



A Bureau Veritas Group Company

Regulatory Compliance Report

Warehouse Lot 204
327-335 Burley Road Horsley Park

Prepared for:	ESR Australia Pty Ltd
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1. Executive Summary

Development Overview

The proposed development is the construction works for industrial warehouses located at Lot 204, 327-335 Burley Road Horsley Park.

Compliance Summary

As Registered Certifiers we have reviewed the architectural design documents prepared by *hla architects* for compliance with the current building assessment provisions, i.e., the Building Code of Australia 2019 Amendment 1 (BCA).

This report has been prepared to assess the project against the Building Code of Australia to enable issuance of construction approvals. Further assessment of the design will be undertaken as the design develops to ensure compliance is achieved prior to approval being issued

Deviations from the Deemed-to-Satisfy Provisions

The assessment of the architectural 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	DTS Clause	Performance Requirements
Fire Safety Items			
1	The following items in relation to perimeter vehicular access do not meet the requirements: - Perimeter vehicular access will be discontinuous in the area where the 'switch room' is placed next to office of the Warehouse B; and - Perimeter vehicular access will be further than 18m from the building on the eastern side of the project where Warehouse A meets Warehouse B. A reviewed design or Performance solution required for further assessment.	C2.4, E2.2	CP9, Ep2.2
2	The exit travel distance exceeds the maximum allowance of BCA. According to Cl D1.4 no point on a floor must be more than 20 m from an exit, or a point from which travel in different directions to 2 exits is available, in which case the maximum distance to one of those exits must not exceed 40 m. A reviewed design or Performance solution required for further assessment.	D1.4	DP4, EP2.2
3	The distance between alternative exits exceeds the requirements of BCA. According to Cl D1.5, <i>Exits</i> that are <i>required</i> as alternative means of egress must be not more than 60m apart. A reviewed design or Performance solution required for further assessment.	D1.5	DP4, EP2.2
4	The exit door in the ground level of office in the Warehouse A opens inward. According to Cl D2.20(b), a swinging door in a	D2.20	DP2, EP2.2

No.	Description	DTS Clause	Performance Requirements
	<i>required exit</i> or forming part of a <i>required exit</i> must swing in the direction of egress. A reviewed design or Performance solution required for further assessment.		
5	Omission of sprinklers from the lift shafts	E1.5	CP2, EP1.4
6	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 EP4.2	E4.2	EP4.2
Miscellaneous Items			
7	Weatherproofing of External Walls As there are no deemed to satisfy provisions relating to the weatherproofing of external walls, 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 FP1.4	-	FP 1.4

confirmed by the professional preparing the performance solution. Any performance solution will need to be prepared by a suitably qualified/accredited professional.

Fire Safety Services

The following key fire safety services are required to meet the minimum DTS requirements.

1.	Fire hydrant system throughout both buildings.
2.	Fire hose reels throughout both buildings.
3.	Sprinkler system throughout both buildings.
4.	Automatic smoke exhaust throughout Warehouse 1 (<i>to be confirmed, Refer Section 9.5</i>)
5.	An occupant warning system should be provided in accordance with BCA Specification E1.5

Refer to part 9 of this report for further details regarding the required services.

Any fire engineered solution relating to CP9, EP1.3 and EP2.2 items will need to be approved after consultation with the NSW Fire Brigade as part of the Construction Certificate process.

2. Introduction

The proposed development comprises of developing two new warehouses including two-storey office in each Warehouse.

The site is located on the 327-335 Burley Rd, Horsley Park NSW 2175.

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. This Act requires that all new building works must be designed to comply with the BCA.

For the purposes of this Report, BCA 2019 Amendment 1 has been utilised as the version of the BCA applicable at the time of preparation this Report.

3. Compliance with the Building Code of Australia

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	Warehouse A	Warehouse B	Pump room
Classification	5, 7b	5,7b	10a
Number of Storeys	1 (2 for the office)	1 (2 for the office)	1
Rise In Storeys	1 (2 for the office)	1 (2 for the office)	1
Type of Construction	Type C (Large Isolated)	Type C (Large Isolated)	N/A
Effective Height (m)	15	15	8.6

Note: The effective height of the project includes all stories included in the rise in stories of the project.

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
Warehouse A				
Tenancy A Office	5	280(GL)+400(L1)	TBC ^{Note 2}	70
Tenancy A Warehouse	7b	13,540		50*
Total		14,220	TBC	120
Warehouse B				
Tenancy B Office	5	116(GL)+263(L1)	TBC ^{Note 2}	38
Tenancy B Warehouse	7b	5,062		50*
Total		5,441	TBC	88

Notes:

- 1- Population numbers have been estimated based on the size and configuration of the development. As part of the design development phase of the project if the estimated numbers are incorrect, please advise.
- 2- As the floor area of both warehouses exceed the parameters of BCA Table C2.2 for Type C Construction, the provisions for large isolated buildings will apply.

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 1170.2-2011 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 1170.4-2002. This may be provided by a specialist seismic consultant or by the architect and services design engineers.

It is noted that BCA 2019 introduced a new Verification Method, BV2, which is a pathway available to verify compliance with BCA Performance Requirement BP1.1(a)(iii).

Glazing is to comply with AS1288-2006, and AS2047-2014.

7. Fire Protection

7.1. 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 building, it is required to be constructed in accordance with the requirements of Type C Construction, in accordance with Table 5 & 5.2 of Specification C1.1 of the Building Code of Australia 2019 Amendment 1.

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
		C
5, 9b or 9c aged care building	max floor area—	3 000 m ²
	max volume—	18 000 m ³
6, 7, 8 or 9a (except for patient care areas)	max floor area—	2 000 m ²
	max volume—	12 000 m ³

As both warehouse buildings exceed the area limitations of the BCA provisions for Type C Construction, the buildings are then considered a large-isolated building and the following provisions will apply:

- Automatic sprinkler protection to AS2118.1 and BCA Specification E1.5 throughout the development,
- Perimeter emergency vehicular access 6m wide located within 18m of the entire building perimeter in accordance with BCA Clause C2.4,
- Provision of a fire hydrant ring main

It is noted that the perimeter vehicular access would not meet the prescriptive requirements of BCA as follows:

- Perimeter vehicular access will be discontinuous the area where the 'switch room' is placed next to office of the Warehouse B (refer **Figure 1**); and

- Perimeter vehicular access will be further than 18m from the building on the eastern side of the project where Warehouse A meets Warehouse B (refer Figure 1).

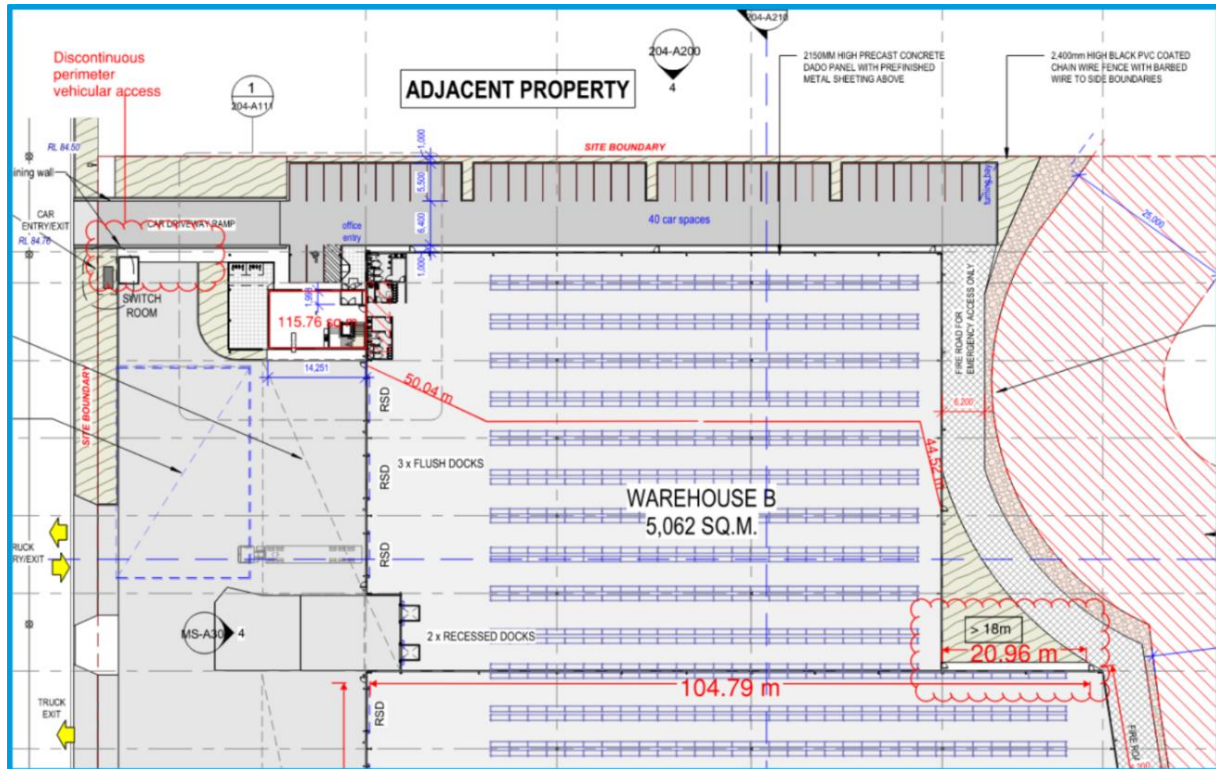


Figure 1 - Perimeter vehicular access

It may be possible to discuss the above with a Fire Safety engineer to ascertain whether it is possible to address these issues as part of a performance solution. If this were proposed, please note any such fire engineered solution would need to address the provisions of BCA Performance Requirement CP9.

7.2. 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 C Construction, Please refer to Appendix B 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:

- Batteries – where the battery system installed in the building has total voltage of 12 volts or more and a storage capacity of 200kWh or more (e.g. batteries to Comms Rooms, battery charge areas, etc.);
- Hydrant Pump Rooms – 120min fire protection only required if within 6m of a building without sprinkler protection;
- Sprinkler Pump Rooms – 120min fire protection only required if within 6m of a building without sprinkler protection;

Please note that with regards to fire separation, the provisions and required FRL's that apply to the building also apply to an occupiable outdoor space associated with the building.

7.3. Fire Hazard Properties (BCA C1.10 and BCA C1.9)

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 of the Building Code of Australia. The following requirements apply:

- Floor Coverings – Critical radiant Flux not less than 1.2 kW/m²

- b) Wall and Ceiling Linings – Material Group No. 1, 2 or 3
- 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 car must have a critical radiant flux not less than 2.2 kW/m², and wall and ceiling linings must be a Material Group No. 1 or 2.

8. Access and Egress

8.1. Fire Hazard Properties (BCA C1.10 and BCA C1.9)

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

- External perimeter doorways
- Non-Fire isolated Stairs

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

- Door Hardware
- Exit Door Operation
- Stair Construction
- Handrail and Balustrade construction

8.2. Exit Travel Distances (BCA D1.4)

The travel distances to exits should not exceed:

- 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 locations of the proposed exits indicate that the travel distances within the building are as follows:

Area	BCA Provisions (Distance to Point of Choice/ Travel Distance/Distance Between)	Assessed Distances			Comments
		To a Point of Choice	Overall Travel Distance	Between Alternate Exits	
Warehouse A	20m/40m/60m	0	64.19m	119m	Doesn't meet the DtS requirements
Office – GL Warehouse A	20m/40m/60m	7.4m	22m	16.2m	Meets the DtS requirements
Office – L1 Warehouse A	20m/40m/60m	17.5m	27m	16.5m	Meets the DtS requirements (D1.4 & D1.9)
Warehouse B	20m/40m/60m	0	50m	95m	Doesn't meet the DtS requirements
Office – GL Warehouse B	20m/40m/60m	N/A	19m	N/A	Meets the DtS requirements
Office – L1 Warehouse B	20m/40m/60m	N/A	13m	N/A	Meets the DtS requirements

The locations of the proposed exits would appear to indicate that the deemed to satisfy requirements in terms of travel distances and distances between alternative exits in the warehouses are not satisfied as per below (refer to **Figure 2 & 3**):

- The exit travel distance exceeds the maximum allowance of BCA in both warehouses
- The distance between alternative exits exceeds the requirements of BCA in both warehouses

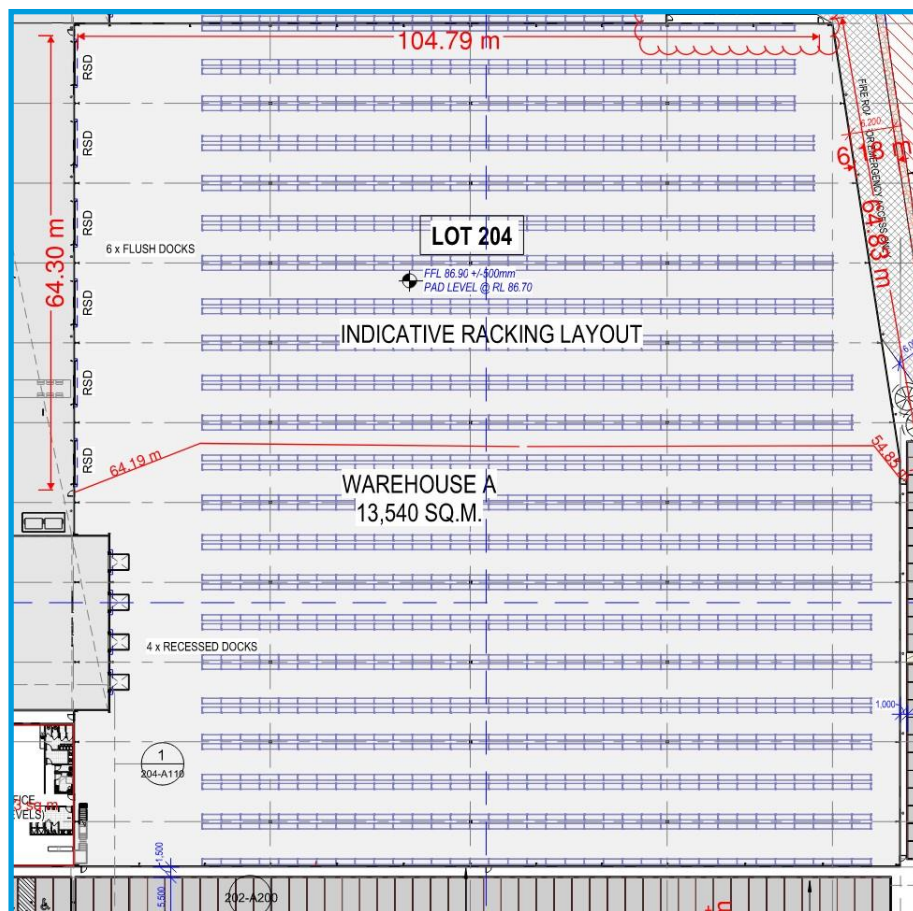


Figure 2 - Warehouse A exits



Figure 3 - Warehouse B exits

The extended travel distances and distance between the exit stairs will need to be assessed as performance solutions by the Fire Safety Engineer using BCA Performance Requirements DP4 & EP2.2

8.3. 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 AS1657-2018 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. Access for persons with disabilities however requires a clear doorway opening width of 850mm (i.e. minimum 920 mm doors).

8.4. Travel by non-fire-isolated stairways or ramps

A non-fire-isolated stairway or non-fire-isolated ramp serving as a required exit must provide a continuous means of travel by its own flights and landings from every storey served to the level at which egress to a road or open space is provided.

The distance from any point on a floor to a point of egress to a road or *open space* by way of a *required non-fire-isolated stairway* or *non-fire-isolated ramp* must not exceed 80 m.

8.5. Swinging doors

A swinging door in a required exit or forming part of a required exit must swing in the direction of egress unless:

- i) It serves a building or part with a floor area not more than 200 m², it is the only required exit from the building or part and it is fitted with a device for holding it in the open position; or
- ii) It serves a sanitary compartment or airlock (in which case it may swing in either direction);

The exit door in the ground level of office in the Warehouse A opens inward (refer to **Figure 4**). According to CI D2.20(b), a swinging door in a *required exit* or forming part of a *required exit* must swing in the direction of egress. Either change of the design or performance solution is required.

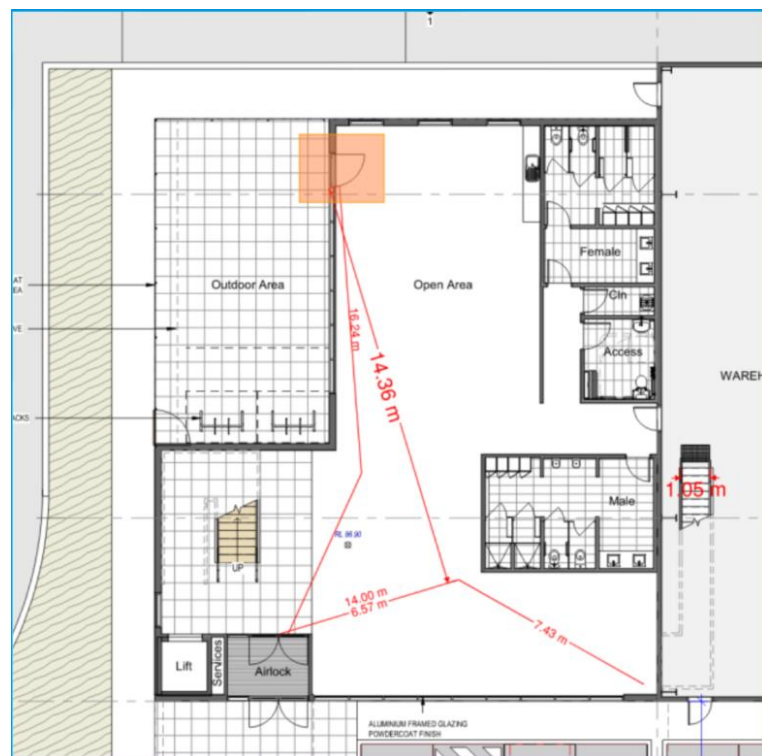


Figure 4 - Swing door direction

8.6. Balustrades and Handrails (BCA 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.

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.

8.7. 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 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.

It is noted that the provisions below also apply to occupiable outdoor areas.

9.1. 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.

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 utilised.

The fire services/hydraulic engineer is to confirm the required flow rates for the development. Please note as the design progresses it will also need to be confirmed that a fire hydrant ring main is provided complying with AS2419.1.

Each warehouse 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. 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 location of the pumphouse and booster will need to be discussed further with Fire Brigade to confirm acceptance.

Please note if it is proposed to place fire hydrants within 10m of the building or under awnings and still be classified as external hydrants this would not comply with the prescriptive requirements of BCA inter alia AS2419.1.

If proposed it may be possible to discuss this further with a Fire Safety engineer to ascertain whether it is possible to address such issues as part of a performance solution. Such a performance solution will need to address provisions of BCA Performance Requirement EP1.3.

9.2. Fire Hose Reels

A Fire Hose Reel System is required to BCA Clause E1.4 and AS2441-2005 and coverage must be provided to the whole building.

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.

The hose reels currently are not shown on the drawings.

9.3. 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 whole buildings.

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 car parks). 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

The fire extinguisher locations currently are not indicated on the drawings.

9.4. Automatic Sprinkler Protection (BCA E1.5)

Automatic sprinkler protection is required to Specification E1.5 and AS2118.1-2017 to the following areas:

- Throughout the entire building if it is classified as large isolated under BCA Clause C2.3;

Location of pumps, tanks, FIP, control valves and booster assemblies will be subject to review by the Fire Brigade as part of the Building Approval process.

The sprinkler system shall be connected to and activate an occupant warning system complying with BCA Specification E2.2a.

Details of the proposed sprinkler system design will need to be reviewed as the design develops.

The following performance solutions are proposed to be addressed by the Fire Safety Engineer using BCA Performance Requirements CP2 & EP1.4:

- Omission of sprinklers from the lift shafts

An occupant warning system is required in accordance with BCA Specification E1.5.

9.5. Smoke Hazard Management (BCA E2.2)

Based on the drawings, the floor area of the warehouses does not exceed 18,000m² and the volume does not exceed 108,000m³ either, therefore if the buildings are protected with sprinkler systems complying with Specification E1.5 and provided with perimeter vehicular access, the requirements of this clause is satisfied.

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.

9.6. Lift Services (BCA E3.4 and BCA E3.6)

The passenger lifts to be installed are to be:

- Fitted with warning signs, fire service controls in accordance with Clauses E3.3, Figure E3.3, E3.7, E3.9 and E3.10 of the BCA.
- Be provided with the following in order to satisfy accessibility requirements:
 - A handrail in accordance with AS1735.12-1999,
 - Minimum internal floor dimensions of 1400 x 1600mm for lifts which travel more than 12m, or 1100 x 1400mm for lifts which travel not more than 12m,
 - Fitted with a series of door opening sensory devices which will detect a 75mm diameter or across the door opening between 50mm and 1550mm above floor level,
 - Have a set of buttons for operating the lift located at heights above level complying with AS1735.12 – 1999
 - For lifts serving more than 2 levels, automatic audible information within the lift car identifying the level each time the car stops, and audible and visual indication at each lift landing to indicate the arrival of a car
 - Emergency hands free communication, including a button that alerts a call centre of a problem and a light to signal that the call has been received

9.7. 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 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 EP4.2.

Details are required to be provided for review.

10. Health and Amenity

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

Offices & Warehouses

Separate sanitary facilities are required to be provided for male & female employees at a rate at the following.

The following table summarises the sanitary facilities required / provided:

Sanitary Facilities Provided for Office & Warehouse A			
	WC	Urinals	Basins
Male	4 (total)	4 (total)	4 (total)
Female	4 (total)	N/A	4 (total)
Accessible	1 (each level)	N/A	1 (each level)
The Above Facilities are adequate for 80 males & 60 females			
Sanitary Facilities Provided for Office & Warehouse B			
Male	3 (total)	3 (total)	3 (total)
Female	3 (total)	N/A	3 (total)
Accessible	1 (each level)	N/A	1 (each level)
The Above Facilities are adequate for 60 males & 45 females			

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.

10.2. Floor Wastes

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.

10.3. 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

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

These provisions also apply to areas considered as occupiable outdoor areas.

10.4. Condensation management (BCA Part F6)

Pliable building membranes installed to an external wall must:

- achieve compliance with AS 4200.1, and
- be installed in accordance with AS4200.2, and
- be a vapour permeable membrane (applicable as the development is in climate zone 7); and
- be located on the exterior side of the primary insulation layer or the wall assembly and except for the single skin mason and single sin concrete be separated from water sensitive materials.

Exhaust systems must achieve a minimum flow rate of 25L/s for bathrooms and sanitary compartments must discharge directly or via a duct to outdoor air or to a roof space that is ventilated.

Exhaust systems discharging directly or via a shaft or a duct to a roof space must be through evenly distributed systems. Openings for minimum flow requirements must have a total unobstructed area of 1/300 of the respective ceiling area if the roof pitch is greater than 22°. 30% of the total unobstructed area required for exhaust being discharged directly or via a shaft or duct to outdoor air must be located not more than 900 mm below the ridge or highest point of the roof space.

10.5. Waterproofing (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.*

Wet Areas

Internal wet areas throughout the development (e.g. bathrooms, laundries) shall be waterproofed in accordance with AS3740 - 2010 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.

10.6. Stormwater Drainage

Stormwater drainage systems serving the building are to comply with AS3500.3 - 2018.

The use of a syphonic stormwater drainage system is not covered by Australian Standards and any design incorporating one would need an appropriate performance solution will need to be documented by the hydraulic consultant addressing the system compliance against BCA Performance Requirements FP1.2 & FP1.3.

11. Energy Efficiency

11.1. SECTION J (Transition Period)

The commentary below is an assessment based on the provisions included in BCA 2019 Amendment 1.

11.2. SECTION J (JP1 Energy Use)

Efficient energy use must be achieved appropriate to the function and use of the building, level of human comfort, solar radiation, energy source of the services and sealing of the building envelope. To achieve this JV1, JV2, JV3 and JV4 verification methods have been introduced as options available to achieve compliance.

It is noted that a deemed to satisfy pathway is still available.

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.

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

Verification Methods

The Verification Methods available to demonstrate compliance with the BCA on a performance basis are as follows:

JV1 NABERS Energy for Offices

- To achieve compliance with JP1 a class 5 building must achieve a minimum of 5.5 NABERS Energy for Offices Base Building Commitment Agreement and comply with ANSI/ASHRAE Standard 140.
- To achieve the energy model for (JP1 (i)) solar radiation the base buildings greenhouse gas emissions are not more than 67% of the 5.5 star level when excluding:
 - Tenant supplementary heating; and
 - Cooling systems; and
 - External lighting; and
 - Car park services.
 - A thermal comfort level between predicted mean vote of -1 to +1 is achieve across not less than 95% of the floor area of all occupied zones for not less than 98% f annual hours of operation.
- The building also need to comply with additional requirements of Spec JVa.

JV2 Green Star

- To achieve compliance with JP1 for Class 3,4,5,6, 7, 8, 9 and common area of Class 2 buildings Green Star can be used as a verification method when the calculation method complies with ANSI/ASHRAE Standard, Specification JVb and when:
 - The building complies with simulation requirements and is registers for a Green Star – Design & As-Built rating; and
 - The annual greenhouse gas emissions of the proposed building are less than 90% of the annual greenhouse gas emissions of the reference building; and
 - In the proposed building, a thermal comfort level of between predicted mean vote of -1 to +1 is achieve across not less than 95% of the floor area of all occupied zones for not less than 98% of the annual hours of operation of the building; and

- The building complies with the additional requirements of Specification JVa.

JV3 Verification Using a Reference Building

- To achieve compliance with JP1 for Class 3,4,5,6, 7, 8, 9 and common area of Class 2 buildings verification using a reference building can be used when the calculation method complies with ANSI/ASHRAE Standard, Specification JVb and when:
 - It is determined that the annual greenhouse gas emissions of the proposed building are not more than the annual greenhouse gas emissions of a reference building when the proposed building is modelled with the proposed services and the proposed building is modelled with the same services as the reference building. The proposed building thermal comfort level is to be between predicted mean vote of -1 to +1 across not less than 95% of the floor area of all occupied zones for not less than 98% of the annual hours of operation; and
 - The building achieves the additional requirements in Specification JVa; and
 - The greenhouse gas emissions of the proposed building may be offset by renewable energy generated and use on site and another process such as reclaimed energy used on site.

11.3. Building Fabric (Part J1)

Roof and Ceiling Construction (Part J1.3)

For a deemed-to-satisfy solution roofs and or ceilings are to be constructed to provide a total R-Value greater than or equal to in climate zone 6, R3.2 for a downward direction of heat flow.

In climate zones 1, 2, 3, 4, 5, 6 and 7, the solar absorptance of the upper surface of a roof must be not more than 0.45.

Where the layer of insulation is penetrated by the percentages as tabled below, additional upgrading of the remainder of the insulation level is required.

To achieve compliance with J0.2 (c) a roof that has a metal sheet roofing fixed to metal purlins, metal rafters or metal battens and does not have a ceiling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens must have a thermal break. The thermal break to be consisting of a material with a R-Value of not less than R0.2, installed at all points of contact between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens.

Roof lights (Part J1.4)

Where roof lights are installed they must have:

- a total area of not more than 5% of the floor area of the room or space served; and
- transparent and translucent elements, including any imperforate ceiling diffuser, with a combined performance of:
 - for Total system SHGC, in accordance with the below table; and
 - for Total system U-value, not more than U3.9;

Roof light shaft index (see Note 1)	Total area of roof lights up to 3.5% of the floor area of the room or space	Total area of roof lights more than 3.5% and up to 5% of the floor area of the room or space
Less than 1.0	Not more than 0.45	Not more than 0.29
1.0 to less than 2.5	Not more or equal to than 0.51	Not more than 0.33
Greater than 2.5	Not more than or equal to 0.76	Not more than 0.49

External Walls and Glazing (Part 1.5)

For walls and glazing construction, the total system U-value must not be greater than-

- (i) for a Class 2 common area, a Class 5, 6, 7, 8 or 9b building other than a ward area, U2.0; and
- (ii) for a Class 3 or 9c building or a Class 9a ward area –
 - (a) in climate zones 1, 3, 4, 6 or 7, U1.1; or
 - (b) in climate zones 2 or 5, U2.0; or
 - (c) in climate zones 8, U0.9;

The total system U-value of wall-glazing construction should be calculated in accordance with Specification J1.5a.

Wall components of the wall-glazing construction must achieve a minimum total R-Value of R1.0 where the wall is less 80% if the area and reflect the value specified in Table J1.5a where the wall is *0% or more of the area.

There are further design parameters for display glazing and solar admittances for wall-glazing construction, both of which should comply with the relevant provisions of J1.5.

To achieve compliance with J0.2 (c) a wall that does not have a wall lining or has a wall lining that is fixed directly to the same metal frame and has a lightweight external cladding such as weatherboards, fibre-cement or metal sheeting fixed to a metal frame must have a thermal break. The thermal break is to consist of a material with an R-Value of not less than R.02, installed at all points of contact between the external cladding and metal frame.

Floors (Part J1.6)

Floors are to achieve an R rating of 2.0.

11.4. Building sealing (Part J3)

Windows and Doors (Part J3.4)

- a) A door, openable window or the alike must be sealed –
 - (i) When forming part of the envelope; or
 - (ii) In climate zones 4,5,6,7 or 8
- b) The requirements of (a) do not apply to –
 - (i) A window complying with AS2047; or
 - (ii) A fire door or smoke door; or
 - (iii) A roller shutter door, roller shutter grille or other security door or device installed only for out of house security
- c) A seal to restrict air infiltration –
 - (i) For the bottom edge of a door, must be draft protection device; and
 - (ii) For the other edged of a door or the edges of an openable window or other such opening, may be a foam or rubber compression strip, fibrous seal or the like.
- d) An entrance to a building, if leading to a conditioned space must have an airlock, self-closing door, rapid roller door, revolving door or the like, other than –
 - (i) When the conditioned space has a floor area of not more than 50m²; or
 - (ii) Where a café, restaurant, open front shop or the like has –
 - (A) A 3m deep un-conditioned zone between the main entrance, including an open front, and the conditioned space; and
 - (B) At all other entrances to the café, restaurant, open front shop or the like, self-closing doors.
 - (iii) A loading dock entrance, if leading to a conditioned space, must be fitted with a rapid roller door or the like

Exhaust fans (Part J3.5)

An exhaust fan must be fitted with a sealing device such as a self-closing damper or the like when serving a conditioned space or a habitable room in climate zones 4, 5, 6, 7, or 8.

Construction of ceilings, walls and floors (Part J3.6)

A seal to restrict air infiltration must be fitted to each edge of the external doors and openable windows. The seals may be foam or compressible strip, fibrous seal or the like. The main entry doors must have either an airlock, or self-closing doors, or a revolving door.

Ceilings, walls, floors and any openings such as a window frame, door frame, roof light frame or the like must be constructed to minimise air leakage in accordance with the below when forming part of –

- (i) The envelope; or
- (ii) In climate zones 4, 5, 6, 7 or 8

Construction required by above must be –

- (iii) Enclosed by internal lining systems that are close fittings at ceiling, wall and floor junctions; or
- (iv) Sealed at junctions and penetrations with –
 - (A) Close fitting architrave, skirting or cornice; or
 - (B) Expanding foam, rubber compressible strip, caulking or the like

The above does not apply to openings, grilles or the like required for smoke hazard management.

11.5. Air Conditioning and Ventilation systems (Part J5.0)

Air conditioning and ventilation systems must be designed to comply with the following provisions:

- Be capable of being deactivated when the building or part of a building being served by that system is not occupied;
- Where motorised dampers are in place, they should close when the system is deactivated
- Where serving a sole-occupancy unit in a Class 3 building, must not operate when any external door of the sole-occupancy unit that opens to a balcony or the like, is open for more than one minute;
- Time switches should be provided to control an air-conditioning system of more than 2kW_r and a heater of more than 1kW_{heating} used for air-conditioning, and be capable of switching electric power on and off at variable pre-programmed times on variable pre-programmed days.
- Ductwork and fittings in an air-conditioning system should have insulation complying with AS/NZS 4859.1 and have an insulation R-Value greater than or equal to:-
 - for flexible ductwork R1.0; or
 - for cushion boxes, that of the connecting ductwork; or
 - That specified in Table J5.5

Table J5.5

Location of ductwork and fittings	Climate zone 1, 2, 3, 4, 5, 6 or 7	Climate zone 8
Within a conditioned space	1, 2	2.0
Where exposed to direct sunlight	3.0	3.0
All other locations	2.0	3.0

Mechanical:

- Be capable of being deactivated where the building or part of the building served by that system is not occupied
- Time switches must be provided to a mechanical ventilation system with an air flow rate of more than 1000 L/s, capable of switching electric power on and off at variable pre-programmed times and on variable pre-programmed days;

Heaters

A heater used for air-conditioning or as part of an air-conditioning system must be either a solar heater, gas heater, heat pump heaters, a heater using reclaimed heat or an electric heater.

A gas water heater, that is used as part of an air-conditioning system must:

- (i) if rated to consume 500 MJ/hour of gas or less, achieve a minimum gross thermal efficiency of 86%; or
- (ii) If rated to consume more than 500 MJ/hour of gas, achieve a minimum gross thermal efficiency of 90%.

Refrigerant chillers

An air-conditioning system refrigerant chiller must comply with MEPS and the full load operation energy efficiency ratio and integrated part load energy efficiency ratio laid out under clause J5.10 of the BCA when determined in accordance with AHRI 551/591

Unitary air-conditioning equipment

Unitary air-conditioning equipment including packaged air-conditioners, split systems, and variable refrigerant flow systems must comply with MEPS and for a capacity greater than or equal to 65 kW_r –

- (a) Where water cooled, have a minimum energy efficiency ratio of $4.0 W_r / W_{\text{input power}}$ for cooling when tested in accordance with AS/NZS 3823.1.2 at test condition T1, where input power includes both compressor and fan input power; or
- (b) Where air cooled, have a minimum energy efficiency ratio of $2.9 W_r / W_{\text{input power}}$ for cooling when tested in accordance with AS/NZS 3823.1.2 at test condition T1, where input power includes both compressor and fan input power.

11.6. Artificial Lighting and Power (Part J6)

Interior Artificial Lighting and Power Control (Part J6.2 & 6.3)

In a sole-occupancy unit of a Class 2 building or Class 4 part the lamp power density/illumination power density of artificial lighting must not exceed the allowance of 5 W/m² within a sole-occupancy unit and 4 W/m² on a verandah, balcony or the like attached to a sole-occupancy unit.

In a building other than a sole-occupancy unit of a Class 2 building or a Class 4 building for artificial lighting, the aggregate design illumination power load must not exceed the sum of the allowances obtained by multiplying the area of each space by the maximum illumination power density below:

The maximum illumination power density;

Common rooms, spaces and corridors in a Class 2 building	4.5W/m ²
Stairways, including fire-isolated stairways	2W/m ²
Toilet, locker room, staff room, rest room or the like	3W/m ²
Lift cars	3W/m ²
Service area, cleaner's room and the like	3W/m ²
Control room, switch room or the like	

(A) intermittent monitoring	3W/m ²
(B) Constant monitoring	4.5W/m ²
Plant room:	
(A) Where an average of 160 lx vertical illuminance is required on a vertical panel such as in switch rooms	4W/m ²
(B) With a horizontal illuminance target of 80 lx	2W/m ²
Library:	
(A) Stack & shelving area	2.5W/m ²
(B) Reading room & general areas	4.5W/m ²
Office:	
(A) Artificially lit to an ambient level of 200 lx or more	4.5W/m ²
(B) Artificially lit to an ambient level of less than 200 lx	2.5W/m ²
Museum & gallery	2.5W/m ²
Retail:	14W/m ²
Corridors:	5W/m ²
Common rooms, spaces & corridors in a Class 2 building	4.5W/m ²
Lounge area for communal use in a Class 3 or 9c building	4.5W/m ²
Dormitory of Class 3 building:	
(A) Used for sleeping only	3W/m ²
(B) Used for sleeping & study	4W/m ²
Storage	1.5W/m ²
School:	4.5W/m ²
Health Care:	
(A) Infants & children's wards & ED	4W/m ²
(B) Exam room	4.5W/m ²
(C) Exam room in intensive care & high dependency ward	6W/m ²
(D) All other patient care areas inc wards & corridors	2.5W/m ²
Kitchen and food preparation area:	4W/m ²
Car parks:	
(A) General	2W/m ²
(B) Entry zone (first 15m of travel during the daytime)	11.5W/m ²
(C) Entry zone (next 4m of travel) during the day	2.5W/m ²
(D) Entry zone (first 20m of travel) during nighttime	2.5W/m ²
Auditoriums, church and public hall :	8W/m ²
Restaurant, café, bar:	14W/m ²

Artificial Lighting must be controlled by a time switch, other control device or a combination of both.

Each light control in a building must not operate lights within an area of more than;

- 250m² if in a Class 6 building or Class 8 laboratory
- Not operate lighting for an area more than -
 - a) 250m² for a space of not more than 2000m²;
 - b) 1000m² for a space of more than 2000m²

if in a Class 3, 6, 7, 8 (other than a laboratory) or 9 building;

- 1000m² for a space of more than 2000m².

Interior decorative and display lighting

Interior decorative and display lighting, such as for a foyer mural or art display, must be controlled -

- Separately from other artificial lighting; and
- By a manual switch for each area other than when operating times of the displays are the same in a number of areas (e.g. where in a museum) in which case they may be combined; and
- By a time switch in accordance with Specification J6 where the display lighting exceeds 1 kW

Window display must be controlled separately from other display lighting exceeds 1kW.

Exterior artificial lighting

Artificial lighting attached to or directed at the façade of the building if it exceeds a total of 100W must;

- Use LED luminaires for 90% of the total lighting load; or
- Be controlled by a motion detector in accordance with Specification J6 of the BCA;
- When used for decorative purposes, such as façade lighting or signage lighting, have a separate switch in accordance with Specification J6.

Lifts (Part 6.7)

Lifts must be configured to ensure artificial lighting and ventilation in the car are turned off when it is unused for 15 minutes and achieve the idle and standby energy performance level required, and the energy efficiency class under J6.7 of the BCA.

12. Access for People with Disabilities

The development is required to comply with the accessibility provisions contained within:

- The Building Code of Australia 2019 Amendment 1;
- Disability (Access to Premises – Buildings) Standards 2010;
- AS1428.1-2009 General Requirements for Access – New Building Work;
- AS1428.4.1 -2009 Tactile Ground Surface Indicators
- AS2890.6-2009 Car Parking for People with Disabilities

This report assesses against the requirements contained with the Building Code of Australia (and documents referred to therein) and is not considered to be a full assessment against the Disability Discrimination Act.

12.1. 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 Amdt 1 and AS 1428.1. Parts of the building required to be accessible shall comply with the requirements of:

- AS1428.1-2009 General Requirements for Access – New Building Work;
- AS1428.4.1 -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 (Class 5)

To and within all areas normally used by the occupants

Warehouse and production/Manufacturing facilities

To and within all areas normally used by the occupants, but as the uses of these areas could be deemed inappropriate, confirmation is required as the appropriateness of the areas in question by the owners or tenant.

12.2. Provision for Access to Buildings

The BCA prescribes access to be provided to and within the building as follows:

- Via the principle pedestrian entry and at least 50% of all other entrances from the allotment boundary
- 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 occupants.

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

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

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

12.3. Accessibility within Building (BCA D3.3)

A building required to be accessible is required to be equipped with either a AS 1428.1 compliant lift or AS 1428.1 compliant ramp, (but the maximum vertical rise of a ramp must not exceed 3.6m).

Within the building the following are required;

- Door circulation space as per AS1428.1 Clause 13.3;
- 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 and backing <4mm
- Any glazing 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. Further details are to be provided or access to these areas is to be assessed by an access consultant.

12.4. Car Parking (BCA D3.5)

Accessible car parking spaces are required to comply with AS 2890.6-2009 at the rate of 1 space for every 100 carparking spaces.

The development is proposed to contain 83 car parking spaces for Warehouse A and 40 car parking spaces for Warehouse B which requires a minimum of 2 accessible spaces. The design has provided 3 accessible spaces which meets the requirements.

A 'shared zone' of minimum 5400mm x 2400mm is required adjacent to accessible car parking spaces, protected with a bollard. The shared zones are included in the drawings.

12.5. 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.

12.6. 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 and 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 one tread width plus 300mm (nominally 700mm as per AS 1428.1-2009 Fig 26(b)), 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.

12.7. 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 products and as per following.

Building Type	Minimum accessible unisex sanitary compartments to be provided
Office, industrial, assembly building, schools, health care except for within a ward area of a Class 9a health-care building	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.

An ambulant facility in each bank is included in the drawings which meets the requirements.

An accessible unisex sanitary compartment or an accessible unisex shower need not be provided on a storey or level that is not provided with a passenger lift or ramp complying with AS 1428.1-2009

12.8. 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;
- Hearing Augmentation System;
- Identify each door required by BCA Clause E4.5 to be provided with an exit sign, stating 'EXIT' and 'Level' number
- Braille and tactile signs must be illuminated to ensure *luminance contrast* requirements are met at all times during which the sign is required to be read.

12.9. Hearing Augmentation (BCA D3.7)

A hearing augmentation system shall be installed throughout the building in accordance with the requirements of Clause D3.7 of the BCA for any meeting rooms, board rooms, etc. which contains an inbuilt amplification system not used for emergency purposed.

12.10. Lifts (BCA E3.6)

Lifts compliant to BCA E3.6 and BCA E3.7 must be provided, where required to be provided, with a minimum size of 1400 x 1600mm or 1100mm x 1400mm (whichever is appropriate) in size – with appropriate handrails and auditory commands.

13. Appendix A - Reference Documentation

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

Drawing No.	Title	Issue	Date	Revision
2-000-217501 FS08 - 002	CONCEPT MASTER PLAN	A	05.08.2021	A
2-000-217501 FS08 - 003	CONCEPT SITE PLAN	A	05.08.2021	A
200226 - DA -204-A100	LOT 204 SITE & FACILITY PLAN	P3	14.09.2021	P3
200226 - DA - 204-A110	LOT 204 OFFICE A PLANS	P1	14.09.2021	P1
200226 - DA - 204-A111	LOT 204 OFFICE B PLANS	P1	14.09.2021	P1
200226 -DA -204-A200	LOT 204 WAREHOUSE ELEVATIONS	P3	14.09.2021	P3
200226 - DA -204-A201	LOT 204 OFFICE ELEVATIONS	P1	14.09.2021	P1
200226 -DA -204-A210	LOT 204 WAREHOUSE SECTIONS	P1	14.09.2021	P1

14. 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 Suppression System	BCA Spec. E1.5 & AS 2118.1 – 2017 Amdt 1,
3.	Building Occupant Warning System activated by the Sprinkler System	BCA Spec. E1.5 & Specification E2.2a Clause 7
4.	Emergency Lighting	BCA Clause E4.2, E4.4 & AS/NZS 2293.1 – 2018
5.	Emergency Evacuation Plan	AS 3745 – 2002
6.	Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS/NZS 2293.1 – 2018
7.	Fire Control Centres	BCA Spec. E1.8
8.	Fire Hose Reels	BCA Clause E1.4 & AS 2441 – 2005 Amdt 1
9.	Fire Hydrant System	Clause C2.12, E1.3, Spec E1.5a, H3.9 & AS 2419.1 – 2005 Amdt 1
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
12.	Perimeter Vehicular Access	BCA Clause C2.4
13.	Portable Fire Extinguishers	BCA Clause E1.6 & H3.11, AS 2444 – 2001
14.	Pressurising Systems	BCA Clause E2.2 & AS/NZS 1668.1 – 2015
15.	Smoke Hazard Management System	BCA Part E2 & AS/NZS 1668.1 – 2015
16.	Warning and Operational Signs	AS 1905.1 –2015, BCA Clause C3.6, D2.23, E3.3

15. Appendix D - Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2019 Amendment 1:

Table 5 TYPE C CONSTRUCTION: FRL OF BUILDING ELEMENTS	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 within it) 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 <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	—/—/—	—/—/—	—/—/—	—/—/—

Table 5.2
REQUIREMENTS FOR CARPARKS
FRL (not less than) Structural adequacy/Integrity/ Insulation
ESA/M (not greater than)
Wall

(a)	<i>external wall</i>	
(i)	less than 1.5 m from a <i>fire-source feature</i> to which it is exposed:	
	<i>Loadbearing</i>	60/60/60
	<i>Non-loadbearing</i>	–/60/60
(ii)	1.5 m or more from a <i>fire-source feature</i> to which it is exposed	–/–/–
(b)	<i>internal wall</i>	–/–/–
(c)	<i>fire wall</i>	
(i)	from the direction used as a <i>carpark</i>	60/60/60
(ii)	from the direction not used as a <i>carpark</i>	90/90/90

Column

(a)	steel column less than 1.5 m from a <i>fire-source feature</i>	60/–/– or 26 m ² /tonne
(b)	any other column less than 1.5 m from a <i>fire-source feature</i>	60/–/–
(c)	any other column not covered by (a) or (b)	–/–/–

Beam

(a)	less than 1.5 m from a <i>fire-source feature</i>	
(i)	steel floor beam in continuous contact with a concrete floor slab	60/–/– or 30 m ² /tonne
(ii)	any other beam	60/–/–
(b)	1.5 m or more from a <i>fire-source feature</i>	–/–/–
	Roof, floor slab and vehicle ramp	–/–/–

Note: ESA/M means the ratio of exposed surface area to mass per unit length.