed building 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:

- Assessment - Dean Goldsmith (Director)
- Report Preparation – Dean Goldsmith (Director)
- Quality Assurance - Luke Oldfield (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 2011 (BCA)
- Guide to the Building Code of Australia.
- Information/documentation provided by the Client
- Architectural plans prepared by Goodman Property Services (Aust) Pty Ltd numbered INT DA01/F, INT DA02/F, INT DA03/F, INT DA04/F, INT DA501/C to INT DA510/C, dated 26 October 2011.

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.
- No assessment has been undertaken with respect to the Disability Discrimination Act 1992 (DDA). The building owner should be satisfied that their obligations under the DDA have been addressed.

- 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.
  v. Disability Discrimination Act 1992.
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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 to prior to the submission of the Construction Certificate Application.

In summary, the key building characteristics have been identified as follows:

BCA Classification:	Class 5 Offices Class 7b Warehouse
Rise in Storeys:	Two (2)
Type of Construction:	Type C - Large Isolated Building
Effective Height:	Less than 12m
Floor Area/Volume:	Floor Area: 30,972m^2 & Volume: TBC (Greater than 108,000m^3)
Minimum Fire Service Required: *(See section E below)*	Fire Hydrants Fire Hose Reels Sprinklers Portable Fire Extinguishers Fire Control Centre Smoke Exhaust Emergency Lighting Exit Signage

Section B – Structural Provisions:

1. BCA cl. B1.4 Materials and Forms of Construction: Structural resistance of materials and forms of construction to comply with BCA clause B1.4. Design certification confirming compliance in this instance is to also be submitted with the Construction Certificate application.

   Structural engineering details are to consider the following Australian Standards (as applicable), and any other appropriate standards accordingly:

   1. AS 1170.0 – 2002 General Principles
   2. AS 1170.1 – 2002, including certification for balustrades (dead and live loads)
   3. AS 1170.2 – 2002, Wind loads
   4. AS 1170.4 – 2007, Earthquake loads
   5. AS 3700 – 2001, Masonry code
   6. AS 3600 – 2009, Concrete code
   7. AS 4100 – 1998, Steel Structures and/or
   8. AS 4600 – 2005, Cold formed steel.
   9. AS 1720.1 – 2010, Design of timber structures
   10. AS 2047 – 1999, Windows in buildings.
   11. AS 1288 – 2006, Glass in buildings.

12. AS 3660.1 – 2000,Termite control.
13. AS 1860 – 2006, Particle board flooring.

BCA Section C – Fire Resistance

1. BCA cl. C1.10: Early Fire Hazard Properties: Floor, wall and ceiling linings are required to comply with the requirements under specification C1.10 and C1.10a. 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.

2. BCA cl. 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.

3. BCA cl. C2.2 General Floor Area and Volume Limitations: The proposed floor area and volume of the building exceeds the limitations for Type C Construction, and as such the facility is defined as a single "Large Isolated Building" - see comments under C2.3 and C2.4 below. Note: The designation applies to both the completed building and also to the individual stages of the building. As such the following requirements are applicable to both the completed building and each individual stage of the project.

4. BCA cl. C2.3 Large Isolated Buildings: The floor area/volume limitations under C2.2 can be exceeded where the building is deemed to be a 'Large Isolated Building'. This will allow the building to remain as Type C Construction. As the compartment size of the building exceeds 18,000m² and 108,000m³ and the max. ceiling height is less than 12m the provision of sprinklers, smoke exhaust and perimeter vehicular access are required. Note: The perimeter vehicular access requirements are outlined below under C2.4.

5. BCA cl. C2.4 Requirements for Open Spaces and Vehicular Access: A minimum unobstructed width of 6m is required around the building for fire brigades perimeter vehicular access 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, and must provide reasonable pedestrian access from the vehicular access to the building. Note: Where the construction of the building is to be staged, a temporary vehicular access road is to be provided along the southern side of Unit 1 of until such time as the next stage of the project is constructed.

   The following compliance issues have been identified with respect to the proposed perimeter vehicular access serving the subject development:

   a) Vehicular access is discontinuous at the north-eastern and south-eastern corners of the building, due to carpark configuration and division to the hardstand.
   b) Vehicular access is provided on the eastern side of the building via Sarah Andrews Close – this vehicular access is greater than 18m from the external wall of the building and as such is non-compliant.
   c) In the case where the construction of the building will be staged, the temporary vehicular access on the southern side of Unit 1 will be unavailable during the construction of the following stage.

   It will be necessary for an alternative solution to be prepared to address these non-compliance issues, in order to demonstrate compliance with Performance Requirement CP9.

6. BCA cl. C2.12 Separation of Equipment: Any emergency generators, central smoke control plant, lift motor equipment, boilers of battery storage enclosures are required to be fire separated from the remainder of the building by construction having a minimum FRL of 120/120/120.

7. BCA cl. C2.13 Electricity Supply Systems: Any electrical substations or switchrooms that sustain emergency equipment are required to be fire separated from the remainder of the building by construction having a minimum FRL of 120/120/120.

8. BCA Spec C1.1 Fire Resisting Construction: The building is of Type C Construction and all external walls are greater than 3 metres from a fire source feature. Therefore, there are no primary building elements that require an FRL under the provisions of Specification C1.1.

BCA Section D – Access and Egress

9. BCA cl. D1.4 Exit Travel Distance: The proposed building does not comply with the 40m exit travel distance requirement under this clause. In this regard the following non-compliances are noted:

   - Unit 1 – Potential maximum exit travel distance measured from the central area of the Warehouse is approx. 75m.
   - Unit 2 - Potential maximum exit travel distance measured from the central area of the Warehouse is approx. 75m.
   - Unit 3 - Potential maximum exit travel distance measured from the central area of the Warehouse is approx. 50m.

   Note 1: The above max. exit travel distances takes into consideration a potential racking layout in the warehouse area of each unit, however, a final assessment will be required upon confirmation of final racking layout.

   Note 2: It is understood that a Fire Safety Engineer is to be engaged to prepare an Alternative Solution having regard to the above non-compliance. In this regard the relevant Performance Requirements are DP4 and EP2.2.

10. BCA cl. D1.5 Distances Between Alternative Exits: The proposed building also does not comply with the DTS maximum 60m distance required between alternative exits under this clause. The maximum distance between alternative exits were measured as follows:

    - Unit 1 – Potential maximum distance between alternative exits measured through the central area of the Warehouse is approx. 145m.
    - Unit 2 - Potential maximum distance between alternative exits measured through the central area of the Warehouse is approx. 145m.
    - Unit 3 - Potential maximum exit travel distance measured from the central area of the Warehouse is approx. 90m.

    Note 1: The above max. distances between alternative exits takes into consideration a potential racking layout in the warehouse area of each unit, however, a final assessment will be required upon confirmation of final racking layout.

    Note 2: It is understood that a Fire Safety Engineer is to be engaged to prepare an Alternative Solution having regard to the above non-compliance. In this regard the relevant Performance Requirements are DP4 and EP2.2.

11. BCA cl. D1.6 Dimensions of Exits: The minimum clear height through all exit stairs is required to be a minimum of 2m. In order to determine compliance with D1.6 confirmation of potential staff numbers are required to be provided by Goodman with the Construction Certificate Application to confirm if adequate exit width is available from each section of the building.

    Note: Compliance with D1.6 appears to be readily achievable.

12. BCA cl. D1.10 Discharge from Exits: Suitable barriers must be installed to prevent exits from being blocked by vehicles.

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

14. BCA cl. 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 1,100mm from the floor.

15. BCA Part D3 Access for People with a Disability: Access and facilities for people with disabilities will be required to be provided to satisfy the requirements of BCA & AS1428.1-2009, satisfying the client's obligations under the DDA. These requirements (in part) will consist of the following;

    - Access via the main pedestrian entrance to each of the units from Sarah Andrews Close is required to comply with AS1428.1-2009. This will require an uninterrupted path of travel to, into and within the building providing access to all accessible areas & facilities.
    - Access into the principal entrances will be required to comply with AS1428.1-2009. This will necessitate 1:40 cross falls / landings at the accessible entrance.
    - Vertical access is required to the first floor levels of the offices in each unit due to the total floor area of the storey exceeding 200msq. In this regard a compliant 1400mm x 1100mm passenger lift will be required to be provided in accordance with the requirements of Part E3.
    - External and internal surfaces are to comply with Section 7 of AS1428.1-2009;
    - Any proposed carpets within the building are to have a pile height or pile thickness not exceeding 11mm and the carpet backing thickness shall not exceed 4mm (total thickness shall not exceed 15mm).
    - Doorways are to achieve a minimum unobstructed clear width of 850mm and where there are double doors proposed, at least one leaf is to achieve this minimum clearance. Additionally, circulation space requirements are to be detailed on the CC drawings – refer to Section 13 of AS1428.1-2009. Generally all doors require a clear space of 530mm at the latch side of the door and 110mm at the hinge side of the door (along the wall on both sides of the doors) to achieve compliance on a 'front on approach' accordingly.
    - 30% luminance contrasts are to be provided to all new doorways e.g. contrasting between door leaf & jamb; door leaf & wall; architrave & wall; door leaf & architrave and door jamb & adjacent wall.
    - Internal and external stairways to comply with Section 11 of AS1428.1-2009.

- Accessible sanitary facilities are to comply with Section 15 of AS1428.1-2009.
- Ambulant sanitary facilities are to comply with Section 16 of AS1428.1-2009.
- Tactile indicators will need to be provided to an accessways meeting a vehicular way adjacent to a pedestrian entry if there is no kerb or kerb ramp. They are also required to all stairways and ramps. Indicators must be Type B & installed in accordance with AS 1428.4.
- Signage, including Braille & tactile signage where appropriate, is required to comply with BCA clause D3.6 and Section 8 of AS 1428.1-2009 for sanitary facilities, ambulant facilities and disabled car parking spaces. In addition, the signage to the accessible toilet facilities are to also identify the facility for left and right handed use.
- All frameless glass panels or fully glazed doors on an accessways are to be clearly marking in accordance with AS 1428.1. In this instance, all frameless glass panel or fully glazed doors, including glazing capable of being mistaken for a doorway or opening, shall be marked with a full width solid non transparent contrast line not less than 75mm wide is required to be located between 900mm and 1000mm above floor level.
- The required accessible car space/s is to comply with AS 2890.6 – 2009.

BCA Section E – Services and Equipment

16. Part E Services and Equipment: The following fire safety measures are required for the main building:

- Fire hydrant systems	BCA Clause E1.3 & AS 2419.1-2005
- Hose reel system	BCA Clause E1.4 & AS 2441-2005
- Automatic fire suppression system (sprinklers)	BCA Spec. E1.5 & AS 2118.1-1999
- Portable fire extinguishers	BCA Clause E1.6 & AS 2444-2001
- Fire Control Centre	BCA Spec. E1.8
- Automatic Smoke Exhaust	BCA Table E2.2a & AS 1668.1-1998
- Emergency Lighting	BCA Clauses E4.2/E4.4 & AS/NZS 2293.1-2005
- Exit Signs	BCA Clauses E4.5, NSW E4.6, E4.8 and AS/NZS 2293.1-2005

Notes:

1. The standards of performances nominated above may vary as a result of the proposed fire engineered alternative solutions.
2. If an alternative solution is proposed in relation the provision of smoke exhaust in the Large Isolated Building, the relevant Performance Requirement is EP2.2.
3. The above is not a Fire Safety Schedule for the purposes of cl. 168 of the Environmental Planning & Assessment Reg. 2000.

BCA Section F – Health & Amenity

17. BCA Part F3 Sanitary and other Facilities: Potential Staff Population numbers will be required to be provided by Goodman in order to confirm if the sanitary facilities provided achieve compliance with Table F2.3.

    In addition, both compliant accessible toilet facilities and Male/Female ambulant toilet facilities are required to be provided within all areas of each unit in the building in accordance with the requirements of Table F2.4 - details confirming that the design of each facility is compliant with AS 1428.1 are to be submitted with the CC Application.

    Note: In accordance with F2.5 the construction of sanitary compartments must have doors and partitions 1.8 metres above floor level and doors to fully enclosed sanitary compartments must be removable from the outside where they swing inwards.

18. BCA Part F4 Light and Ventilation: All artificial lighting must comply with AS 1680. Mechanical ventilation must comply with AS 1668.2.

19. Section J – Energy Efficiency: The energy efficiency provisions of Section J are applicable to the building, and as such, a report will be required to be submitted prior to issue of the Construction Certificate which details how compliance is being achieved.

    In this regard Parts J1 - Building Fabric, J2 - External Glazing, J3 - Building Sealing and J5 - Air Conditioning and Mechanical Ventilation are only applicable to the office component of the building. Part J6 - Artificial Lighting and Power, and Part J7 - Hot water supply, apply to the whole building.

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 are readily achievable, however full details demonstrating compliance are required to be submitted with the CC Application.