

20<sup>th</sup> February 2024

Our Ref: SYD000602-LTR02-B

Gabrielle Chidiac  
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**Re: Fire Engineering Support for Modification Application – M3 and M4 The Maltings, Mittagong**

Dear Gabrielle,

The purpose of this letter is to provide advice on the proposed design at The Maltings, Mittagong. This letter is prepared for M3 and M4.

A preliminary assessment is undertaken based on the review of Building Code of Australia 2022 Report (ref: GDL190311), dated 22 December 2023 and the M3 and M4 drawing set prepared by Snøhetta, dated 20 December 2023.

We trust this letter is sufficient to provide fire engineering DA support. If you require any further information at this stage, please do not hesitate to contact me.

Regards,

Penny Yang  
Associate, Certifier – Fire Safety  
Credwell Performance Pty Ltd

# 1 Background

The Maltings Mittagong project comprises of malthouse buildings on the western side of Nattai River and fronting the main Southern Railway line. It is locally listed as a heritage site in the Mittagong Local Environmental Plan. The works consist of material refurbishments and additions to the buildings of M1+M2 and M3+M4 for hotel style, exhibitions and private function use.

We have been appointed by The Maltings Pty Ltd to provide fire engineering assistance during the development of the DA. On 13 May 2022, development consent (DA20/1400) was granted by the NSW Land and Environment Court for a staged development application (DA) relating to 2 Colo Street, Mittagong, commonly known as “The Maltings”. The approved proposal consists of a development concept for adaptive re-use of the site, and a detailed design for alterations and additions to the former malthouses (M1, M2, Southern Sheds and M3), redevelopment of Maltster’s Cottage and construction of a new Northern Shed to accommodate a range of uses in multi-purpose spaces for art, exhibitions, functions, recreation activities and performances, as well as construction of a new hotel with ancillary uses (M4). The detailed design scheme encompasses site works, including rehabilitation of the riparian corridor along Nattai River. The approved proposal also includes a development concept for potential residential and/or visitor accommodation (M5/M6).

As part of this we have participated in design team meetings and conversations relating to the proposals. The extent of works proposed to the buildings is significant, and while existing elements are maintained, the building have been assessed against current standards with regards to compliance with the BCA. A BCA report has been prepared by Group DLA that identifies several aspects of the buildings that do not strictly meet the BCA DTS provisions. In these instances, Performance Solutions have been investigated to support the proposals.

# 2 Current Proposal

The proponent is seeking to amend the existing development consent (DA20/1400) for adaptive re-use of the site via two separate but related applications that are prepared concurrently:

- A section 4.56 modification to revise the design of the alterations, additions and adaptive re-use of Maltings M1, M2 and the Southern Sheds; and the design of the new Northern Shed and the redevelopment of Maltster’s Cottage.
- A DA to alter the design of the alterations, additions and adaptive re-use of Maltings M3, and amendment to the façades and interiors of the M4 hotel.

This Support for Modification Application is for M3 and M4 only.

### 3 Documents

As part of our assessment, we have reviewed the following information:

1. BCA report M3+M4, Rev G, Group DLA, 22/12/2023
2. BCA Capability Statement M3+M4, Group DLA, 22/12/2023
3. Drawings produced by Snøhetta identified in Table 1:

*Table 1 Drawings produced by Snøhetta*

Drawing Number	Title	Revision	Date
M3/M4 100	M3/M4 Site plan	E	12 February 2024
M3/M4 1100	M3/M4 Plan Basement	E	12 February 2024
M3/M4 1101	M3/M4 Plan L00-L01	E	12 February 2024
M3/M4 1102	M3/M4 Plan L02	E	12 February 2024
M3/M4 1103	M3/M4 Plan L03 – L04	E	12 February 2024
M3/M4 1104	M3/M4 Plan L05 – Roof	E	12 February 2024
M3/M4 1801	M3/M4 GFA Plans	E	12 February 2024
M3/M4 2000	M3/M4 Elevations – North, East, South, West	E	12 February 2024
M3/M4 3000	M3/M4 Sections	E	12 February 2024

## 4 Site Characteristics

### 4.1 General Building Layout

The floor plans of M3 and M4 are shown in Figure 1 to Figure 4.

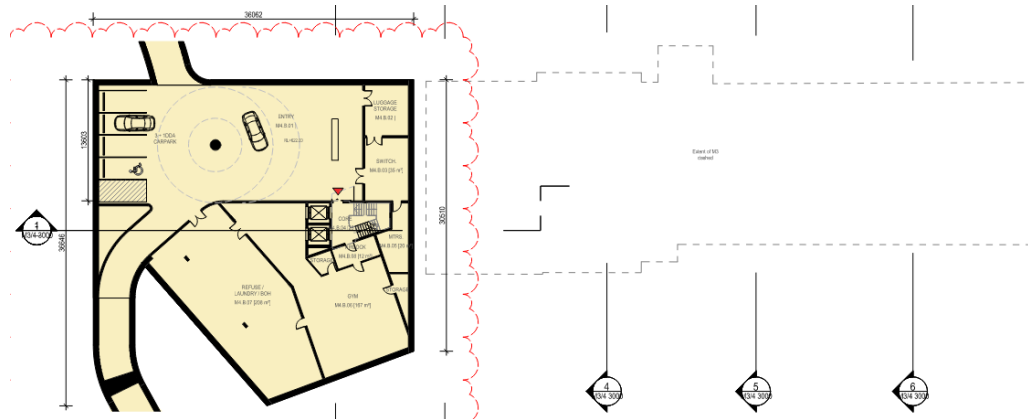


Figure 1: M3 and M4 Basement

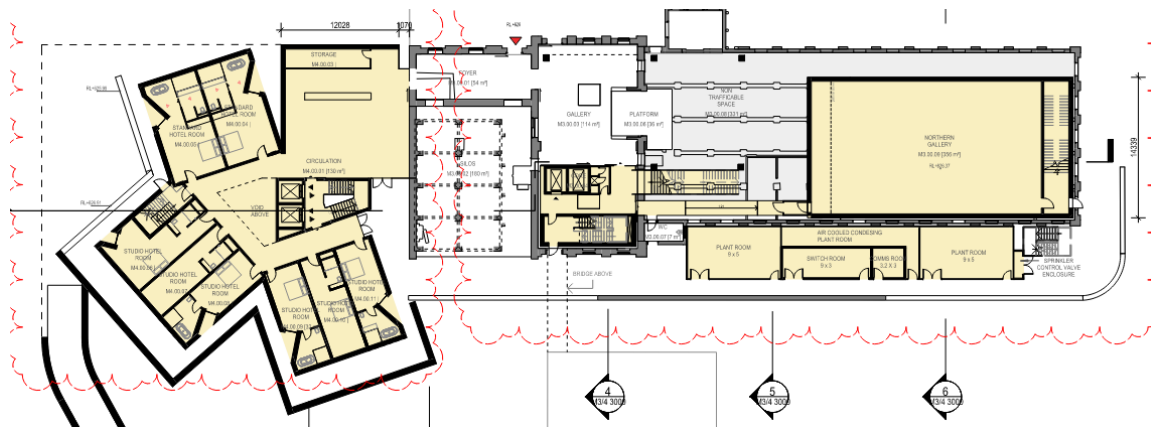


Figure 2: M3 and M4 Ground Floor

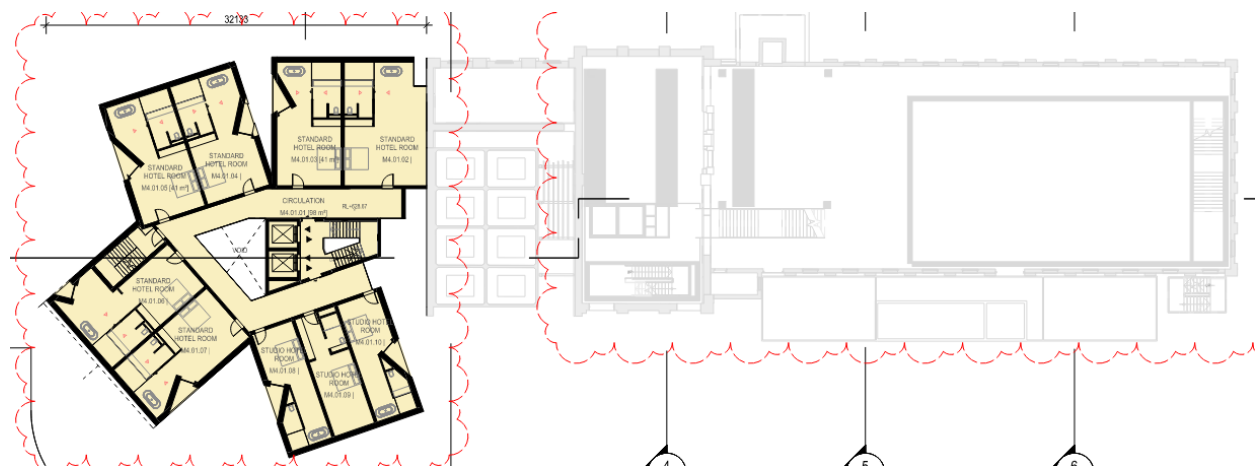


Figure 3: M3 and M4 Level 1

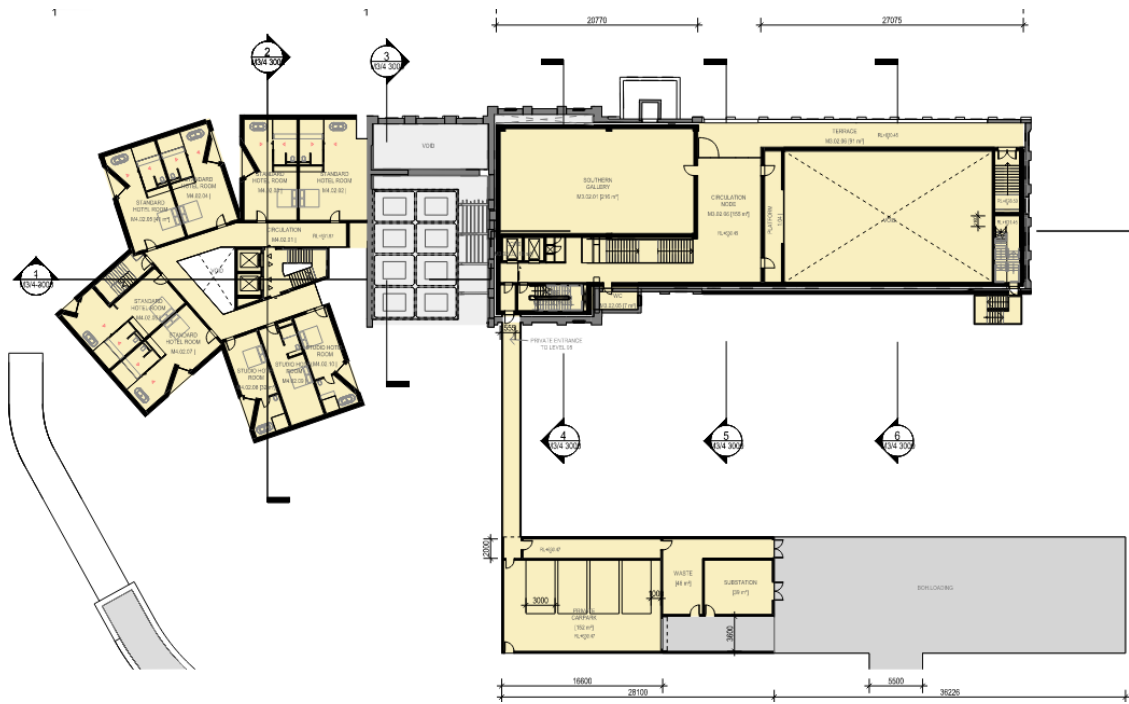


Figure 4: M3 and M4 Level 2

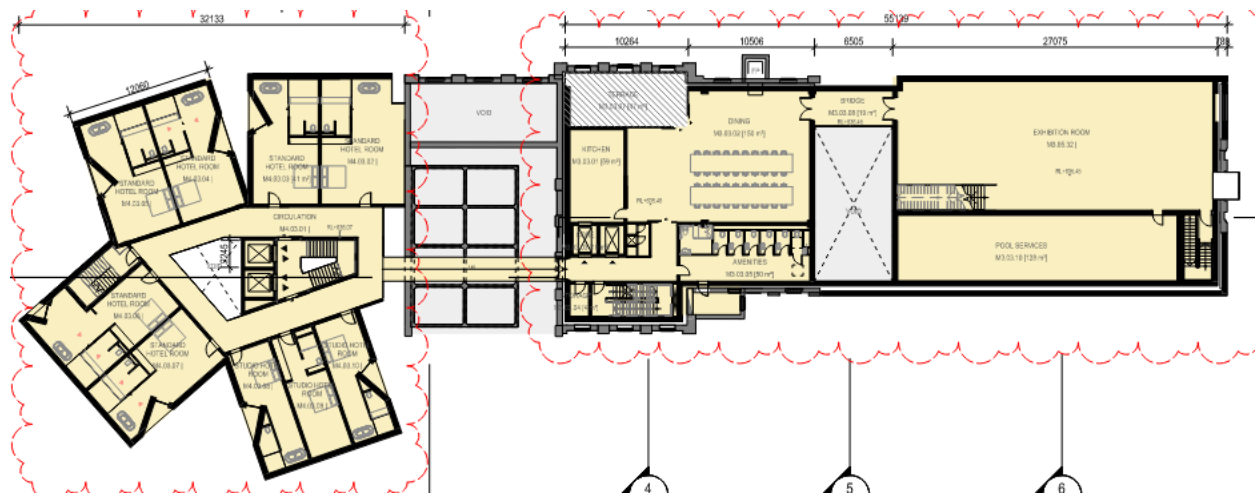


Figure 5: M3 and M4 Level 3



Figure 6: M3 and M4 Level 4

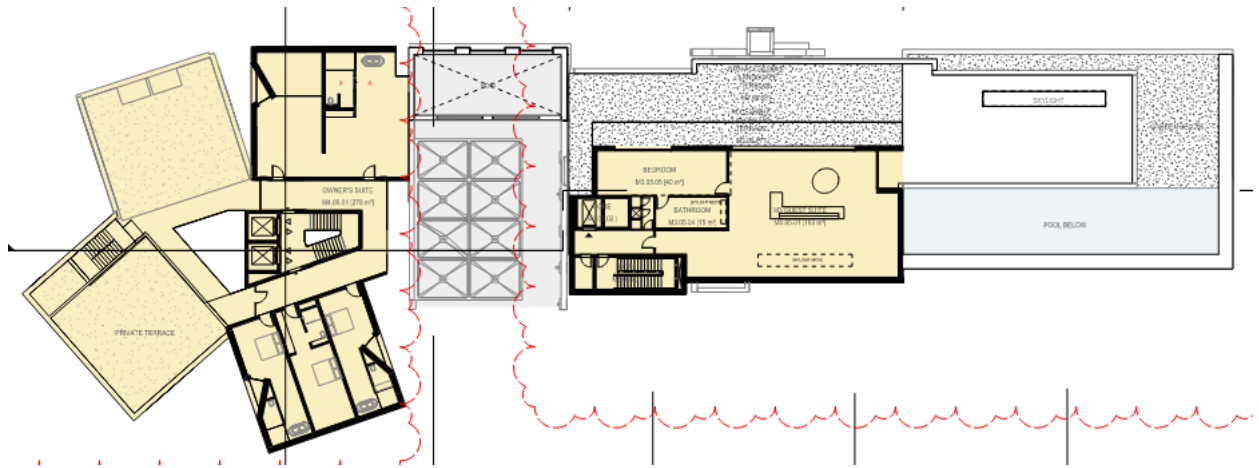


Figure 7: M3 and M4 Level 5

## 4.2 BCA DtS Reference Criteria

The BCA DtS reference criteria for the building is summarised below:

*Table 2 BCA DtS Reference Criteria*

Building Information	Description of Requirements
BCA Edition	BCA 2022
Classification	Basement: Class 7a car park, Class 7b Storage, Class 9b Gym Ground: Class 3 Hotel, Class 9b Assembly Building (exhibition hall/art gallery) L1: Class 3 Hotel L2: Class 3 Hotel, Class 9b Assembly Building (exhibition hall/art gallery) L3: Class 3 Hotel, Class 6 Restaurant, Class 9b Assembly Building (function room) L4: Class 3 Hotel, Class 6 Bar, Class 9b Assembly Building (lounge/gallery) L5: Class 3 Hotel
Construction Type	Type A
Rise in Storeys	7
Number of Storeys Contained	7
Effective Height	Approximately 19.8 m

## 5 Fire Engineering Solutions

The following non-compliances in M3 and M4 outlined below have been identified by DLA Group and will be support by a Performance Solution.

Table 3 Performance Solutions for M3 and M4

Item (BCA report ref)	BCA DtS Provision (Performance Requirement)	Description	Proposed Assessment
C3	C2D10, C2D14 (C1P2)	<p>Combustible Façade Items</p> <p>The following building elements are deemed combustible:</p> <ul style="list-style-type: none"> <li>a) The existing timber battens are combustible in lieu of being deemed not combustible.</li> <li>b) Timber doors &amp; windows in the external façade.</li> <li>c) Other – Awaiting external wall details and proposed wall type drawings.</li> </ul>	<ul style="list-style-type: none"> <li>- The timber elements in the façade can be addressed qualitatively based on the sizes and location.</li> <li>- Additional measures such as providing extra sprinkler heads to the timber elements may be required to mitigate the risk, pending further review of the size and location of the timber elements during detailed design.</li> </ul>
C4	C3D3 (C1P2, E2P2)	<p>Oversized Compartment</p> <p>The size of the fire compartment is potentially oversized, i.e., greater than 8,000 m<sup>2</sup> and / or 48,000 m<sup>3</sup>.</p> <p>The floor area of the entire building is approximately 8,300 m<sup>2</sup>, however it is unknown where fire separation is provided.</p>	<ul style="list-style-type: none"> <li>- Fire separation of the building is to be reviewed further once available.</li> <li>- Smoke separation might be implemented if the compartment size exceeds the limitation slightly, subject to further review during detailed design.</li> </ul>
C5	C3D11, C3D12 (C1P2)	<p>Separation of Lift &amp; Stair Shafts</p> <p>The lifts and Central Hotel stairway are required to be fire separated; however, they currently share the same shaft.</p>	<ul style="list-style-type: none"> <li>- The stair is recommended to be smoke separated from the Class 3 portion.</li> <li>- The operation of the lifts in fire mode is to be designed to mitigate the risk of fire spread.</li> </ul>
C6	C3D15 (C1P4, E2P2)	<p>Residential Public Corridors – Smoke Separation</p> <p>Smoke separation is required where a residential (Class 3) corridor is up to 46 m in lieu of 40 m on L3 to L5. There is currently no smoke separation to the public corridors.</p>	<ul style="list-style-type: none"> <li>- Smoke seals are proposed to all SOU doors to minimise smoke spread.</li> </ul>
C7	C4D12 (C1P2)	Bounding Construction – Hotel Portion	<ul style="list-style-type: none"> <li>- The operation of the lifts in fire mode is to be designed to mitigate the risk of smoke spread.</li> </ul>



		The lift opens direct into the level 05 guest suite. The lift landing door can only provide an FRL of -/60/- in lieu of FRL -/60/60.	- Drenchers are to be provided at the lift landing door to mitigate the risk of fire spread.
D1	D2D3 (D1P4)	<p>Basement Exits</p> <p>Only one exit from the basement has been provided in lieu of not less than two (2). Two (2) exits are required due to the vertical egress rise to the level of discharge is more than 1.5 m, and the floor area of the basement is greater than 50 m<sup>2</sup>.</p>	- The occupancy and population density of the basement will be analysed to justify only one exit is provided.
D2	D2D4, D2D12, D3D5, D3D24 (D1P4, D1P5, E2P2)	<p>Central Hotel Exit Stair</p> <p>The Central Residential exit stair is required to be a fire-isolated stairway and contains the following non-compliances:</p> <ol style="list-style-type: none"> <li>The Central Hotel exit stair is not contained in a fire rated shaft. It connects more than three (3) storeys in a building that is provided with sprinklers throughout and is therefore required to be fire-isolated from the remainder of the building. It has been proposed to keep this stair open or non-fire isolated.</li> <li>Travel from the stair to a road required passing by unprotected openings (less than 60 min FRL for a height of 3 m above the path of travel) within 6 m of the building.</li> <li>Discharges internally in lieu of open space.</li> <li>Contains rising and descending design to the basement level, i.e., not smoke separated at ground level.</li> <li>Sliding door is used to enter the stairway on basement level.</li> </ol>	<ul style="list-style-type: none"> <li>- Smoke baffles from the stair to the hotel corridor may be required to support the central stair in a Performance Solution.</li> <li>- Fire door with smoke seal on the basement level is required to minimise smoke spread.</li> <li>- Fuel load on Ground Floor is to be limited by building management.</li> <li>- Signage is to be provided within the stair to indicate the discharge level.</li> <li>- It is recommended to replace the sliding door in the basement with a swing door with smoke seal to improve smoke separation.</li> <li>- The hotel atrium is to be in a separate fire compartment to the Central Hotel Stair.</li> </ul>
D3	D2D5, D2D6, D2D14 (D1P4, E2P2)	<p>Travel Distances to Exits – Excessive</p> <p>Extended travel distances are listed as follows:</p> <ol style="list-style-type: none"> <li>Basement – 30 m to an exit in lieu of 20 m</li> <li>L2 – 24 m to a POC in lieu of 20 m</li> <li>L3 – 27 m to a POC in lieu of 20 m</li> <li>L4 – 30 m to a POC in lieu of 20 m</li> </ol>	- Reduced smoke detector spacing can be installed to support extended travel distance.
D4	D2D8	Path of Travel Widths – Undersized	- The reduction of path of travel width will be addressed by the anthropometric data provided

	(D1P6)	<p>The following non-compliances have been identified:</p> <ul style="list-style-type: none"> <li>a) Paths of travel to exits are illustrated at less than 1 m in the following areas: <ul style="list-style-type: none"> <li>a. Pool plant room.</li> <li>b. Basement storerooms and meter room.</li> <li>c. Other – TBC.</li> </ul> </li> <li>b) There is insufficient egress width for the proposed population on Level 3 and 4.</li> </ul>	<p>in NFPA 101 to demonstrate that the minimum width an occupant is required in a walkway.</p> <ul style="list-style-type: none"> <li>- The specific reduction is to be provided during detailed design for further assessment.</li> </ul>
D5	D2D12 (D1P4, D1P5, E2P2)	<p>Fire Isolated Exits – Doorways Opening Issue</p> <p>A doorway from a room must not open directly into a fire isolated stairway unless it is from a public corridor, sole-occupancy unit occupying the entire storey or sanitary compartment or the like. The current design does not comply with this provision in the following areas:</p> <ul style="list-style-type: none"> <li>a) Basement gym opens direct into the central hotel stair</li> </ul>	<ul style="list-style-type: none"> <li>- It will be addressed qualitatively based on the number of doors opening into the stairs and the use of the areas.</li> <li>- Only two doors open directly to the fire stair, one from the gym and one from the carpark with limited car spaces.</li> <li>- Smoke seal to be provided to doors opening into the fire stair on the basement level.</li> </ul>
D6	D2D12, C4D5 (D1P5)	<p>Discharge from Fire-Isolated Stairways – Protection</p> <p>Occupants that discharge from stair 1, 4 and 6 pass unprotected openings (less than 60 min FRL for a height of 3 m above the path of travel) within 6 m of the building.</p>	<ul style="list-style-type: none"> <li>- Radiant calculation can be undertaken to determine the potential radiant exposure.</li> <li>- Additional measures such as 6 mm toughened glazing may be required to mitigate the risk.</li> </ul>
D7	D2D12 (D1P4, D1P5, E2P2)	<p>Travel via Fire-Isolated Stairways – Discharge Location</p> <p>Stair 1 is required to be fire isolated as it passes by four (4) storeys. However, the stair does not meet the discharge requirements of D2D12(2) where it discharges on L02.</p>	<ul style="list-style-type: none"> <li>- Stair 1 discharges on L02 to an external stair which discharges on Ground Floor.</li> <li>- The egress route from Stair 1 to the external stair to outside is continuous.</li> <li>- Protection might be required to ensure the occupants will not be affected by a building fire when they use the external stair.</li> </ul>
D8	D2D14 (D1P4, E2P2)	<p>Non-Fire Isolated Required Exit Stair – Discharge</p> <p>A non-fire-isolated stairway 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 (Ground Floor).</p>	<ul style="list-style-type: none"> <li>- This will be addressed qualitatively based on the number of alternative exits and population density of the building.</li> <li>- Additional measures such as directional signage is to be installed to direct occupants to an exit.</li> </ul>

		The non-fire isolated required exit stair (stair 7) discharges on Level 3 in lieu of within 20 m of an external exit door on Ground Level.	
D9	D3D26 (D1P2)	<p>Door Latching in Fire Mode – Not to Fail Safe Unlock</p> <p>The BCA requires all locked doors that are not openable without a key in the direction of egress to failsafe unlock/ unlatch on general fire trip. It is understood that this may not be desirable for security reasons to certain doors.</p> <p><b><i>[Note: locations of the doors are to be confirmed during detailed design.]</i></b></p>	<ul style="list-style-type: none"> <li>- Additional measure such as dedicated staff and security personnel may be required to station and open the doors during open hours.</li> <li>- A push button and associated signage to allow occupants to egress through the subject doors are to be installed.</li> </ul>
D10	D3D26 (D1P2)	<p>Operation of a Latch</p> <p>Panic bars are required, however, there are several required exit doors that are proposed to be sliding doors. This combination of door operation and hardware will not work.</p>	<ul style="list-style-type: none"> <li>- The occupant characteristics and density are to be considered in the assessment to demonstrate sliding doors will not impede egress.</li> <li>- The sliding doors are to be installed with automatic open and hold open device that will open the doors on fire trip.</li> <li>- Backup battery will also be required to ensure the doors will operate in power outage.</li> </ul>
E1	E1D2 (E1P3)	<p>Fire Hydrant System - Location</p> <p>Site/ Building fire booster – location to be confirmed, however it is expected not to be able to achieve full technical compliance in that it cannot be located at the main entry to site, within 20 m of the various buildings principal pedestrian entrances and be within sight of the individual building entries, all at once.</p>	<ul style="list-style-type: none"> <li>- The Performance Solution will address the issue qualitatively.</li> <li>- Additional measures such as signage and visual warning devices will be required to facilitate fire brigade intervention.</li> </ul>
E2	E1D2 (E1P3)	<p>Hydrant Landing Valves – Locations</p> <p>Certain fire hydrants will not be located in fire isolated stairs, rather Fire Engineered stairs.</p>	<ul style="list-style-type: none"> <li>- The stair at the top storey is to be fire separated from the catwalk.</li> <li>- The stair and the landings are to achieve the required FRL.</li> </ul>
E3	E1D3 (E1P1)	<p>Fire Hose Reel System – Omission</p> <p>Fire hose reels to be omitted throughout the building.</p>	<ul style="list-style-type: none"> <li>- Additional fire extinguishers are to be provided where fire hose reels are omitted.</li> </ul>

			<ul style="list-style-type: none"> <li>- The properties of fire hose reels and fire extinguishers are compared to demonstrate the appropriate use for the area.</li> </ul>
G1	Part G3, Spec 31 (C1P1, C1P2, E1P4, E2P2)	<p>A performance-based atrium is proposed with minor deviation from the DtS provision, including:</p> <ul style="list-style-type: none"> <li>- rationalise the smoke exhaust system</li> </ul>	<p>It is understood that there are two atria in M3 and M4 – the silo and hotel circulation space.</p> <p><u>Silo Atrium</u></p> <ul style="list-style-type: none"> <li>- The silo is to be fire separated from the rest of the building apart from the linking bridge on L3 which is a transient area with limited occupants.</li> <li>- No occupant or storage is allowed in the silo.</li> <li>- The linking must not be a required exit or egress pathway.</li> </ul> <p><u>Hotel Atrium</u></p> <ul style="list-style-type: none"> <li>- Computational fluid dynamics (CFD) assessment will be carried out during detailed design to support the rationalisation of the smoke exhaust system.</li> <li>- High level openings may be introduced to assist with venting the smoke.</li> </ul>

## 6 Conclusion

Based on our preliminary review of the design, the proposed Performance Solutions identified in this letter can be supported by performance based fire safety engineering.