MBC MODERN BUILDING CERTIFIERS

# Building Code of Australia Report

Cold Storage Warehouse and Distribution Facility
Harris Avenue, Marsden Park, NSW

Prepared for: NewCold and EMKC | Issue date: 19 April 2017

ABN 54 165 354 218
Suite 112-114, 117 Old Pittwater Road, Brookvale NSW 2100
(02) 9939 1530 • info@mbc-group.com.au • www.mbc-group.com.au

TABLE OF CONTENTS



| Date | Revision Number | No. of pages | Issue or Description of Amendment | Prepared By | Date Approved |
|---|---|---|---|---|---|
| 18.04.17 | A | 24 | Draft report | Mike Gooley | 18.04.17 |
| 19.04.17 | B | 24 | S96 submission | Mike Gooley | 19.04.17 |


ABN 54 165 354 218
Suite 112-114, 117 Old Pittwater Road, Brookvale NSW 2100
(02) 9939 1530 • info@mbc-group.com.au • www.mbc-group.com.au

## Executive Summary

We have reviewed architectural design documents prepared by EMKC (refer appendix A) for compliance with the NCC - Building Code of Australia 2016.

This report nominates relevant BCA prescriptive ('deemed to satisfy') provisions together with areas in which an alternate performance based solution will need to be developed to comply with the performance requirements of the BCA.

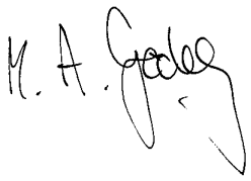
The fire safety engineered solution must be referred to the NSW Fire Brigade as part of the Construction Certificate process. Initial consultation with the fire brigade will be required during the development of the FEB at design development/construction certificate stage.

The information contained within this report is a preliminary assessment of the architectural drawings being submitted with the Section 96 (2) application to modify the development consent.

The documentation will need further detailing such as architectural design specifications, service design, etc as outlined within this report. These matters will be suitable assessed at the Construction Certificate stage.

We trust that the above submission is of assistance and should you wish to discuss any aspect of this advice, please do not hesitate to contact me.

Best regards,



Mike Gooley
Director
**Modern Building Certifiers**

ABN 54 165 354 218
Suite 112-114, 117 Old Pittwater Road, Brookvale NSW 2100
(02) 9939 1530 • info@mbc-group.com.au • www.mbc-group.com.au

## 1.0 Introduction

The proposed development comprises a large warehouse building that will be used as a Cold Storage Warehouse and Distribution Facility.

The facility will include an automated high bay racking storage, chiller and freezer warehouse with a large chiller and freezer dispatch area with loading dock facilities. There will be a 3 storey office building attached and connected to dispatch area.

### 1.1 Current Legislation

The applicable legislation governing the design of buildings is the Environmental Planning and Assessment Act 1979. This Act requires that all new building works must be designed to comply with the BCA.

The version of the BCA applicable to the development, is version that in place at the time of the application to the Certifying authority for the Construction Certificate. For the purposes of this assessment, BCA 2016 has been used as the benchmark for assessment being the version of the BCA applicable at the time of preparation of this report.

## 2.0 Building Assessment Data

Summary of Construction Determination: -

| | |
|---|---|
| Classification | 5, 7b and 8 |
| Number of Storeys Contained | 3# |
| Rise In Storeys | 3# |
| Type of Construction | B - large isolated building |
| Effective Height (m) | < 25.0m |

| | |
|---|---|
| # | In a class 7 or 8 building, a storey that has an average internal height of more than 6m is counted as one storey if it is the only storey above the ground or 2 storeys in any other case. The class 7b and 8 portions will have a rise in storey of 1 and 2. |

Summary of the floor areas and relevant populations where applicable: -

| Part of Project | BCA Classification | Approx. Floor Area ($m^2$) | Assumed Population |
|---|---|---|---|
| Warehouse | 7b and 8 | ➢ 34,682 | Ancillary |
| Offices | 5 | 3,000 | 300 |
| Total | | 37,682 | |

Notes:

1. The calculated populations can be based in accordance with Table D1.13 of the BCA or by the building owners providing details of expected staff numbers. The occupant density for the offices has been calculated as 10 sqm/person;
2. The floor areas can be adjusted by subtracting ancillary areas such as sanitary facilities, corridors, shelving and or racking layouts in storage areas.

## 3.0 Structural Provisions

Any new structural works are to comply with the applicable requirements of AS/NZS 1170.1.

Glazing is to comply with AS1288, and AS2047.

Prior to the issue of the Construction Certificate structural certification is required to be provided.

## 4.0 Fire Resistance

The building should be constructed generally in accordance with Table 4 of Specification C1.1 of the Building Code of Australia 2016. The building is required to be Type B Construction. The following building elements will need to achieve the required RFL's;

- Loadbearing parts of external walls situated within 18.0m of the side boundaries required to achieve an FRL (i.e FRL of not less than 240/90/60);
- Internal loadbearing walls/columns supporting floors (i.e. 120/-/- for office and 240/-/- within the warehouse).

Consideration will be given to the documentation of an alternative solution from a fire engineer to reduce the FRL's of building elements.

The building has a floor area and volume that exceeds the limitation under Clause C2.2, the building is considered a large isolated building and the following provisions will apply:

- Automatic sprinkler protection to AS2118.1 and BCA specifications E1.5 throughout the building,
- Perimeter emergency vehicular access 6m wide located within 18m of the entire building perimeter,

Based upon the current design there will be a small area on the western side where the perimeter access will be less than 6.0m wide and the perimeter access maybe greater than 18.0m from the external walls along the Hollinsworth Road frontage.

Consideration will be given to the documentation of an alternative solution from a fire engineer to address perimeter fire brigade access and the active fire safety systems, appropriate for the building.

## 4.1 Passive Fire Protection

Other passive fire protection issues that will need to be addressed in detailed documentation phase include:

- Electricity supply,
- Boilers or batteries,
- Hydrant Pump rooms,
- Sprinkler Pump Rooms,

To be separated from the remainder of the building by construction achieving a minimum fire resistance level of 120 minutes.

## 4.2 Fire Hazard Properties

The fire hazard properties of fixed surface linings and mechanical ductwork will also need to be addressed within the detailed documentation phase pursuant to specification C1.10 Building Code of Australia.

## 5.0 Egress

The egress provisions from the proposed building are provided by:

- External perimeter doorways
- Required non-fire isolated stairways

Other detailing issues that will need to be addressed include:

- Door Hardware
- Exit door operation
- Stair construction
- Handrail and balustrade construction

The abovementioned details will be assessed at the construction certificate stage to ensure compliance is achieved with the BCA.

### 5.1 Exit Travel Distances

The travel distances to exits and between alternative exits must not exceed:

Class 5-9

- 20m to a single exit or point of choice and where two exits are provided, a maximum of 40m to one of those exits; and
- exits shall be located to not be more than 60m apart and not closer than 9m

Due to the floor area of the Cold Storage Warehouse and Distribution Facility the travel distance to required exits will exceed the minimum standards of the BCA and will be address by an alternative solution from a fire engineer at the construction certificate stage.

### 5.2 Dimensions of Exits

Minimum dimensions of 1000mm and 2000mm height to be provided within exits, with the paths of travel should provide a minimum width of 1000mm (note that all maintenance access, cat walks, etc may comply with AS1657 in which case a 600mm clear width is required).

The total aggregate exit width within the building caters for the occupant density from portions of the building. Entry doors to fire-isolated passageway/stairways must swing in the direction of

egress.

Doorways are permitted to contain a clear opening width of 750mm with a height of 1980mm as part of egress requirements. Access for persons with disabilities however requires a clear doorway opening width of 850mm (i.e minimum 870 mm doors).

## 5.3 Access for Persons with a Disability

Access for people with disabilities shall be provided to and within the building in accordance with the requirements of BCA 2016. Parts of the building required to be accessible shall comply with the requirements of AS1428.1-2009.

Where the main public entrance is via a ramp, tactile indicators shall be provided in accordance with AS 1428.4 at the top and bottom. Parking shall be provided for people with disabilities in accordance with in accordance with Clause D3.5 of the BCA. Facilities services and features of the building accessible to people with disabilities shall be identified by signage complying with Clause D3.6 of the BCA.

*General*

Access to be provided to and within the building pursuant to AS1428.1-2009 as follows:

- Via the principle public entry and at least 50% of all other entrances
- From designated car parking spaces for the use of occupants with a disability.
- All areas used by the public.

Note that entrances that are not accessible are to be located within 50m of an entrance that is accessible.

Design Considerations:

Based upon the nature of the uses of the cold storage warehouse and distribution facility, accessible access will not be provided to these areas. An exemption under D3.4 of the BCA will be applied based upon advice from an access consultant:

- area where access would be inappropriate because of the particular purpose for which the area is used.
- an area that would pose a health or safety risk for people with disabilities.

The abovementioned exemption will be address at the construction certificate stage.

## 6.0 Fire Services & Equipment

The following fire services will need to be provided throughout the building:

- An automatic sprinkler system in accordance with the relevant provision of clause E1.5 of the BCA and AS 2118.1-1999,
- Fire hydrants in accordance with clause E1.3 of the BCA and AS 2419.1-2005,
- Fire hose reels in accordance with clause E1.4 of the BCA and AS 2441-2005,
- Portable Fire Extinguishers in accordance with Clause E1.6 of the BCA and AS 2444-2001,
- Emergency lighting, exit signage and directional exit signage is required throughout the building in accordance with Part E of the BCA and AS/NZS 2293.1-2005

The building is required to be served by a fire control centre in accordance with spec. E1.8 as the overall floor area of the building will be greater than 18,000sqm.

### 6.1 Fire Hydrants

A system of Fire Hydrants is required to be provided to BCA Clause E1.3 and AS 2419.1-2005. Any departures from the DTS provisions will be address by the documentation of an alternative solution to satisfy the performance requirements of the BCA.

The design will be prepared and documented from a Hydraulic Consultant.

Booster Assembly:
A booster assembly if remote from the building, the booster shall be –

(i) At the boundary of the site and be within sight of the main entrance of the building;
(ii) Adjacent to the principal vehicular access to the site;
(iii) Located not less than 10m from the external wall of the building.

The location of the booster assembly will be addressed at the construction certificate stage. Any departures from the DTS provisions will be address by the documentation of an alternative solution to satisfy the performance requirements of the BCA.

### 6.2 Fire Hose Reels

A Fire Hose Reel System is required to BCA Clause E1.4 and AS2441. To be located within 4m of exits and provide coverage within the building based on a 36m hose length. Please note that fire hose reel coverage cannot pass through fire or smoke doors.

Any departures from the DTS provisions will be address by the documentation of an alternative solution to satisfy the performance requirements of the BCA.

### 6.3 Automatic Sprinkler Protection

The building is considered as a large isolated building and as such is required to be protected by an Automatic Fire Suppression System to Clause E1.5, Specification E1.5 and AS2118.1-1999.

Consideration will be given to an alternative fire prevention system rather that a sprinkler system for the automated high bay racking system. This will include the documentation of an alternative solution from the fire engineer to satisfy the performance requirements of the BCA.

Location of pumps, tanks, FIP, control valves and booster are required to be provided.

An occupant warning system that is triggered upon activation of the sprinkler system should be provided in accordance with BCA Specification E1.5.

## 7.0 Emergency Lighting, Exit Signs and Warning Systems

The building will be provided with emergency lighting and exit signage in accordance with BCA 2016 and AS 2293.1. Due to the nature of the Cold Storage Warehouse and Distribution facility the location and height of exit signs may not comply with the DTS provisions of the BCA.

Any departures from the DTS provisions will be address by the documentation of an alternative solution to satisfy the performance requirements of the BCA.

## 8.0 Lift Services

The passenger lifts to be installed are to be: -

- fitted with warning signs, fire service controls in accordance with AS 1735.2
- Stretcher facilities are to be provided within the lifts with minimum dimensions of 600m wide, 2000mm long and 1400mm high where the vertical height is greater than 12.0m.
- Be provided with the following: -
    - A handrail in accordance with AS 1735.12
    - Minimum internal floor dimensions as specified in AS 1735.12,
    - Fitted with a series of door opening sensory devices which will detect a 75mm diameter or across the door opening between 50mm and 1550mm above floor level,
    - Have a set of buttons for operating the lift located at heights above level complying with AS 1735.12.

Each passage lift must be accessible for people with disabilities in accordance with E3.6 and AS 1735.12.

## 9.0 Ventilation and Smoke Hazard Management

Smoke hazard management shall be provided throughout the building by means of an automatic smoke exhaust system in accordance with Specification E2.2b.

Consideration will be given to the documentation of an alternative solution from the fire engineer to examine potential deletion of automatic smoke exhaust system.

Throughout the development the provision of natural or mechanical ventilation is required to all habitable rooms in accordance with F4.5 Building Code of Australia and AS 1668 and AS/NZS 3666.1.

## 10.0 Sanitary Facilities

The sanitary & other facilities being provided for the building based upon calculated number of occupants.

Please note the Unisex facilities provided for people with disabilities may be counted once for each sex. These facilities are to be provided in accordance with AS1428.1-2009.

## 11.0 Energy Efficiency

The proposed office space shall comply with Part J of the BCA. To achieve compliance, there are two options available:

The building can comply with the deemed-to-satisfy provisions of the BCA, relating to the following areas:
Building Fabric
Glazing
Building Sealing
Air Conditioning & Ventilation Systems
Artificial Lighting & Power
Hot Water Supply

The building can be verified against a reference building as per Verification Method JV3. This requires that the proposed building and its services be shown to have an annual energy consumption of equal or less than the reference building which has been modelled as per the requirements of Part J of the BCA.

Certification from an appropriately qualified engineer should be provided for either option with a report / computations outlining how compliance is achieved.

## Appendix A – Design Documentation

The following documentation prepared by EMKC was used in the assessment and preparation of this report: -

| Drawing No. | Title |
|---|---|
| AU0012 MDP FS10/002/A | Proposed Site Plan |
| AU0012 MDP FS10/100/A | Proposed GF Office Layout |
| AU0012 MDP FS10/110/A | Proposed L1 Office Layout |
| AU0012 MDP FS10/120/A | Proposed L2 Office Layout |
| AU0012 MDP FS10/200/A | Proposed Elevations |

## Appendix B – Draft Fire Safety Schedule

| | Essential Fire Safety Measure | Standard of Performance |
|---|---|---|
| 1 | Automatic Fail Safe Devices | BCA Clause D2.19 & D2.21 |
| 3 | Automatic Fire Suppression System | BCA Spec. E1.5 & AS 2118.1 – 1999 |
| 4 | Building Occupant Warning System activated by the Sprinkler System | BCA Spec. E1.5 & AS 1670 – 2004 |
| 5 | Emergency Lighting | BCA Clause E4.2, E4.4 & AS/NZS 2293.1 – 2005 |
| 6 | Emergency Evacuation Plan | AS 3745 – 2002 |
| 7 | Exit Signs | BCA Clauses E4.5, E4.6 & E4.8 and AS/NZS 2293.1 – 2005 |
| 8 | Fire Control Centres | BCA Spec. E1.8 |
| 9 | Fire Blankets | AS 2444 – 2001 |
| 10 | Fire Hose Reels | BCA Clause E1.4 & AS 2441 – 2005 |
| 11 | Fire Hydrant System | Clause E1.3 & AS 2419.1 – 2005 |
| 12 | Lightweight Construction | BCA Clause C1.8 & AS 1530.3 – 1999 |
| 13 | Mechanical Air Handling System | BCA Clause E2.2, Part G3 and AS/NZS 1668.1 – 1998 |
| 14 | Paths of Travel | EP&A Reg 2000 Clause 186 |
| 15 | Portable Fire Extinguishers | BCA Clause E1.6 & AS 2444 – 2001 |
| 16 | Perimeter Fire Brigade Access | BCA Clause C2.4 |
| 17 | Smoke Hazard Management System | BCA Part E2, Part G3 & AS/NZS 1668.1 – 1998 |

Note: The proposed new building will be subject to a fire engineering assessment. The fire schedule will be amended prior to the issue of the construction certificate to incorporate additional fire safety measures required by the fire engineering assessment.