FIRE SAFETY CONCEPT STRATEGY

Project:	Lot E Aldington Road Industrial Estate	**Ref No.:**	F202700_FSCS_01
Address:	200 Aldington Road, Kemps Creek NSW 2178	**Date:**	13 October 2025
		Issue:	Final Issue

To: Martin Charteris, Stockland FIFE Kemps Creek Pty Ltd c/o Fife Capital

RE: MOD Fire Safety Concept Strategy – Final Issue

1. INTRODUCTION

1.1 OVERVIEW

CORE Engineering Group has been engaged by Stockland FIFE Kemps Creek Pty Ltd c/o Fife Capital to prepare a Fire Safety Concept Strategy for the construction of Lot E in the Aldington Road Industrial Estate at 200 Aldington Road, Kemps Creek NSW 2178 NSW 2178. The project encompasses the construction of a new one-storey warehouse and distribution facility with two dedicated two-storey offices serving each warehouse tenancy. The scope of this report is limited to the items identified by the BCA consultant.

1.2 SCOPE

The purpose of this report is to document the proposed fire safety concept strategy for the building, including guidance on the likely fire engineering trial design which has been established based on review of the BCA report, proposed design, and CORE Engineering Group's previous experience. This document is intended to be a guidance document for the design team to inform detailed design documentation and shall be further developed as necessary through ongoing consultation.

The specific details included are:

- The proposed Performance Solutions to address identified non-compliances.
- The proposed fire engineering requirements.

1.3 SOURCES OF INFORMATION

Architectural plans provided by DTA Architects, as indicated in Table 1-1

Table 1-1: Drawings

DRAWING NO.	DESCRIPTION	ISSUE	DATE
DA04	Site Plan – Ground Floor – Overall	P6	17/09/2025
DA05	Site Roof Plan – Overall	P5	17/09/2025
DA06	Site Plan – WH4 Ground Floor	P6	17/09/2025
DA07	Floor Plans – Office – W4A	P5	17/09/2025
DA08	Roof Plan – W4A	P5	17/09/2025
DA09	Site Plan – WH4B Ground Floor	P6	17/09/2025
DA10	Floor Plans – Office – W4B	P5	17/09/2025
DA11	Roof Plan – WH4B	P5	17/09/2025
DA12	Elevations	P5	17/09/2025

DRAWING NO.	DESCRIPTION	ISSUE	DATE
DA13	Elevations	P5	17/09/2025
DA14	Section W4A	P5	17/09/2025
DA15	Sections – W4B	P5	17/09/2025

1.4 LIMITATIONS AND ASSUMPTIONS

- This document represents the opinions of CORE Engineering Group based on the information known at the time of preparation of this document. Opinions, findings, and recommendations detailed in this document are based on our understanding and interpretation of current statutory and regulatory obligations and standards and should not be construed as legal opinions.
- This report does not constitute a fire engineering report (FER) that addresses the Performance Requirements of the BCA. Any recommendations herein are subject to detailed fire engineering analysis, and the relevant approval process.
- This document has been prepared as a guidance document only, and any parties relying on this for pricing should be cognisant that the recommendations are preliminary and subject to detailed analysis and authority approvals.

2. PROPOSED WORKS

2.1 SITE CONTEXT

The development site is located in Kemps Creek, approximately 66.8 km southwest of Sydney's central business district. The Stockland FIFE Kemps Creek Site located at 200 Aldington Road, Kemps Creek. This proposed development is on Lot E within the estate, as depicted in Figure 2-1 and Figure 2-2.

Figure 2-1: Site Context Plan

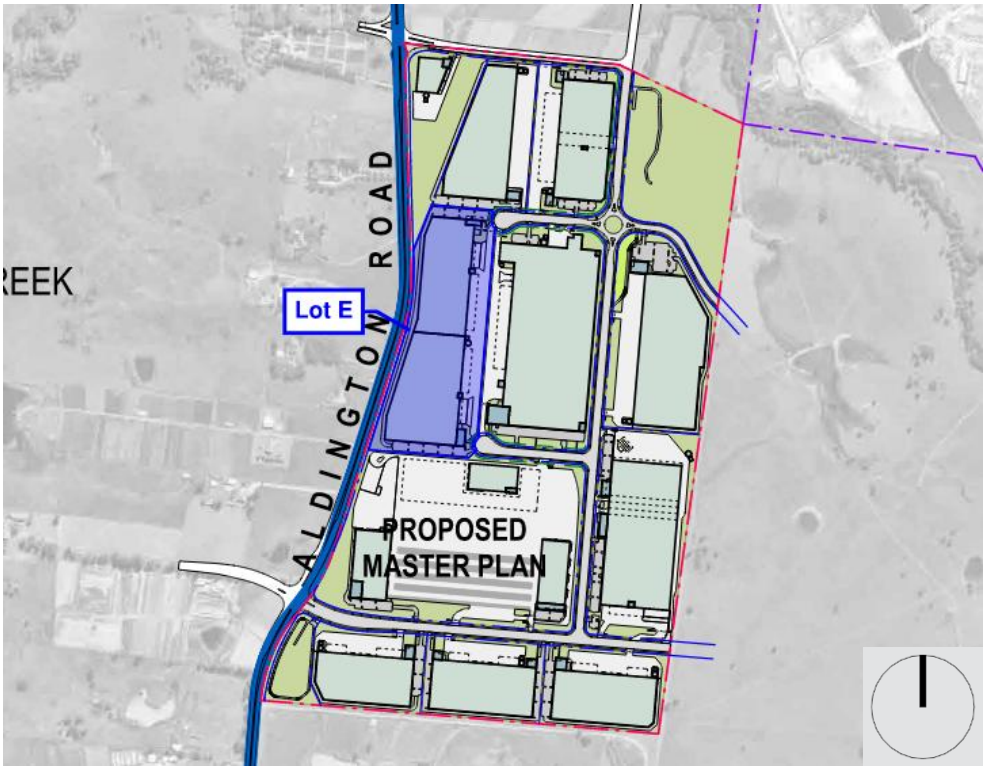

Figure 2-2: Estate Master Plan

The building site influences the likely fire brigade intervention times and, given the close proximity to the nearest fire station, is expected to facilitate a relatively convenient and expedient fire brigade response. The two nearest fire brigade stations provided with permanent staff are Bonnyrigg Heights and St Marys, approximately 11.2 km and 11.4 km from the site, respectively, when considering actual driving routes.

2.2 SITE LAYOUT

The proposed development is located within Lot E of Aldington Industrial Site, which is a warehouse and distribution facility, containing tenancies named WH4A and WH4B. The building is classified as a large-isolated building of Type C construction and generally feature a ridge height of approximately 14.1 m.

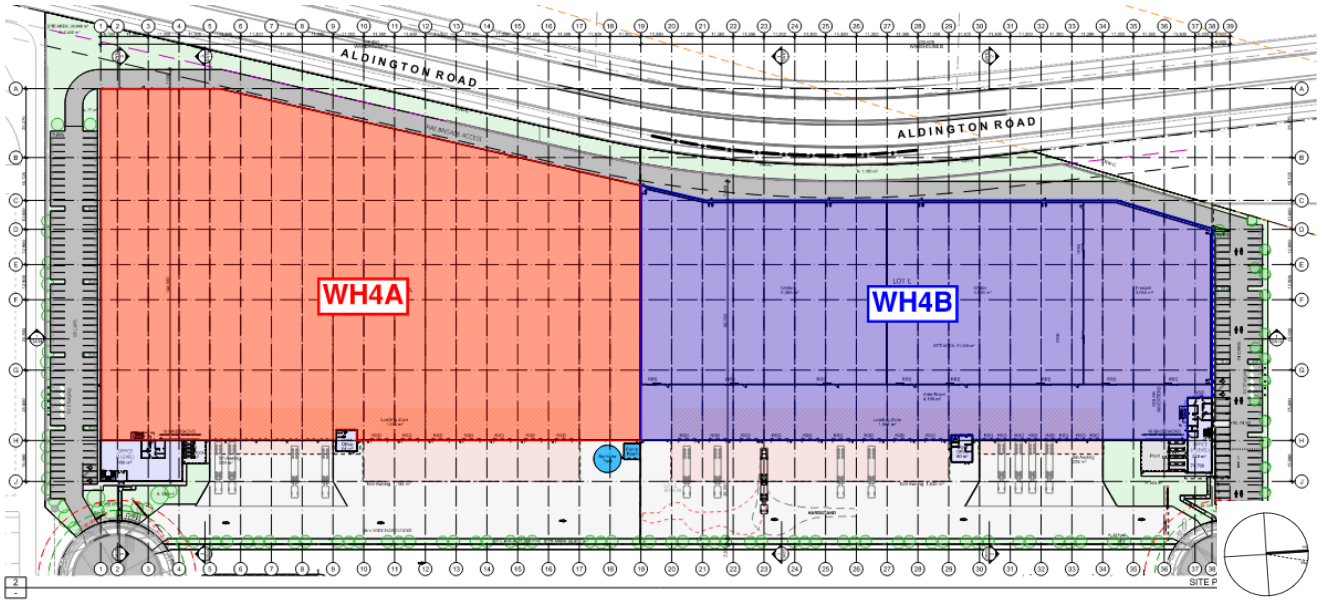

Figure 2-3: Lot E – Site Plan

The building feature is summarised as follows:

- WH4A (Figure 2-4 and Figure 2-5)
  - The warehouse part of WH4A has a floor area of 22,774 m^2.
  - Two-storey ancillary office at the south-eastern corner with a floor area of 900 m^2.
  - One-storey dock office on the eastern hardstand with a floor area of 64 m^2.
  - An external carpark serving WH4A is provided to the southern perimeter of the site.
- WH4B (Figure 2-6 and Figure 2-7)
  - The warehouse part of WH4B has a floor area of 18,198 m^2.
  - Two-storey ancillary office at the north-eastern corner with a floor area of 721 m^2.
  - One-storey dock office on the eastern hardstand with a floor area of 81 m^2.
  - An external carpark serving WH4B is provided to the northern perimeter of the site.
- Loading dock and associated hardstands serving both warehouse tenancies are provided along the eastern portion of the building with 15 m and 5 m awnings.
- Fire service infrastructure serving the site is provided to the eastern hardstand.

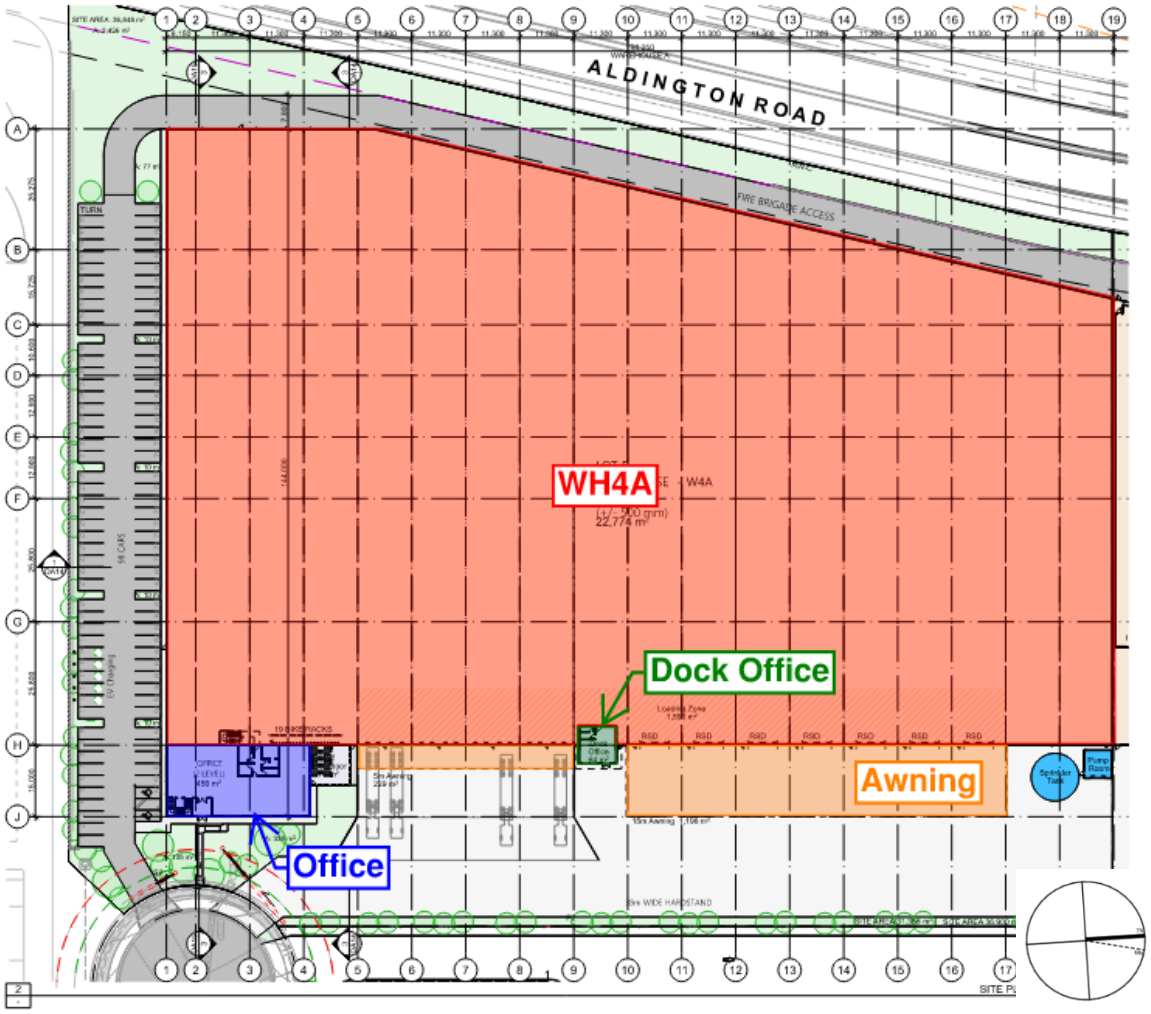

Figure 2-4: Site Context Plan: WH4A

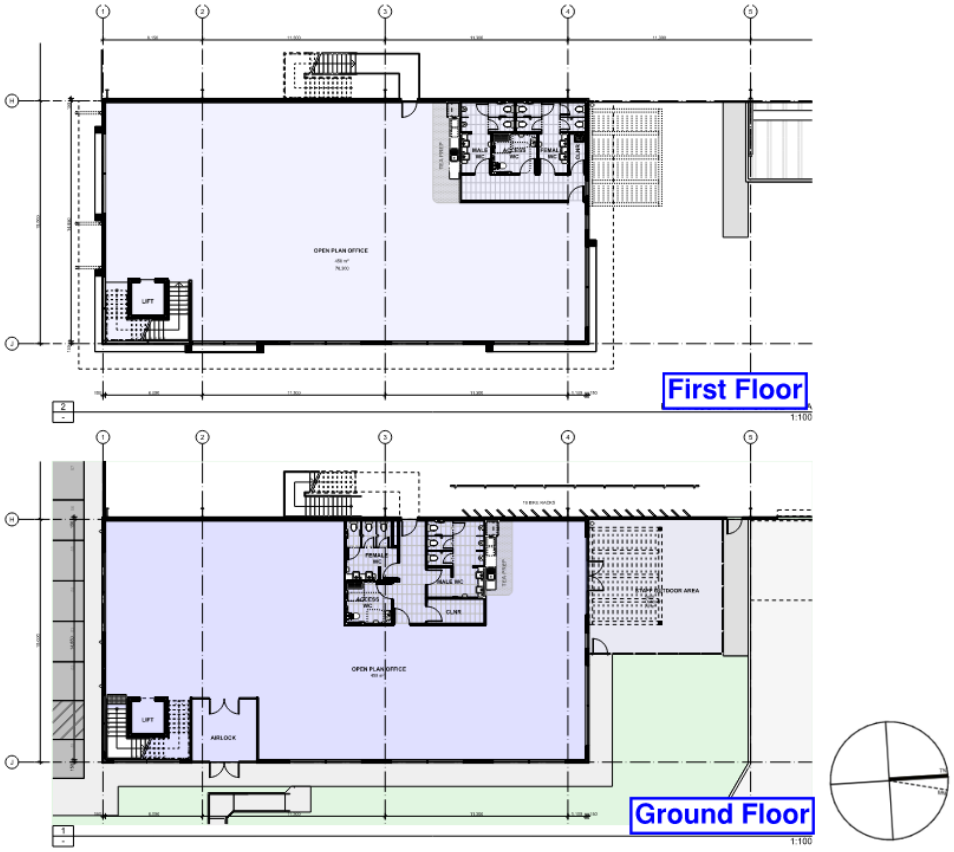

Figure 2-5: WH4A Office Plan – Ground Floor (Botton) & First Floor (Top)

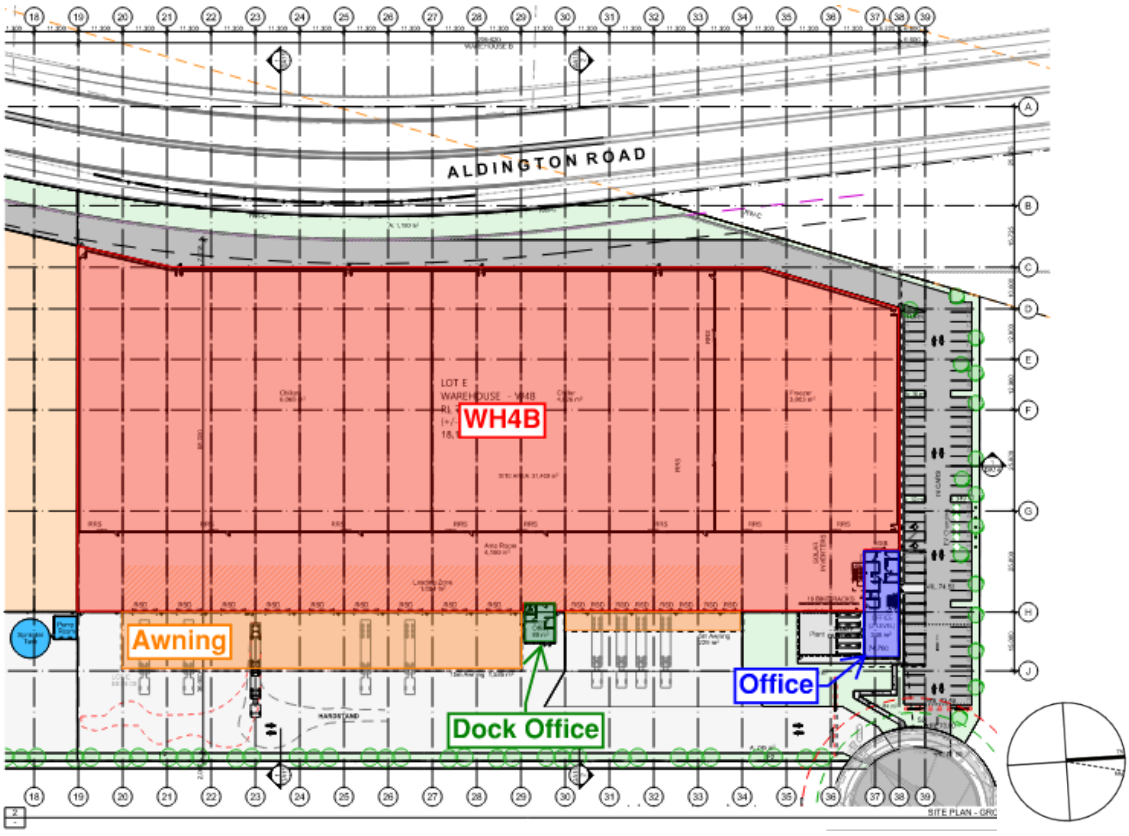

Figure 2-6: Site Context Plan WH4B

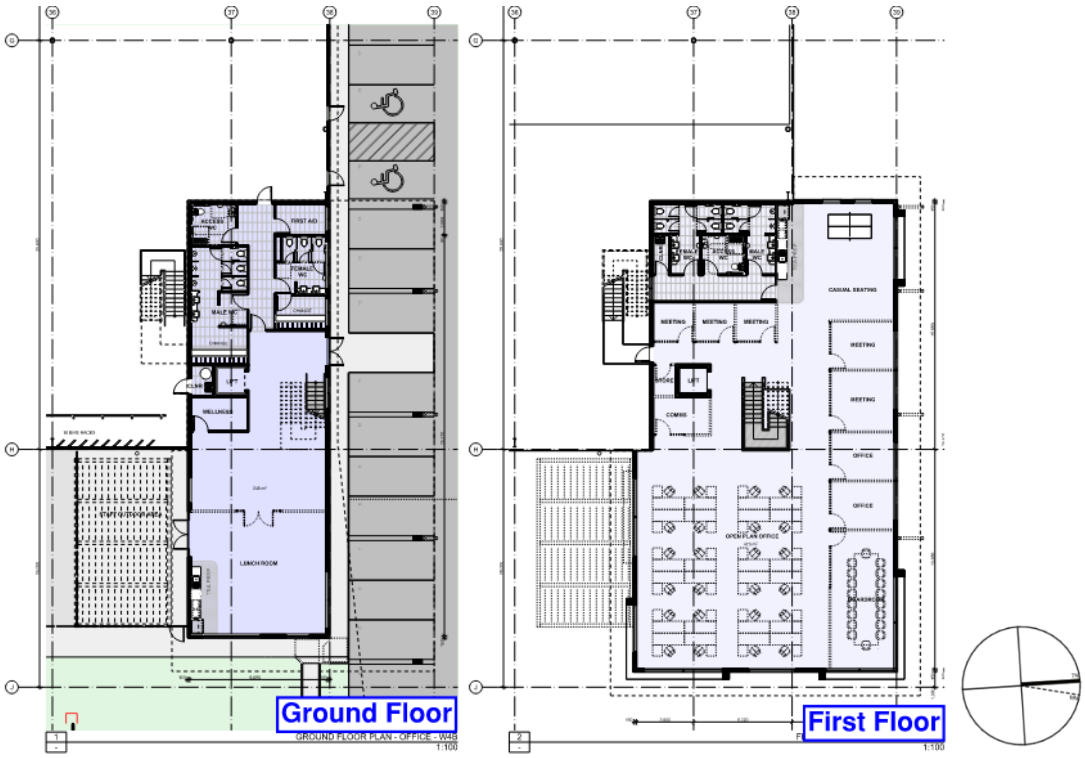

Figure 2-7: WH4B Office Plan – Ground Floor (Left) & First Floor (Right)

2.2.1 Internal Layout of WH4B

The proposed internal layout of WH4B includes a freezer and two chillers for storage purposes. Airlocks are provided to the exits discharging directly to the open-air environment along the western and northern perimeters, as depicted in Figure 2-8. Insulated sandwich panels may be utilised for the construction of the chiller and freezer areas. Additional requirements and fire safety measures are detailed in Section 3.1.4.

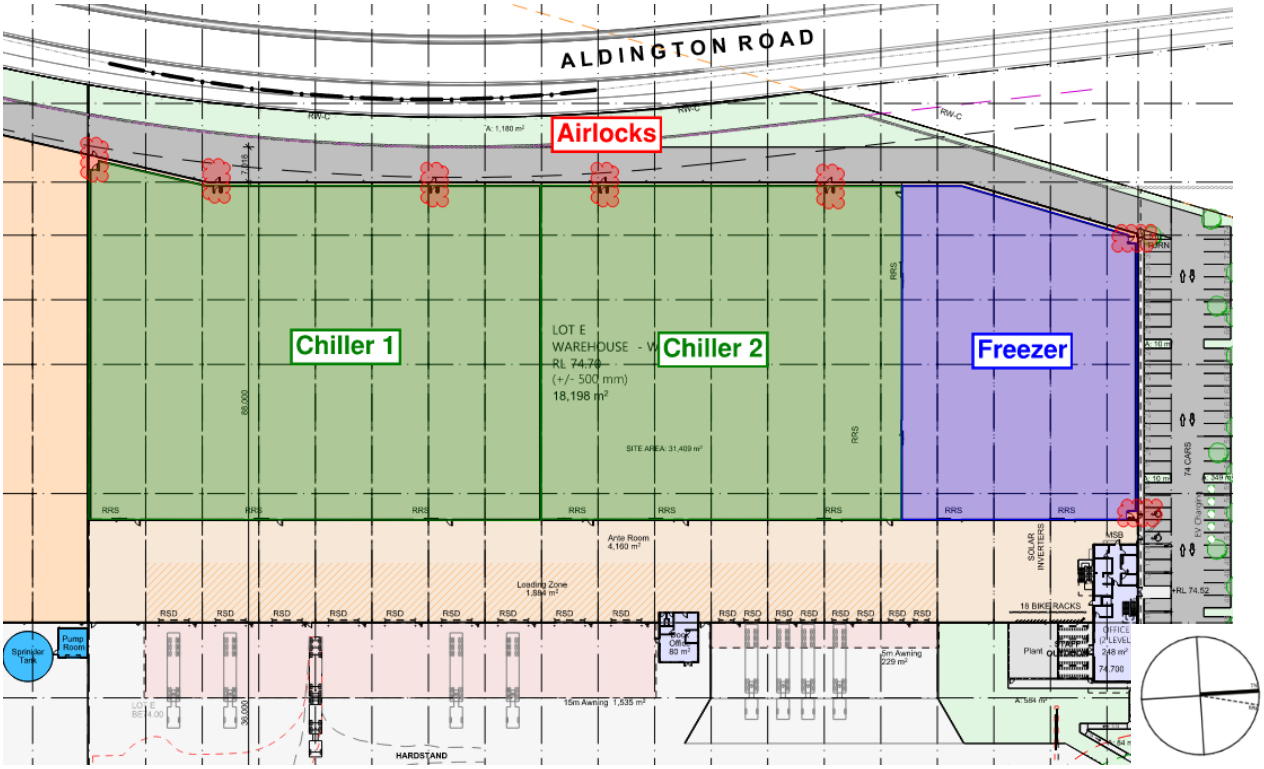

Figure 2-8: Internal Layout of WH4B

2.3 BUILDING BCA CHARACTERISTICS

The following BCA characteristics are assumed for the building.

Table 2-1: Building BCA Characteristics

CHARACTERISTIC	CHARACTERISTIC
Classification*	Class 5 (Office), Class 7b (Storage)
Rise in Storeys	Two (2)
Type of Construction	Type C Required (Large Isolated Building)
Effective height	3.6 m

3. PROPOSED PERFORMANCE SOLUTIONS

The below summarises the proposed fire engineering requirements to satisfy the Performance Requirements of the BCA.

3.1 HAZARDS

3.1.1 Photovoltaic Cells

It is understood that PV cells may be installed on the roof of the proposed warehouse.

The following general design guidance is provided in order to limit any electrical exposure to evacuating occupants or attending firefighters:

- The panels shall be installed in compliance with AS/NZS 5033: Installation and safety requirements for photovoltaic (PV) arrays 2012.
- An A4 notice on fade-resistant material shall be displayed at the relevant FIP notifying attending firefighters as to the existence of the Photovoltaic Solar Panel Array on the roof of the building. The notice shall include the following on a colour-contrasting background:
  - The location of the panels
  - The location of all associated isolation switches, AC and DC isolators for the shut-off of generated electricity
  - A statement advising if the PV array automatically isolates on fire trip.
- Solar panel/inverter isolation switches should be accessible from the Ground Floor.
- It is also recommended that the design team consider implementing non-combustible insulation below the solar panels and locating no panel closer than 1 m from a roof light or the top of a firewall for property protection purposes.

Note: These requirements do not apply for panels that do not connect to the main electrical system of the building, e.g. solar hot water units.

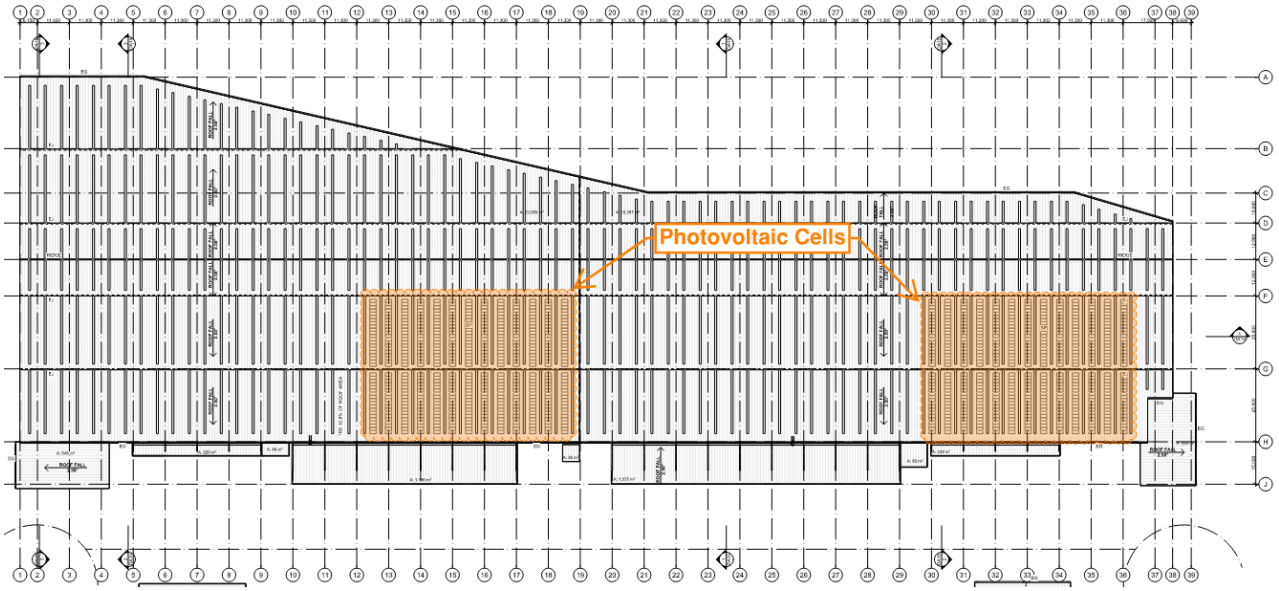

Figure 3-1: Photovoltaic Cells

3.1.2 Substation

Substations are proposed to the site and be located adjacent to the main road with a minimum separation of 10 m from the respective fire service infrastructure. The substations shall be constructed in accordance with the requirements of the relevant supply authority.

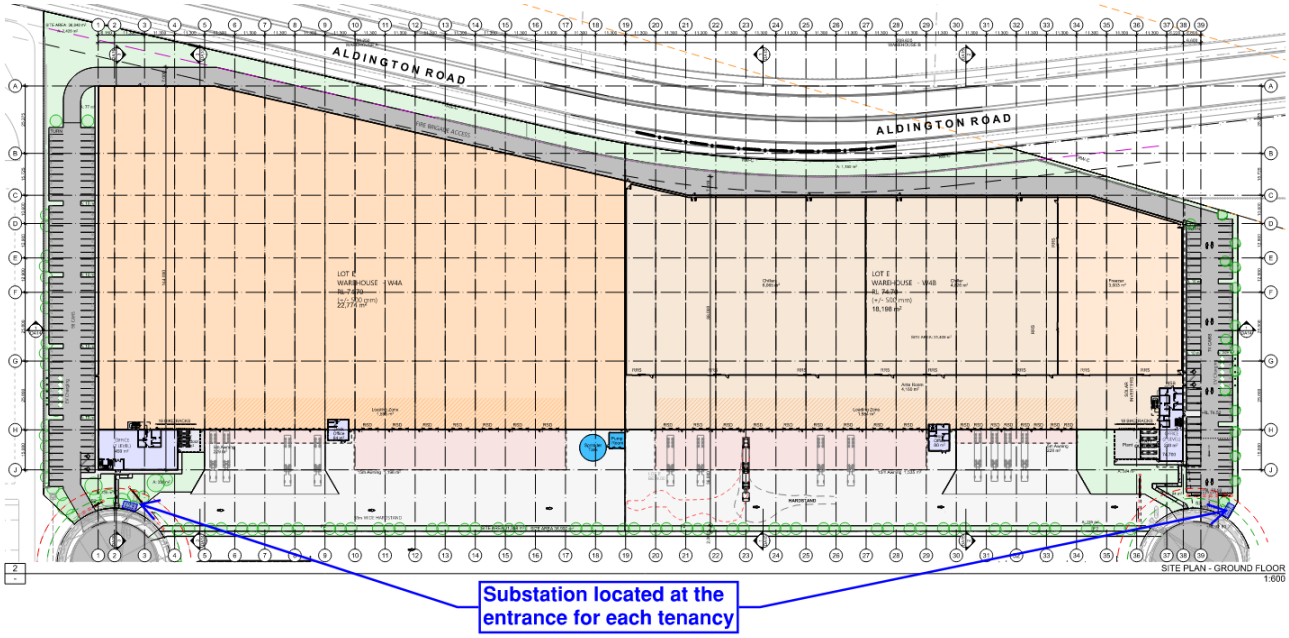

Figure 3-2: Substation location

3.1.3 External EV and Internal MHE Chargers

It is proposed to accommodate a number of charging stations for electric vehicles and manual handling equipment for both warehouse tenancies, which present unique challenges and hazards to firefighters, such as:

- Potential for battery packs to experience thermal runaway due to overcharging or fully discharging.
- Potential for battery packs to burn for prolonged periods.
- Potential for the reignition of extinguished battery packs.
- Production of hazardous gases such as H-F.

Although not a Performance Solution, the following measures are recommended and proposed for consideration by the design team to be adopted in the design to facilitate fire brigade intervention and reduce the impact on building occupants. These measures are provided when considering ABCB's Advisory Note on EV charging and AFAC's Position Statement Document entitled "Electric Vehicles and EV Charging Equipment in the Built Environment":

Note: Although AFAC's Guideline is primarily aimed at electric vehicles (EV's), the presence of Li-ion powered MHE is considered to present comparable risks and is therefore considered relevant in this instance.

Table 3-1: Considerations for AFAC's Publication on EVs and EV Charging Equipment

CONSIDERATION	ASSESSMENT BASED ON PROPOSED DESIGN

Location of the charging stations and the proximity to other vehicles, exits, other fire safety systems, building utilities and critical infrastructure. Note: Open-air or external charging points should always be considered before the installation of internal charging points.	• EV and MHE charging stations shall not be located within 3 m of a fire exit.
	  ◦ 3 m separation is based on experimental testing, which shows jet flames not exceeding 3 m, and based on NFPA 855 (Clause 9.5.2.6.1.7), which recommends a 3 m separation between lithium-ion battery-containing storage systems and egress paths.
	  ◦ All charging stations shall not be located within 10 m of external hydrants.
	  ◦ All charging stations shall not be located within 6 m of internal fire infrastructure.
	• The external EV charging stations shall be located in positions that are open to the air, thereby permitting the free venting of smoke and heat.

Establishing that the appropriate fire resistance (FRL) is applied to building elements.	• The proposed building is a Type C structure, and therefore, building elements generally do not prescriptively require an FRL.
Suitability of fire safety systems and their location in proximity to the risk, including fire hydrants, fire detection systems, occupant warning systems, automatic fire sprinkler systems, and ventilation and smoke hazard management systems.	• MHE charging bays are located within the warehouse enclosures. As such, they shall be protected by the roof sprinkler system, thereby assisting in controlling the development of fire. • Compliant hydrant coverage to AS2419.1:2021 shall be provided to all charging locations. • Hydrants and sprinklers are to be designed for simultaneous operation, noting that these shall be independent systems. • Rationalised smoke exhaust system throughout both warehouse tenancies. • The building occupant warning system shall be activated by the activation of the smoke detectors and sprinkler system throughout the building. • Warehouse space has a large smoke reservoir to alleviate the potential for a build-up of gas discharge. ◦ Given that the heat release rate and quantity of gas emissions between a BEV and ICEV have been found not to differ significantly, barring HF, no specific

CONSIDERATION	ASSESSMENT BASED ON PROPOSED DESIGN
	treatment of the ventilation system is proposed. • Carpark is on-grade and such that the heat and smoke are anticipated to vent to the atmosphere.
The adequacy of vehicle separation to prevent fire spread with respect to directional flame jetting in EV fires. This includes special considerations for vehicle access in stacked parking arrangements or automatic vehicle parking systems.	• Internal MHE charging shall achieve minimum 3 m separation to storage racking. • There are no stacked parking or automatic vehicle parking systems for the proposed facility.
Intervention capabilities of the local fire authority	• All EV and MHE charging stations shall have compliant hydrant coverage. • The hydrant system is designed for at least 3x hydrants operating simultaneously, which shall be served by the town main (inexhaustible supply). • A block plan shall be provided at the FCC that nominates the location where these charging facilities are installed.
Potential for contaminated fire-water run-off	• All of the water will be deposited within the building due to an MHE fire. • EV chargers are located externally in accordance with FRNSW recommendation and fighting water will be deposit to the surrounding carpark and road way. • Notwithstanding, research from RISE has shown that the toxicity of fire water from a BEV is not worse than that from an ICEV.
Provision of remote emergency shutdown controls and/or automatic shutdown for EV charging stations.	• All internal MHE chargers are to automatically shut down on fire trip. • All external EV chargers located within 6 m of the building shall automatically shut down on fire trip. • All EV and MHE chargers are to be provided with an emergency stop button on the charger that is clearly signed.
Vehicle impact protection (e.g. bollards) for EV charging stations.	• Vehicle impact protection shall be provided to the charging stations.
Application of any best practice standards for EV charging equipment.	• All measures relevant to the subject building recommended under the ABCB's Advisory Notice 'Electric Vehicles in Buildings' are to be implemented.
Implementation of a regular maintenance schedule for EV charging equipment.	• Maintenance is to be in accordance with the manufacturer's schedule and specifications.

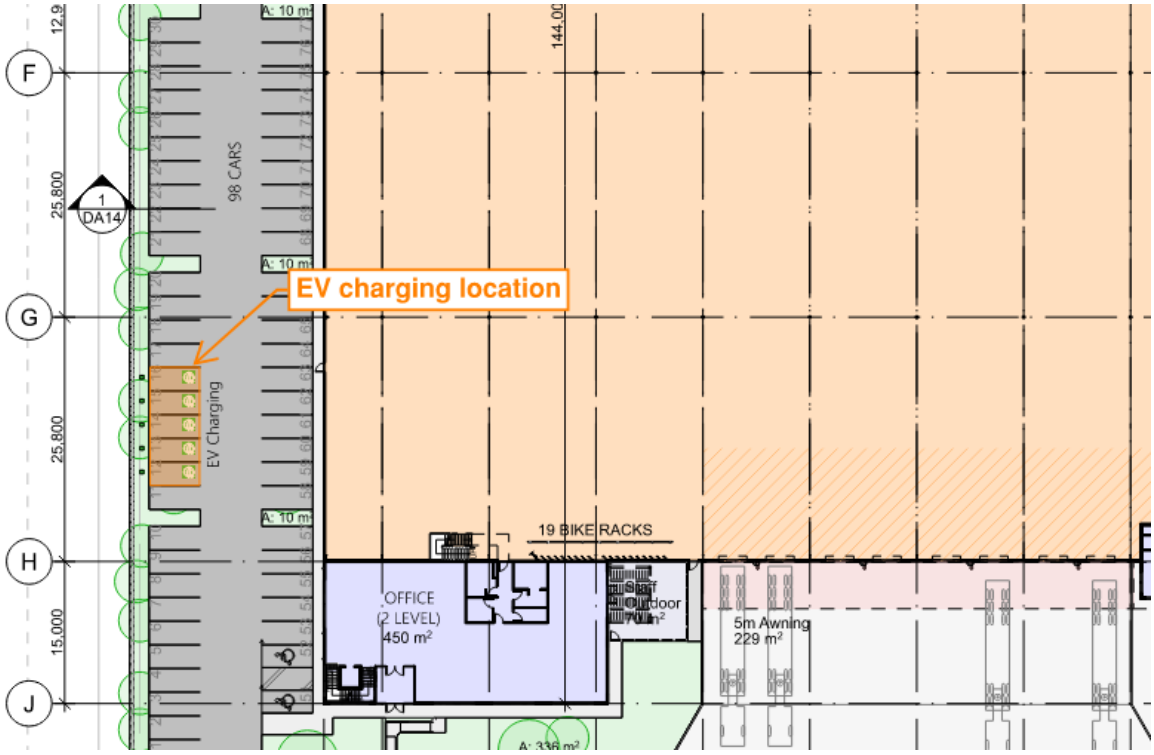

Figure 3-3: Proposed EV Charging Location – WH4A

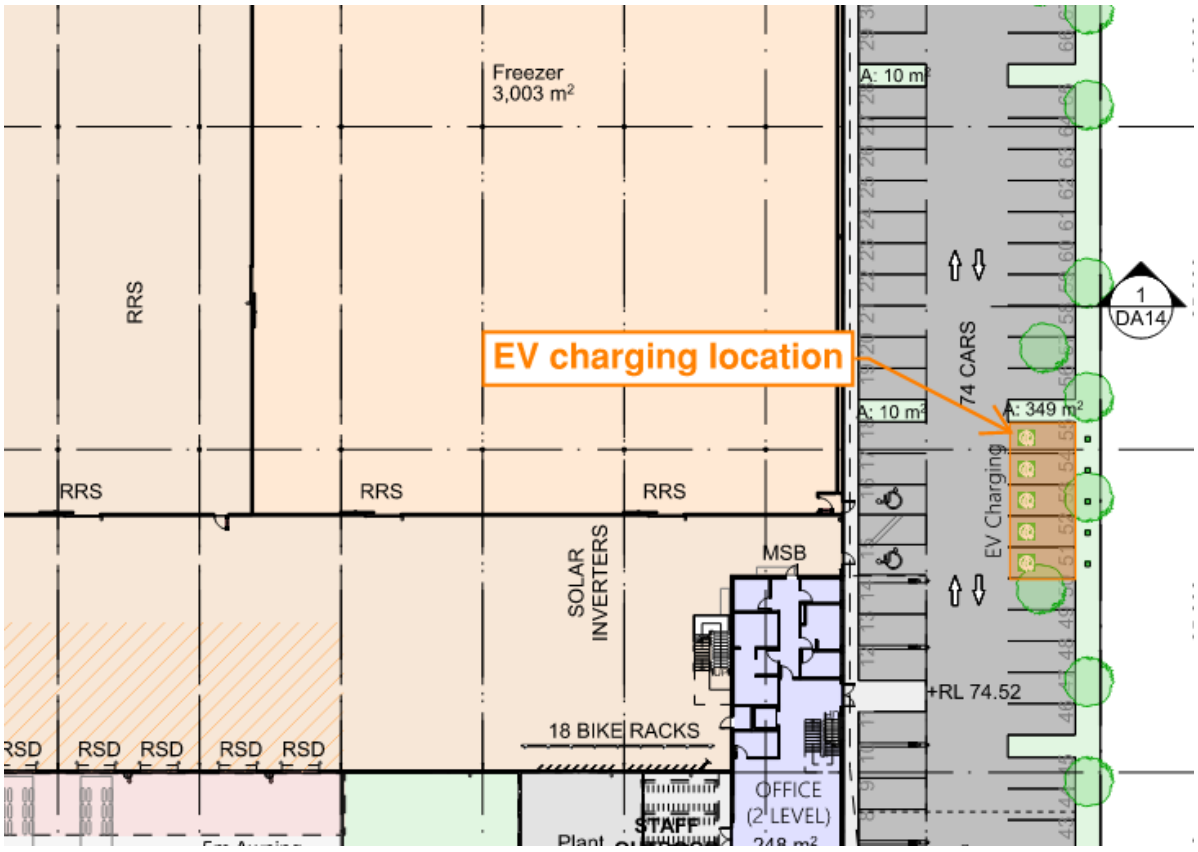

Figure 3-4: Proposed EV Charging Location WH4B

The following measures from ABCB's Advisory Note (Figure 3-5) are considered relevant and applicable to the subject building.

Figure 3-5: Considerations for ABCB's Advisory Note

3.1.4 Insulated Sandwich Panels

Insulated Sandwich Panel (ISP) may be used for the coolrooms within WH4B. Insulated Sandwich Panels used within the building shall have a core which complies with one of the following, except that EPS or EPS-FR shall not be used:

- Non-combustible; or
- Achieves a Group 1 rating to AS/ISO 9705; or
- Achieves a Group 2 rating to AS/ISO9705 and also achieves Class 1 to FM4880.

The ISPs are to be listed on the Fire Safety Schedule for the building. The installation of the panels shall adhere to the IPCA Code of Practice, insofar as:

- Installed by and certified by an IPCA-approved installer.
- A key diagram is located at the FIP showing the location and type of all ISPs in the building (refer to Annex B of CoP).
- Labelling is to be provided at doorways into each enclosure (refer to Annex B of CoP).

3.2 FIRE RESISTING CONSTRUCTION

3.2.1 Type C Construction Required

The proposed building shall be constructed in accordance with the BCA DtS provisions for Type C fire-resisting construction as large-isolated buildings. It is proposed to be constructed as steel portal frame structures with dado panel walls and metal sheet roofs within internal steel columns.

3.2.2 Vehicular Perimeter Access

The vehicular perimeter access pathway should be provided around the whole of the building. These should be designed and constructed with an all-weather surface capable of supporting all FRNSW appliances in accordance with NCC Provision C3D4 and the FRNSW Fire Safety Guideline ‘Access for fire brigade vehicles and firefighters’, available at http://www.fire.nsw.gov.au, with the below exceptions proposed to be addressed under a Performance Solution:

- Sections of the vehicular perimeter access are greater than 18 m from the building on the eastern hardstand and perimeter, as depicted in Figure 3-6.

To facilitate the perimeter access non-conformances, the following measures will be required as part of the Performance Solution:

- All gates, security fencing, and boom gates should be readily openable by the fire authorities. This can be achieved through one or a combination of the following –
  - Fitted with locks that are openable with a 003 key; and/or
  - Fitted with locks/latches that are openable with a master key, swipe, or badge, with copies of these keys/swipes/badges provided to the two local fire brigade stations; and/or
  - Mechanical gates and boom gates should open on fire trip and power failures.
- The perimeter vehicular access path of the site provides vehicles with a continuous forward motion around the building.
- The encircling perimeter access path (Figure 3-6) for the building shall have sufficient width, swept paths and loadbearing capacity to support the specialist brigade appliances to appropriately stage, as per FRNSW’s Guideline Clause 7 “Vehicle access requirements” and 9 “Weight and loads”.
- Areas where the pathway extends more than 18 m from the building are generally located along the recessed docks and main road, where visibility to the building remains largely unobstructed except for minimal landscaping elements
- Brigade appliances are provided with a dedicated bay to connect to the available sprinkler tank suction connection and otherwise set up their appliances such that the circulation of other emergency vehicles is not hindered by the connected appliance. Line marking area shall be provided for the designated space to ensure that it is not otherwise occupied.
- The gradient of the docks, being suitable for large rigid vehicles, is expected to be trafficable for fire brigade circulation. Hence, the brigade appliances can drive along the recessed dock within 18 m of the building, if necessary.

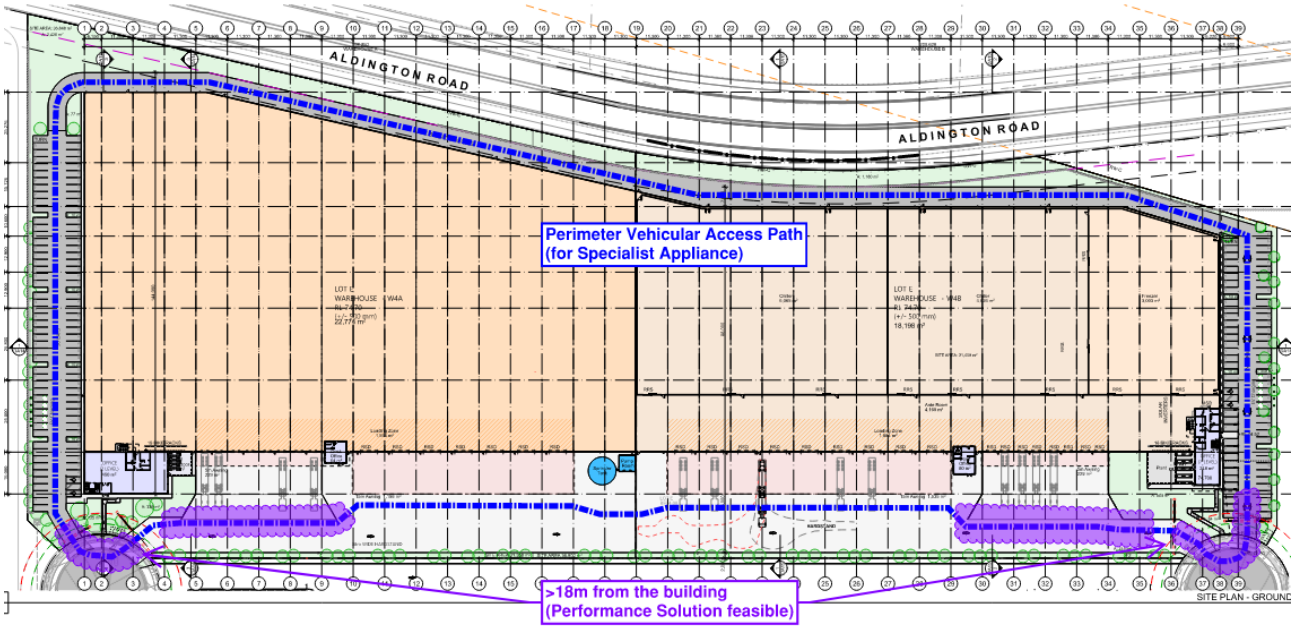

Figure 3-6: Vehicular Perimeter Access Path

3.3 EGRESS

Activation of any sprinkler heads or detectors should initiate the evacuation of all areas of the building. Dedicated fire wardens from the warehouse and office areas should ensure that all clients, visitors, and staff are promptly evacuated.

3.3.1 Travel Distance – Warehouse

Travel paths within WH4A and WH4B are to conform to the NCC DtS requirements with the following exceptions, as depicted in Figure 3-7 and Figure 3-8:

- **WH4A**: Travel distances shall be no greater than 85 m and 165 m between alternative exits in lieu of 40 m and 60 m, respectively.
  - As the exit doors in WH4A are not located beneath the awning, the extended travel distances are considered internal, with no travel beneath the awning included.
- **WH4B**: Travel distances shall be no greater than 75 m to the nearest exit and 150 m between alternative exits, inclusive of travel beneath the awning in lieu of 40 m and 60 m, respectively.

Note that travel beneath the awning is considered to afford unlimited tenability due to the awning being on three sides and providing a minimum height of 7 m. The above non-conformances shall be addressed through a Performance Solution.

Additional exits, as depicted in Figure 3-7 and Figure 3-8 below, will be required to accommodate the travel distances noted above.

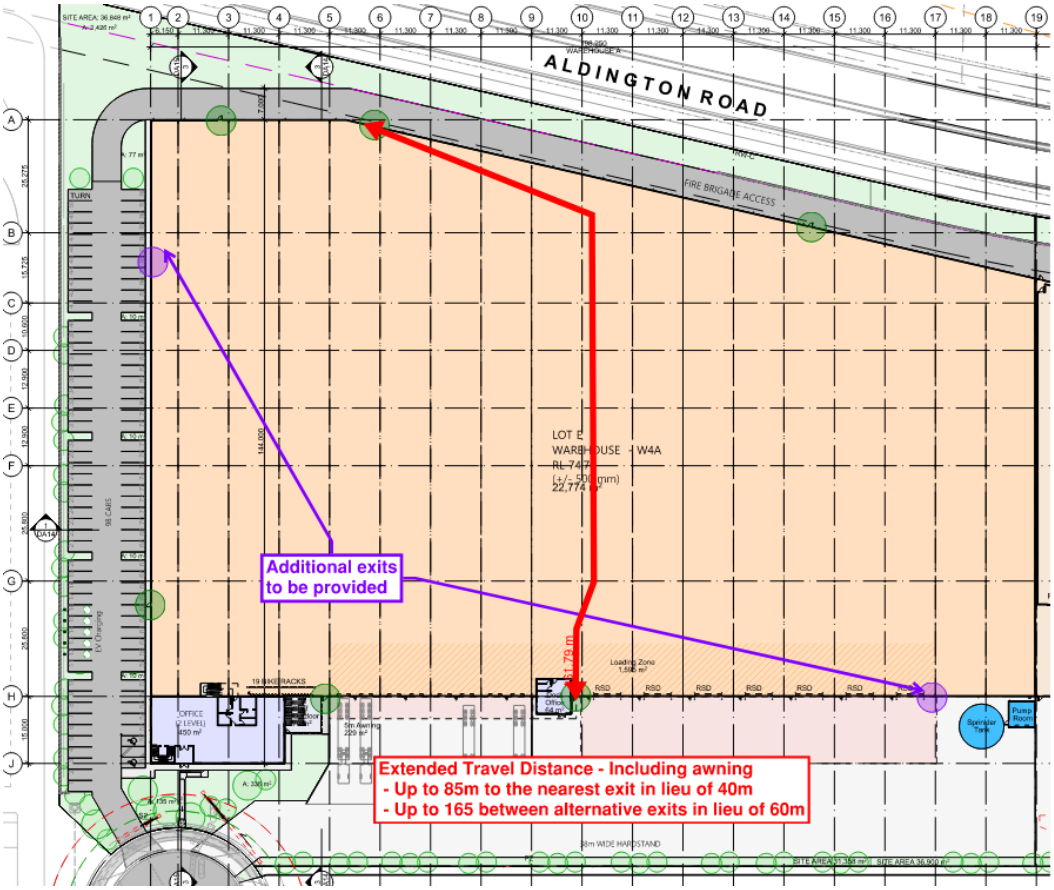

Figure 3-7: DtS non-compliant travel distances within WH4A – Additional exit required in purple

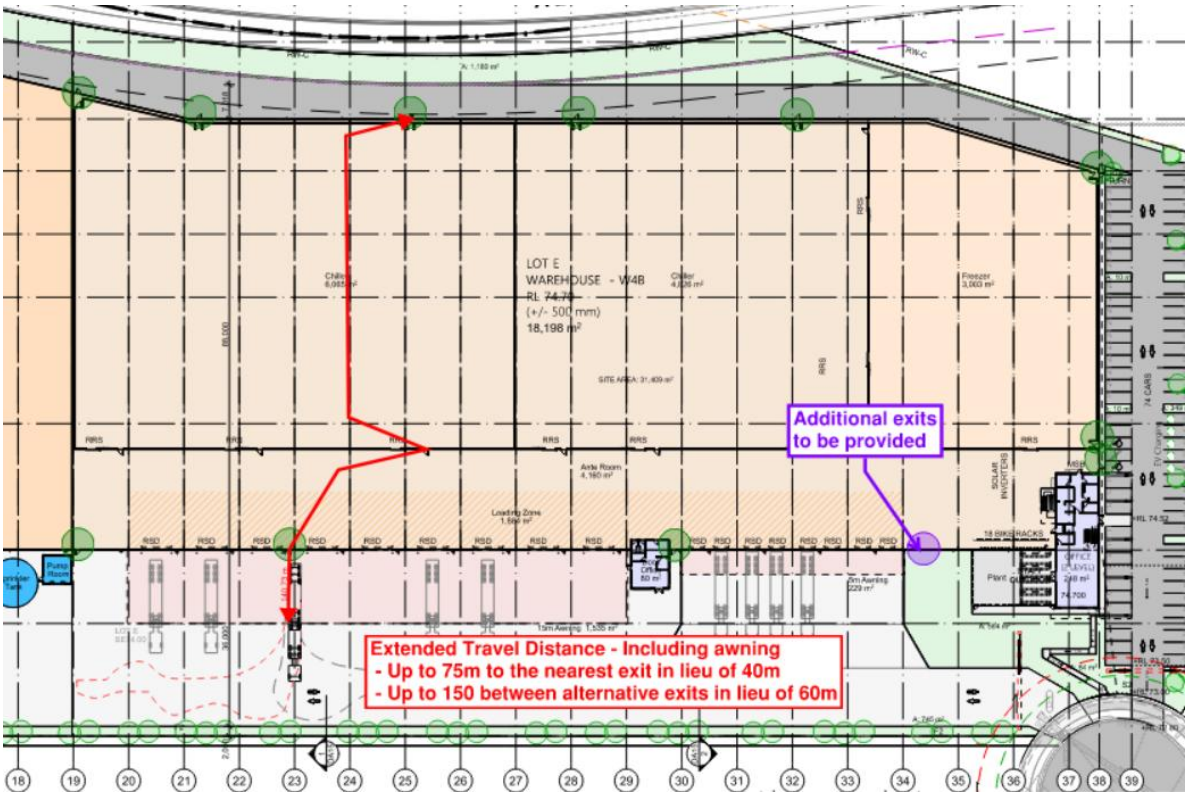

Figure 3-8: DtS non-compliant travel distances within WH4B – Additional exit required in purple

A Performance Solution is considered feasible to address these DtS non-conformances, reliant on:

- Large enclosure volumes of the warehouse tenancy to provide a smoke reservoir.
- CFD modelling of the enclosure to determine available safe egress time.
- Building occupant warning system shall be initiated on activation of the sprinkler system.
- A rationalised smoke exhaust system shall be provided for the warehouse, achieving a minimum exhaust rate of 1 enclosure air change per hour.
- For WH4B, a roof level detection system may be required. Pending detail analysis.

Further review may be undertaken following the detailed design and incorporation of any proposed fitouts.

3.3.2 Travel Distance – Office

In the office 5B, the distance of point of choice must be no more than 20 m and must be compliant with the NCC DtS requirements with the following exceptions identified and depicted in Figure 3-9.

- Up to 25 m to a point of choice in lieu of 20 m.

It should be noted that 30 m is the maximum distance that can be supported with a Performance Solution.

A Performance Solution is considered feasible to address this DtS department, relying on:

- Smoke detection throughout the main office shall be provided in accordance with Section 5 of AS1670.1:2018.
- Occupant warning system shall initiate on activation of the detection system.

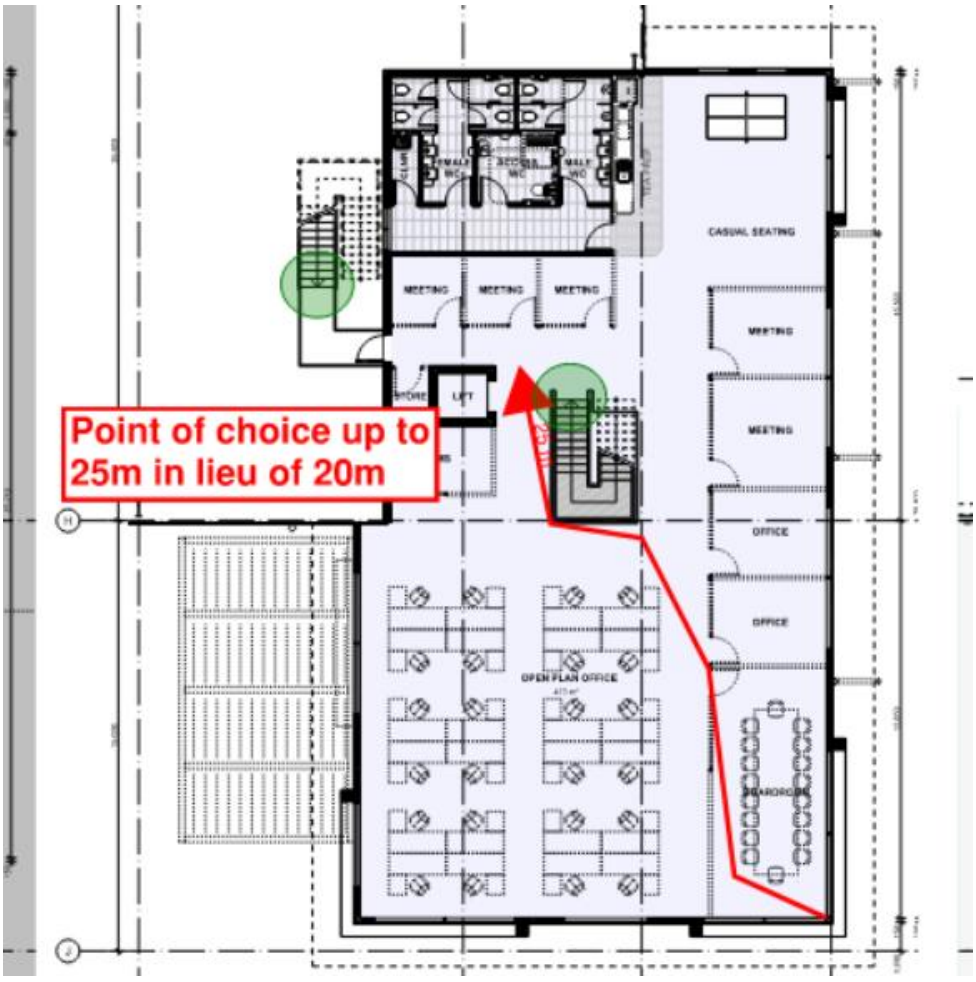

Figure 3-9: DtS non-compliant travel distances within the WH5B office

3.4 FIREFIGHTING EQUIPMENT

Figure 3-10 illustrates the site plan with fire services provided to the site. These include the main fire indicator panel (FIP) located within the fire control centre within WH4A office, Sub-FIP within WH5B office, fire hydrant boosters, sprinkler booster, sprinkler tank, pump room, and perimeter vehicular access path. It should be noted that hydrant booster location is yet to be shown on the architectural drawings and therefore is to be confirmed.

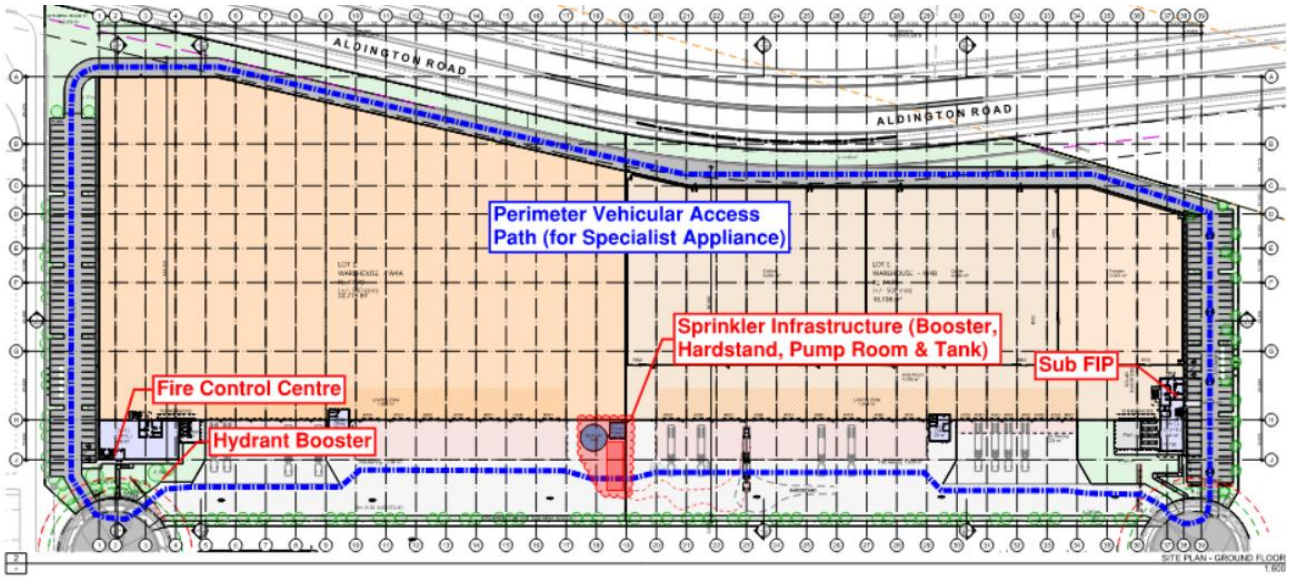

Figure 3-10: Fire Brigade Access and Site Facilities

3.4.1 Fire Hydrants

A dedicated hydrant system with an independent booster assembly must be provided in accordance with NCC Provision E1D2 and AS2419.1:2021. As the building exceed 108,000 m^2, it is not prescriptively within the scope of AS2419.1:2021.

A Performance Solution is considered feasible for the design of the hydrant system, reliant on the following:

- As far as possible, the hydrant system should consist of external hydrant points. Where the size and design of a building require the provision of internal fire hydrants to achieve floor coverage in accordance with the requirements of AS2419.1. Such hydrants should be located to allow progressive movement of firefighters towards the central parts of the building.
    - When working from an external hydrant, the next additional hydrant should be located in the building not more than 50 m from the external hydrant per the request of FRNSW.
    - When working from an internal hydrant (either from within a fire isolated exit or passageway, within 4 m of an exit or another additional hydrant), the next additional hydrant should be located not more than 25 m from that hydrant per the request of FRNSW.
    - 25 m and 50 m distances have been recommended to make allowance for shorter-than-standard hoses (repairs etc.) and unknown variables in the building layout and fixtures etc.
- An external hydrant should be provided adjacent to or within close proximity of each external entry/exit point around the building as required for coverage.
- External hydrants must have a travel path to the road, hardstand, or carriageway of less than 50 m.
- Hydrants located beneath the warehouse awnings, although considered internal hydrants in accordance with AS2419.1:2021, shall be designed and treated as external hydrants for coverage of the internal warehouse parts.
    - The coverage of the area below the awnings must be provided by additional fallback hydrants located outside of the awnings, as depicted in Figure 3-11.

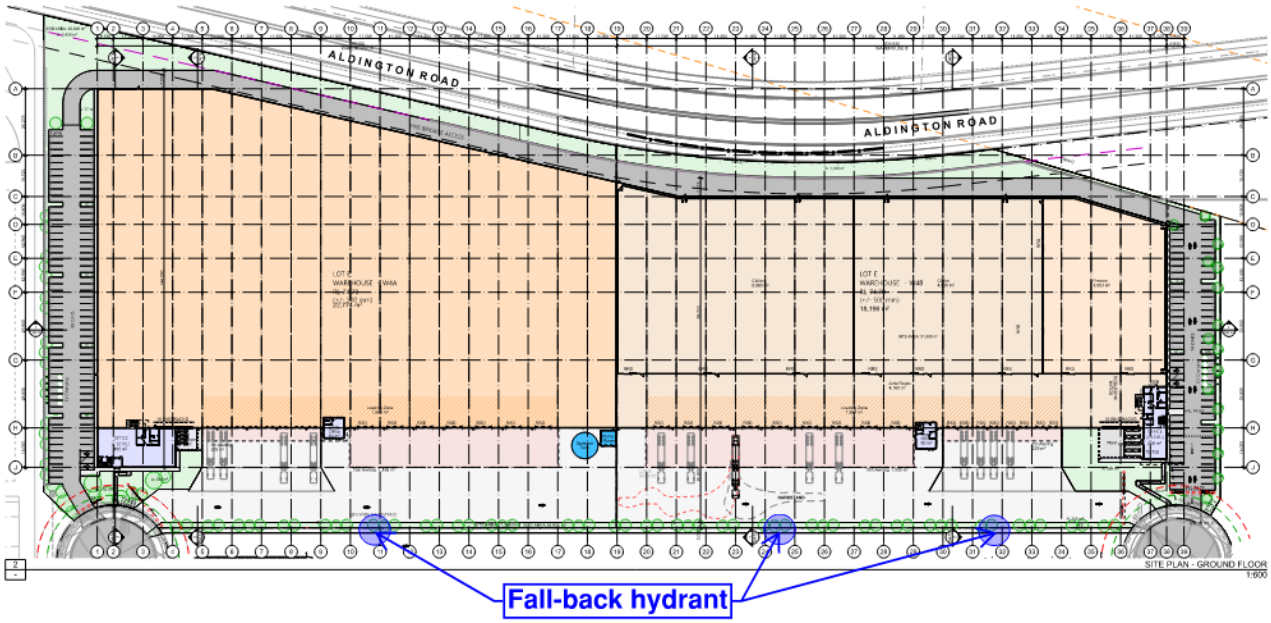

Figure 3-11: Fallback hydrants Location (Indicative)

- The system should incorporate a ring main with isolation valves that are external to the building and numbered with the corresponding numbers indicated on the block plan at the booster assembly.
- All hose connections in the system are to be fitted in accordance with FRNSW Technical information sheet – FRNSW compatible hose connections (available at firesafety.fire.nsw.gov.au). These couplings should be tested as part of the system when the commissioning tests are undertaken.
    - Hydrant booster shall be provided with a compliant staging area in accordance with Section 7 of AS2419.1:2021.
- The design capacity of the system shall be capable of allowing 3 hydrants to operate simultaneously (i.e. 30 L/s) as per Appendix C of AS2419.1:2021.
- Hydrant booster assembly is proposed to be located at the south-eastern corner of the site which is adjacent to the site entrance and shall be at least 10 m away from substations and other electrical hazards. Final location to be confirmed through detailed design.
- The booster and the associated hardstand must not obstruct the perimeter access path. The potential location of the hydrant booster is shown in Figure 3-12.

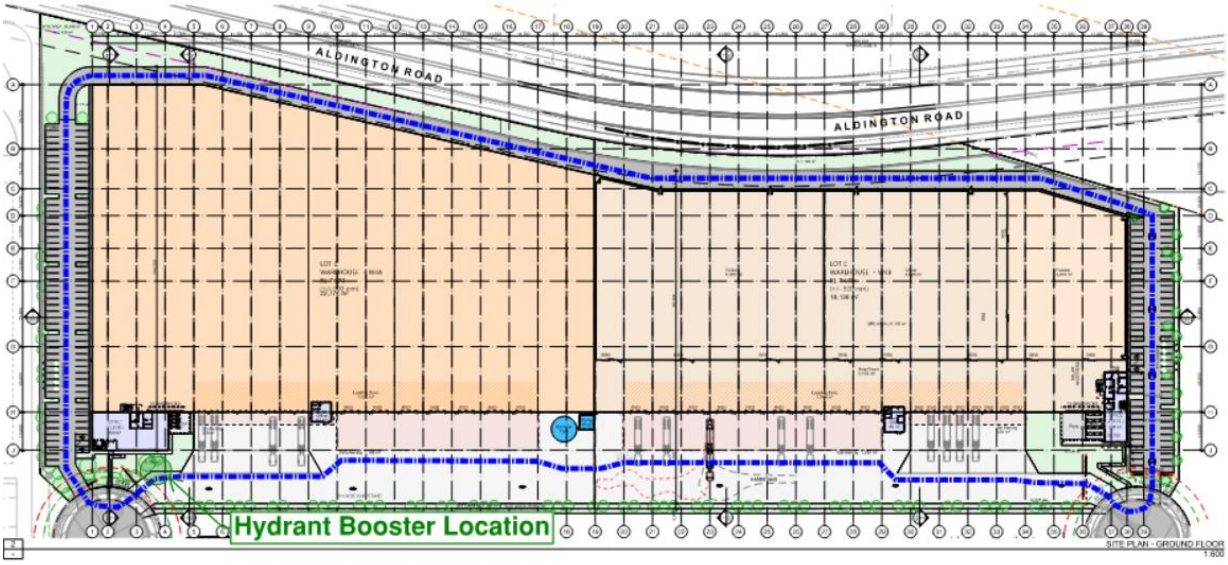

Figure 3-12: Hydrant booster location

- All elements related large isolated building required under Appendix C of AS2419.1:2021 shall be considered and implemented in the hydrant design. This shall include full-duty pump/s.
- All external walls located within the vicinity of the hydrant infrastructure shall be designed to fail inwards.

3.4.2 Fire Hose Reels

Fire hose reel shall be provided throughout the building in accordance with Provision E1D3 of the NCC and AS2441:2005 with the following exception:

- 50 m long fire hose reels are proposed to be used around the building perimeter, or where serving the coolrooms and located outside of the coolroom they serve. Any additional on-floor FHRs shall be standard coverage.

A Performance Solution may be feasible to address the DtS departure, reliant on:

- Only the FHRs located around the perimeter of the building or those serving the coolrooms shall be 50 m. Where additional floor FHRs are required for coverage, they shall be standard 36 m lengths.
- 50 m fire hose reels must be tested and certified according to AS2441:2005 and Provision E1D3 of the NCC.
- The pressure and flow at the nozzle of the 50 m hose reel are to be achieved based on the requirement of AS2441:2005.
- Coverage using 50 m hose reels is to be achieved with no more than two bends in the hose.
- Staff training in the use of the 50 m length fire hose reels is to occur at least every 12 months to maintain occupant familiarity with the increased weight and length of the extended hose reels.

3.4.3 Fire Sprinkler System

A fire sprinkler system shall be provided throughout the building in accordance with the DtS Provisions and AS2118.1:2017.

- In the office and beneath warehouse awnings, the system shall comply with NCC Specification 17 and AS2118.1:2017.
- Sprinkler activation temperature must be no greater than 101°C and have a Response Time Index (RTI) of less than 50 $m^{1/2}s^{1/2}$ (i.e. fast response type) where located below the warehouse roof.
    - Sprinklers within freezers shall be dry dropper type and have an activated temperature not exceeding 68°C.
- A line-marked area next to the sprinkler booster shall be provided for fire brigade appliance parking.
- All external walls in the vicinity of the sprinkler infrastructure shall be designed to fail inwards.
- The site should have an independent system with a dedicated fire pump, water supply tanks and booster assembly.
- Upon sprinkler activation, the building occupant warning alarm shall be initiated throughout the building and the direct brigade notification activated.

The location of the sprinkler booster assembly has been identified as a DtS departure. However, a Performance Solution is feasible to support the location of the sprinkler booster, reliant on:

- The fire sprinkler booster and the dedicated hardstand for fire brigade appliances are being located as depicted in Figure 3-13. As per FRNSW's Guideline for fire brigade vehicles, the hardstand should be designed to be 18 m long by 6 m wide, whilst allowing other fire brigade appliances to pass. The hardstand area serving a suction-connection outlet is to be positioned at an angle not greater than 45° from the outlet's longitudinal direction.
- The location of the sprinkler booster assembly shall be shown on a block plan located at the FIPs and at the hydrant booster assembly.

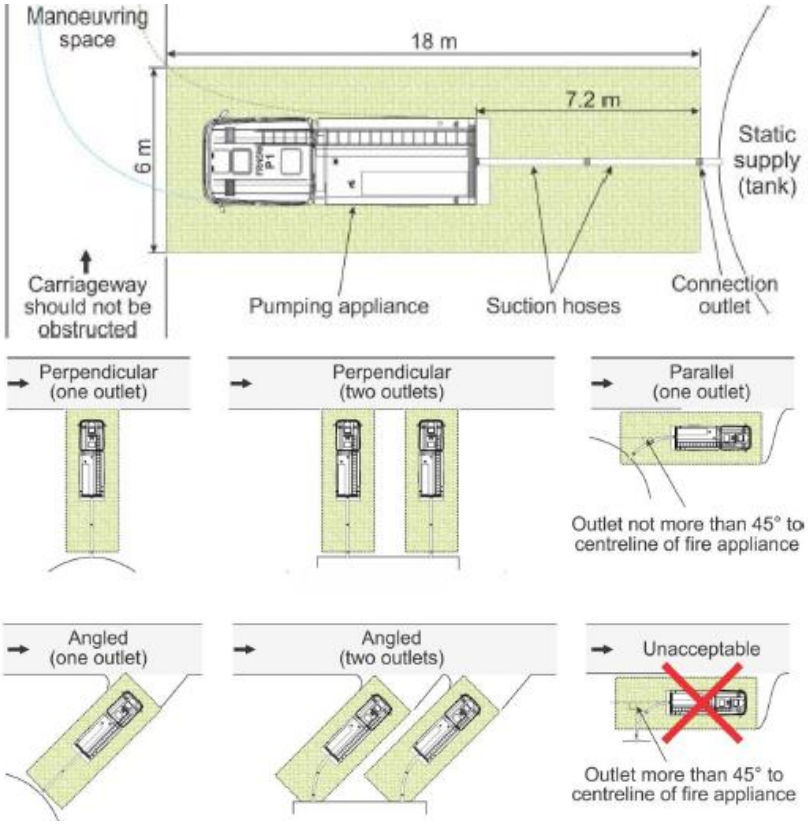

Figure 3-13: Extract from FRNSW Guideline – Rigid Suction Connection Hardstand

3.4.4 Portable Fire Extinguishers

Portable fire extinguishers are to be provided throughout the building in accordance with DtS Provision E1D14 of the BCA and selected, located, and distributed in accordance with AS2444:2001.

3.4.5 Control and Indicating Equipment

Each warehouse tenancy shall be provided with a Fire Indicator Panel (FIP) at the main entry of the office.

The FIPs must be installed in accordance with NCC Specification 19, Specification 20 and AS1670.1:2018 and have the following capabilities to further facilitate brigade intervention:

- The FIPs must be capable of isolating, resetting, and determining the fire location within the building.
- Smoke exhaust fan controls shall be provided at the FIPs. If a separate fire fan control panel is provided, it shall include a display to indicate the operation or otherwise of the fans.
    - The panel shall include clear signalling of the operational status of the fans. A local fire fan control panel shall include override controls of smoke exhaust and supply fans.

3.5 SMOKE HAZARD MANAGEMENT

3.5.1 Smoke Detection System

A smoke detection system for occupant warning is unlikely to be required due to its large volume. Although not anticipated to be required at this stage, given the presence of temperature-controlled rooms proposed within WH4B, the design should make allowance for a multi-point aspirating smoke detection system located at the ceiling level of each room.

As a result of the extended travel distance within the office serving WH5B, a smoke detection system shall be provided in accordance with Section 5 of AS1670.1:2018.

3.5.2 Smoke Hazard Management System

An automatic smoke exhaust system shall be provided to each warehouse area within the building, complying with Specification 21 and AS1668.1:2015, with the following requirements:

- System capacity must be capable of an exhaust rate of at least one enclosure air change per hour.
- Any mechanical boards or switching boards serving the mechanical exhaust system are to be protected by construction achieving an FRL of 120/120/120 if within the building.
- Adequate make-up air should be provided at a low level to facilitate the exhaust system's designed operational capacity. The make-up air should be provided at a low level by:
  - Permanently open natural ventilation louvers; and/or
  - Perforated roller shutters; and/or
  - Mechanically operated louvres or roller shutters that open upon activation of the fans.

Note: smoke exhaust is not required to the offices or other ancillary areas.

Specifically for WH4B, smoke exhaust fans shall be provided within the chiller and freezer enclosures to satisfy the performance requirements above. The ante room has an approximate floor area of 4,000 m² and includes extended travel distances. Therefore, the requirement for a smoke exhaust system shall be confirmed through detailed analysis. Due to the temperature control, it is proposed that makeup air be provided either:

- From the eastern elevation only through a combination of roller doors/rapid roller doors which open on fire trip; and/or
- Mechanical supply air which is evenly distributed around the perimeter of the enclosures

3.5.3 Building Occupant Warning System

A building occupant warning system shall be provided throughout all parts of the building. The system should be in accordance with the prescriptive requirements of Specification 17 and Clause 7 of Specification 20 of the NCC 2022 and AS1670.1:2018.

- The occupant warning alarm shall be sounded throughout all areas of the building upon activation of the smoke detection or sprinkler systems.

3.6 VISIBILITY IN AN EMERGENCY

Emergency lighting is to be provided throughout the building in accordance with DtS Provisions E4D2 and E4D4 of the NCC 2022 and AS2293.1:2018.

Exit signage is to be provided throughout the building in accordance with the DtS Provisions E4D5, E4D6, E4D8 of the NCC 2022 and AS2293.1:2018.

3.7 BUILDING MANAGEMENT PROCEDURES

The ongoing management of the building is as important in maintaining a high level of life safety as the Provisions recommended during the design phase of the building.

3.7.1 Maintenance of Fire Safety Equipment

The fire safety systems should be tested and maintained in accordance with Australia Standard AS1851 or other relevant testing regulatory.

3.7.2 Evacuation Plan

An emergency management plan should be developed for the site in accordance with AS3745:2010.

4. PROPOSED PERFORMANCE SOLUTIONS

4.1 SUMMARY

DtS non-conformances have been identified by the BCA Consultant as a result of these works which are summarised in Table 4-1.

Table 4-1: Summary of proposed Performance Solutions

#	DTS PROVISION	TITLE	NON-COMPLIANCE(S)	PROPOSED PERFORMANCE SOLUTION
1	C3D5	Perimeter Vehicular Access	• Vehicular access along the eastern hardstand and perimeter is greater than 18 m from the building.	• Staging opportunities are available along the vehicular access path and upon the western hardstand. • Sprinkler protection is provided throughout the subject building.
2	D2D5	Extended Travel Distance (Office serving WH5B)	• Up to 25 m to a point of choice in lieu of 20 m.	• Sprinkler protection is provided throughout the office in accordance with AS2118.1:2017. • Smoke detection is provided throughout the office in accordance with AS1670.1:2018. • Occupant warning system shall initiate on activation of the detection system.

3	D2D5
	D2D6
	E2D10
		Extended Travel Distances & Rationalised Smoke Exhaust (Warehouse area)	• WH4A:
			  • Up to 85 m to the nearest exit in lieu of 40 m.
			  • 165 m between alternative exits in lieu of 60 m.
			• WH4B:
			  • Up to 75 m to the nearest exit in lieu of 40 m.
			  • 150 m between alternative exits in lieu of 60 m.
			• Rationalisation of automatic smoke exhaust system for the building.
			  • Omission of exhaust from other ancillary areas such as offices and awnings
				• Sprinkler protection shall be installed throughout the building in accordance with AS2118.1:2017.
				• Automatic smoke exhaust within warehouse areas to activate on sprinkler activation and achieve minimum 1 ac/h capacity.
				  • Exhaust fan locations to be determined through detailed design.
				• Awnings serve as temporary safe refuge for occupant evacuation.
				• Large volume creating large smoke reservoir.
				• MASD within coolrooms and freezer rooms – Pending detail analysis

#	DTS PROVISION	TITLE	NON-COMPLIANCE(S)	PROPOSED PERFORMANCE SOLUTION
4	E1D2	Fire Hydrant System Design	• AS2419.1:2021 used despite the building exceeding 108,000 m^3. • External hydrants under awnings • Additional internal hydrants • Block plan size • Hydrant Booster Location	• Hydrants located beneath the awnings shall be designed to AS2419.1:2021 and be treated as external hydrants with fall back hydrants. • Sprinkler protection is provided throughout the building including beneath the awnings. • Coverage via internal hydrants shall be afforded in accordance with FRNSW's 50-25 rule. • Additional measures for Large Isolated Buildings as per Appendix C of AS2419.1:2021 shall be provided.
5	E1D3	50 m Fire Hose Reel	• 50 m fire hose reels are provided to the perimeter of the warehouse and serving the coolrooms, exceeding the maximum length of 36 m for coverage.	• Sprinkler protection is provided throughout the building in accordance with AS2118.1:2017. • Occupants are to be trained in the use of 50 m fire hose reels. • Fire hose reel coverage from the 50 m fire hose reels shall be designed for no more than 2 bends. • 50 m fire hose reels shall be provided with suitable pressure and flow in accordance with AS2441:2005
6	E1D4	Location of Sprinkler Booster	• The location of the sprinkler booster serving the building is located more than 20 m from the pedestrian entrance.	• Sprinkler booster directly accessible from perimeter access path • Sprinkler booster location identified on a block plan at the hydrant booster assemblies and FIPs.

5. CONCLUSION

The fire safety strategy presented herein is considered to enable the built form of the proposed building to satisfy the Performance Requirements of the BCA, subject to validation and verification of any assumptions made through detailed fire engineering analysis.

Through ongoing design development, the strategy proposed herein shall be amended and adapted based on consultation with the design team to develop the scope for the Fire Engineering Brief, and ultimately for the Fire Engineering Report for Construction.

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