CONSULTANTS ADVICE

Project:	Alterations to existing vacant retail tenancy	**Ref No.:**	F202240_FSS_02
Address:	Manly Wharf	**Date:**	5 August 2024
		Issue:	Final Issue for DA Submission

To: Ash Cranston

RE: Fire Safety Strategy – Final Issue

1. INTRODUCTION

1.1 OVERVIEW

CORE Engineering Group has been engaged to develop a fire safety strategy for the proposed development at Manly Wharf. The proposed development seeks alterations to the existing vacant retail tenancy at Manly Wharf for use as a pub and micro-brewery with ancillary dining and live performance.

1.2 SCOPE

The purpose of this report is to document the proposed fire safety strategy for the works proposed under this DA. The report also considers the holistic fire safety strategy, such that the proposed works do not adversely impact the provision of fire safety for the remainder of the building.

The report includes guidance on the likely fire engineering trial design which has been established based on review of the architectural set, NCC report and CORE Engineering Group's previous experience. This 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.

All works to the portions of the building subject to this DA will be in accordance with NCC 2022. Additional commentary/recommendations are made throughout the report with regards to identified shortfalls that may need to be addressed as part of current scope.

1.3 SOURCES OF INFORMATION

- Architectural set provided by Lewis Advisory on behalf of ACME via email dated 31/07/24.
  - "Site Plan", Drawing #A01.01 Rev C dated 29/07/24.
  - "Location Plan: Ground Floor", Drawing #A.01.02 Rev D dated 29/07/24.
  - "Location Plan: Basement", Drawing #A.01.02A Rev B dated 29/07/24.
  - "Location Plan: First Floor", Drawing #A.01.02B Rev B dated 29/07/24.
  - "Proposed Plan: Ground Floor Gross Floor Area", Drawing #A.02.00 Rev E dated 29/07/24.
  - "Proposed Plan: Ground Floor Fire Compartment Plan", Drawing #A.02.00A Rev A dated 29/07/24.
- Existing Fire Engineering Report #s16124 Revision 2 prepared by MCD Fire Engineering dated 21/10/16.
- Existing Fire Engineering Report #75148.2 prepared by Warrington Fire dated 19/10/04.
- AFSS for the site dated 02/10/23, as documented in Figure 2-6 below.

- BCA Assessment Report prepared by Blackett Maguire + Goldsmith, Report #s240072 Rev 1, dated 05/08/24.
- Email correspondence provided from TTW Structure Engineers dated 05/04/24, confirming existing FRLs for the site.
- Site inspection by Core Engineering Group on 13/03/24.
- Max population of 700 people for the Pub/Micro-Brewery, as confirmed by Lewis Advisory via email dated 14/05/24.

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 NCC. Any recommendations herein relating to Performance Solutions are subject to detailed fire engineering analysis, and the relevant approval process.
- This document has been prepared as a guidance document only, and should not be used for construction documentation without further clarification. Any parties relying on this document for pricing should be cognisant that this is preliminary and any assumptions are subject to detailed analysis, investigations and authority approvals.
- The requirements for any building approvals (i.e. complying development certificate for the fitout) shall be determined by a PCA.
- The advice herein relates to compliance with the relevant parts of the NCC relating to fire safety and does not take into account insurers requirements, business continuity and other stakeholder objectives which should be reviewed independently by the client as required.

2. BUILDING DESCRIPTION

2.1 SITE CONTEXT

The development site is located in Manly, approximately 15 km north of Sydney’s central business district. The existing site spans multiple allotments under separate ownerships and is accessed at the junction of East Esplanade, West Esplanade and Belgrave Street. The site is otherwise bounded by beaches to the east/west (Manly Cove) and seafront to the south (Figure 2-1).

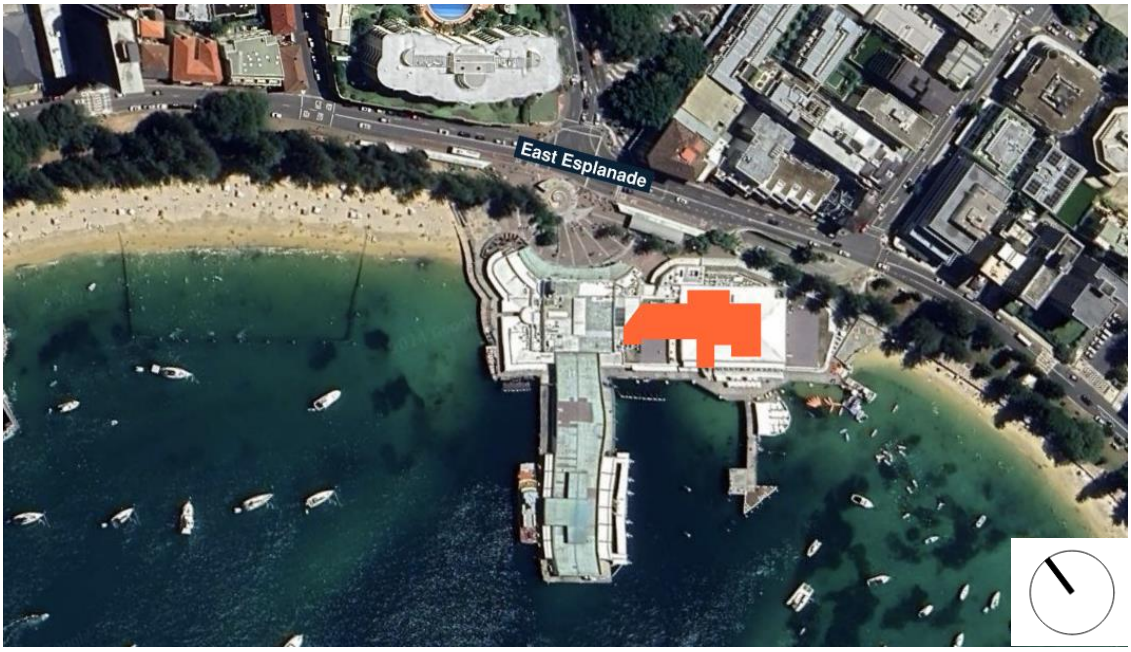

Figure 2-1: Existing Site Layout (Nearmaps)

2.2 BUILDING DESCRIPTION

The respective areas of the site are depicted in Figure 2-2 to Figure 2-4 below and summarised as follows:

- Basement Level (Figure 2-3), which is accessed via East Esplanade to the north, and is inclusive of carparking/loading dock. The basement is located beneath the eastern portion of the site.
- Ground Level (Figure 2-2), which is inclusive of the following:
  - Wharf to the south, which is owned and operated by Transdev (separate allotment). The wharf building serves Manly ferry.
  - Terminal building to the north of the wharf, which contains multiple restaurant/retail tenancies, all connected to a common/central mall area. An open-air pedestrian path is available around the perimeter of the terminal building.
- Level 1 (Figure 2-4), which is inclusive of two separate restaurant tenancies and rooftop plant area. The Level 1 floor plate is located above the eastern portion of the site.

Note that each level within the existing building constitutes a separate fire compartment.

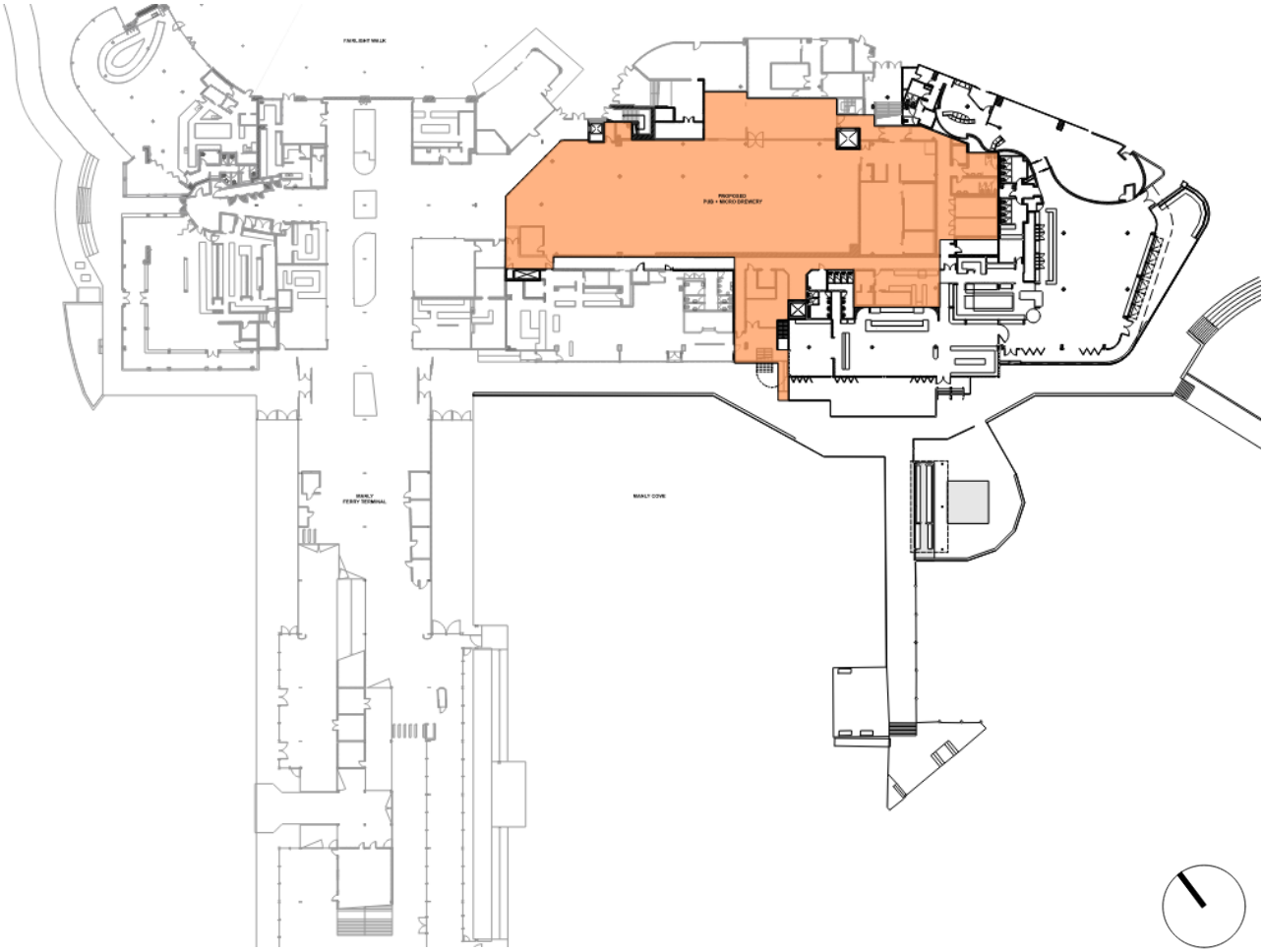

Figure 2-2: Site Plan (Ground Level)

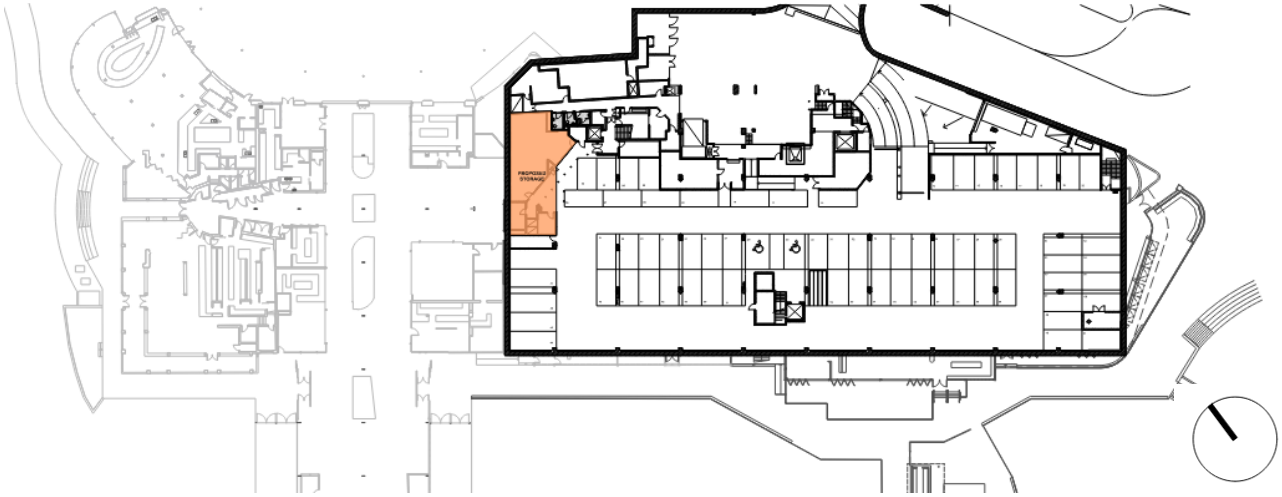

Figure 2-3: Existing Floor Plan (Basement Level)

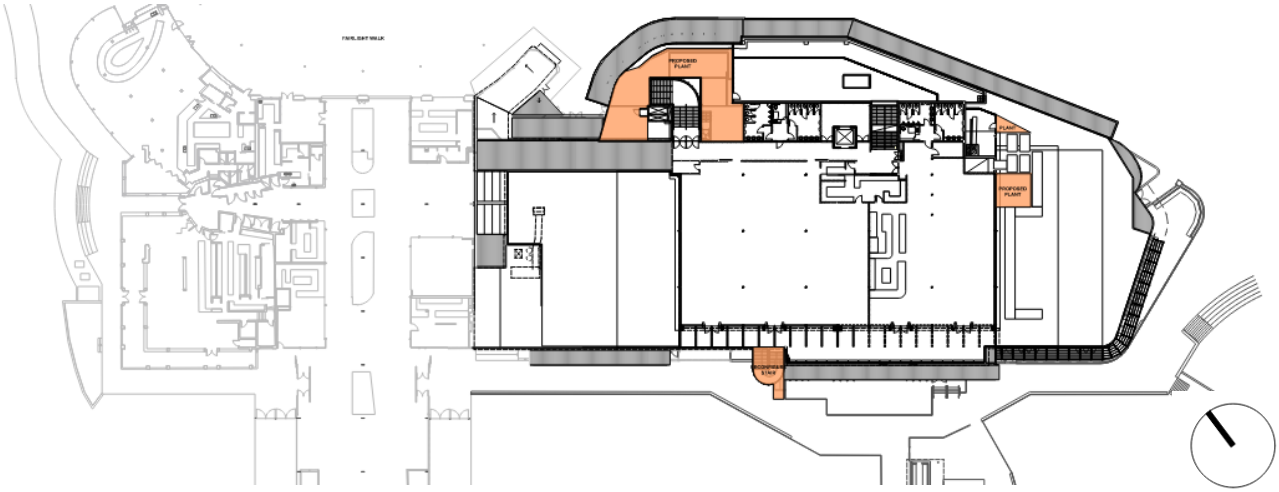

Figure 2-4: Indicative Floor Plan (Level 1)

2.3 PROPOSED WORKS

The proposed development seeks alterations to the existing vacant retail tenancy at Manly Wharf for use as a pub and micro-brewery with ancillary dining and live performance. The proposed works are limited to the eastern portion of the Terminal Building.

The Pub shall be inclusive of a central area with two separate bars at either end of the space, and a back of house area for storage. The main lobby is to the south of the site, which is connected to the terminal area via public corridor. Egress is also available to East Esplanade to the north.

To the west of the Pub are publicly accessible toilets and amenities serving the Terminal Building. To the east of the Pub is the existing Manly Wharf Hotel. It is noted that this is not subject to this DA however, is considered in the context of the holistic fire safety strategy, such that the proposed works do not adversely impact the provision of fire safety for the remainder of the building.

Between the Pub and existing Manly Wharf Hotel, there is a proposed Micro-Brewery/Kitchen which is separated from both areas via full height glazing. The Micro-Brewery shall contain wooden barrels for ageing beer and plant, processing and packaging equipment.

Although the Pub/Micro-Brewery and existing Manly Wharf Hotel shall be under common ownership, both areas shall be treated as separate Class 6 SOU.

Figure 2-5: Proposed Works (Eastern Portion of Terminal Building – Ground Floor)

2.4 BUILDING NCC CHARACTERISTICS

The following NCC characteristics are assumed for the areas subject to new works.

Table 2-1: Building NCC Characteristics

CHARACTERISTIC	MANLY WHARF	
Classification	Class 6 (restaurant/café/retail), Class 9b (public assembly), Class 7a (carpark), Class 7b (Loading Dock)	
Rise in Storeys	Two (2)	
Floor Area (Approx.)	Ground Level (Pub/Micro-Brewery and Manly Wharf Hotel):	2,355 m^2
Type of Construction required	Type B Required	
Effective height (estimated)	2.7 m	
Maximum Fire Compartment Sizes (Type B)	Pub/Micro-Brewery and Manly Wharf Hotel (Class 6): 3,500 m^2/21,000 m^3	

2.5 EXISTING FIRE SAFETY MEASURES

The following fire safety measures are present in the building, as per the fire safety schedule and AFSS (Figure 2-6). As part of maintaining these systems, there is unlikely to be significant works needed as the AFSS is current and dated 13/03/24.

It is noted that there is an existing FER for the site (#s16124 Revision 2 from MCD Fire Engineering dated 21/10/16), which relates to the Level 1 extension works. The FER includes a Performance Solution to rationalise FRLs (Level 1 structure) from 180 FRL to 90 FRL. The proposed works are remote from Level 1 and therefore, the assumptions and outcomes of the existing analysis are considered to be valid.

There is also another existing FER for the site (Existing Fire Engineering Report #75148.2 prepared by Warrington Fire dated 19/10/0, which relates to the existing ALDI tenancy. Due to the change of use of vacant supermarket tenancy to a pub and micro-brewery with ancillary dining and live performance, the existing FER is no longer considered applicable and shall be superseded as part of the proposed works.

Fire safety measure	Minimum standard of performance	Date(s) assessed	APFS *
Portable Fire Extinguisher & Fire Blankets	AS2444-2001	12-03-24	F049889A
Automatic Fire Detection & Alarms	AS1670.1-2004 & BCA Specification E2.2a clause 4 and 5 and AS1670.1-2015 (to new Level 1 works)	12-03-24	F049889A
Automatic Fire Sprinklers	AS2118.1-1999 & BCA Specification E1.5 and Fire Engineering Report No. S16124, Revision FER2.0 from MCD Fire Engineering dated 21/10/16 (to new Level 1 works)	12-03-24	F049889A
Building Occupant Warning System	AS1670.1-2004 BCA Clause 5 of Spec E2.2a and Clause 3.22 of AS1670.1-2015 to new Level 1 works	12-03-24	F049889A
Fire Doors	AS1905.1-1997 & BCA Specification C3.4 and AS1905.1-2005 (to new Level 1 works)	12-03-24	F022052A
Smoke Doors and Shutters	AS 1530.7-2014 and AS 6905-2007 BCA Specification C3.4 - 2019	12-03-24	F022052A
Emergency Lighting	AS2293.1-2005	12-03-24	F049889A
Exit Signs	AS2293.1-2005	12-03-24	F049889A
Fire Hose Reel System	AS24441-1988, AS2441-2005 to new works including Level 1.	12-03-24	F049889A
Fire Hydrant Installations	Original Installation to Ordinance 70, AS2419.1-2005 to new works including Level 1 works and Hydrant Booster.	12-03-24	F049889A
Fire & Smoke Control in Multi Compartment Buildings	AS/NZ 1668.1-1998	12-03-24	F022568A
Fire Dampers	BCA Clause C3.15 and AS/NZS 1668.1-1998 (AS 1682.1-1990 and AS 1682.2-1990)	12-03-24	F022568A
Fire Seals protecting openings in fire resisting components of the building	Clause 22.13 and Clause 55.5 of Ordinance No 70 of the Local Government Act 1919 to original installation, AS4072.1-2005 & AS1530.4-2014 to new works	12-03-24	F022052A
Lightweight construction (fire rated) to walls bounding 2 x ground floor lobbies leading up to Level 1 to fire separate it from ground floor	BCA Specification C1.8, AS 1530.4-2014	12-03-24	F022052A
Mechanical air handling system (automatic shutdown of air-handling system)	BCA Clause E2.2, AS/NZ 1668.1-1999 and AS/NZ 1668.1-2005 for Level 1 works.	12.03.24	F022568A
Mechanical air handling system (automatic smoke exhaust system)	BCA Specification E2.2B & AS/NZ 1668.1-1998 and Fire Safety Engineering Report No. 75148.2 from Warrington Fire Research Australia dated 19/10/04.	12.03.24	F022568A
External wall wetting sprinklers to Entry Lobby B	BCA Clause C3.4 and AS2118.1-1999	12-03-24	F049889A
Warning and operational signs	BCA2016 Clause D2.23.	12-03-24	F049889A
Smoke detectors for automatic closing operation of fire doors	BCA Clause C3.5 and AS1670.1-2004 and AS1670.1-2015 (to new Level 1 works)	12-03-24	F049889A
Fire resisting construction (applied coatings for steel – Intumescent Paint)	AS 1530.4-2014 & AS 4100	12-03-24	F022052A
Fire Engineering Report	Fire Engineering Report No. S16124, Revision FER2.0 from MCD Fire Engineering dated 21/10/16.	12-03-24	F049889A

Figure 2-6: Fire Safety Schedule

3. FIRE SAFETY MEASURES

The below summarises the relevant fire safety measures to be considered to facilitate the new works. The below summarises the proposed fire engineering requirements to satisfy the performance requirements of the NCC.

3.1 FIRE RESISTING CONSTRUCTION

3.1.1 Type of Construction

Due to the building required to be of Type B construction, the external wall and all components are required to be non-combustible. Therefore, all attachments to the external wall proposed as part of these works (i.e. signage) are required to comply with DtS Provision C2D14.

3.1.2 FRL Strategy

The building is required to be of Type B construction and therefore Class 6 portions are generally required to achieve a 180 minute FRL.

As part of the new works, it is proposed to provide 180 FRL fire separation as per Figure 3-1 below, noting that this includes also includes the portion of Level 1 slab over the Pub/Micro-Brewery and Manly Wharf Hotel. The intent of the fire separation is to maintain a maximum compartment size of 3,500 m^2, such that a smoke hazard management system is not required to be provided to the Pub/Micro-Brewery and Manly Wharf Hotel (Section 3.4).

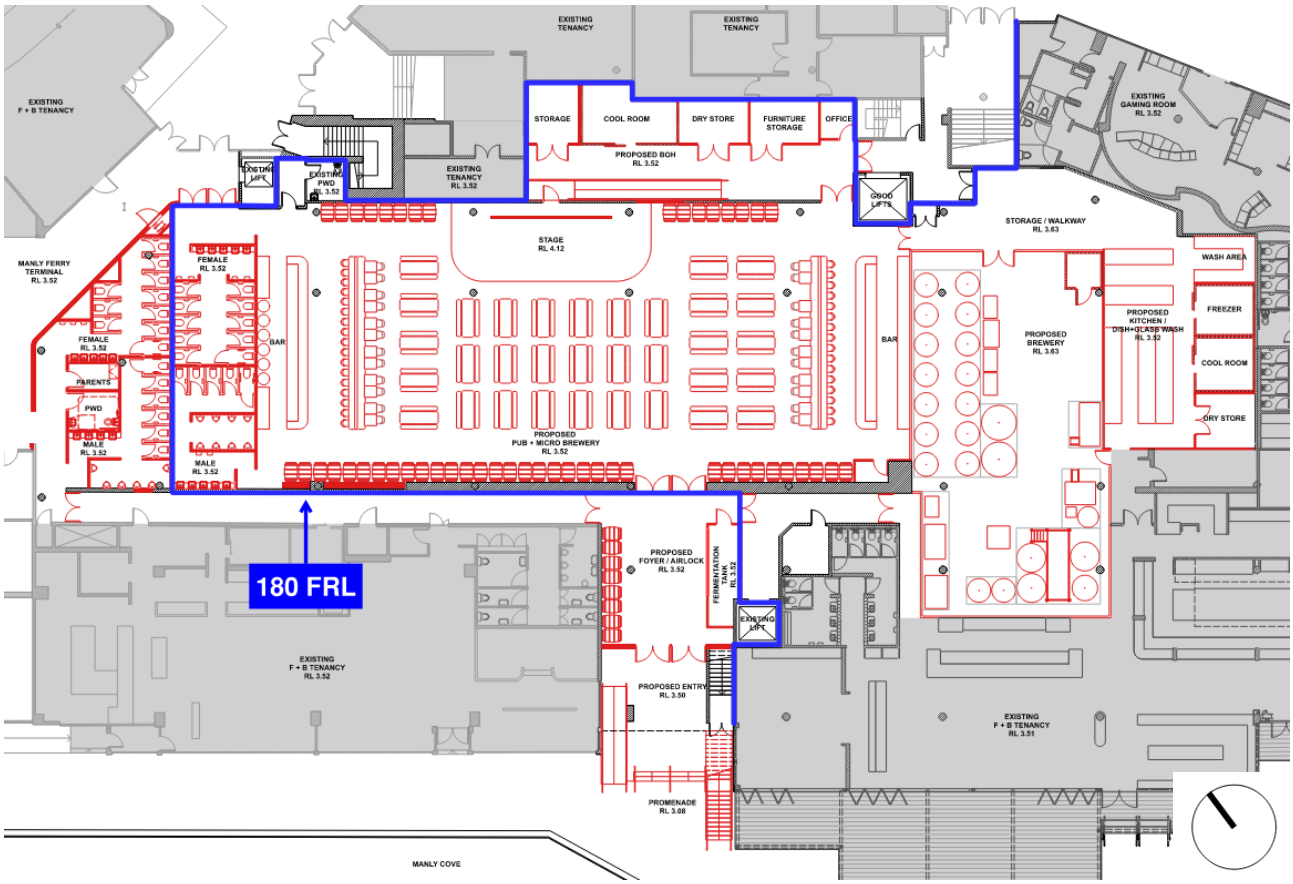

Figure 3-1: Proposed Compartmentation Strategy

It has been identified by the PCA that separation of external walls/openings in different fire compartments shall not be provided in accordance with DtS Provision C4D5. As such, a Performance Solution can be provided, reliant on the following measures (Figure 3-2):

- Internal drencher protection provided to glazed portion of external wall serving Manly Wharf Bar in accordance with DtS Provision C4D5.
- Low expected fuel load beneath Level 1 slab overhang (non-leasable area).
- Stairway to basement area providing greater than 6 m separation between credible fuel loads.
- Sprinkler protection provided throughout the building.

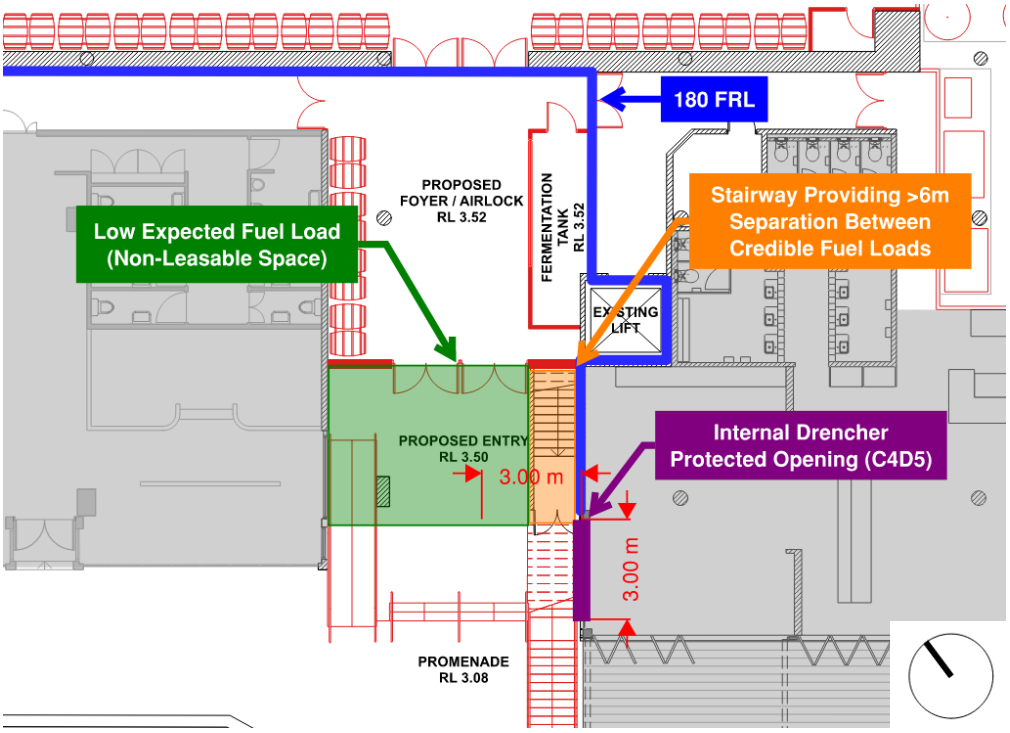

Figure 3-2: Protection of Openings

Note that preliminary advice from the structural engineer (Section 1.3) suggests that 180 FRL is not achieved by existing compartmentation elements. It is recommended that site verification is carried out to confirm actual FRL provided by existing compartmentation elements. A proposed upgrade strategy should then be developed to assess the impact of achieving DtS compliance.

If required, a Performance Solution may be feasible to address rationalised FRLs to non-loadbearing structure only and shall be assessed on a case-by-case basis, noting that this is subject to FRNSW/PCA acceptance.

3.2 EGRESS

3.2.1 Paths of Travel and Aggregate Egress Widths

The minimum aggregate egress width provided to the Pub/Micro-Brewery shall be in accordance with DtS Provision D2D8 (Width of exits and paths of travel to exits), given the expected population within this area (Section 1.3). A minimum 1 m wide clear width is to be provided between machinery/plant within the micro-brewery.

3.2.2 Travel Distances

Travel distances within all areas subject to new works must comply with the DtS Provisions of the NCC, as summarised as follows:

- Up to 20 m to a point of choice
- Up to 40 m to the nearest exit
- Up to 60 m between alternative exits

Measured travel distances from the Pub and Kitchen/Micro-Brewery-Manly Wharf Hotel are depicted in Figure 3-3 and Figure 3-4 below respectively, demonstrating that this does not exceed distances nominated by DtS Provisions of NCC.

Note that the Pub/Micro-Brewery and existing Manly Wharf Hotel are under common ownership however, are considered as separate tenancies (sole occupancy units) for purposes of travel distances as a conservative assumption.

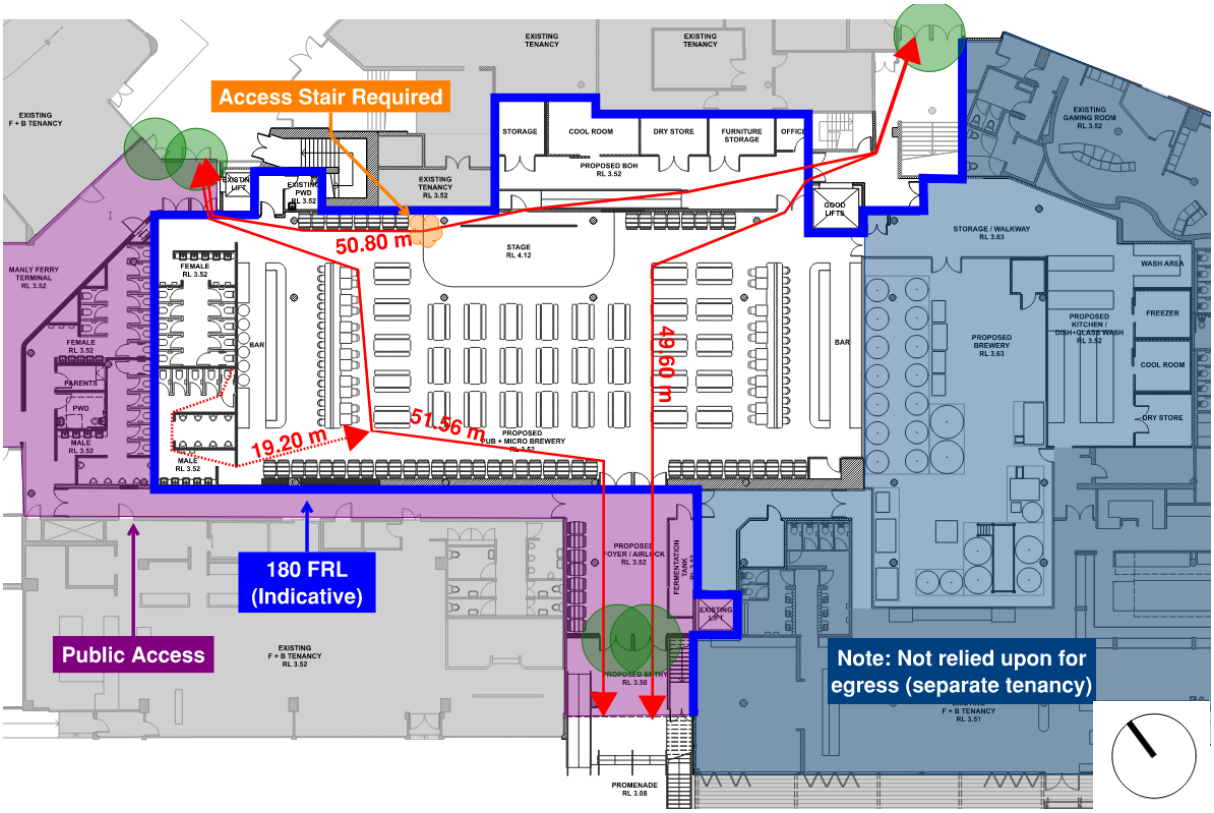

Figure 3-3: Travel Distances (Pub)

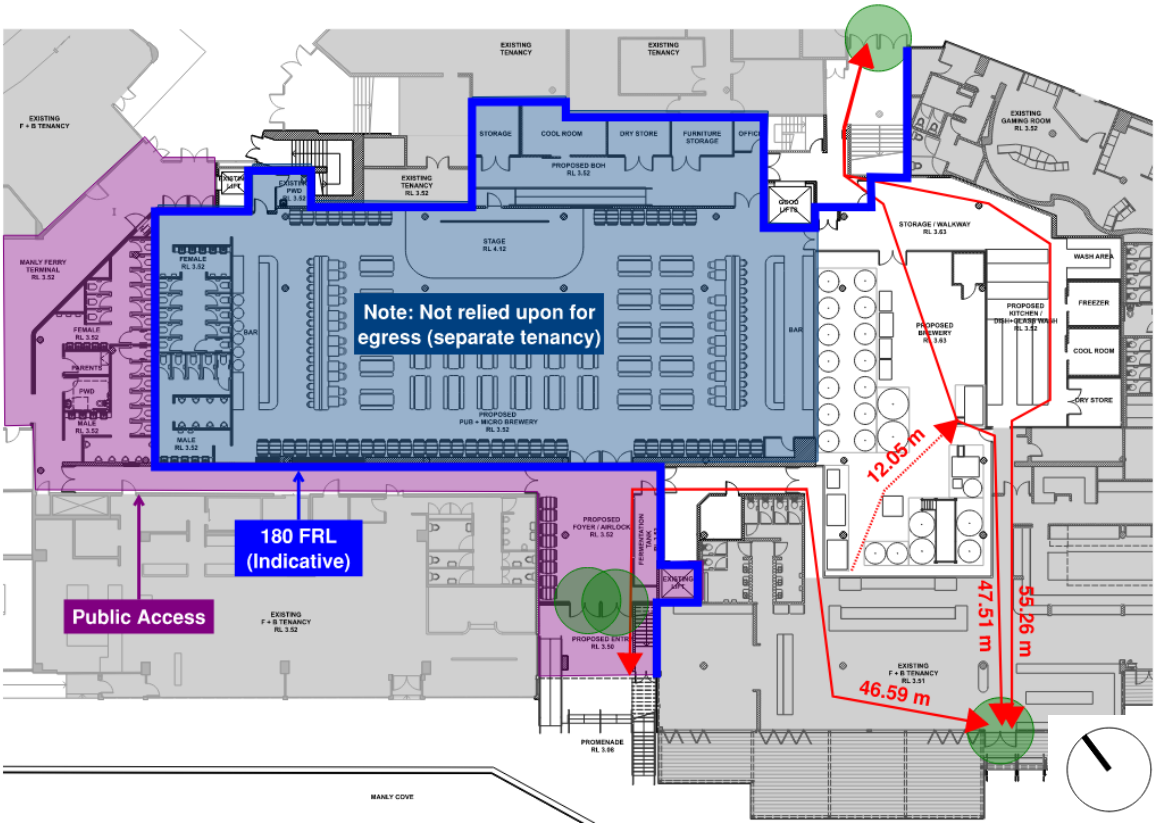

Figure 3-4: Travel Distances (Kitchen/Micro-Brewery and Manly Wharf Hotel)

3.2.3 Door Hardware, Operation and Mechanisms

All exit doors and doors in a path of travel to an exit are required to be DtS compliant throughout the building. This includes the swing of doors, the applied latching and locking mechanisms and the force required on mechanism used to open sliding doors.

3.3 FIRE FIGHTING EQUIPMENT

3.3.1 Fire Hydrants

The standard of performance listed on the AFSS for the hydrant system is Ordinance 70 and AS2419.1:2005. It is understood that given the significant water supply provided via town's main, AS2419.1:2005 pressures and flows are achieved for the most remote hydrant and therefore Ordinance 70 appears to relate to pipework only. As such, the existing hydrant system appears capable of serving the area subject to new works and meeting the operational requirements of FRNSW.

Fire hydrant coverage is also required to be provided throughout the area subject to new works. Given that there are no significant changes to the building footprint, it is expected that compliant coverage shall be achievable without significant modifications to the existing system, pending detailed coverage review by hydraulic designer.

3.3.2 Fire Hose Reels

The standard of performances listed on the AFSS for the fire hose reel system is AS2441:1998 and AS2441:2005. Fire hose reel coverage is to be provided throughout the area subject to new works. Given that there are no significant changes to the building footprint, it is expected that compliant coverage shall be achievable without significant modifications to the existing system, pending detailed coverage review by hydraulic designer.

3.3.3 Fire Sprinkler System

The standard of performance listed on the AFSS for the sprinkler system is AS2118.1:1999 and the existing FER. Sprinkler protection shall be provided throughout the area subject to new works in accordance with the standard of performance listed on AFSS, with all new works are to comply with AS2118.1:2017.

The following additional requirements shall apply:

- Sprinkler heads are to be fast-response where possible, achieving an RTI no greater than 50 $m^{1/2}s^{1/2}$ and an activation temperature no greater than 68°C.
- Upon sprinkler activation the direct brigade notification shall be activated and initiate the building occupant warning system.

3.3.4 Portable Fire Extinguishers

Portable fire extinguishers should be provided throughout the areas subject to new works, in accordance with DtS Provision E1D14 of the NCC and selected, located, and distributed in accordance with AS2444:2001.

3.3.5 Control and Indicating Equipment

The existing Fire Indicator Panel (FIP) for the building is provided at Ground Level, within the north-eastern portion of the site and is accessed directly from outside the building. The standard of performances listed on the AFSS for the detection and alarm system is AS1670.1:2004 and AS1670.1:2015. All new works to CIE (if applicable) shall comply with AS1670.1:2018.

3.4 SMOKE HAZARD MANAGEMENT

3.4.1 Smoke Detection System

The standard of performance listed on the AFSS for the existing detection and alarm system is AS1670.1:2004. Given the extent of sprinkler protection provided throughout the building and no smoke hazard management system proposed to Pub/Micro-Brewery and Manly Wharf Hotel, this does not appear to be a required measure under the DtS Provisions of the NCC.

3.4.2 Smoke Exhaust

In accordance with DtS Provision E2D15(2)(c), no smoke hazard management system is required to be provided throughout the Pub/Micro-Brewery and Manly Wharf Hotel, subject to the following being provided:

- Separated from Terminal Area/Level 1 and fire compartment size <3,500 m^2 (Section 3.1.1)
- Sprinkler protection provided throughout (Section 3.3.3).

3.5 VISIBILITY IN AN EMERGENCY, EXIT SIGNS AND WARNING SYSTEMS

3.5.1 Signage and Lighting

As part of the fitout, additional signage and lighting may be required in order to comply with the requirements of the DtS Provisions.

- Emergency lighting is to be provided throughout area subject to new works in accordance with DtS Provisions E4D2 and E4D4 of the NCC 2022 and AS2293.1:2018.
- Exit signage is to be provided throughout area subject to new works in accordance with the DtS Provisions E4D5, E4D6, E4D8 of the NCC 2022 and AS2293.1:2018.

3.5.2 Building Occupant Warning System

The standard of performance listed on the AFSS for the existing BOWS is AS1670.1:2004 and AS1670.1:2015. A BOWS shall be provided throughout the areas subject to new works in accordance with the standard of performance listed on AFSS, with all new works to comply with AS1670.1:2018.

The occupant warning alarm should operate throughout all areas of the building upon activation of the smoke detection/sprinkler system.

3.6 BUILDING AND CONSTRUCTION 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.

3.6.1 Maintenance of Fire Safety Equipment

The fire safety systems should be tested and maintained in accordance with Australian Standard AS1851 or other relevant testing regulatory. Specific programmes may need to be developed for critical / complicated items such as lifts or mechanical systems.

3.6.2 Emergency Plan

An emergency management plan should be developed for the building in accordance with AS3745:2010. This should be developed in concert between by the emergency planning committee, building owner/operator, fire services contractor and fire engineer.

Consideration of various elements bespoke to the building is required including alarm cascade, lift operation, facilitation of fire brigade operations and security procedures impacting on fire strategy to this building as well as across the masterplan.

4. SUMMARY OF PROPOSED PERFORMANCE SOLUTIONS

In particular, the fire safety assessment and fire engineering design shall focus on the following identified non-compliances.

Table 4-1: Summary of Proposed Performance Solutions

TITLE	DTS	NON-COMPLIANCE(S)	PERFORMANCE SOLUTION
Protection of Openings	C4D4	External Walls and Associated Openings in Different Fire Compartments shall not be protected in accordance with C4D4.	• Internal drencher protection provided to glazed portion of external wall serving Manly Wharf Bar in accordance with DtS Provision C4D5. • Low expected fuel load beneath Level 1 slab overhang (non-leasable area). • Separation distance between basement compartment via stair. • Sprinkler protection provided throughout the building.

5. CONCLUSION

The fire safety strategy presented herein is considered capable of meeting the Performance Requirements of the NCC, subject to validation and verification of ay 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.

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