BLACKETT MAGUIRE+ GOLDSMITH

# BCA ASSESSMENT REPORT

## DHL Canon Facility
## Site 1A Oakdale Central
## HORSLEY PARK NSW

Revision 1
Date: 17th August 2012
Project No.: 120336

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# A. INTRODUCTION

## A.1 BACKGROUND / PROPOSAL

Blackett Maguire + Goldsmith Pty Ltd (BM+G) have been commissioned by Goodman Property Services Pty. Ltd. to undertake a Building Code of Australia (BCA) 2012 assessment for the proposed warehouse facility at site 1a Oakdale Central, Horsley Park..

The proposed development comprises the construction of the proposed Canon Facility DHL, which comprises an approx. 20,170m² building, that contains a warehouse, ancillary single storey main offices, 2 Storey Dock office, carparking and hardstand.

## A.2 AIM

The aim of this report is to:

- Undertake an assessment of the proposed warehouse extension against the Deemed-to-Satisfy (DtS) Provisions of the BCA 2012.
- Identify any BCA compliance issues that require resolution/attention for the proposed development.

## A.3 PROJECT TEAM

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

- Tony Heaslip (Associate)
- Dean Goldsmith (Director)

## A.4 DOCUMENTATION

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

- BCA 2012
- Guide to the BCA 2012.
- Architectural plan prepared by SB Architects numbered OAK PA1 01 to 12 (F).

## 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 BCA in force at the time of receipt of Construction Certificate application.

## 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 1992 (DDA) other than those matters covered by the Disability (Access to premises-buildings) Standards 2010 and the BCA Part D3. 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. 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, NSW Fire Brigades 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 height to the floor of the topmost storey (excluding the topmost storey if it contains only heating, ventilating, lift or other equipment, water tanks or similar service units) from the floor of the lowest storey providing direct egress to a road or open space.

*Fire Resistance Level (FRL)*

The grading periods in minutes for the following criteria-

(a) structural adequacy; and

(b) integrity; and

(c) insulation,

and expressed in that order.

*Fire Source Feature (FSF)*

The far boundary of a road which adjoins the allotment or a side or rear boundary of the allotment; or an external wall of another building on the allotment which is not a Class 10 building.

*National Construction Code Series (NCC)*

The NCC was introduced 01 May 2011 by the Council of Australian Governments. The BCA Volume One (Class 2 to 9 Buildings) is now referenced as the National Construction Code Series Volume One — BCA.

*Occupation Certificate*

Building Occupation Approval issued by the Principal Certifying Authority pursuant to Part 4A of the EPA Act 1979.

*Open Space*

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

*Performance Requirements of the BCA*

A Building Solution will comply with the BCA if it satisfies the Performance Requirements. A Performance requirement states the level of performance that a Building Solution must meet.

Compliance with the Performance Requirements can only be achieved by-

(a) complying with the DtS Provisions; or

(b) formulating an 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 extension development:

| | |
|---|---|
| ▪ **BCA Classification:** | Class 5 (Offices)<br>Class 7b (Warehouse) |
| ▪ **Rise in Storeys:** | Two (2) |
| ▪ **Effective Height:** | Less than 12m |
| ▪ **Type of Construction:** | Type C Large Isolated Building |
| ▪ **Climate Zone:** | Zone 6 |
| ▪ **Maximum Floor Area:** | 20,170m² (>18,000m²) |
| ▪ **Maximum Volume:** | Approx. 190,000m$^3$ (>108,000m³) |

## B.2 FIRE SOURCE FEATURE

The distances from the nearest Fire Source Features for the new building are:

| **Fire Source Feature** | **Distance to Fire Source Feature** |
|---|---|
| **Northern Boundary** | >18m |
| **Southern Boundary (Far boundary of Rd)** | >18m |
| **Eastern Boundary (Far boundary of Old Walgrove Rd)** | >18m |
| **Western Boundary** | Approx. 10m |

## C. SUMMARY OF KEY COMPLIANCE ISSUES

The following comprises a summary of the key compliance issues identified under the clause-by-clause assessment in Appendix 1 of this report. These matters are to be addressed prior to issue of the Construction Certificate.

### C.1 Matters requiring further resolution/plan amendments

| | BCA Clause/s | Description |
|---|---|---|
| 1. | D2.13, D2.17 & D3.3 | As there is no lift serving the First Floor Level of the Docking Office, the stairway and handrail construction must comply with AS 1428.1: 2009 i.e. solid construction with no gaps between risers, and handrails to both sides of the stairway and 300mm extensions at the ends. |
| 2. | E1.3 & AS 2419.1:2005 | The reference plans do not currently nominate a location for the fire hydrant booster assembly, which is to be located within sight of the principal entry and no closer than 10m from the building (unless protected in accordance with construction complying with AS 2419.1:2005). |
| 3. | F2.4 | In addition to the accessible toilet facility, each bank of toilets must contain at least one compartment suitable for persons with ambulant disability. In this instance, one ambulant cubicle will be required in each male and female bank of toilets within the Office and the Dock Office. |

### C.2 Matters requiring Fire Safety Engineered Alternative Solutions

| | BCA Clause/s | Description |
|---|---|---|
| 1. | D1.4 | Maximum travel distance of 73m to one of two alternative exits (in lieu of BCA DTS maximum of 40m). |
| 2. | D1.5 | Maximum travel distance of 145m between alternative exits (in lieu of BCA DTS maximum of 60m). |
| 3. | E1.3 (inter alia AS 2419.1: 2005) | To allow external fire hydrants to be located beneath the awnings protruding from the eastern elevation. |
| 4. | E4.5 & E4.6 (inter alia AS 2293.1: 2005) | Exit signage to be positioned above the maximum height of 2.7m prescribed under AS 2293.1:2005 to permit the passage of fork lifts machinery below. |
| 5. | E2.2 | To allow manual operated smoke clearance system within the warehouse in lieu of automatic smoke exhaust system throughout the building. |

## D. BCA ASSESSMENT

The following comments have been made in relation to the relevant BCA provisions relating to the proposed DHL Canon Facility.

**Note: The following is a précis of the provisions and should be read in conjunction with the BCA.**

### 1. Part B1 – Structural Provisions

Structural engineering details prepared by an appropriately qualified structural engineer to be provided to demonstrate compliance with Part B1 in relation to the new structural elements of the building.

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

## SECTION C – FIRE RESISTANCE

### FIRE RESISTANCE AND STABILITY

### 2. Clause C1.1 – Type of Construction Required

The minimum type of fire-resisting construction of a building must be that specified in Table C1.1 and Specification C1.1 except as allowed for in this clause.

*Comments*: Type C Construction – Large Isolated Building applies to the new building. As the buildings are situated on one allotment, and the building will be situated more than 3m from a fire source feature, fire resisting construction under Specification C1.1 is not required.

### 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*: As identified in section B.1 above, the new building has a rise of storeys of 2.

### 4. Clause C1.10 – Fire Hazard Properties

The fire hazard properties of any 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*: Note: 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 building is deemed Large Isolated Buildings and as such the provisions of Table C2.2 are not applicable.

### 6. Clause C2.3 – Large Isolated Buildings

A Class 5 to 9 Large Isolated Building 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 building is required to be sprinkler protected throughout and provided with perimeter vehicular access per C2.4 below.

## 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 clause in that the continuous vehicular access must be 6m wide and within 18m of the building, and of a suitable bearing capacity and unobstructed height to permit the operation and passage of F&RNSW vehicles.

*Comments*: The proposed warehouse complies with the provisions of C2.4 with respect to 6m wide vehicular access being provided to the perimeter of the building.

## 8. 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; or

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

## 9. 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 then -/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 the new extension.

## PROTECTION OF OPENINGS

## 10. Clause C3.16 – Construction Joints

Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation must be protected in a manner identical with a prototype tested in accordance with AS 1530.4 to achieve the required FRL.

*Comments*: To be noted.

**SPECIFICATIONS**

**11. Specification C1.1 – Fire Resisting Construction**

The new building work is 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 with the following.

*Comments*: As stated above, there no building elements required to be fire rated under the provisions of Spec.C1.1 Table 5.

**12. 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.

**13. 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*: Design certification and details demonstrating compliance are required to be provided at CC Application stage from the Structural Engineer.

## SECTION D – ACCESS & EGRESS

**PROVISION FOR ESCAPE.**

**14. 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 travel distances to exits in the proposed new warehouse exceed the requirements of clause D1.4. The non-compliance issues detailed below are required to be addressed as an Alternative Solution by the Fire Safety Engineer, and comply with Performance Requirements DP4 & EP2.2:

- Maximum travel distance of 73m to one of two alternative exits (in lieu of BCA DTS maximum of 40m).

  In addition to the above, the proposed layout must not have any point on the floor that exceeds 20m to a point of choice to alternative exits.

**15. 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 proposed warehouse areas exceed the requirements of clause D1.5. The DTS non-compliance is required to be addressed by an Alternative Solution which demonstrates compliance with Performance Requirements DP4 & EP2.2 as follows;

- Maximum travel distance of 145m between alternative exits (in lieu of BCA DTS maximum of 60m).

**16. 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. In this regard, the minimum clear height through all exit stairs is required to be 2m and the minimum clear width of 1m. This clause also specifies the minimum dimensions of doorways from the various compartments and the width of exit doors from buildings depending on the functions carried out within them.

*Comments*: Based upon the maximum population numbers listed under D1.13 below, the proposed provision of exits in the Warehouse and Office areas in the building can readily achieve compliance with the requirements of D1.6. Note: Final population numbers, number of exits and dimensions of exit doors will be assessed at CC Application stage to address the full requirements of D1.6.

**17. 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 stairway serving the two level docking office complies.

**18. 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 building are required to be protected in accordance with the requirements of this clause.

**19. 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*: We note that the total number of staff proposed by DHL will be 110 people. For the purpose of this BCA Assessment, we have conservatively based our assessment on a maximum 220 people.

**CONSTRUCTION OF EXITS**

**20. 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*: Applies to stairs in the proposed first floor offices in the new building.

**21. Clause D2.7 – Installations in Exits & Paths of Travel**

This clause restricts the installation of certain services in fire-isolated exits, non-fire-isolated exits and certain paths of travel to exits. Sub-clauses (a) to (e) prescribes which services **shall not be installed** as well as the circumstances in which certain services **may be installed** in fire-isolated and non-fire-isolated exits.

*Comments*: This requirement applies to any electrical distribution boards or Comms equipment enclosures that are to be installed within of corridor or the like that is a dedicated egress path.

**22. Clause D2.8 – Enclosure of Space Under Stairs & Ramps**

A space below a required fire-isolated stairway or ramp in a fire-isolated shaft must not be enclosed to form a cupboard or other enclosed space. If the required stairway or ramp is non-fire-isolated, (including an external stairway) any cupboard underneath must have an FRL of 60/60/60, with a self-closing -60/30 door.

*Comments*: Applies to egress stairs in the new building.

### 23. 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.

### 24. 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). Generally, balustrade are to be a minimum 1m above the finished floor level of a landing or floor and have no opening exceeding 125mm.

*Comments*: Balustrades will be required to the stairway/landing bounding the stairway to the Dock Office, and to the external retaining walls where the fall to the level below is more than 1m. Architect to note, details demonstrating compliance will be required to be included in the CC plans.

### 25. 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*: The proposed Architect to note, details demonstrating compliance will be required to be included in the CC plans. In this instance, it should be noted that the handrails to the stairway serving the first floor level of the docking office must comply with AS 1428.1:2009.

### 26. Clause D2.19 - Doorways

Where power operated sliding doors are proposed at the main entry they must automatically open upon fire trip and/or malfunction to the power source to the door.

*Comments*: The proposed Architect to note, details demonstrating compliance will be required to be included in the CC plans.

### 27. 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.

*Comments*: Architect to note, details demonstrating compliance will be required to be included in the CC plans. In this instance, the main entry doors to the office are to swing in the direction of egress (i.e. outwards).

### 28. 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

## 29. 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*: The proposed site plan indicates that an accessible path from the accessible parking spaces to the main entry is readily achievable in accordance with the provisions of D3.2. Final details of the design of these accessible paths will be required to be submitted with the CC application to confirm compliance with AS 1428.1-2009.

As the Dock office does not exceed 200m$^2$, lift access is not required.

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

This part specifies the requirements for accessways within buildings which must be accessible. A General summary of the requirements are as follows:

- Access into the principal entrance of the main lobby will be required to comply with AS1428.1-2009.
- Access via a compliant ramp or passenger lift are required to all levels of the building in a Class 5,6, 7b or 8 building except in a building containing 3 storeys or less where the floor area of a store does not exceed 200m².
- External and internal surfaces are to comply with Section 7 of AS1428.1-2009;
- External and internal pavers / tiles or internal vinyls are to comply with AS4586.
- 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).
- Turning Spaces & Passing Spaces for people in wheelchairs are required to be provided in accessible corridors in accordance with Section 6 of AS 1428.1-2009.
- 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 application drawings – refer to Section 13 of AS1428.1-2009.
- 30% luminance contrasts are to be provided to all new doorways in accessible pathway, e.g. contrasting between door leaf & jamb; door leaf & wall; architrave & wall; door leaf & architrave and door jamb & adjacent wall. Note: Consideration to compliance with the above needs to be given where the auto sliding doors are proposed.
- Internal stairways to comply with Section 11 of AS1428.1-2009. Note: The stairways will need to be setback from the bottom line of the partition wall to ensure handrails comply (refer to detail below).

*Comments*: In regard to the above requirements it would appear that the proposed design of the building is capable of achieving compliance with the provisions of D3.3 as outlined above and the relevant requirements of AS 1428.1-2009, however, final design details will be assessed at the CC Application stage.

## 31. 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*: Assessment of any areas proposed to be subject of the Exemption provisions of D3.4 will be carried out at the CC Application stage.

## 32. 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*: The referenced plans show an adequate number of accessible car spaces to serve the development. The car spaces are to comply with AS 2890.1.

## 33. Clause D3.6 – Signage

This section provides requirements for signage in buildings required to be accessible By Part D3. In this regard 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.

*Comments*: Signage will be required to identify accessible facilities, an ambulant accessible facility and access to accessible pedestrian entry (where required).

**34. Clause D3.8 – Tactile Indicators**

This clause provides for the installation of tactile indicators in buildings required to be accessible and must be provided to warn people who are blind or have a vision impairment that they are approaching a stairway, ramp, overhead obstruction or an accessway meeting a vehicular way, except for areas exempted by D3.4.

*Comments*: Tactile indicators are required in areas of the proposed buildings and details demonstrating compliance are to be submitted at the CC Application stage.

**35. Clause D3.11 – Ramps**

Ramps may be used as part of an accessway where there is a change of level and must comply with the requirements set out in AS1428.1.

*Comments:* Architect to note, details demonstrating compliance will be required to be included in the CC plans.

**36. Clause D3.12 – Glazing on an Accessway**

All frameless glass panels or fully glazed doors on an accessway 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.

*Comments:* Architect to Note.

## SECTION E – SERVICES AND EQUIPMENT

### FIRE FIGHTING EQUIPEMENT

**37. 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 AS2419.1-2005 and also details where internal hydrants must be located.

*Comments*: The proposed building is required to have protection by the installation of a fire hose reel system in accordance with AS2419.1-2005. Detail will need to be submitted with the application for a Construction Certificate.

In this instance, we note that a fire engineered Alternative Solution will be required where external fire hydrants are proposed to be situated below the two awnings to the eastern elevation.

**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 building is required to have protection by the installation of a fire hose reel system in accordance with AS2441. Detail will need to be submitted with the application for a Construction Certificate.

### 38. 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*: As both buildings are designated as a Large Isolated Building in accordance with both C2.3 & Table E1.5 they are required to be protected with a sprinkler system throughout the building. Details demonstrating compliance will need to be submitted with the application for a Construction Certificate.

### 39. 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 warehouses and associated offices in accordance with Table E1.6.

### 40. 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*: Details of the required fire control centre will need to be submitted with the application for a Construction Certificate.

## SMOKE HAZARD MANAGEMENT

### 41. 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.

The details relating to the installation and operation of the systems are set out in Specifications E2.2a, E2.2b and E2.2c.

*Comments*: A smoke exhaust system is required as the building is a large isolated building and exceeds 18,000m$^2$. In this instance, we note that a fire engineered Alternative prepared addressing BCA Performance Requirement E2.2 is proposed to allow manual operated smoke clearance fans to the warehouse in lieu of smoke exhaust throughout the building.

## LIFT INSTALLATIONS

### 42. Clause E3.2 - Stretcher Facilities in Lifts

All buildings that require an emergency lift or where the effective height is greater than 12m, are required to be provided with compliant passenger lift stretcher facilities. In this regard a stretcher facility must include a clear space of 600mm wide x 2000mm long x 1400mm long for a horizontal stretcher.

*Comments:* As the effective height of the building is less than 12m a stretcher facility is not required.

### 43. Clause E3.6 – Passenger Lifts

This clause and Table E3.6a and Table E3.6b detail the limitations on the types of passenger lifts that may be used to provide compliant access to the levels in the building and the minimum requirements for each lift, along with the relevant standard of performance.

*Comments:* Not Applicable as lift access to the first floor level is not required under BCA Part D3.

## EMERGENY LIGHTING, EXIT SIGNS AND WARNING SYSTEMS

### 44. 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*: Electrical Consultant to note.

### 45. Clause E4.4 – Design & Operation of Emergency Lighting

Every required emergency lighting system must comply with AS2293.1.

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

### 46. 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 form 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.

### 47. Clause E4.6 – Direction Signs

If an exit is not readily apparent to persons occupying or visiting the building then exit signs must be installed in appropriate positions in corridors, hallways, lobbies, and the like, indicating the direction to a required exit.

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

### 48. Clause E4.8 – Design & Operation of Exit Signs

Every required exit sign must comply with AS/NZS 2293.1 and be clearly visible at all times when the building is occupied by any person having the legal right of entry into the building.

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

## SECTION F – HEALTH & AMENITY

### DAMP AND WEATHERPROOFING.

### 49. 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.

### 50. 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

**51. Clause F1.6 – Sarking**

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

*Comments*: Note

**52. 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**

**53. 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*: It is considered that the referenced plans show an adequate number of sanitary facilities based on the population numbers nominated for the building under D1.13 above.

**54. 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. In this instance, an accessible facility is required at each storey containing sanitary compartments and to at least 50% of the bank of toilets within each storey.

Furthermore, in addition to the accessible toilet facility, each bank of toilets must contain at least one compartment suitable for persons with ambulant disability. One compartment will be required in each male and female bank of toilets.

The details for the provision of disable facilities and the standard, AS 1428.1, are set out in sub-clauses (a) to (i).

*Comments*: It is considered that there are sufficient accessible facilities available subject to the provision of ambulant facilities within each bank of toilets.

**55. Clause F2.5 – Construction of Sanitary Compartments**

(a) 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) 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 required to be submitted with documentation for the CC Application.

## LIGHT AND VENTILATION

### 56. 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 Stage.

### 57. 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.

*Comments*: Design certification to be submitted at CC Stage.

## SECTION J – ENERGY EFFICIENCY

### 58. SECTION J1.0 – DEEMED-TO-SATISFY PROVISIONS

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, Roof-lights, Walls, and Floors.

*Comments*: This section applies to any air-conditioned spaces proposed within the building. Design details and/or certification of design will be required to be submitted with the application for a Construction Certificate.

### 59. SECTION 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.

*Comments*: This section applies to any air-conditioned spaces proposed within the building. A calculation demonstrating that the proposed design of the building complies with the requirements of **Part J2** is required to be submitted with the application for a Construction Certificate.

### 60. SECTION 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**. is required to be provided.

*Comments*: This section applies to any air-conditioned spaces proposed within the building. Details or certification that the proposed building design complies with the requirements of **Part J3** will need to be submitted with the application for a Construction Certificate.

### 61. SECTION J4 – AIR MOVEMENT

Details and/or design certification which confirm that air movement within the proposed building achieves compliance with the relevant requirements of **Clauses J4.0 to J4 4** and the **Table therein** will be required to be provided from the mechanical Engineer.

*Comments*: Detail will need to be submitted with the application for a Construction Certificate.

## 62. SECTION 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*: Detail will need to be submitted with the application for a Construction Certificate.

## 63. SECTION 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*: Consultant certification required at CC Application Stage.

## 64. SECTION J7 – HOT WATER SUPPLY & SWIMMING POOL & SPA POOL PLANT

Details and/or design certification which confirm that any proposed hot water supply system within the proposed building achieves compliance with the relevant requirements of **Part J7** (Section 8 of AS 3500.4) will be required to be provided from the Hydraulic Engineer.

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

## 65. SECTION J8 – ACCESS FOR MAINTENANCE & FACILITIES FOR MONITORING

See NSW Subsection J8 for access to maintenance.

Access must be provided to all plant, equipment and components that require maintenance in accordance with Part I2.

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

## E. CONCLUSION

This report contains an assessment of the referenced architectural documentation for the proposed DHL Canon facility at Site 1A Oakdale Central against the Deemed-to-Satisfy Provisions of the BCA 2012. The proposal involves the construction of a new warehouse, ancillary office and dock office.

Arising from the review, it is considered that the proposed development can readily achieve compliance with the relevant provisions of the BCA by way of minor plan amendments and fire engineered Alternative Solutions prior to issue of the Construction Certificate. Furthermore, we are of the opinion that any plan amendments required in order to achieve compliance with the BCA would not be of a nature that would necessitate the submission of a Section 75W to amend the Project Approval.

# APPENDIX 1 – PRELIMINARY FIRE SAFETY SCHEDULE

| Essential Fire and Other Safety Measures | Standard of Performance |
|---|---|
| Alarm Signaling Equipment | AS1670.3 – 2004 |
| Automatic Fire Suppression Systems | BCA Spec. E1.5 & AS 2118.1-1999 |
| Building Occupant Warning System activated by the Sprinkler System | BCA Spec E1.5 Clause 8 and/ or Clause 3.22 of AS 1670.1 – 2004 |
| 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 – 2005 |
| Fire Hose Reels | BCA Clause E1.4 & AS 2441 – 2005 |
| Fire Hydrant System | Clause E1.3 & AS 2419.1 - 2005 |
| 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 Control System | Alternative Solution |
| Smoke detection system | BCA E2.2a Clause 5(b) and Alternative Solution |
| Fire Engineered Alternative Solutions | TBA |