



**BUILDING CODE OF AUSTRALIA
REPORT**

**Eastern Creek Retail Centre
Rooty Hill Road, Eastern Creek**

Table of Contents

Executive Summary 3

1.0 Introduction 5

2.0 Building Assessment Data 5

3.0 Structural Provisions 6

4.0 Fire Resistance 6

5.0 Egress 8

6.0 Fire Services & Equipment 10

7.0 Ventilation and Smoke Hazard Management 11

9.0 Sanitary Facilities 12

10.0 Energy Efficiency 13

Appendix A - Design Documentation 14

Appendix B - Draft Fire Safety Schedule 15

Appendix C- Fire Resistance Levels 16

Date	Revision Number	No. of pages	Issue or Description of Amendment	Checked By	Approved By	Date Approved
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06/09/17	B	16	For DA Submission	Zoe Brown	Brigitte Thearle	07.09.17

Executive Summary

As Accredited Certifiers, we have reviewed architectural design documents prepared by i2C (refer appendix A) for compliance with the Building Code of Australia 2016.

The assessment of the design documentation has revealed that the following areas are required to be assessed against the relevant performance requirements of the BCA. The submission for Construction certificate will need to include verification from a suitably accredited fire engineer: -

DTS Clause	Description of Non-Compliance	Performance Requirement
C2.4	<p><u>Perimeter Vehicular Access</u> A minimum unobstructed width of 6m located within 18m is required to the entire perimeter of the building.</p> <p>The North East portion of the building does not achieve 6m clear vehicular access. The access to the south is discontinuous and the south eastern portion has areas where the access is up to 19m from the building and is less than 6m in clear width.</p>	CP9
D1.4	<p><u>Extended Travel Distances</u> The travel distances to exits should not exceed 30m to a single exit or 20m to a point of choice and where two exits are provided, a maximum of 40m to one of those exits.</p> <p>Tenancies located central to the main exits with a maximum of 65m from specialty tenancies and 80m from the Woolworths in lieu of 40m and 36m to a point of choice in lieu of 20m</p> <p>The fire safety engineer is to confirm feasibility of a performance solution to address the above distances.</p>	DP4 & EP2.2
D1.5	<p><u>Extended Distance Between Alternate Exits</u> The distance between alternative exits in a Class 6 building must not exceed 60m. The proposal includes a maximum distance of 100m between alternative exits in lieu of 60m.</p>	DP4
E2.2	<p><u>Smoke Hazard Management</u> It is anticipated that the provision of smoke hazard management will be rationalised throughout the development</p>	EP2.2

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

The documentation will need further detailing such as door hardware, specifications, service design, as outlined in Appendix D of this report.

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.

BCA ASSESSMENT REPORT
Proposed Retail Centre
Rooty Hill Road, Eastern Creek

Assessed By
Zoe Brown

1.0 Introduction

The proposed development comprises of a new retail centre containing specialty stores, restaurants, fresh food, a gym and medical centre.

The site is located on Rooty Hill road, Eastern Creek adjoining the M7 toll road.

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.

2.0 Building Assessment Data

Summary of Construction Determination: -

Building Assessment Data	
Classification	5, 6 & 9b
Number of Storeys Contained	1
Rise In Storeys	1
Type of Construction	Type C (Large Isolated)
Effective Height (m)	0 (Single Storey)

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

BCA ASSESSMENT REPORT
Proposed Retail Centre
Rooty Hill Road, Eastern Creek

Part of Building	Class	Floor Area	Occupant No.
Restaurants (Seating) [x13]	6	943	943
Restaurants (Kitchen) [x13]	6	471	48
Licensed Seating [x2]	6	240	70
Kiosks [x3]	6	53	6
Specialties stores [x18]	6	1692	564
Pharmacy [x1]	6	348	116
Mini Major [x1]	6	577	192
Woolworths (Shop) [x1]	6	2,790	930
Woolworths (Back of House)	6	1,004	20
Woolworths (Liquor) [x1]	6	201	67
Medical (Consultancy) [x1]	5	541	54
Circulation [x2]	6	1,530	306
Gym	9b	392	131
Alfresco Dining/ cinema	6 & 9b	1,373	150
TOTAL	5 & 6	12,155m²	3,597

Notes:

1. The above populations have been based on the floor areas and calculations in accordance with Table D1.1.3 of the BCA.
2. 1/3 of Restaurant Floor Area has been dedicated to Kitchen and the remainder to seating

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 buildings should be constructed generally in accordance with Table 5 of Specification C1.1 of the Building Code of Australia 2016. The building is required to be Type C Construction.

The building has been assessed on the basis of it being one fire compartment, with the medical centre and gym portions adopting the Class 6 classification as they occupy less than 10 % of the floor area of the storey.

The building exceeds the area / volume limitations of the BCA provisions and is therefore considered a large isolated building and the following provisions will apply:

- Automatic sprinkler protection to AS2118.1 and BCA specifications E1.5 throughout the development / smoke detection and alarm system in accordance with AS1670,

- Smoke exhaust or smoke and heat vents required throughout the development
- Perimeter emergency vehicular access 6m wide located within 18m of the entire building perimeter,

It is noted that the building does not contain the required 6m clearance to the north east façade, is discontinuous to the south and has portions more than 18m from the building and less than 6m in width to the south east. In addition further information is required to confirm truck circulation in the southwest loading dock area adjacent to the medical centre.

In addition, the vehicular access is to comply with FRNSW guidelines on the provision of vehicular access with regards to trafficable surfaces.

The vehicular access provided is less than required under C2.4 and therefore a fire engineered solution will be required to address Performance Requirement CP9 of the BCA

4.1 Protection of Openings

The prescriptive provisions of the BCA stipulate that openings within building elements required to have an FRL shall be protected as follows:

1. Any external opening within 3m of the fire source feature protected by -/60/- fire rated construction, or externally located wall wetting sprinklers, or an alternate solution be provided to verify CP2 of the BCA.

Note that where fire dampers, fire collars, etc are utilised, allowance needs to be made for access hatches to be provided within the walls / ceilings to ensure that maintenance access is provided.

Fire source feature is defined as;

- (a) *The far boundary of a road, river, lake or the like adjoining an allotment,*
- (b) *The side or rear boundary of the allotment,*
- (c) *The external wall of another building on the allotment which is not a class 10 building.*

4.4 Passive Fire Protection

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

- Emergency power supply,
- Emergency generators,
- 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.

4.4 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
- Details of the egress provisions to the Road.

5.1 Exit Travel Distances

The locations of the proposed exits would appear to indicate that the deemed to satisfy requirements in terms of travel distances, distances between alternative exits and egress widths would be satisfied for the tenancy's that discharge directly to open space and tenancy's located within close proximity to one of the 3 main exits provided.

The travel distances to exits should not exceed:

- 30m to a single exit or 20m to a 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

The following areas exceed the maximum allowable travel distance:

- Specialty tenancies located central to the main exits have travel distances up to 65m to an exit, And 80m from the Woolworths in lieu of 40m
- 36m (max.) to a point of choice in lieu of 20m from the parents room/female bathrooms, and 21m from Woolworths

Separation of exits does not fully comply as the distance between alternative exits exceeds 60m, with a maximum of 100m.

This is to be assessed as part of a performance solution by a suitably qualified fire safety engineer to BCA Performance Requirement DP4 and EP2.2.

It is noted that travel distances, particularly to the Woolworths tenancy will be subject to further review subject to receipt of fitout drawings.

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 following table summarises the exit widths required:

Floor Level	Exit Width Provided	Number of people (as provided)	Exit Width required
Ground	15.0m	1.985	14.0m

The exit width provided is 15.0m.

The total aggregate exit width within the building caters for 2150 occupants.

Doors used as required exits must be designed to swing in the direction of egress unless they are the only exit serving a sole occupancy unit and the tenancy has a floor area of less than 200m².

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).

5.4 Balustrading and Handrail

Balustrading to a height of 1000mm with a maximum opening of 125mm in any direction should be provided adjacent to balconies, landings, corridors etc where located adjacent to a change in level exceeding 1000mm.

Where it is possible to fall more than 4m to the finished floor below, the balustrade shall not contain any horizontal or near horizontal members that facilitate climbing.

Any windows with a sill height of less than 1.7m in bedrooms or 865mm in all other cases with a fall of more than 2m for windows, 4m for all other cases, openings are to be restricted or a protective barrier that does not allow a 125mm sphere to pass through.

Handrails should generally be provided at a minimum height of 865mm alongside of all ramps and stairs.

The main public stairs and ramps should be designed in accordance with the requirements of AS1428.1 for persons with disabilities. This requires a handrail on each side of the stair and ramp and for the handrail to extend approximately 550mm – 600mm past the last tread / end of ramp.

5.5 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 Clause D3.2, D3.3 and D3.4 of the BCA 2016. Parts of the building required to be accessible shall comply with the requirements of AS1428.1-2009.

The design would generally comply with the prescriptive provisions of the BCA with additional ongoing review being undertaken as to door widths, circulation, etc. Further details are to be provided or access to these areas is to be assessed by an access consultant.

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 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.
- From another accessible building connected by a pedestrian link.
- 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.

A hearing augmentation-listening system shall be installed throughout the building in accordance with the requirements of Clause D3.7 of the BCA.

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, AS 2118.4-1995, AS 2118.6-1995 throughout the building
- 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

6.1 Fire Hydrants

A system of Fire Hydrants is to be provided to BCA Clause E1.3 and AS 2419.1-2005. We will reply upon design certificate from a Hydraulic Consultant.

A booster assembly will be required as part of the fire hydrant requirements. The booster is required to be located attached to the building at the main entry. If remote from the building, it is to be located at the main vehicle entry and with sight of the main entry of the building within 20m of a hardstand area. The location of the booster assembly is to be confirmed.

Fire hydrants are to be provided within 4.0m of required exits.

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.

The hose reels are currently not indicated on the plans and therefore further detail is required to undertake a full assessment.

Please note that fire hose reel coverage cannot pass through fire or smoke doors.

6.3 Automatic Sprinkler Protection

An Automatic Fire Suppression System is required to Specification E1.5 and AS2118.1-1999.

Location of pumps, tanks, FIP, control valves and booster are to be indicated on the plans to allow a full assessment

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 Ventilation and Smoke Hazard Management

Smoke hazard management shall be provided throughout the building by means of the following systems:

- An automatic smoke exhaust system in accordance with Specification E2.2b
- Automatic Smoke Detection and Alarm System in accordance with the requirements of BCA Spec E2.2a and AS 1670.1-2004

It is anticipated that the provision of smoke hazard management will be rationalised throughout the development. This is to be assessed as part of the performance solution to BCA Performance Requirement EP2.2 by the accredited fire safety engineer.

A fire indicator panel is required as part of the detection system. This panel is to be located within 4m of the main entry and should be incorporated within the fire control room. Any variation to the prescriptive provisions will require the consent of the fire brigade and should form part of the fire safety engineering report to verify the performance requirements of the BCA.

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.

9.0 Sanitary Facilities

The sanitary & other facilities within the development have been calculated as the below:

F2.3 – SANITARY FACILITY CALCULATIONS					
Occupant Number	Population No.		Number of Required Facilities		
			WC	Urinal	Basin
Retail Patrons 2102	Male	1051	1	2	2
	Female	1051	3	-	2
Retail Employees 83	Male	42	3	2	2
	Female	42	3	-	2
Food Patrons 1163	Male	582	4	9	4
	Female	582	10	-	5
TOTAL REQUIRED	Male		8	13	8
	Female		16	-	9
TOTAL PROVIDED	Male		10 (Complies)	15 (Complies)	TBC
	Female		17 (Complies)	-	TBC

Notes / Assumption:

- Childcare site and PAD site will contain separate amenities and therefore have not been allowed for in this calculation.
- Woolworths/liquor, Mini major and Medical Centre will contain separate amenities for employees, and therefore have not been allowed for in this calculation.
- The Alfresco/Cinema area will contain 150 occupants as provided by Frasers Property Australia.
- Occupancy Number for the Licenced Dining Areas have been calculated as per number of seats shown on the plans.
- Employee numbers for retail tenancies assumed at a rate of 4% of the tenancy population
- Kiosks to contain up to 2 staff
- 1/3 of Restaurant Floor Area dedicated to Kitchen and the remainder to seating
- Gym facilities to be provided by the tenant and therefore not included in this calculation.
- Equal numbers of Male and Females throughout the entire retail centre

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. For every bank of sanitary compartments, at least one ambulant compartment, designed in accordance with AS 1428.1, must be provided for each sex.

Where detailed fitout is pending analysis will be undertaken once tenants and indicative layouts/tenant numbers are known. No allowance has been made for corridors etc that would be provided.

10.0 Energy Efficiency

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

1. 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
2. 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.

Access for maintenance is to be provided to the building in accordance with the requirements of BCA Part J8.

The proposed site will be located in a climate zone 5.

Due to special nature of the building some energy provisions may not be appropriate.

10.8 Access for Maintenance

Access is to be provided to all plant, equipment and components associated with the provision of the above energy requirements i.e.

- Adjustable or monitored shading devices
- Time switches and motion detectors
- Room temperature thermostats
- Plant thermostats such as boilers or refrigeration units
- Motorised air dampers and central valves
- Reflectors, Lenses and Diffusers of light fittings
- Heat transfer equipment

Appendix A - Design Documentation

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

Drawing No.	Title	Date	Drawn By	Revision
DA05	Proposed Stage 1 Plan	01.09.17	I2C	A

Appendix B - Draft Fire Safety Schedule

Essential Fire Safety Measures	Standard of Performance
1. Automatic Fail Safe Devices	BCA Clause D2.19 & D2.21
2. Automatic Fire Detection and Alarm System	BCA Spec. E2.2a & AS 1670 – 2015
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 – 2015
5. Emergency Lighting	BCA Clause E4.2, E4.4 & AS/NZS 2293.1 – 2005
6. Emergency Evacuation Plan	AS 3745 – 2002 Performance solution by accredited fire safety engineer
7. Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS/NZS 2293.1 – 2005
8. Fire Hose Reels	BCA Clause E1.4 & AS 2441 – 2005
9. Fire Hydrant System	Clause E1.3 & AS 2419.1 – 2005
10. Mechanical Air Handling System	BCA Clause E2.2, AS/NZS 1668.1 – 2015 & AS 1668.2 – 2012
11. Paths of Travel	EP&A Reg 2000 Clause 186 Performance solution by accredited fire safety engineer
12. Perimeter Vehicular Access	BCA Clause C2.4 Performance solution by accredited fire safety engineer
13. Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001
14. Required Exit Doors (power operated)	BCA Clause D2.19(d)
15. Smoke Dampers	AS/NZS 1668.1 – 1998
16. Smoke Hazard Management System	BCA Part E2 & AS/NZS 1668.1 – 2015 Performance solution by accredited fire safety engineer
17. Warning and Operational Signs	Section 183 of the EP & A Regulations 2000, AS 1905.1 – 2005

Appendix C- Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2016:

Table 5 TYPE C CONSTRUCTION: FRL OF BUILDING ELEMENTS

Building element	Class of building—FRL: (in minutes)			
	<i>Structural adequacy/Integrity/Insulation</i>			
	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	-/-/-	-/-/-	-/-/-	-/-/-