



BUILDING CODE OF AUSTRALIA REPORT
Retail Ready Meat Processing Centre,
Templar Road, Erskine Park

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EXECUTIVE SUMMARY

McKenzie Group Consulting have been engaged by Commercial & Industrial Property Ltd to conduct a BCA assessment of the proposed Retail Ready Meat Processing Centre, Templar Road, Erskine Park.

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 report also provides an overview of relevant provisions for health and amenity for occupants including sanitary facilities for both able bodied occupants and occupants with disabilities as well as general access provisions.


DTS Clause	Description of Non-Compliance	Performance Requirement
C2.4	The perimeter access serving to the North-Western Elevation is underneath an awning that projects 20m from the building.	CP9
D1.4	(i) Egress distances of up to 90m to a point of choice to two (2) exits, in lieu of 20m. (ii) Egress distances of up to 130m to an exit, in lieu of 40m.	DP4 & EP2.2
D1.5	Distances of up to 140m between alternative exits, in lieu of 60m.	DP4 & EP2.2
D1.9	Travel distances via non-fire isolated stairs serving the mezzanine office level exceed the required distance of 80m to an exit providing direct access to a road or open space. Distances currently measure up to 110m.	DP4 & EP2.2
E1.4	The Smoke Hazard Management provisions within the facility shall be assessed as part of the fire safety engineering.	EP1.1
E2.2	The Smoke Hazard Management provisions within the facility shall be assessed as part of the fire safety engineering.	EP2.2
E4.5, E4.6 & E4.8	Mounting of Illuminated Exit Signage greater than 2.7m from the FFL	EP4.2

The fire engineered solution relating to (CP9 & EP2.2) will need to be approved after consultation with the NSW Fire Brigade as part of the Construction Certificate process.

The application for Construction Certificate shall be assessed under the relevant provisions of the Environmental Planning & Assessment Act 1979 (As Amended) and the Environmental Planning & Assessment Regulation 2000.

The building is capable of complying with BCA2013. Where appropriate the design will comply with the deemed-to-satisfy provisions and the prescriptive performance requirements through the development of fire engineered alternative solutions.

Assessed By



Andrew Maxon

1.0 INTRODUCTION

The development site includes the construction of a food processing and packing plant with associated on-grade parking located on Templar Road, Erskine Park.

The purpose of this report is to provide a general overview of the proposed building in terms of compliance with the provisions of the BCA (2013).

The issues within the report should be used as an early design guide to the compliance of the proposed new building with the BCA and is generic insofar as the design has progressed. Further checking is required throughout the design process.

Limitations and Exclusions

The information contained within this report is based upon a review of the preliminary architectural drawings (refer to appendix A) and does not include:

- Determining compliance with the Disability Discrimination Act (DDA);
- Determining compliance with Council policies;
- Assessment of architectural drawings against the Occupation Health and Safety legislation.

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 application of compliance with the particular version of the BCA is the date the application is made for a construction certificate with the Certifying Authority.

Development Consent

This report will demonstrate that there will be no additional requirements resulting from prescribed application of the BCA for any significant design changes that would necessitate the submission of an applicant under Section 96 of the Environmental planning and Assessment Act 1979.

A copy of the approval and associated endorsed drawings will be required prior to issuing the Construction Certificate for that component of works. The endorsed drawings and all relevant conditions will need to be satisfied and accurately reflect the construction drawings.

2.0 PRELIMINARIES

2.1 Building Assessment Data

The following BCA Parameters will apply to this Building:

The building has been assessed as a large-isolated building and must be designed to comply with Clause C2.3 and C2.4 of the BCA

The associated service and storage rooms to the Northern Elevation of the main building, although not directly connected to the main building, are to be collectively considered as one building as per Clause C2.3(c).

Classification:	Office = 5, Warehouse = 8
Number of Storeys Contained:	2
Rise In Storeys:	2
Type of Construction:	Type C
Effective Height (m):	Less than 25m

Part of Building	BCA Classification	Approx. Floor Area (m ²)	Approx. Volume (m ³)	Assumed Population
Warehouse	8	16,392 m ²	>108,000 m³	A maximum of*252 Persons at any one time
Mezzanine Production Area	8	1,343 m ²		
Offices & Amenities	5	2,339 m ²		
Service Buildings	8	943 m ²		
Total		21, 017 m²	>108,000 m³	*252 Persons

*Notes:

1. The estimated population numbers in the above table have been derived based upon advice from the applicant. Persons proposed to be accommodated will be assessed in more detail at the Construction Certificate stage.
2. Any amendments to the abovementioned population will require an additional BCA Review.

3.0 SECTION B - STRUCTURE

3.1 Structural Provisions

All new structural works are to comply with the applicable requirements of AS/NZS1170.1

The structural resistance of materials and forms of construction must be determined in accordance with its respective Australian Standard referenced Clause B1.4.

Prior to the issue of the Construction Certificate structural certification is required to ensure compliance is achieved with the provisions of the BCA.

4.0 SECTION C – FIRE RESISTANCE

4.1 Fire Resistance:

The building must be designed to comply with Type C Construction and the fire resisting construction of building elements in accordance with Table 5 of Specification C1.1 (refer to summary of FRL's – Appendix B).

The fire hazard properties of fixed surface linings and mechanical ductwork is required to be addressed within the detailed documentation phase pursuant to Specification C1.10.

4.2 Fire Compartmentation

Due to the building exceeding the maximum size of fire compartments stated under BCA Table C2.2, compliance with Clause C2.3 Large Isolated Buildings is required. It is estimated that the volume of the building will exceed 108,000m³. Therefore a sprinkler system in accordance with Specification E1.5, Vehicular Access complying with Clause C2.4(b) and a smoke hazard management system in accordance with Specification E2.2(b) or (c) is required.

Presently, compliant Vehicular Access in accordance with Clause C2.4(b) has not been provided due to the following items:

- i) The perimeter access serving to the North-Western Elevation is underneath an awning that projects 20m from the building. Therefore the furthest part of the 6m pathway is greater than 18m from the building.

Emergency generators sustaining equipment operating in emergency mode, lift motors, control rooms, central smoke control plant are to be separated from the remainder of the building by construction having an FRL of not less than 120/120/120.

Battery storage areas that have a voltage exceeding 24 volts and a capacity exceeding 10 ampere hours are to be separated from the remainder of the building by construction having an FRL of not less than 120/120/120.

5.0 SECTION D – ACCESS EGRESS

5.1 Provision for Escape

The proposed egress routes for the building do not comply with the DtS provisions of the BCA, due to the following matters:

- i) Egress distances of up to 90m to a point of choice to two (2) exits;
- ii) Egress distances of up to 130m to an exit;
- iii) Distances of up to 140m between alternative exits;
- iv) Travel by non-fire isolated stairs exceeding the required distance of 80m;

The above egress matters may be assessed as part of a fire engineering solution for the building to achieve compliance with the performance requirements of the BCA, in this instance relevant performance requirements are DP4 and EP2.2.

The unobstructed width of a path of travel to an exit must not be less than 1m. It is noted some areas may be reduced below 1m due to machinery, conveyors or the like. Where this occurs, these non-compliances are to be included in the fire engineering assessment.

Doorways are permitted to contain a clear opening width of 750mm with a height of 1980mm as part of the egress requirements. Access for persons with disabilities however requires a clear doorway opening width of 850mm (i.e. minimum 920mm door).

Due to the traffic flow around all buildings it is recommended that where it would be possible for exit doorways to be obstructed by vehicles, bollards are placed to prevent this. Please also note that the discharge point of alternative exits must be located as far apart as practical.

5.2 Construction of Exits

Electrical distribution boards and switchboards along the path of travel to required exits must be enclosed in non-combustible construction with doorways suitably sealed against the smoke spreading from the enclosure.

Other detailing issues that will need to be included in the Construction Certificate include stair, handrail and balustrade construction and details of the egress provisions to the road.

With regards to the provisions for the construction of exits, please ensure the following requirements are addressed via a compliant design solution or an alternative solution prepared by a fire engineer addressing the relevant Performance Requirements of the BCA.

A doorway serving as a required exit or forming part of a required exit must:

- (i) not be fitted with a roller shutter or tilt-up door unless it serves a building or part with a floor area less than 200m².
- (ii) if a swinging door, swing in the direction of egress.
- (iii) if a sliding and/or power operated door, be able to be opened manually under a force of not more than 110 N and must open automatically if there is a power failure or upon the activation of a fire or smoke detection system.

A doorway serving as a required exit, forming part of a required exit must or a doorway in the path of travel to an exit must be readily openable without a key from the side that faces a person seeking egress by a single hand downward action device which is located between 900-1100mm from the floor.

5.3 Access for Occupants with Disabilities

Access for people with disabilities is required to be provided through 50% of the principal pedestrian entries to the building and to and within all areas normally used by the occupants.

However, where supported by an Access Report, allowances may be applied for areas that would be inappropriate because of the particular use or that would pose a health and safety risk for a person with a disability. Based upon our review the meat production and storage areas would be eligible for this exemption.

Nonetheless access will be required to be provided to all office and canteen areas, including the upper mezzanine level, due to this area exceeding 200m² as per BCA Clause D3.3. Compliance may be achieved via the installation of a passenger lift or a lift for persons with limited mobility in accordance with AS1735. Details are to be included in the documentation for Construction Certificate.

Ramps:

Ramps are required to comply with clause 10 of AS1428.1 – 2009.

Doorways:

All doorways are to be designed to ensure that the clear widths and circulation spaces are in accordance with AS1428.1.

Car parking:

Generally accessible parking spaces complying with AS2890.6 and should be provided at a rate of 1 in 100 required spaces for persons with disabilities, in accordance with Table D3.5 of the BCA.

Signage:

As part of the detailed design package, specifications will need to be developed indicating:

- Sanitary Facilities & Lift Identification Signs in accordance with AS1428.1-2009
- “Disabled” sanitary facility sign in accordance with AS1428.1-2009

Stairways:

Stairways are required to comply with clause 11 of AS1428.1 – 2009.

Tactile indicators:

Tactile ground surface indicators are required to be provided to all stairways and ramps in accordance with AS/NZS 1428.4.1.

6.0 SECTION E – SERVICE AND EQUIPMENT

6.1 Fire Hydrants

Based on the combined area of both buildings it is assumed that a booster assembly will be required as part of the fire hydrant requirements, which must be in sighting distance of the main entrance. Please refer to clause 7 of AS 2419.1-2005 for the specific design requirements for a booster assembly.

The building must be served by fire hydrants located in order to provide coverage in accordance with AS 2419.1-2005.

Where coverage compliance cannot be achieved this will be required to be included in the Fire Engineering assessment addressing the relevant Performance Requirement - EP1.3.

6.2 Fire Hose Reels

The building will need to be provided with fire hose reels in accordance with BCA Clause E1.4 and AS2441-2005. To be located within 4m of exits and provide coverage within the building based on a 36m hose length and 4.0m hose stream.

Where coverage compliance cannot be achieved this will be required to be included in the Fire Engineering assessment addressing the relevant Performance Requirement - EP1.1.

6.3 Sprinkler System

Based upon the building being assessed as a large-isolated building, the whole building must be served by an automatic sprinkler system in accordance with specification E1.5 and AS 2118.1.

Special consideration may be required for the design of the sprinkler for areas defined as an 'occupancy of excessive hazard' under table E1.5 of the BCA.

The sprinkler valve enclosure being situated within an enclosure which has direct access to a road or open space suitable for use by the fire brigade.

6.4 Portable Fire Extinguishers

Portable Fire Extinguishers are required to be provided in accordance with Clause E1.6 of the BCA and AS 2444-2001.

6.5 Fire Control Centre

As the building has a floor area greater than 18, 000 m², a Fire Control Centre is required to be provided in accordance with Specification E1.8.

6.6 Building Occupant Warning System

In conjunction with BCA Specification E1.5, a Building Occupant Warning System is required to be provided in accordance with AS1670.1-2004.

6.7 Smoke Hazard Management

Smoke hazard management provisions are required due to the building exceeding 18, 000m² floor area and/or 108, 000m³ volume. Where a ceiling height of a fire compartment is not more than 12m either one of the following must be provided:

- i) an automatic smoke exhaust system in accordance with Specification E2.2b; or
- ii) an automatic smoke and heat vents in accordance with Specification E2.2c.

Where the ceiling height of a fire compartment does exceed 12m, an automatic smoke exhaust system in accordance with Specification E2.2b must be provided.

The above requirement will be included in fire safety engineering assessment to ensure compliance with Performance Requirement EP2.2 of the BCA. However allowance should be made for smoke clearance facilities as required by the NSW Fire Brigade.

6.8 Exit Signs & Emergency Lighting

Emergency lighting and exit signs must be appropriately situated along the path of travel to exits in accordance with Part E4 of the BCA and AS/NZS 2293. 1.

Exit signs must be mounted at a height of not more than 2.7m above the floor. Due to the operational requirements of the subject development there may be a need to locate exit signs above this height.

This scenario will be required to be assessed as part of the Fire Engineering Solution for the subject site, in accordance with Performance Requirement EP4.2 of the BCA.

7.0 HEALTH AND AMENITY

7.1 Sanitary Facilities

Persons with Disabilities

The sanitary facility for persons with a disability is to comply with the associated provisions of AS1428.1 – 2009. Accessible facilities have been noted on the ground floor, however accessible and ambulant facilities are required to be provided to the mezzanine level.

Bathroom Construction

Where bathrooms or rooms containing water closets have the WC within 1200mm of the doorway, the door shall be either sliding, open outwards, or be provided with removable hinges.

Ambulant Requirements

At each bank of toilets a sanitary facility suitable for people with an ambulant disability in accordance with AS1428.1 - 2009 must be provided for use by males and females.

The proposed sanitary facilities allow the following maximum occupants:

Ground Floor	Max. allowable occupants	WC	Urinal	WHB	
Male	100	5	8	5	
Female	100	8	N/A	5	
Accessible Sanitary Facility, 1 per storey.					
Mezzanine	Max. allowable occupants	WC	Urinal	WHB	
Male	120	6	8	5	
Female	75	5	N/A	3	
Accessible Sanitary Facility, 1 per storey.					
Total:	Male	220	11	16	10
	Female	175	13	N/A	8

7.2 Light and Ventilation:

Artificial lighting complying with AS/NZS1680.0 is to be incorporated with the final detailed design to be developed to confirm this.

Mechanical ventilation and artificial light is to be provided in accordance with Part F4 of the BCA.

8.0 ENERGY EFFICIENCY

8.1 Energy Efficiency

The office portion of the building that shall be conditioned (i.e. any form of climate control) and therefore be required to comply with the energy provisions of the BCA 2013.

The proposed site will be located in a climate zone 6.

Options available are:

- Comply with Verification method JV3

Or

- Comply with the deemed to satisfy provisions in relation to:
 - Building Fabric
 - External Glazing
 - Building dealing
 - Air movement
 - Air conditioning and ventilation systems
 - Artificial light and power
 - Hot water supply

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 architectural plans prepared by Nicholas & Alexander Architects were used in the assessment and preparation of this report:-

DRAWING NO.	TITLE	ISSUE	DATE
13424 – DA-010	Locality & Site Plan	--	29.07.13
13424 – DA-101	Ground Floor Process Layout Plan	--	30.07.13
13424 – DA-102	Office Plan & Elevations. Mezzanine Plan	--	30.07.13
13424 – DA-201	Elevations & Sections	--	30.07.13

APPENDIX B - FIRE RESISTANCE LEVELS FOR TYPE C CONSTRUCTION

The table below represents the Fire resistance levels required in accordance with BCA 2013:

Building element	Class of building—FRL: (in minutes)			
	Structural adequacy/Integrity/Insulation			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any <i>fire-source feature</i> to which it is exposed is—				
Less than 1.5 m	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
1.5 to less than 3 m	—/—/—	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
3 m or more	—/—/—	—/—/—	—/—/—	—/—/—
EXTERNAL COLUMN not incorporated in an <i>external wall</i> , where the distance from any <i>fire-source feature</i> to which it is exposed is—				
Less than 1.5 m	90/—/—	90/—/—	90/—/—	90/—/—
1.5 to less than 3 m	—/—/—	60/—/—	60/—/—	60/—/—
3 m or more	—/—/—	—/—/—	—/—/—	—/—/—
COMMON WALLS and FIRE WALLS—	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
INTERNAL WALLS-				
Bounding <i>public corridors</i> , public lobbies and the like—	60 / 60/ 60	—/—/—	—/—/—	—/—/—
Between or bounding <i>sole-occupancy units</i> —	60/ 60/ 60	—/—/—	—/—/—	—/—/—
Bounding a stair if <i>required</i> to be rated—	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
ROOFS	—/—/—	—/—/—	—/—/—	—/—/—

APPENDIX C – DRAFT FIRE SAFETY SCHEDULE

Based upon the documentation reviewed to date, the following schedule of essential fire measures and other measures must be installed within the building.

(Pursuant to Clause 168 of the Environmental Planning and Assessment Regulation 2000)

	Fire Safety Measure	Standard of performance
1.	Automatic Fire Suppression System	BCA Clause & Specification E1.5 & AS 2118.1 – 1999
2.	Building Occupant Warning System activated by the Sprinkler System	BCA Specification E1.5 & AS 1670.1 – 2004
3.	Emergency Lighting	BCA Clause E4.2, E4.4 & AS/NZS 2293.1 – 2005
4.	Exit Signs (*)	BCA Clauses E4.5, E4.6 & E4.8 and AS/NZS 2293.1 – 2005
5.	Fire Control Centre	BCA Clause & Specification E1.8
6.	Fire Hose Reels (*)	BCA Clause E1.4 & AS 2441 – 2005
7.	Fire Hydrant System (*)	Clause E1.3 & AS 2419.1 – 2005
8.	Mechanical Air Handling System (*) (Smoke Control System)	BCA Clause E2.2, AS/NZS 1668.1 – 1998 & AS 1668.2 – 1991
9.	Paths of Travel (*)	EP&A Reg 2000 Clause 186
10.	Perimeter Vehicular Access	BCA Clause C2.4
11.	Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001
12.	Warning and Operational Signs	Section 183 of the EP & A Regulations 2000

Notes: *These essential fire safety measures may be subject to a fire safety engineering assessment.