BUILDING CODE OF AUSTRALIA REPORT

Revision: F SEPTEMBER 2019

Eastern Creek Quarter Stage 2
Lot 1, Rooty Hill Road, Eastern Creek

Prepared for: Frasers Property

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Date	Rev No	No. of Pages	Issue or Description of Amendment	Assessed By	Approved By	Date Approved
15/01/18	A	35	Draft for review	Zoe Brown	Brigitte Thearle	15/01/18
20/04/18	B	35	Draft for DA Submission	Zoe Brown	Brigitte Thearle	20/04/18
28/09/18	C	20	Final for DA Submission	Vanessa Batty	Geoff Pearce	28/09/18
11/10/18	D	20	Minor Amendment for DA Submission	Zoe Brown	Vanessa Batty	11/10/18
06/09/19	E	26	Updated to BCA 2019 and change of Large Isolated to Type compartmentalised	Zoe Brown	Paul Curjak	09/09/19
12/09/19	F	26	Minor Updates	Zoe Brown	Paul Curjak	12/09/19

Executive Summary

Development Overview

The proposed development comprises of a new retail centre containing bulky goods tenancies, and restaurants, with associated car parking and loading areas.

This report has been prepared to support State Significant Development Application SSD 17_8588 for the detailed design and construction of the Stage 2 bulky goods retail development on Lot 1, Rooty Hill Road South, Eastern Creek.

Compliance Summary

As Accredited Certifiers, we have reviewed architectural design documents prepared by i2C (refer appendix A) for compliance with the Building Code of Australia 2019.

As the design developments, the below information is to be provided to enable further assessment

No.	Description	Discipline
1.	**Fire Resisting construction | BCA Spec C1.1** A loadbearing external wall, and any column incorporated in it must achieve an FRL in accordance with Table 4 of Spec C1.1 The northern façade of building 1 (Type B Construction) is within 15m of the adjacent boundary (Fire source feature) which backs onto existing woodlands. Loadbearing parts within 18m of a fire source feature must achieve an FRL of 180/60/--. Details of the construction and FRL of the facade is to be provided as part of the Construction Certificate documentation	Architect
2.	**Non-Combustible Building Elements | BCA Clause C1.9 & C1.14** External walls and common walls of a Type B building (Building 1) and all components within the walls must be non-combustible. This includes cladding systems and attachments such as awnings and building signs. Test reports of all materials proposed are to be provided for further assessment as part of the Construction Certificate Application	Architect

3.	**Fire Compartments | BCA Clause C2.2** The maximum fire compartment area of a Type B, Class 6 building is 3,500 m². Building 1 is Type B and shown to have fire walls separating the compartments of the building to comply with C2.2. Details of the construction and FRL of the fire walls is to be provided as part of the Construction Certificate documentation	Architect
4.	**Pedestrian Ramps and Stairs | BCA Clause D2.10- 2.17** The design of all stairs and ramps are to be in accordance with the BCA and AS 1428.1 Stair and ramp details are to be provided as part of the Construction Certificate documentation to enable further assessment.	Architect
5.	**Doorways and Doors | BCA Clause D2.19 & D2.21** A door forming part of a required exit must be readily openable without a key from the side that faces a person seeking egress with a single hand downward pushing action. Where automatic sliding doors are proposed, details of how these doors operate in an emergency is to be provided as part of the Construction Certificate Documentation to enable further assessment.	Architect
6.	**Fire Hydrants | BCA Clause E1.3** Fire hydrants are required to all buildings over 500 m² in accordance with AS 2419.1. This includes all buildings within the development, except for the Pad Site Building. Fire Hydrant coverage plans are to be provided and compliance certified by a suitably qualify hydraulic engineer as part of the Construction Certificate Documentation.	Services Consultant
7.	**Fire Hose Reels | BCA Clause E1.4** Fire hose reels are required in accordance with AS 2441 Fire Hose Reel coverage plans are to be provided and compliance certified by a suitably qualify hydraulic engineer as part of the Construction Certificate Documentation.	Services Consultant
8.	**Fire Services Protection | BCA Clause E2.2** Building 1 is to be protected by one of the following fire safety systems: ▪ Automatic Smoke Exhaust System activated in accordance with the requirements of BCA Spec E2.2 and AS1670.1-2018; or ▪ Smoke and Heat Vents in accordance with the requirements of BCA Spec E2.2c; or	Services Consultant

	▪ An automatic smoke detection and alarm system complying with Spec E2.2a; or ▪ A sprinkler system (other than a FPAA101D or FPAA101H system) complying with Spec E1.5 The designer is to advise which system the building will contain and provide comment on any variances to DtS.	
9.	**Sanitary Facilities | BCA Clause F2.3** Sanitary facilities are to be provided in accordance with Table F2.3 of the BCA. The plans do not indicate how many facilities will be provided. Further information is to be provided on the Construction Certificate Documentation	Architect

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: -

No.	Alternative Solution Description	DTS Clause	Performance Requirement
Fire Safety Items			
1.	**Travel Distances** The travel distances to exits should not exceed 30m to a single exit, or 20m to a point of choice where to exits are provided, to a maximum of 40m to one of those exits The plans provided do not indicate internal shop fit outs and therefore the assessment has allowed for the provision of racking layouts With provision for fit-outs, the following distances are in excess of deemed-to-satisfy provisions: ▪ Building 1 displays a travel distance of 60m to an exit in lieu of 40m ▪ Building 1 displays a distance to a point of choice of 30m in lieu of 20m	D1.4	DP4 & EP2.2
2.	**Hydrant Booster Assembly** The booster must be located adjacent to the principal vehicular access to the site. The booster is shown to the south-west boundary, where the principal vehicular access is at the north-eastern corner of the site	E1.3	EP1.3

The fire engineered solution relating to EP1.3 & EP2.2 will be subject to consultation with the NSW Fire Brigade as part of the Construction Certificate process under Clause 144 of the Environmental Planning & Assessment Regulation 2000.

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.

1.0 INTRODUCTION

The proposed development comprises of a new retail centre containing bulky goods tenancies, and restaurants, with associated carparking and loading areas.

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

This report is based upon the review of the design documentation listed in Appendix A of this Report

The report is intended as an overview of the relevant provisions of the Building Code of Australia for assistance only. Detailed drawings and associated review will still be required as the final design is developed.

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 Report, BCA 2019 has been utilised as the version of the BCA applicable at the time of preparation this Report.

2.0 PRELIMINARIES

2.1 Building Assessment Data

Summary of Construction Determination: -

Part of Project	Building 1 Bulky Goods	Building 2	Building 3	Pad Site
Classification	6	6	6	6
Number of Storeys	1	1	1	1
Rise In Storeys	1	1	1	1
Type of Construction	Type B	Type C	Type C	Type C
Effective Height (m)	0 (Single Storey)	0 (Single Storey)	0 (Single Storey)	0 (Single Storey)
Building Size	Area : 8,255 m²	Area : 803 m²	Area : 1,567 m²	Area : 498 m²
Largest Compartment	3,230 m²	803 m²	1,567 m²	498 m²

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

Building 1				
Part of Project	**BCA Classification**	**Approx. Floor Area (m^2)**	**Approximate Volume (m^3)**	**Assumed Population**
Major 1 Shop Back of house	6	1,810 1,532 278		313 307 6
Tenant 1 Shop Back of house	6	805 690 115		144 138 6
Tenant 2 Shop Back of house	6	833 707 126		148 142 6
Tenant 3 Shop Back of house	6	845 721 124		151 145 6
Tenant 4 Shop Back of house	6	454 396 58		78 74 4
Tenant 5 Shop Back of house	6	452 394 58		78 74 4
Tenant 6 Shop Back of house	6	680 593 87		125 119 6
Tenant 7 Shop Back of house	6	684 596 88		126 120 6
Tenant 8 Shop Back of house	6	453 395 58		78 74 4
Tenant 9	6	285		57
Tenant 10 Shop Back of house	6	856 681 175		148 137 11
Café (Including outdoor seating) Kitchen Dining	6	145 30 115		118 3 115
TOTAL	**6**	**8,255 m²**	**TBA**	**1,564** 62 staff 1,502 patrons

Building 2				
Part of Project	**BCA Classification**	**Approx. Floor Area (m^2)**	**Approximate Volume (m^3)**	**Assumed Population**
Tenant 11	6	175		41
Tenant 12	6	180		42
Tenant 13	6	248		58
Tenant 14	6	200		47
TOTAL		**803 m²**	**TBA**	**188**

Building 3				
Part of Project	**BCA Classification**	**Approx. Floor Area (m^2)**	**Approximate Volume (m^3)**	**Assumed Population**
Tenant 15	6	189		45
Tenant 16	6	230		54
Tenant 17	6	355		83
Tenant 18	6	295		69
Tenant 19	6	249		59
Tenant 20	6	250		59
TOTAL		**1,568 m²**	**TBA**	**369**

Building 4 (Pad Site)				
Part of Project	**BCA Classification**	**Approx. Floor Area (m^2)**	**Approximate Volume (m^3)**	**Assumed Population**
Pad Site	6	498		TBA
TOTAL		498 m²	**TBA**	

Notes:
1. The above populations have been based on the floor areas and calculations in accordance with Table D1.13 of the BCA.
2. The floor areas have been adjusted without ancillary areas such as sanitary facilities, corridors, back of house areas, shelving and or racking layouts in storage areas.
3. 1/3 of the Café and Pad Site Floor area has been dedicated to the kitchen and the remainder to seating.
4. All shops have been calculated at a rate of 1 person per 3 m²
5. All restaurant seating areas have been calculated at a rate of 1 person per 1 m²
6. All Kitchen Areas have been calculated at a rate of 1 staff per 10 m²

2.2 Structural Provisions (BCA B1)

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, including determination of the importance level of the development.

This is to include assessment against the provisions of BCA Clause B1.6 – Construction of Buildings in Flood Areas

3.0 FIRE PROTECTION

3.1 Fire Compartmentation (BCA C1.1)

The BCA stipulates three levels of fire resistant construction, which is based upon the rise in storeys and classification of the building. Each of these types of construction has maximum floor area and volume limitations as per BCA Table C2.2.

Based upon the rise in storeys and use of the Buildings, building 1 is required to be Type B Construction in accordance with Table 4 of Specification C1.1 of the Building Code of Australia 2019. Buildings 2-4 are required to be Type C Construction in accordance with Table 5 of Specification C1.1 of the Building Code of Australia 2019.

Each building has been assessed as one fire compartment.

The maximum floor area and volume limitations of a fire compartment as nominated in the deemed to satisfy provisions are as follows:

Classification		Type of Construction		
		A	B	C
5, 9b or 9c aged care building	max floor area—	8 000 m^2	5 500 m^2	3 000 m^2
	max volume—	48 000 m^3	33 000 m^3	18 000 m^3
6, 7, 8 or 9a (except for patient care areas)	max floor area—	5 000 m^2	3 500 m^2	2 000 m^2
	max volume—	30 000 m^3	21 000 m^3	12 000 m^3

Building 1 (Bulky Goods including Café) has been assessed as a Type B building and is shown to contain proposed fire walls to compartmentalise the building into areas not greater than 3,500 m^2. Details of the construction and FRLS of the fire walls is to be provided as part of the Construction Certificate Documentation.

3.2 Fire Resistance (BCA C1.1)

The building should be constructed generally in accordance with the relevant provisions of Specification C1.1 of the BCA applicable to Type B and Type C Construction, Please refer to Appendix C which outlines the required fire rating to be achieved by the development.

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,

The above areas are to be separated from the remainder of the building by construction achieving a minimum fire resistance level of 120 minutes.

3.3 Fire Hazard Properties (BCA C1.10 and BCA C1.12)

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. The following requirements apply:

Non-Sprinkler Protected Areas

a) Floor Coverings – Critical radiant Flux not less than 2.2kW/m³ a maximum smoke development rate of 750 percent-minutes
b) Wall and Ceiling Linings – Material Group No. 1, 2, or 3 for walls and Group No.1, or 2 for ceilings and with a smoke growth rate index not more than 100, or an average specific extinction area less than 250m2/kg
c) Other Materials – Spread of Flame Index not exceeding 9 and Smoke Developed Index not exceeding 8 (if Spread of Flame if >5)

Rigid and flexible air handling ductwork must comply with AS4254 parts 1 & 2 2012.

Floor linings and floor coverings used in lift cars must have a critical radiant flux not less than 2.2, and wall and ceiling linings must be a Material Group No. 1 or 2.

External Wall Cladding

As building 1 is of Type B construction the external walls, including any external and internal claddings & linings must be non-combustible as determined by AS1530.1. 1994.

The following materials may be used wherever a non-combustible material is required:

a) Plasterboard.
b) Perforated gypsum lath with a normal paper finish.
c) Fibrous-plaster sheet.
d) Fibre-reinforced cement sheeting.
e) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0.
f) Bonded laminated materials where—
    i. each lamina, including any core, is non-combustible; and
    ii. each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2mm; and
    iii. the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole does not exceed 0 and 3 respectively.

The BCA does nominate that ancillary elements may be fixed to an external wall that is required to be non-combustible unless they comprise of the following:

a) An ancillary element that is non-combustible.
b) A gutter, downpipe or other plumbing fixture or fitting.
c) A flashing.
d) A grate or grille not more than 2 m² in area associated with a building service.
e) An electrical switch, socket-outlet, cover plate or the like.
f) A light fitting.
g) A required sign.
h) A sign other than one provided under (a) or (g) that—
    i) achieves a group number of 1 or 2; and
    ii) does not extend beyond one storey; and
    iii) does not extend beyond one fire compartment; and
    iv) is separated vertically from other signs permitted under (h) by at least 2 storeys.

It is recommended that once material selections are made, copies of the fire test certificates/reports be provided for review and approval.

3.4 Protection of Openings in External Walls (BCA C3.2)

The prescriptive provisions of the BCA stipulate that any external opening within 3m of the fire source feature requires protection by -/60/- fire rated construction, or externally located wall wetting sprinklers.

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.

4.0 EGRESS PROVISIONS

4.1 Provisions for Escape (BCA D1)

The egress provisions from the proposed building are provided by:

- External perimeter doorways

Other detailing issues that will need to be addressed include:

- Door Hardware
- Exit door operation
- Details of the egress provisions to the Road.

4.2 Exit Travel Distances (BCA D1.4)

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.

The travel distances to exits should not exceed:

Class 5-9

- 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 locations of the proposed exits indicate that the deemed to satisfy requirements in terms of travel distances would be satisfied throughout. However internal layouts have not been indicated on the plans and it is likely that future fitouts will create extended travel distances. The Development is subject to further ongoing assessment of travel distances as the design progresses. Travel distances will be verified through a performance based solution, subject to consultation with FRNSW prior to the issue of the Construction Certificate.

With provision for fit-outs, the following distances are in excess of deemed-to-satisfy provisions:

- Building 1 displays a travel distance of 60m to an exit in lieu of 40m
- Building 1 displays a distance to a point of choice of 30m in lieu of 20m

4.3 Dimensions of Exits (BCA D1.6)

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).

Aggregate egress width provisions are to be further assessed as part of design development and verified for compliance with the BCA prior to the issue of the Construction Certificate.

Exit door widths are to be shown on the plans to enable further assessment

Doorways are permitted to contain a clear opening width of the required width of the exit minus 250mm, 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 920 mm doors).

4.4 Balustrading and Handrails (BCA D2.16 and BCA D2.17)

Generally

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 surface below, the balustrade shall not contain any horizontal or near horizontal members that facilitate climbing between 150 – 760mm above the floor.

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

The public stairs and ramps located along an accessible path of travel 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.

4.5 Slip Resistance

The adoption of BCA 2014 introduced a requirement for slip resistance of stairway treads and ramp surfaces. The requirements are as follows:

Table D2.14 SLIP-RESISTANCE CLASSIFICATION

Application	***Surface conditions***	
	Dry	***Wet***
Ramp steeper than 1:14	*P4 or R11*	*P5 or R12*
Ramp not steeper than 1:14	*P3 or R10*	*P4 or R11*
Tread or landing surface	*P3 or R10*	*P4 or R11*
Nosing or landing edge strip	*P3*	*P4*

5.0 ACCESS FOR PEOPLE WITH DISABILITIES

5.1 General Building Access Requirements (BCA D3.1)

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 2019. Parts of the building required to be accessible shall comply with the requirements of:-

- AS1428.1-2009 General Requirements for Access – New Building Work;
- AS1428.4-2009 Tactile Ground Surface Indicators
- AS2890.6-2009 Car Parking for People with Disabilities

Access for persons with a disability is to be provided as follows:-

Office/shops (Class 5/Class 6 buildings)

To and within all areas normally used by the occupants

5.2 Provision for Access to Buildings

The BCA prescribes access to be provided to and within the building 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.

In buildings over 500m2 in floor area, a non-accessible entrance must not be located more than 50m from an accessible entrance.

And where a pedestrian entry contains multiple doors, the following is required;

- Entrance containing not more than 3 doors, at least one of the door leaves must be accessible.
- Where an entrance contains more than 3 doors, not less than 50% of the door leaves must be accessible.

A door is considered to be accessible if it is automatic (open and closing) or is more than 850mm in clear opening width and contains the required door circulation space.

5.3 Provisions for Access within Buildings (BCA D3.3)

Within the building the following are required;

- Door circulation space as per AS1428.1 Clause 13.3 and as attached in appendix 1;
- Doorways must have a clear opening of 850mm;
- Passing spaces (1.8m wide passages) must be provided at maximum of 20m intervals
- Within 2.0m of end access ways/corridors, turning areas spaces are required to be provided.
- Carpet pile height of not more than 11mm to an adjacent surface
- Any glazed capable of being mistaken for a doorway or opening must be clearly marked (or contain chair rail, hand rail or transom as per AS 1288 requirements)

The design would generally comply with the prescriptive provisions of the BCA with additional ongoing review being undertaken as to door widths, circulation, etc.

5.4 Car parking (BCA D3.5)

Accessible car parking spaces are required to comply with AS 2890.6-2009 at the rate of 1 accessible space for every 50 spaces.

The development is proposed to contain 355 car parking spaces which requires a minimum of 8 accessible spaces. 11 accessible car spaces are proposed and therefore meets the minimum requirement.

A ‘shared zone’ of minimum 5400mm x 2400mm is required adjacent to accessible car parking spaces, protected with a bollard.

5.5 Tactile Indicators (BCA D3.8)

Tactile indicators are required to be provided to warn occupants of all stairs (except Fire Isolated stairs) and ramps regardless of public nature or private environment and where an overhead obstruction occurs less than 2.0m above the finished floor level.

5.6 Stairs (BCA D3.3 inter Alia AS1428.1)

Stairs shall be constructed as follows:

a) Where the intersection is at the property boundary, the stair shall be set back by a minimum of 900mm so that the handrail TGSIs do not protrude into the transverse path of travel.
b) Where the intersection is at an internal corridor, the stair shall be set back in 300mm, so the handrails do not protrude into transverse path of travel.
c) Stairs shall have opaque risers.
d) Stair nosing shall not project beyond the face of the riser and the riser may be vertical or have a splay backwards up to a maximum 25mm.
e) Stair nosing profiles shall-
   - Have a sharp intersection;
   - Be rounded up to 5mm radius; or
   - Be chamfered up to 5mm x 5mm
f) All stairs, including fire isolated stairs shall, at the nosing of each tread have a strip not less than 50mm and not more than 75mm deep across the full width of the path of travel. The strip may be set back a maximum of 15mm from the front of the nosing. The strip shall have a minimum luminance contrast of 30% to the background. Where the luminous contrasting strip is affixed to the surface of the tread, any change in level shall not exceed a difference of 5mm.

5.7 Provisions for Accessible Sanitary Facilities (BCA F2.4)

Unisex Accessible Sanitary Facilities

An accessible unisex sanitary facility must be located so that it can be entered without crossing an area reserved for one sex only and provided in accordance with AS 1428.1-2009 and must contain a closet pan, washbasin, shelf or bench top and adequate means of disposal of sanitary towels and as per following.

Building Type	Minimum accessible unisex sanitary compartments to be provided
Class 6 and 9b	a) 1 on every storey containing sanitary compartments; and b) Where a storey has more than 1 bank of sanitary compartments containing male and female sanitary compartments, at not less than 50% of those banks.

Ambulant Facilities

At each bank of toilets where there is one or more toilets in addition to an accessible unisex sanitary compartment, a sanitary compartment suitable for a person with an ambulant disability in accordance with AS 1428.1-2009 must be provided for use by males and females.

Where male sanitary facilities are provided at a separate location to female sanitary facilities, accessible unisex sanitary facilities are only required at one of those locations.

5.8 Signage (BCA D3.6)

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

- Sanitary Facility Identification Signs (note that they are to comply with BCA Specification D3.6 and include the use of Braille, Tactile, etc and be placed on the wall on the latch side of the facility);
- Directional / Way Finding signs to the Lifts, Sanitary Facilities, etc;
- Identify each door required by BCA Clause E4.5 to be provided with an exit sign, stating 'EXIT' and 'Level" number

6.0 FIRE SERVICES AND EQUIPMENT

The following section of this report describes the essential fire safety measures and the minimum performance requirements of those measures. A draft essential fire safety schedule can be found in Appendix B.

6.1 Fire Hydrants (BCA E1.3)

A system of Fire Hydrants is required to be provided in accordance with BCA Clause E1.3 and AS2419.1-2005, please provide pressure and flow calculations for review.

Pressure and flow information will be required to confirm the required pressures and flow to the system, depending on the type of hydrant to be utilized;

- Feed hydrants (within 20m of hard stand for pumping appliance), 150 kPa
- Attack hydrant (within 50m of hard stand) 250 kPa
- Hydrants on a pump station, 700 kPa

The flow requirements depend on the size of the fire compartment and type of building, for this project the requirements are:

- Building 1, 2 & 3 (Bulky Goods) 5-10 L/s with 3 hydrants operating.
- Building 2 (Pad Site) Not applicable as this building is less than 500m²

The building is required to be provided with a booster assembly 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, the booster is to be located at the main vehicle entry and within sight of the main entry of the building within 20m of a hardstand area. The current location does not meet the requirements as the booster is not adjacent to the principal vehicular entry and as such is to be assessed as part of the performance solution by the accredited fire safety engineer to BCA Performance Requirement EP1.3.

A fire ring main is not required.

The fire pump location is to be shown on the plans

6.2 Fire Hose Reels (BCA E1.4)

A Fire Hose Reel System is required to BCA Clause E1.4 and AS2441-2005

Fire hose reels are to be located within 4m of exits and provide coverage within the building based on a 36m hose length. Where required, additional fire hose reels shall be located internally as required to provide coverage.

Fire Hose reel are not to extend through Fire and Smoke Walls.

The hose reels are currently not indicated and are to be shown on the plans to enable further assessment

6.3 Fire Extinguishers (BCA E1.6)

The provision of portable fire extinguishers is required to BCA Clause E1.6 and AS2444-2001 to provide coverage to the building.

Table E.6 details when portable fire extinguishers are required:

Occupancy Class	Risk Class (as defined in AS 2444)
General provisions – Class 2 to 9 buildings (except within sole-occupancy units of a Class 9c building)	(a) To cover Class AE or E fire risks associated with emergency services switchboards. (Note 1) (b) To cover Class F fire risks involving cooking oils and fats in kitchens. (c) To cover Class B fire risks in locations where flammable liquids in excess of 50 litres are stored or used (not excluding that held in fuel tanks of vehicles). (d) To cover Class A fire risks in normally occupied fire compartments less than 500m^2 not provided with fire hose reels (excluding open deck carparks). (e) To cover Class A fire risks in classrooms and associated schools not provided with fire hose reels. (f) To cover Class A fire risks associated with Class 2 or 3 building or class 4 part of building.

Fire extinguishers are to be located in accordance with AS 2444, often collocated with fire hydrants and/or fire hose reels.

The fire extinguisher locations are to be indicated on the plans to enable further assessment

6.4 Exit Signs and Emergency Lighting (BCA E4.2 and BCA E4.5)

Emergency Lighting and Exit Signs indicating exit location paths of travel to exits to be provided in accordance with AS2293.1-2018

Details are required to be provided for review.

6.5 Smoke Hazard Management, Smoke Detection and Sprinkler Protection (BCA E2.2)

Building 1 fire compartments between 2.000 m² – 3,500 m² are to be protected by one of the following systems:

- Automatic Smoke Exhaust System activated in accordance with the requirements of BCA Spec E2.22 and AS1670.1-2018; or
- Smoke and Heat Vents in accordance with the requirements of BCA Spec E2.2c; or
- An automatic smoke detection and alarm system complying with Spec E2.2a; or
- A sprinkler system (other than a FPAA101D or FPAA101H system) complying with Spec E1.5

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.

7.0 HEALTH AND AMENITY

7.1 Sanitary Facilities (BCA F2.2 and BCA F2.3)

Retail

Sanitary facilities are required to be provided for employees. In relation to the public, sanitary facilities are required to be provided either where more than 600 persons can be accommodated (standard shops) or for café / restaurant where there are more than 20 seats.

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.

Building 1 contains more than 600 persons and therefore the below sanitary facilities are required for the use of the public when provided in a common location. Staff facilities will be provided as part of the fit-outs and will be located within the back of house areas

Sanitary Facilities Required for the public					
Building 1	**Occupant Numbers**		**WC**	**Urinals**	**Basins**
Patrons 1,387	694	Male	1	2	2
	694	Female	3	-	2
		Accessible	1	-	1
Café Patrons 115	58	Male	1	2	2
	58	Female	3	-	2
		Accessible	1	-	1

7.2 Floor Wastes (BCA F1.11)

Floor wastes to be provided within bathrooms and laundries where located above another sole occupancy unit. The floor shall be sloped towards these wastes.

Floor wastes are required to be provided where wall hung urinals are provided and the floor shall be sloped towards these wastes.

Floor wastes are not indicated.

7.3 Light and Ventilation (BCA Part F4)

Natural Ventilation is required to be provided to rooms at a rate of 5% of the floor area in openings. Alternatively, mechanical ventilation is required in accordance with AS1668.2-2012. The architect is to provide calculations to verify compliance is achieved.

Artificial lighting complying with AS/NZS1680.0-2009 is to be incorporated with the final detailed design to be developed to confirm this.

7.4 Weatherproofing of External Walls (BCA FP1.4)

Performance Requirement FP1.4 which relates to the prevention of the penetration of water through external walls, must be complied with. It is noted that there are no Deemed-to-Satisfy Provisions for this Performance Requirement in respect of external walls.

As such, a performance solution is to be prepared by a suitably qualified professional that demonstrates that the external walls of the proposed building complies with Performance Requirement FP1.4 which reads as follows:

> *A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause—*
>
> *a) unhealthy or dangerous conditions, or loss of amenity for occupants; and*
> *b) undue dampness or deterioration of building elements.*

8.0 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 6.

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

Appendix A - Design Documentation

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

Drawing No.	Title	Date	Drawn By	Rev
DA04	Proposed Site Plan – Stage 2	22/08/19	MPR	G

Appendix B - Draft Fire Safety Schedule

	Essential Fire Safety Measures	Standard of Performance
1.	Automatic Fail Safe Devices	BCA 2019 Clause D2.19 & D2.21
2.	Automatic Fire Detection and Alarm System *(Where required)*	BCA Spec. E2.2a & AS 1670.1 – 2018, AS/NZS 1668.1 - 2015
3.	Emergency Lighting	BCA 2019 Clause E4.2, E4.4 & AS/NZS 2293.1 – 2018
4.	Emergency Evacuation Plan	AS 3745 – 2002
5.	Exit Signs	BCA 2019 Clauses E4.5, NSW E4.6 & E4.8 and AS/NZS 2293.1 – 2018
6.	Fire Hose Reels	BCA 2019 Clause E1.4 & AS 2441 – 2005 Amdt 1
7.	Fire Hydrant System	BCA 2019 Clause E1.3 & AS 2419.1 – 2005 Amdt 1 Performance solution by accredited fire safety engineer
8.	Mechanical Air Handling System *(Where required)*	BCA 2019 Clause E2.2, AS/NZS 1668.1 – 2015
9.	Paths of Travel	EP&A Reg 2000 Clause 186 Performance solution by accredited fire safety engineer
10.	Portable Fire Extinguishers	BCA 2019 Clause E1.6 & AS 2444 – 2001
11.	Required Exit Doors (power operated)	BCA 2019 Clause D2.19
12.	Smoke and Heat Vents *(Where required)*	BCA 2019 Spec. E2.2c, NSW Table E2.2 & AS 2665 – 2001
13.	Smoke Hazard Management System *(Where required)*	BCA 2019 Part E2 & AS/NZS 1668.1 – 2015
14.	Warning and Operational Signs	EP&A Reg 2000 Clause 183

Appendix C- Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2019:

Table 4 TYPE B CONSTRUCTION: FRL OF BUILDING ELEMENTS (BUILDING 1 ONLY)

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 within it) or other external building element, where the distance from any fire-source feature to which it is exposed is—				
For *loadbearing* parts—				
less than 1.5 m	90/ 90/ 90	120/120/120	180/180/180	240/240/240
1.5 to less than 3 m	90/ 60/ 30	120/ 90/ 60	180/120/ 90	240/180/120
3 to less than 9 m	90/ 30/ 30	120/ 30/ 30	180/ 90/ 60	240/ 90/ 60
9 to less than 18 m	90/ 30/–	120/ 30/–	180/ 60/–	240/ 60/–
18 m or more	–/–/–	–/–/–	–/–/–	–/–/–
For non-*loadbearing* parts—				
less than 1.5 m	–/ 90/ 90	–/120/120	–/180/180	–/240/240
1.5 to less than 3 m	–/ 60/ 30	–/ 90/ 60	–/120/ 90	–/180/120
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN not incorporated in an *external wall*, where the distance from any *fire-source feature* to which it is exposed is—				
less than 3 m	90/–/–	120/–/–	180/–/–	240/–/–
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS—	90/ 90 / 90	120/120/120	180/180/180	240/240/240
INTERNAL WALLS—				
Fire-resisting lift and stair *shafts*—				
Loadbearing	90/ 90/ 90	120/120/120	180/120/120	240/120/120
Fire-resisting stair *shafts*				
Non-*loadbearing*	–/ 90/ 90	–/120/120	–/120/120	–/120/120
Bounding *public corridors*, public lobbies and the like—				
Loadbearing	60/ 60/ 60	120/–/–	180/–/–	240/–/–
Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
Between or bounding *sole-occupancy units*—				
Loadbearing	60/ 60/ 60	120/–/–	180/–/–	240/–/–
Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
OTHER LOADBEARING INTERNAL WALLS				

and COLUMNS—	60/–/–	120/–/–	180/–/–	240/–/–
ROOFS	–/–/–	–/–/–	–/–/–	–/–/–

Table 5 TYPE C CONSTRUCTION: FRL OF BUILDING ELEMENTS (BUILDINGS 2-4)

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 *fire-source feature* 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 *external wall*, where the distance from any *fire-source feature* 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 *public corridors*, public lobbies and the like—	60 / 60/ 60	–/–/–	–/–/–	–/–/–
Between or bounding *sole-occupancy units*—	60/ 60/ 60	–/–/–	–/–/–	–/–/–
Bounding a stair if *required* to be rated—	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
ROOFS	–/–/–	–/–/–	–/–/–	–/–/–