Proposed Industrial Unit

35-39 Carter Road Brookvale NSW 2100

Regulatory Compliance Report

BCA Assessment

Prepared for: FIGGIS & JEFFERSON TEPA PTY LTD

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Table of Contents

1. Executive Summary 3
2. Introduction 4
3. Compliance with the BCA 4
4. Documentation of Performance Solutions 4
5. Preliminaries 5
6. Structure 6
7. Fire Protection 6
8. Access and Egress 11
9. Services and Equipment 14
10. Health and Amenity 16
11. Appendix A – Reference Documentation 17
12. Appendix B – Draft Fire Safety Schedule 19
13. Appendix C – Fire Resistance Levels 21

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1. EXECUTIVE SUMMARY

The proposed development is the proposed Industrial Unit located at 35-39 Carter Road, Brookvale NSW 2100.

Summary of Compliance

As Registered Certifiers we have reviewed the architectural design documents prepared by Figgis + Jefferson Tepa Architects (refer appendix A) for compliance with the building assessment provisions currently outlined in BCA 2022.

Deviations from the Deemed-to-Satisfy Provisions

The assessment of the design documentation has revealed that the following areas deviate from the deemed-to-satisfy provisions of the BCA. These items are to be addressed to ensure compliance is achieved, either through design amendment to achieve compliance with the deemed-to-satisfy provisions, or through a performance solution demonstrating compliance with the Performance Requirements of the BCA:

No.	Description	Relevant DTS Clauses	Performance Requirements
Fire Safety Items			
1	**Extended travel distances** The following travel distances are to be addressed through a performance solution, in the event that they are not reduced through design amendments: Level 1 ▪ 24m to a point of choice in lieu of 20m	D2D5	D1P4, E2P2
2	**Travel Via Fire-Isolated Exits** The following departures are noted with the fire stairs: Ground Floor ▪ Discharge from fire isolated stairway will necessitate passing within 6m to the buildings external wall and associated openings.	D2D12	D1P4, D1P5, E2P2
3	**Discontinuous non fire isolated stairs** As the mezzanine levels are currently considered storeys, the stairways serving as egress would need to comply with the requirements of D2D14. The non-fire isolated stairways currently do not provide continuous egress to the road or open space, and will need to be addressed.	D2D14	D1P4
Miscellaneous Items			
4	**Weatherproofing of External Walls** As the external walls are proposed to be constructed of a material not nominated in F3D5, a performance solution is to be provided by the façade engineer/registered architect demonstrating that the external walls comply with the requirements of Performance Requirement F3P1 (previously FP1.4).	F3D5	F3P1 (previously FP1.4).

The feasibility and any additional requirements that will apply as a result of performance solution/s will need to be confirmed by the professional preparing the performance solution/s. Any performance solution/s will need to be prepared by a suitably qualified/accredited professional.

Refer to parts 10 of this report for further details regarding the required services.

Any fire engineered solutions will need to be approved after consultation with the NSW Fire Brigade as part of the Construction Certificate process via a Section 26 and 27 submission

2. INTRODUCTION

The proposed development comprises of proposed Industrial Units located on the 35-39 Carter Road, Brookvale

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.

The applicable legislation governing the design of buildings is the Environmental Planning and Assessment Act 1979. Section 19 of the of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulations 2021 requires all new building works to comply with the current BCA.

The BCA applicable to the development is the version that is in force at the time of a valid Construction Certificate application which includes the entrance floor. For the purposes of this Report, BCA 2022 has been utilised.

3. COMPLIANCE WITH THE BCA

The Building Code of Australia is a performance based document, whereby compliance is achieved by complying with the Governing Requirements and the Performance Requirements.

Performance Requirements are satisfied by one of the following:

1) A Performance Solution
2) A Deemed-to-Satisfy Solution
3) A combination of (1) and (2)

4. DOCUMENTATION OF PERFORMANCE SOLUTIONS

A Performance Solution must demonstrate compliance with all relevant Performance Requirements, or the solution must be at least equivalent to the Deemed-to-Satisfy provisions.

Compliance with the Performance Requirements is to be demonstrated through one or a combination of the following:

a) Evidence of suitability in accordance with Part A5 of the BCA that shows the use of a material, product, plumbing and drainage product, form of construction or design meets the relevant Performance Requirements.
b) A Verification Method including the following:
    i. The Verification Methods provided in the NCC.
    ii. Other Verification Methods, accepted by the appropriate authority that show compliance with the relevant Performance Requirements
c) Expert Judgement
d) Comparison with the Deemed-to-Satisfy Provisions

Where a Performance Solution is proposed as the method to achieve compliance, the following steps must be undertaken:

a) Prepare a performance-based design brief in consultation with relevant stakeholders,
b) Carry out analysis, using one or more of the assessment methods nominated above, as proposed by the performance-based design brief,
c) Evaluate results from (b) against the acceptance criteria in the performance-based design brief,
d) Prepare a final report that includes:
    i. All Performance Requirements and/or Deemed-to-Satisfy Provisions identified as applicable,
    ii. Identification of all assessment methods used,
    iii. Details of required steps above,
    iv. Confirmation that the Performance Requirement has been met; and
    v. Details of conditions or limitations, if an exist, regarding the Performance Solution.

5. PRELIMINARIES

5.1. BUILDING ASSESSMENT DATA

Summary of Construction Determination:

Part of Project	Building 1
Classification	6, 7a, 7b
Number of Storeys	4
Rise In Storeys	4
Type of Construction	A
Effective Height (m)	9.8m

Note:

- *The effective height of the project includes all stories included in the rise in stories of the project,*
- *The effective height of the building has been determined based on 23.600-13.800. Where these RL's change the effective height of the building will need to be reassessed*
- *The first mezzanine floor has been included in the rise in storeys due to the total aggregate area of all mezzanines.*

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

Part of Project	BCA Classification	Approx. Floor Area (m^2)	Approximate Volume (m^3)	Assumed Population
Lower Ground floor	7b 7a 6	548.44 387.86 21.97	TBC	54
Ground floor & Mezzanine	7b	605.5	TBC	21
Level 1	7b 7a	805.01 605.88	TBC	48
Level 1 (Mezzanines)	7b	216.73	TBC	8

Part of Project	BCA Classification	Approx. Floor Area (m^2)	Approximate Volume (m^3)	Assumed Population
Total		3191.39	TBC	131

- Notes: *The above populations have been based on floor areas and calculations in accordance with Table D2D18 (prev. Table D1.13) of the BCA.*

6. STRUCTURE

6.1. STRUCTURAL PROVISIONS (BCA B1)

New structural works are to comply with the applicable requirements of BCA Part B1, including AS/NZS 1170.0-2002, AS/NZS 1170-1-2002, AS/NZS 1170.2-2021 and AS 1170.4-2007.

Depending on the importance level of the building as determined by AS/NZS 1170.0-2002, the non structural elements of the building, including partitions (and non-structural fire walls), ceilings, services and racking/shelving may be required to comply with the seismic restraint requirements of AS 1170.4-2007. Where this is required, certification will be required confirming that the design of the seismic restraints comply with AS 1170.4-2007. This may be provided by a specialist seismic consultant or by the architect and services design engineers.

It is noted that Verification Method, B1V2 (previously BV2)is a pathway available to verify compliance with BCA Performance Requirement B1P1 (1)(c) (previously BP1.1(a)(iii)).

Glazing is to comply with AS1288-2021, and AS2047-2014.

7. FIRE PROTECTION

7.1. FIRE COMPARTMENTATION (BCA C2D2 (PREVIOUSLY 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 C3D3 (previously C2.2).

Based upon the rise in storeys and use of the building, it is required to be constructed in accordance with the requirements of Type A Construction, in accordance with Tables S5C11a-g of Specification 5 (previously Table 3 & 3.9 of Specification C1.1) of the Building Code of Australia 2022.

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
6, 7a, 7b	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

The building does not exceed the above limitations.

7.2. FIRE RESISTANCE (BCA C2D2 (PREVIOUSLY C1.1))

The building should be constructed generally in accordance with the relevant provisions of Specification 5 (previously Specification C1.1) of the BCA applicable to Type A Construction, please refer to Appendix D which outlines the required fire rating to be achieved by the development.

Where a fire wall is proposed, it is noted that the wall is to achieve a structural rating regardless of whether it is loadbearing or not. Refer to Appendix D for required FRLs.

7.3. FIRE HAZARD PROPERTIES (BCA C2D10 AND C2D11 (PREVIOUSLY C1.10 AND BCA C1.9))

External Wall Cladding

Since the building is of Type A construction, the following components are required to be completely non-combustible:

- External walls and common walls, including façade coverings, framing, insulation;
- Flooring and floor framing of lift pits;
- Non-loadbearing internal walls required to have an FRL;
- All non-loadbearing shafts;
- All loadbearing internal walls and loadbearing fire walls, including those that are part of loadbearing shafts.

Please provide product specifications and test reports to AS 1530.1-1994 for all materials to demonstrate compliance.

For materials and assemblies that are required to be non-combustible, the material or system must be not deemed combustible when tested in accordance with AS 1530.1-1994.

The above noted requirements do not apply to the following:

a) Gaskets,
b) Caulking,
c) Sealants,
d) Termite management systems,
e) Glass, including laminated glass, and associated adhesives, including tapes,
f) Thermal breaks associated with—
    i. glazing systems; or
    ii. external wall systems, where the thermal breaks—
        A. are no larger than necessary to achieve thermal objectives; and
        B. do not extend beyond one storey; and
        C. do not extend beyond one fire compartment.
g) Damp-proof courses,
h) Compressible fillers and backing materials, including those associated with articulation joints, closing gaps not wider than 50 mm,
i) Isolated—
    i. construction packers and shims; or
    ii. blocking for fixing fixtures; or
    iii. fixings, including fixing accessories; or
    iv. acoustic mounts.
j) Waterproofing materials applied to the external face, used below ground level and up to 250 mm above ground level,
k) Joint trims and joint reinforcing tape and mesh of a width not greater than 50 mm,
l) Weather sealing materials, applied to gaps not wider than 50 mm, used within and between concrete elements,

m) Wall ties and other masonry components complying with AS 2699 Part 1 and Part 3 as appropriate, and associated with masonry wall construction,
n) Reinforcing bars and associated minor elements that are wholly or predominately encased in concrete or grout,
o) A paint, lacquer or a similar finish or coating,
p) Adhesives, including tapes, associated with stiffeners for cladding systems,
q) Fire-protective materials and components required for the protection of penetrations.

Combustible Materials

The following materials, though combustible or containing combustible fibres, 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) Sarking type materials that do not exceed 1mm in thickness and have a Flammability Index not greater than 5.
g) Bonded laminated materials where -
   (i) each laminate is non-combustible; and
   (ii) each adhesive layer does not exceed 1 mm in thickness; and
   (iii) the total thickness of the adhesive layers does not exceed 2 mm; and
   (iv) 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.

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

BCA 2022 introduced a number of additional clarifications and considers the following materials, when entirely composed of itself, are non-combustible and may be used wherever a non-combustible material is required:

a) Concrete.
b) Steel, including metallic coated steel,
c) Masonry, including mortar,
d) Aluminium, including aluminium alloy,
e) Autoclaved aerated concrete, including mortar,
f) Iron,
g) Terracotta,
h) Porcelain,
i) Ceramic,
j) Natural stone,
k) Copper,
l) Zinc,
m) Lead,
n) Bronze,
o) Brass.

Any Aluminium Composite Panels must be labelled in accordance with SA TS 5344.

The BCA does nominate that ancillary elements may not 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.
i) An awning, sunshade, canopy, blind or shading hood other than one provided under (a) that—
    i) meets the relevant requirements of Table S7C7 as for an internal element; and
    ii) serves a storey—
        A. at ground level; or
        B. immediately above a storey at ground level; and
    iii) does not serve an exit, where it would render the exit unusable in a fire.
j) A part of a security, intercom or announcement system.
k) Wiring.
l) Waterproofing material installed in accordance with AS 4654.2 and applied to an adjacent floor surface, including vertical upturn, or a roof surface.
m) Collars, sleeves and insulation associated with service installations.
n) Screens applied to vents, weepholes and gaps complying with AS 3959.
o) Wiper and brush seals associated with doors, windows or other openings.
p) A gasket, caulking, sealant or adhesive directly associated with (a) to (o)

Please provide fire hazard properties reports for any proposed signs and confirm their extent i.e. not spanning more than one storey or fire compartment:

Interior Linings

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 7 (previously Specification C1.10) of the Building Code of Australia. The following requirements apply:

Sprinkler Protected Areas

a) Floor Coverings – Critical radiant Flux not less than 1.2 kW/m^2
b) Wall and Ceiling Linings – Material Group No. 1, 2, 3
c) Other Materials – Spread of Flame Index not exceeding 9 and Smoke Developed Index not exceeding 8

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.

7.4. SEPARATION OF EQUIPMENT (C3D13 (PREVIOUSLY C2.12))

Equipment listed below must be separated from the remainder of the building providing a FRL as required by Specification 5 (previously Spec C1.1) but not less than 120/120/120 with a self-closing fire door with an FRL or not less than -/120/30. When separating a lift shaft and life motor room, an FRL of not less than 120/-/- is required.

a) Lift motors and lift control panels; or
b) Emergency generators used to sustain emergency equipment operating in the emergency mode; or
c) Central smoke control plant; or
d) Boilers; or
e) A battery system installed in that building that has total voltage of 12 volts or more and a storage capacity of 200kWh or more.

7.5. PROTECTION OF OPENINGS IN EXTERNAL WALLS (BCA C4D3, C4D4, C4D5 (PREVIOUSLY C3.2 / C3.3 / C3.4))

The prescriptive provisions of the BCA stipulate that any external opening within 3m of the boundary, within 6m of the far boundary of a road, river, lake or the like that adjoins the allotment, or within 6m of another building on the allotment requires protection by -/60/- fire rated construction, or externally located wall wetting sprinklers.

Where a building is separated into fire compartments, the distance between parts of external walls and openings within them must be not less than the table below unless those parts of each external wall has an FRL not less than 60/60/60 and openings are protected.

Angle Between Walls	Minimum Distance
0º (walls opposite)	6m
More than 0º to 45º	5m
More than 45º to 90º	4m
More than 90º to 135º	3m
More than 135º to 180º	2m
More than 180º	Nil

There are currently no openings located within 3m to the boundary.

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.

7.6. PROTECTION OF OPENINGS FIRE RATED BUILDING ELEMENTS (BCA C4D6, C4D11 (PREVIOUSLY C3.5 AND BCA C3.10))

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

a) Penetrations through fire rated floors to be protected either by a tested prototype (e.g. fire collar, fire damper, etc) or be installed within a fire rated shaft achieving an FRL the same as the FRL of the floor it is passing through;

b) Any penetration through a wall or room required to have an FRL (e.g. substation, boiler room, apartment separating wall etc) is to be protected either by a tested prototype (e.g. fire collar, fire damper, etc) or be installed within a shaft achieving an FRL the same as the FRL of the floor it is passing through;
c) Self-closing -/60/30 fire doors to the doors opening to the fire isolated stairs (note that this also includes the access doors to the condenser units on the plant platforms).

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.

As the design develops, details will need to be included in relation to sealing of penetrations / construction of fire rated shafts.

8. Access and Egress

8.1. Provision for Escape (BCA D2 (previously D1))

The egress provisions for the proposed building are provided by the following:

- Fire isolated stairways,
- Non-fire isolated stairs,
- External doors,

The egress provisions that apply to the building also apply to any occupiable outdoor areas.

Detailing issues that will need to be addressed as the design develops include:

- Door hardware,
- Exit door operation,
- Stair construction,
- Handrail and balustrade construction,
- Discharge from fire isolated exits,
- Details of the egress provisions to the road,
- Door swings

8.2. Required Fire Isolation of Exits (BCA Clause D2D5 (previously D1.3))

Class 5 to 9

Stairs utilised as required exits must be fire isolated where they connect, pass through or pass by more than 2 consecutive storeys and, an extra storey may be added if the building has a sprinkler system (other than a FPAA101D system) installed throughout.

Alternatively, where the stair does not provide access to or egress from the third storey, and is separated from that storey by construction achieving and FRL of 60 minutes or, in a Type A building where the construction is loadbearing, 90 minutes, the exit is also not required to be fire isolated.

The exits are proposed to be fire isolated.

8.3. TRAVEL VIA FIRE ISOLATED EXITS (BCA D2D12 (PREVIOUSLY D1.7))

The BCA requires each fire isolated stairway to provide independent egress from each storey served and discharge directly, or by way of its own fire isolated passageway to:

- A road or open space; or
- To a point in a storey within the confines of the building, that is used only for pedestrian movement, car parking or the like and is open for at least 2/3 of its perimeter, and an unimpeded path of travel not more than 20m to a road or open space; or
- A covered area that adjoins a road or open space, is open for at least 1/3 of its perimeter, has an unobstructed clear height throughout of not less than 3m, and provides an unimpeded path of travel to a road or open space of not less than 6m.

Additionally, where the path of travel from the point of discharge requires occupants to pass within 6m of any part of the external wall of the same building (measured horizontally), that external wall must have a 60/60/60 FRL and have any openings protected internally for a distance of 3m above or below the path of travel.

8.4. EXIT TRAVEL DISTANCES (BCA D2D5, D2D6 (PREVIOUSLY D1.4, D1.5))

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 deviate from the DTS provisions as outlined below

The travel distances to exits should not exceed:

Class 5 to 9

- no point on the floor must be more than 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

The above indicates that the deemed to satisfy requirements in terms of travel distances would be satisfied, with the exception of the following areas:

Level 1

- 24m to a point of choice in lieu of 20m

The extended travel distances and distance between the exit stairs will need to be addressed to comply with the requirements of the deemed to satisfy provisions noted above, or be assessed as performance solutions by the Fire Safety Engineer using BCA Performance Requirements D1P4 and E2P2 (previously DP4 & EP2.2)

8.5. DIMENSIONS OF EXITS (BCA D2D7, D2D8, D2D9, D2D10, D2D11 (PREVIOUSLY 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 AS1657-2018 in which case a 600mm clear width is required).

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.

8.6. TRAVEL VIA REQUIRED NON-FIRE ISOLATED STAIRS (BCA D2D14 (PREVIOUSLY D1.9)

A required non-fire isolated stair must provide direct egress, via its own flights from every storey served to the level of road or open space.

The following additional travel distance parameters apply where a required non-fire isolated stair is utilised for egress:

- In Class 5-9 buildings, the distance from any point of a floor to road or open space is not to exceed 80m,
- In a Class 5 to 8 or 9b building, a required non-fire-isolated stairway or non-fire-isolated ramp must discharge at a point not more than:
  - 20 m from a doorway providing egress to a road or open space or from a fire-isolated passageway leading to a road or open space; or
  - 40 m from one of 2 such doorways or passageways if travel to each of them from the non-fire-isolated stairway or non-fire isolated ramp is in opposite or approximately opposite directions.

Ground Floor

- Discharge from fire isolated stairway will necessitate passing within 6m to the buildings external wall and associated openings.

8.7. BALUSTRADES AND HANDRAILS (BCA D3D17, D3D18, D3D19, D3D20, D3D22, D3D29 (PREVIOUSLY D2.16 / BCA D2.17 / D2.24))

Generally

Balustrading to a minimum height of 1000mm with a maximum opening of 124mm in any direction should be provided adjacent to balconies, landings, corridors etc where located adjacent to a change in level exceeding 1000mm, or where it is possible to fall through an openable window located more than 4m above the surface beneath.

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. It is noted that these provisions also apply to any building elements, including AC covers and the like, that are within 1m of the required balustrade.

Where a required barrier is fixed to the vertical face forming an edge of a landing, balcony, deck, stairway or the like, the opening formed between the barrier and the face must not exceed 40 mm.

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

In addition to the above, handrails are required to both sides of all stairs with a width of 2m or more.

8.8. SLIP RESISTANCE (BCA D3D15 (PREVIOUSLY D2.14))

The slip resistance requirements for ramps and stairs are outlined below:

Table D3D15 (prev. Table D2.14) SLIP-RESISTANCE CLASSIFICATION

Application	Surface conditions	
	Dry	Wet
Ramp steeper than 1:14	P4 or R11	P5 or R12

Ramp steeper than 1:20 but 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

9. 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.

9.1. FIRE HYDRANTS (BCA E1D2 (PREVIOUSLY E1.3))

A Fire Hydrant system is required to be provided in accordance with BCA Clause E1D2 (prev. E1.3) and AS2419.1-2021.

All fire hydrants shall have the centre line of the fire hydrant valve or outlet not less than 750mm and not more than 1200mm above the ground, finished floor level or platform as outlined in AS2419.1-2021.

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;

The fire services/hydraulic engineer is to confirm the required flow rates for the development.

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 at the main entry. If remote from the building, the booster is to be located at the main vehicle entry or with sight of the main entry of the building within 20m of a hardstand area.
The booster protection requirements apply to any booster which is located within 10m of the building it serves unless provided with a DTS sprinkler system. The protection requirements are summarised below:

i. Wall behind the booster which achieves a minimum FRL of 90/90/90 must be achieved from a DTS perspective
ii. This must extend not less than 2m from each side of the centre line of the fire hydrant riser and,
iii. Extend to a height not less than 3m above ground level

Further details are to be provided at the construction certificate stage.

9.2. FIRE HOSE REELS (BCA E1D3 (PREVIOUSLY E1.4))

A Fire Hose Reel System is required to BCA Clause E1D3 (previously E1.4) and AS2441-2005.

Fire hose reel assemblies shall be suitably mounted at a spindle height of between 1400mm and 2400mm above floor level as outlined in AS2441-2005.

The system is required to provide coverage to Class 6, 7a and 7b zones.

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

Fire hose reel cupboards must not contain any other services such as water meters, etc., and doors to fire hose reel cupboards are not to impede the path of egress unless a performance solution is developed under BCA Performance Requirement E1P1 (previously EP1.1).

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

Further details are to be provided at the construction certificate stage.

9.3. FIRE EXTINGUISHERS (BCA E1D14 (PREVIOUSLY E1.6))

The provision of portable fire extinguishers is required to BCA Clause E1D14 (previously E1.6) and AS2444 - 2001 to provide coverage to the following zones.

Portable fire extinguishers must be located not more than 1200mm from the finished floor and not less than 100mm as outlined in AS2444-2001.

E1D14 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 - 2001, often collocated with fire hydrants and/or fire hose reels.

9.4. SPECIAL HAZARDS (BCA E1D17 (PREVIOUSLY E1.10)

Any special hazard is to be included in the project FEBQ for comment by FRNSW. A list of some special hazards that may require FRNSW and fire engineering involvement are as following:

i. EV charging stations,
ii. Alternative electrical generation (solar, tri-gen),

9.5. SMOKE HAZARD MANAGEMENT (BCA E2D3 – E2D20 (PREVIOUSLY E2.2)

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

- Automatic Smoke Detection/Alarm System in accordance with the requirements of BCA Spec 20 Clause 3, 4 or a combination of Clause 3 and 4 (previously E2.2a) and AS 3786-2014 and/or AS 1670.1-2018;
- Building Occupant Warning System activated by the smoke alarm/detection in accordance with BCA Specification 20 Clause 7 (previously Spec E2.2a) and Clause 3.22 of AS 1670.1-2018
- Carpark ventilation systems must comply with Clause 5.5 of AS/NZS1668.1-2015 Amendment 1

A fire indicator panel is required as part of the detection system. This panel is to be located within 4m of the main entry. 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.

9.6. Exit Signs and Emergency Lighting (BCA E4D2, E4D4, E4D5, E4D6 and E4D8 (previously E4.2 E4.5, E4.6, E4.8))

Emergency Lighting and Exit Signs indicating exit location paths of travel to exits to be provided in accordance with BCA Part E4 and AS/NZS 2293.1-2018, including the potential use of photo luminescent exit signs.

Where exit signs are proposed to be above 2.7m to avoid potential damage by forklifts in the warehousing areas, this will need to be documented as a performance solution by an accredited fire safety engineer. This would need to be assessed to BCA Performance Requirement E4P2 (previously EP4.2).

10. Health and Amenity

10.1. Stormwater Drainage (BCA Clause F1D3 (previously Clause F1.1)

Stormwater drainage systems serving the building are to comply with AS3500.3 - 2021.

10.2. Surface Water Management (BCA Part F1)

Exposed Joints

Exposed joints in the drainage surface on a roof, balcony, podium or similar horizontal surface part of a building must not be located beneath or run through a planter box, water feature or similar part of the building.

Joints are to be protected in accordance with Section 2.9 of AS 4654.2.

External Waterproofing Membranes

All external above ground areas (roof slabs, balconies etc.) shall be protected by a waterproofing system in accordance with AS4654 Parts 1 and 2 – 2012.

10.3. Roof & Wall Cladding (BCA Part F3 (previously Part F1))

BCA 2022 has introduced some deemed to satisfy provisions that relate to the waterproofing of external walls. These provisions apply as follows:

- Masonry, including masonry veneer, unreinforced and reinforced masonry is to comply with AS 3700
- Autoclaved aerated concrete is to comply with AS 5146.3
- Metal wall cladding is to comply with AS 1562.1

Where the installation is not proposed to comply with the above, or a different material is proposed to be used, a performance solution can be utilised to demonstrate compliance.

Performance Requirement F3P1 (previously FP1.4) which relates to the prevention of the penetration of water through external walls, must be complied with. Where a performance solution is proposed, it is to be prepared by a suitably qualified professional (façade engineer with NER for structural engineering) that demonstrates that the external walls of the proposed building comply with Performance Requirement F3P1 (previously 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.

10.4. WET AREAS & OVERFLOW PROTECTION (BCA PART F2 (PREVIOUSLY PART F1)

Internal wet areas throughout the development (e.g. bathrooms, laundries) shall be waterproofed in accordance with Specification 26 and AS3740 - 2021 requirements.

Further review will be undertaken as the design develops with respect to the specification of waterproofing membrane, provision of water-stops at doorways etc.

10.5. SANITARY FACILITIES (BCA F4D2, F4D3, F4D4, F4D5, F4D6 (PREVIOUSLY F2.2 AND F2.3)

Warehouses

There is currently only one accessible bathroom provided to each warehouse unit. As per clause F4D4, this would be sufficient for up to 10 employees per tenancy. Where there will be more than 10 employees in each tenancy, there will be a shortfall in provided facilities. Further details of the proposed population are to be provided for review.

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.

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.

10.6. LIGHT AND VENTILATION (BCA PART F6 (PREVIOUSLY PART F4)

Class 6, 7a & 7b

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

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

11. APPENDIX A – REFERENCE DOCUMENTATION

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

Drawing No.	Title	Revision	Date	Prepared By
DA 110	LOWER GROUND FLOOR PLAN	01	26/11/2024	FIGGIS + JEFFERSON TEPA ARCHITECTS
DA 111	GROUND FLOOR AND GROUND MEZZANINE PLAN	01	26/11/2024	FIGGIS + JEFFERSON TEPA ARCHITECTS
DA 112	PROPOSED FIRST FLOOR PLAN	01	26/11/2024	FIGGIS + JEFFERSON TEPA ARCHITECTS
DA 113	PROPOSED FIRST MEZZ FLOOR PLAN	01	26/11/2024	FIGGIS + JEFFERSON TEPA ARCHITECTS
DA 114	PROPOSED ROOF PLAN	01	26/11/2024	FIGGIS + JEFFERSON TEPA ARCHITECTS
DA 201	PROPOSED ELEVATIONS (1)	01	26/11/2024	FIGGIS + JEFFERSON TEPA ARCHITECTS
DA 202	PROPOSED ELEVATIONS (2)	01	26/11/2024	FIGGIS + JEFFERSON TEPA ARCHITECTS
DA 300	SECTIONS (1)	01	26/11/2024	FIGGIS + JEFFERSON TEPA ARCHITECTS
DA 301	SECTIONS (2)	01	26/11/2024	FIGGIS + JEFFERSON TEPA ARCHITECTS

12. Appendix B – Draft Fire Safety Schedule

No.	Measure	Standard of Performance	Status
Statutory Fire Safety Measures			
1.	Access Panels, Doors and Hoppers to fire-resisting shafts	BCA 2022 Clause C4D14 & AS 1530.4 – 2014	
2.	Automatic Fire Detection and Alarm System	BCA 2022 Clause E2D3, E2D5, E2D7, E2D8, E2D9, E2D10, E2D11, E2D13, E2D14, E2D15, E2D16, E2D17, E2D19, E2D20, Spec 20 Clause S20C3/S20C4/S20C5, AS 1670.1 – 2018, AS/NZS 1668.1 – 2015, AS 3786-2014	
3.	Emergency Lighting	BCA 2022 Clause E4D2, E4D4 & AS/NZS 2293.1 – 2018	
4.	Exit Signs	BCA 2022 Clauses E4D5, E4D6 & E4D8 and AS/NZS 2293.1 – 2018	
5.	Fire Doors	BCA 2022 Clause C4D3, C4D5, C4D6, C4D7, C4D8 & C4D9 and AS 1905.1 – 2015	
6.	Fire Hose Reels	BCA 2022 Clause E1D3 & AS 2441 – 2005 Amdt 1	
7.	Fire Hydrant System	BCA 2022 Clause C3D13, E1D2, Spec 18, I3D9 & AS 2419.1 – 2021	
8.	Fire Seals, Collars (electrical, hydraulic, mechanical, fire)	BCA 2022 Clause C4D15, C4D16, Spec 13, Spec 14, & AS 1530.4 –2014	
9.	Lightweight Construction	BCA 2022 Clause C2D9, Spec 6	
10.	Mechanical Air Handling System (zone smoke control/automatic smoke exhaust/stair pressurisation)	BCA 2022 Clause E2D3, E2D4, E2D6, E2D7, E2D8, E2D9, E2D10, E2D11, E2D12, E2D13, E2D14, E2D15, E2D16, E2D17, E2D18, E2D19, E2D20, G3D8, Spec 21, AS/NZS 1668.1 – 2015 & AS 1668.2 – 2012	
11.	Portable Fire Extinguishers	BCA 2022 Clause E1D14 & I3D11, AS 2444 – 2001	
12.	Smoke Detectors and Heat Detectors	BCA 2022 Clause E2D3, E2D5, E2D7, E2D8, E2D9, E2D10, E2D11, E2D13, E2D14, E2D15, E2D16, E2D17, E2D19, E2D20, Spec 20 Clause S20C3/S20C4/S20C5, AS 1670.1 – 2018, AS/NZS 1668.1 – 2015	
13.	Smoke Doors	BCA 2022 Spec 11	
14.	Solid Core Doors	BCA 2022 Clause C4D12	
15.	Wall-Wetting Sprinkler and Drencher Systems	BCA 2022 Clause C4D5, G3D8, Spec 31 & AS 2118.1 – 2017	
16.	Warning and Operational Signs	EP&A (Development Certification and Fire Safety) Regulation 2021 Clause 108, BCA 2022 Clause C4D7, D2.23, E3D4, NSW I4D14 & AS 1905.1 –2015	
Other Fire Safety Measures			

17.	Building Occupant Warning System	BCA 2022 Spec 17 & Spec 20 Clause S20C7 & AS 1670.1 – 2018 – Clause 3.22	
18.	Emergency Evacuation Plan	Fire Engineering Report XXXX Revision XX prepared by XXXX dated XXXX and AS 3745 – 2010	
19.	Paths of Travel	EP&A (Development Certification & Fire Safety) Reg 2021 Section 108, 109	

13. Appendix C – Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2022:

Type A Construction

Table S5C11a: Type A Construction: FRL of loadbearing parts of external walls

Distance from a fire source feature	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Less than 1.5m	90/90/90	120/120/120	180/180/180	240/240/240
1.5 to less than 3m	90/60/30	120/90/90	180/180/120	240/240/180
3m or more	90/60/30	120/60/30	180/120/90	240/180/90

Table S5C11b: Type A Construction: FRL of non-loadbearing parts of external walls

Distance from a fire source feature	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Less than 1.5m	-/90/90	-/120/120	-/180/180	-/240/240
1.5 to less than 3m	-/60/60	-/90/90	-/180/120	-/240/180
3m or more	-/-/-	-/-/-	-/-/-	-/-/-

Table S5C11c: Type A Construction: FRL of external columns non incorporated in an external wall

Column tyle	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Loadbearing	90/-/-	120/-/-	180/-/-	240/-/-
Non-loadbearing	-/-/-	-/-/-	-/-/-	-/-/-

Table S5C11d: Type A Construction: FRL of common walls and fire walls

Wall type	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Loadbearing or non-loadbearing	90/90/90	120/120/120	180/180/180	240/240/240

Table S5C11e: Type A Construction: FRL of loadbearing internal walls

Location	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8

Fire-resisting lift and stair shafts	90/90/90	120/120/120	180/120/120	240/120/120
Bounding public corridors, public lobbies and the like	90/90/90	120/-/-	180/-/-	240/-/-
Between or bounding sole-occupancy units	90/90/90	120/-/-	180/-/-	240/-/-
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion	90/90/90	120/90/90	180/120/120	240/120/120

Table S5C11f: Type A Construction: FRL of non-loadbearing internal walls

Location	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Fire-resisting lift and stair shafts	-/90/90	-/120/120	-/120/120	-/120/120
Bounding public corridors, public lobbies and the like	-/60/60	-/-/-	-/-/-	-/-/-
Between or bounding sole-occupancy units	-/60/60	-/-/-	-/-/-	-/-/-
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion	-/90/90	-/90/90	-/120/120	-/120/120

Table S5C11g: Type A Construction: FRL of other building elements not covered by Tables S5C11a to S5C11f

Location	FRL (in minutes): Structural Adequacy/ Integrity/ Insulation			
	Class 2,3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Other loadbearing internal walls, internal beams, trusses and columns	90/-/-	120/-/-	180/-/-	240/-/-
Floors	90/90/90	120/120/120	180/180/180	240/240/240
Roofs	90/60/30	120/60/30	180/60/30	240/90/60

(3) Carparks

For building elements in a carpark as described in (1) and (2), the following minimum FRLs are applicable:

a) External wall:
   i. Less than 3 m from a fire-source feature to which it is exposed:
      A. Loadbearing: 60/60/60.
      B. Non-loadbearing: –/60/60.
   ii. 3 m or more from a fire-source feature to which it is exposed: –/–/–.

b) Internal wall:

i. Loadbearing, other than one supporting only the roof (not used for carparking): 60/–/–.
ii. Supporting only the roof (not used for carparking): –/–/–.
iii. Non-loadbearing: –/–/–.

c) Fire wall:
i. From the direction used as a carpark: 60/60/60.
ii. From the direction not used as a carpark: as required by Tables S5C11a to S5C11g.

d) Columns:
i. Supporting only the roof (not used for carparking) and 3 m or more from a fire-source feature to which it is exposed: –/–/–.
ii. Steel column, other than one covered by (i) and one that does not support a part of a building that is not used as a carpark—
A. 60/–/–; or
B. an ESA/M of not greater than 26m2/tonne.
iii. Any other column not covered by (i) or (ii): 60/–/–.

e) Beams:
i. Steel floor beam in continuous contact with a concrete floor slab
A. 60/–/–; or
B. an ESA/M of not greater than 30m2/tonne.
ii. Any other beam: 60/–/–.

f) Fire-resisting lift and stair shaft (within the carpark only): 60/60/60.

g) Floor slab and vehicle ramp: 60/60/60.

h) Roof (not used for carparking): –/–/–.

(4) For the purposes of subclause (3):

a) ESA/M means the ratio of exposed surface area to mass per unit length.
b) Refer to Specification 17 for special requirements for a sprinkler system in a carpark complying with (3) and (b) located within a multi-classified building.