

# Building Code of Australia 2010 Assessment Report

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## 1.0 INTRODUCTION

In accordance with our role as the BCA Consultant, we have undertaken an updated assessment of the proposed café, hotel, gym and residential development with basement parking under the Building Code of Australia 2010. The development consists of six levels of basement car parking with one level of retail/café use, five levels of hotel use and twenty-two levels of residential use.

**Please note: This updated assessment has been based upon the 2010 edition of the BCA. The applicable edition of the BCA imposed on a project is relative to the lodgement of the Construction Certificate application with the Accredited Certifier providing a corresponding development application has been approved. Lodgement of the Construction Certificate application after the 1 May 2011 will impose the 2011 edition of the BCA.**

## 1.1 REFERENCED DOCUMENTS

The following documentation was reviewed in the preparation of the attached report:

- Architectural drawings prepared by FJMT Architecture.
  - Proposed Site Plan, April 2011
  - Ground Level Residential Entry Lower, April 2011
  - Ground Level Hotel Entry Upper, April 2011
  - Hotel Level A, April 2011
  - Hotel Level B, April 2011
  - Hotel Level C, April 2011
  - Hotel Level D (Typical 1A Floor Plan), April 2011
  - Typical Residential Type 1A Plan (with Lift Overrun), April 2011
  - Typical Residential Type 1D Plan, April 2011
  - Typical Residential Type 2D Plan, April 2011
  - Typical Residential Type 3C Plan, April 2011
  - Typical Residential Type 4E Plan, April 2011
  - Typical Residential 4E Penthouse Plan, April 2011
  - Roof Plan, April 2011
  - Basement Mezzanine, April 2011
  - Basement Loading Dock B1, April 2011
  - Basement Level B2, April 2011
  - Basement Typical B3-B5, April 2011
  - PA-200-01, March 2011
  - PA-200-02, March 2011
  - PA-210-01, March 2011
  - PA-210-02, March 2011
  - PA-210-03, March 2011
  - PA-210-04, March 2011
  - PA-210-05, March 2011
  - PA-210-06, March 2011
  - PA-300-01, March 2011
  - PA-300-02, March 2011
  - PA-300-03, March 2011
  - PA-300-04, March 2011
- Arup Fire Engineering statement dated 29<sup>th</sup> June 2010.
- Building Code of Australia 2010 (see above comments in bold)
- Guide to the Building Code of Australia 2010
- Environmental Planning and Assessment Act 1979.
- Environmental Planning and Assessment Regulation 2000.

## 1.2 LIMITATIONS

- This report is a preliminary review of the above referenced documents.
- No assessment has been undertaken with respect to the Disability Discrimination Act 1992 (DDA). The building owner should be satisfied that their obligations under the DDA have been addressed. See comments under Part D3 below.

Please note that whilst the BCA specifies a minimum standard of compliance with AS1428.1 and Part D3 of the BCA for access and facilities for people with disabilities, compliance with such requirements may not necessarily preclude the possibility of a future compliant made under the Disability Discrimination Act 1992 (DDA). The DDA is a complaint based legislation and is presently not identified by the State Building Codes and Regulations. In this regard the client should be satisfied that their obligations under the DDA have been addressed.

## 2.0 BUILDING CHARACTERISTICS

<b>BCA Classification:</b>	Class 2 Residential (Level 7 to Level 28) Class 3 Hotel (Ground Floor Upper to Level 6) Class 6 Café/ Restaurant (Ground Floor Level Lower) Class 7a Carpark (Basement Levels -1 to -6 including Mezzanine) Class 7b Storage (Basement Mezzanine Level) Class 9b Gym (Level 2)												
<b>Rise in Storeys:</b>	Twenty-nine (29) <i>(required to be confirmed)</i> .												
<b>Type of Construction:</b>	Type A Construction												
<b>Effective Height:</b>	86.4 metres <i>(required to be confirmed)</i>												
<b>Floor Area</b>	<table border="0"> <thead> <tr> <th></th> <th style="text-align: right;"><b>Approx. Total</b></th> </tr> </thead> <tbody> <tr> <td>Car park Levels:</td> <td style="text-align: right;">8,613m<sup>2</sup></td> </tr> <tr> <td>Lower/Upper Ground Floor:</td> <td style="text-align: right;">700m<sup>2</sup></td> </tr> <tr> <td>Hotel Levels:</td> <td style="text-align: right;">5,180m<sup>2</sup></td> </tr> <tr> <td>Residential Levels:</td> <td style="text-align: right;">22,800m<sup>2</sup></td> </tr> <tr> <td><b>Total Floor Area</b></td> <td style="text-align: right;"><b>37,300m<sup>2</sup></b></td> </tr> </tbody> </table> <p><i>*Note: All floor areas are required to be confirmed.</i></p>		<b>Approx. Total</b>	Car park Levels:	8,613m <sup>2</sup>	Lower/Upper Ground Floor:	700m <sup>2</sup>	Hotel Levels:	5,180m <sup>2</sup>	Residential Levels:	22,800m <sup>2</sup>	<b>Total Floor Area</b>	<b>37,300m<sup>2</sup></b>
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## 3.0 SUMMARY OF COMPLIANCE ISSUES

### 3.1 SECTION B – STRUCTURE

1. Structural Engineers Design details and Certification will be required for the Construction Certificate stage to detail compliance to Part B1 Type A Construction – Structural provisions of the BCA and AS1170.

### 3.2 SECTION C – FIRE RESISTANCE

#### 2. C2.2: General Floor Area and Volume Limitations

The size of any fire compartment in a Class 6 or 7 building must not exceed to the Floor Area and Volume limitations detailed under Table C2.2. In this regard, the Floor Area and Volume limitations for Type A Construction is 5,000m<sup>2</sup> and 30,000m<sup>3</sup>.

For Class 9b uses the maximum floor area is 8000m<sup>2</sup> and 48000m<sup>3</sup>. The proposed uses to the Ground Floor levels and hotel area are under the requirements for each classification of Class 6 (Café), Class 9b (Gym) and Class 7b (Storage) use.

*Note 1: We understand that the Basement carpark levels are fire-separated from the levels above.*

*Note 2: The Class 7a Carpark levels are not subject to the requirements under C2.2 as they are required to be fully sprinkler protected. (Note, the whole building will be sprinkler protected).*

*Note 3: The Class 2 and 3 residential/hotel levels are not applicable to this clause as each sole occupancy unit (hotel room or apartment) is considered a separate fire compartment.*

#### 3. C2.6: Vertical Separation of Openings in External Walls

Given that the building is required to be sprinkler protected throughout under Clause E1.5 of the BCA, spandrel separation of external openings is not required under this clause.

#### 4. C2.7: Separation by Fire Walls

Where fire walls are proposed to separate fire compartments or different building classifications they are required to have an FRL as described below under Specification C1.1. In addition, any openings in the fire walls are required to be treated in accordance with Part C3 (Fire seals/fire doors etc). Furthermore, fire walls must extend from floor to slab or from floor to the roof covering.

#### 5. C2.8 Separation of Classifications in the Same Storey

Different classifications in the same storey are required to be either fire-separated by fire walls achieving the higher FRL or the whole storey is required to have the higher FRL to all building elements as per the Table Spec C1.1 of the BCA.

This will apply to Basement Mezzanine Level to separate the storage use and carpark loading dock adjacent (note: 240mins FRL separation required in this instance); Lower Ground Floor level to separate the residential lobby and café area; Upper Ground Floor level to separate the hotel lobby and café area; and Level 2 to separate the gym and hotel area.

#### 6. C2.9: Separation of Classifications in Different Storeys

Where different classifications are situated one above the other in different storeys, they must be separated by floors having an FRL prescribed under Specification C1.1 below for the classification of the lower storey. This will apply to each floor separating classifications to the Basement Mezzanine level, Ground Floor, Level 1 and between the hotel and residential parts to Level 7.

## **7. C2.10 Separation of Lift Shafts**

Given the proposed lifts connect more than 3 storeys in a sprinkler-protected building; they are required to be located in a shaft having an FRL prescribed under Specification C1.1. In addition, see requirements under Part E3 regarding emergency lifts that must be enclosed in a shaft having a minimum FRL of 120/120/120.

## **8. C2.11: Stairways and Lifts in One Shaft**

Under this clause the a stairway and lift must not be located in the same shaft if either the stair or lift are required to have an FRL. In this regard the proposed design complies.

## **9. C2.12: Separation of Equipment**

Where it is proposed to install lift motor rooms, emergency generators, boilers or battery rooms they are required to be separated by Construction achieving an FRL of 120/120/120. Any doorways into such rooms are required to be self closing fire doors requiring an FRL of -/120/30. This will apply to the plant rooms to Basement Mezzanine/loading dock levels.

## **10. C2.13: Separation of Equipment**

The proposed electricity substation and the main switch room (sustaining equipment operating in emergency mode) are required to be enclosed in construction achieving an FRL of 120/120/120 and any door to such rooms must be a self closing -/120/30 fire door. This may be applicable to separate switch boards which supply emergency equipment such as Hydrant Booster Pumps, Sprinkler Pumps, Smoke Control Systems, Emergency Lifts and Sounds and intercom systems.

## **11. C3.2: Protection of Openings in External Walls**

Under this clause, any openings in the external wall of the building that are within 3 metres of a side or rear boundary of the allotment, or 6 metres from the far boundary of a road are required to be protected in accordance with C3.4.

We understand that the development is bounded by two roads which would comply with the distance to openings as detailed above to the far side of the road. We note the side boundaries are over 3m from the building, however it would appear that there are openings within 3m of the West boundary to the Hotel Levels A and B. Please clarify whether this is the case and protection is required in accordance with Clause C3.4.

## **12. C3.3 Separation of External Walls & Associated Openings in Different Fire Compartments**

This would only apply where fire walls are provided to separate fire compartments or building classifications that would require protection to openings in external walls of fire compartments that oppose another fire compartment. This may be applicable to the hotel level if a firewall separation is provided to separate the gym area and the hotel use. External walls/openings of different fire compartments would be within 3-6m of openings to the gym admin area and hotel store 1 adjacent.

## **13. C3.8: Openings in Fire Isolated Exits**

The doors to the fire-isolated exits and passageways are required to be protected by -/60/30 self closing fire doors. In addition, any window in an external wall of a fire isolated exit must be protected in accordance with C3.4 if it is within 6 metres of, and exposed to, a window or other opening in a wall of the same building other than the same fire-isolated enclosure.

## **14. C3.10: Openings in Fire Isolated Lift Shafts**

The lift shafts are required to be protected by -/60/- fire doors that comply with AS 1735.11.

### 15. C3.11: Bounding Construction (Class 2/3)

The doors to each residential sole occupancy unit and each hotel room are required to have self closing -/60/30 fire doors. In addition a doorway must be protected if it provides access from a room not within a sole occupancy unit to a public corridor or lobby such as back-of-house rooms and the gym area to the hotel public corridors.

### 16. C3.12/C3.13/C3.15: Openings to Shafts and for Services

Where service installations penetrate floors or walls required to have an FRL, they are to be protected by fire seals (Fire Collars/Fire Stopping) that comply with Specification C3.15. Where the Mechanical Ventilation System penetrates floors Fire Dampers are required to be provided in accordance with AS 1668.1. A shaft is required to all levels to service ducts, electrical risers and garbage chute rooms, in accordance with Spec C1.1 as below for the FRL and protection of openings by Fire Doors.

### 17. Specification C1.1: Fire Resisting Construction

The proposed building elements are required to comply with Table 3 of Specification C1.1 for Type A Construction. In this regard, the following FRL's apply:

#### **Class 2/3 Residential/Hotel**

External Walls (Load bearing)	
Less than 1.5m:	90/90/90
1.5m to less than 3m:	90/60/60
3m or more:	90/60/30
External Walls (Non-load bearing)	
Less than 1.5m	-/90/90
1.5m to less than 3m	-/60/60
3m or more:	No FRL
Fire Walls:	90/90/90
Lift and Stair Shafts:	90/90/90
Walls Separating Units and Corridors	90/90/90 or -/60/60 (non LB)
Service Shafts:	-/90/90
Internal Walls/Columns/Beams	90/-/-
Floors:	90/90/90
Roof:	90/60/30

*Note 1: The roof does not require the FRL detailed above if the roof is non-combustible and the building has a sprinkler system throughout, in accordance with the concessions of Clause 3.5 of Spec. C1.1.*

#### **Class 7a Basement Carpark**

Note: The concessions under Table 3.9 can be applied due to the carpark being sprinkler protected throughout and the floor separating the carpark to the Mezzanine Basement level achieving an FRL of 120/120/120. (However for structural adequacy reasons a higher FRL is achieved for supporting the building above). Note: the storage area is not included under these provisions and will require an FRL separation of 240/240/240).

External Walls (Less than 3m to FSF):	60/60/60
Internal Walls/Columns/Beams:	60/-/-
Floors and Ramps:	60/60/60
Lift and Stair Shaft:	60/60/60

### **Class 9b Gymnasium**

External Walls (Load bearing)	
Less than 1.5m:	120/120/120
1.5m to less than 3m:	120/90/90
3m or more:	120/60/30
External Walls (Non-load bearing)	
Less than 1.5m	-/120/120
1.5m to less than 3m	-/90/90
3m or more:	No FRL
Service Shafts:	120/90/90
Internal Walls/Columns/Beams	120/-/-
Floors:	120/120/120

### **Class 6 Café/Restaurant**

External Walls (Load bearing)	
Less than 1.5m:	180/180/180
1.5m to less than 3m:	180/180/120
3m or more:	180/120/90
External Walls (Non-load bearing)	
Less than 1.5m	-/180/180
1.5m to less than 3m	-/180/120
3m or more:	No FRL
Fire Walls:	180/180/180
Lift and Stair Shafts:	180/120/120
Service Shafts:	-/120/120
Internal Walls/Columns/Beams	180/-/-
Floors:	180/180/180

### **Class 7b Storage**

Fire Walls:	240/240/240
Internal Walls/Columns/Beams	240/-/-
Floors:	240/240/240

*Note 1: Structural drawings and design certification is to be submitted by a structural engineer confirming compliance with the requirements of Specification C1.1 as above.*

## **3.3 SECTION D – ACCESS & EGRESS**

### **18. D1.2: Number of Exits Required**

As the effective height of the building is greater than 25 metres, each storey is required to be served by a minimum of two exits, we note this provision to the building by way of a scissor stair design and have confirmed with the architect that two exits are provided at Penthouse Level 4E.

### **19. D1.3: When Fire-isolated Stairways are Required**

All exit stairs serving the building are required to be fire-isolated under this clause.

## 20. D1.4: Exit Travel Distances

The doorway of any residential sole occupancy unit or hotel room (SOU) is required to be within 6 metres of an exit or a point of choice of two exits. In this regard, your attention is drawn to Hotel Level A and 4 No. Hotel suites (namely, H1.1 AS-ST5 SW1, SW2, SW3 and H1.1 AS-1B3-NW) where the travel distance to a point-of-choice is in excess of 6m.

Similarly, 4 No. Hotel suites to Hotel Levels B (namely, H1.2AS-ST5-SW1, SW2, SW3 and H1.2 AS-2B1-NW) all show travel distances to a point-of-choice in excess of 6m, however, it is understood that this is to be reviewed by Arup Fire Engineers.

In the Basement carparks, café, gym and other classifications, all points on the floor are required to be within 20 metres to an exit or a point of choice of two or more exits. Where there is a point of choice of two exits, all points on the floor are required to be within 40 metres to one of the exits.

A Fire Engineered Alternative Solution will need to be considered for excessive egress distances as detailed above which could also consider fit out layouts or further design changes to be addressed as part of the Construction Certificate process.

*Note 1: Further details revealing the location of all exits and paths of travel to exits are to be provided at Certification stage.*

*Note 2: Our assessment does not have regard to the future fit out of the cafe tenancy and therefore the exit travel distances are likely to be increased.*

## 21. D1.5: Distances Between Alternative Exits

The distance between alternative exits on the residential and hotel floors must not exceed 45 metres, from the proposed layout the distance between alternative exits measured between the scissor fire stair exits complies with this clause requirement.

The distance between alternative exits to the Basement carpark, café, gym and other uses are required to be not more than 60 metres apart. The Basement carpark levels would comply with the provisions of this clause. Upon resolution of detailing the alternative exits to the Basement Mezzanine as stated above, the distance between alternative exits is required comply with this clause requirement.

It is also acknowledged that egress pathways converge at two separate locations, those being at Basement Mezzanine Level (with both stair flights ascending from the levels below) and separately at Ground Level Residential Entry Lower (with both stair flights descending from levels above).

Given the nature of the non-compliance a fire engineered solution is required and can be addressed as part of the Construction certificate process.

## 22. D1.6: Dimensions of Exits

Under this clause, the unobstructed height in a required exit or a path of travel to an exit must not exceed 2m, except doorways which may be not less than 1980mm. In addition, the unobstructed width of an exit, or a path of travel to an exit must not be not less than 1 metre. Please note that doors may be 750mm (or 800mm for disabled access requirements).

We have considered the required exit widths in the table below having regards to the carpark, café/restaurant, gym and hotel levels.

Population	No. of Persons	Required Exit Width	Proposed Exit Width	Complies Yes/No
Basement Car park Levels (per floor)	50 per floor	1m	2m	Yes
Café/ Restaurant	91	1m	1.5m	Yes
Gym	74	1m	1m	Yes
Hotel Levels	24 per floor (worst case)	1m	2m	Yes

Hotel Room	Conference	80 seats	1m	1m	Yes
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Further details are to be provided having regards to the location and width of all exit doors.

*Note 1: The population was calculated under Table D1.13, the actual occupancy numbers may be considered less, particularly to the café and gym areas.*

*Note 2: Doorways may be 250mm less than the required exit width.*

### 23. D1.7: Travel via Fire Isolated Exits

A doorway from a room must not open directly into a stairway that is required to be fire isolated unless it is from a public corridor/lobby, or a sole occupancy unit occupying all of a storey or a sanitary compartment, airlock or the like. This would comply to the Basement carpark levels, hotel and residential levels. However clarification is required to the plans of the fire stair separation and exit door locations to the Basement Mezzanine and loading dock levels. In addition, the electrical riser doors are not allowed within the fire stair to the Basement levels.

Each fire-isolated stairway must provide independent egress from each storey served and discharge directly to a road or open space. Alternatively, the fire-isolated exits may discharge into a covered area that adjoins a road or open space that is open for 1/3 of its perimeter and has an unobstructed clear height throughout of not less than 3 metres, and is within 6 metres of a road or open space.

Each fire-isolated stair exit appears to discharge to the Lower Ground Floor level directly to the street via a covered area that is required to comply as detailed above.

Each fire-isolated stair serving the Upper levels and Lower levels are required to be separated from each other at this level and to the fire isolated passageways so no exits from the same level/storey will converge at the lower ground floor level within the fire isolated passageway.

### 24. D1.9 Travel by Non Fire-Isolated Stairs

We note the use of required non fire-isolated stairs forming part of an egress path to the Basement Mezzanine and loading lock levels. These stairs are required to be within 20m of the fire-isolated stair and as they do not discharge at ground level.

Given the nature of the non-compliance a fire engineered solution is required and can be addressed as part of the Construction certificate process.

### 25. D1.10: Discharge from Exits

All exit paths to open space are required to be 1m in width and bollards will be required to exit doors that could be blocked by vehicles on the Basement carparking levels.

### 26. D2.2: Fire-isolated Stairways & Ramps

The fire-isolated stairways are to be constructed of non-combustible materials and so that if there is local failure, it will not cause structural damage to, or impair the fire resistance of the shaft. Details and design certification are to be provided by the Structural Engineer for the Certification stage.

### 27. D2.4 Separation of Rising & Descending Stair Flights

The fire-isolated stair exits must have no direct connection between a flight rising from a storey below and a flight descending from a storey above. In this regard, compliance appears to be achieved.

Note: Any construction that separates or is common to the rising and descending flights must be non-combustible and smoke proof in accordance with Clause 2 of Specification C2.5.

## **28. D2.7: Installations in Exits and Path of Travel**

Services or equipment comprising electricity meters, distribution boards, central telecommunication distribution boards/equipment, electrical motors or other motors serving equipment in the building, can be installed in a corridor or the like, leading to a required exit if the services or equipment are enclosed with non-combustible construction or appropriate fire-protection covering and doorways suitably sealed against smoke spread from the enclosure.

Note comments regarding the electrical riser doors located within the fire stair to Basement levels, required to be re-designed.

## **29. D2.11: Fire-isolated passageways**

The fire-isolated passageways serving fire stairs at Basement levels and the Lower Ground Floor level are required to achieve the same FRL as the fire stairs and fully enclosed.

Note the separation requirements of the fire-isolated stairs/passageways serving different levels and avoidance of converging exits.

## **30. Part D2: D2.13/D2.14/D2.15/D2.16 & D2.17: Stairs, Balustrades & hand rails**

The proposed treads and risers, landings, door thresholds, balustrades and handrails are required to comply with the requirements of the applicable sections as stated. All balustrades are required to be 1m high to landings, floors and balconies and 865mm to the stairs, all balustrades are required to have no openings that could permit a 125mm sphere and no climbable elements where the drop below is 4m measured to the Ground Floor Level. Note concessions for fire isolated stair balustrades for use of emergency purposes only.

## **31. D2.19: Doorways & Doors**

The revolving doors to the residential and hotel lobbies cannot be used where the door is a required exit for egress purposes from these levels. An alternative swinging door may be located adjacent to each revolving door for egress provisions.

## **32. D2.20: Swinging Doors**

Exit doors are required to swing in the direction of egress. Note: Where a building or part is less than 200m<sup>2</sup> and it is the only required exit from this part of the building, it may swing inwards provided it is fitted with a hold open device. We note all required doors comply with this clause requirement.

## **33. D2.21: Operation of Latch**

A door in a required exit or in a path of travel to an exit must be readily openable from the side facing a person seeking egress, by a single hand downward action or pushing action on a device located between 900mm and 1100mm above finished floor level.

## **34. D2.22: Re-entry from Fire-Isolated Exits**

Doors of a fire-isolated exit must not be locked from the inside in a fire-isolated exit serving any storey above an effective height of 25 metres. In this regard, the exits serving the residential levels are required to comply. Alternatively the doors serving the residential fire stairs may be fitted with a failsafe device that automatically unlocks the door upon activation of a fire alarm and on at least every fourth floor, the doors are not able to be locked and a sign is fixed on such doors stating that re-entry is available, or an intercom system is provided near the doors with the appropriate signage for operation.

## **35. D2.23: Signs on Doors**

Signs are to be installed on fire doors to fire isolated exits on the side facing a person seeking egress. "FIRE DOOR - DO NOT OBSTRUCT, DO NOT KEEP OPEN". In addition the doors

discharging from the fire isolated exits are to have signage located on the outside of the doors that states "FIRE SAFETY DOOR – DO NOT OBSTRUCT".

### **36. D3.2: General Building Access Requirements**

Under this clause disabled access is required to be provided from the allotment boundary at the main points of entry into the building to the café and hotel lobby levels and from any accessible car parking space through to the principal public entrance. In addition, disabled access is required to and within the entrance floor and all other floors served by the lift. This would include the provisions of accessible sanitary compartments and facilities in accordance with Part D3 and AS1428.1.

To the Class 3 hotel levels, access is required to the common facilities (gym), entrance lobby level and to 4 sole-occupancy units (hotel rooms) where 76 rooms are provided.

Note: The requirements of Part D3 do not apply to the Class 2 residential levels however we note the provisions of adaptable units as per the Consent Authority requirements to Levels 1D and 3C.

The provision of an Access Report should be provided from a qualified Access Consultant detailing all relevant compliance requirements to AS1428.1, AS4299, AS1735.12, AS2890.1 and DDA requirements in conjunction with the Councils DCP.

### **37. D3.5: Carparking**

Car parking spaces for people with disabilities are required to be provided at 1 space for every 100 car parking spaces in the Class 7 Commercial part and 1 space for every 50 car parking spaces serving the Class 6 cafe part where up to 1000 car spaces are provided.

In regards to the Class 3 hotel use, the number of disabled car spaces is worked out on the multiplication of the total number of car spaces by the percentage of accessible SOU (hotel rooms) to the total of SOU (all hotel rooms). Further details are required for this.

### **38. D3.6: Identification of Accessible Facilities**

Clear and legible Braille and tactile signage that complies with Specification D3.6 incorporating the international symbol of access as appropriate, is to be provided to identify the location of the toilet facilities/hearing augmentation systems and lifts.

### **39. D3.8: Tactile Indicators**

Where public stairways and ramps are proposed tactile indicators are required to warn people with vision impairment. In this regard, tactile indicators are shown to the proposed stair in accordance with this clause. Tactile indicators must be Type B indicators in accordance with AS 1428.

## **3.4 SECTION E – SERVICES AND EQUIPMENT**

### **40. E1.3: Fire Hydrants**

The proposed building is required to be served by a Fire Hydrant system complying with AS 2419.1 - 2005. Details and design certification are required from the Hydraulic Consultant for the Certification stage including the Booster assembly and Hydrant Pump Room required to be located off a fire isolated stair or direct access to the road. We note the Booster assembly location; this is required to be within sight of the main entrance points of the building and protected in accordance with AS 2419.1 requiring 90/90/90 FRL construction 2m either side of the assembly and 3m above with no openings.

### **41. E1.4: Fire Hose Reels**

The proposed building is required to be served by Fire Hose Reels complying with AS 2441 – 2005. Hose reels are required to be located externally, internally within 4 metres of an exit, or internally adjacent to a Fire Hydrant (other than one within a fire-isolated exit). Details are required

from the Hydraulic Consultant for the Certification stage. We note compliant locations to the residential and hotel levels to the public corridors within 4 metres of the fire stair exit.

#### **42. E1.5: Sprinklers**

Given the proposed building has an effective height greater than 25 metres, it is required to be provided with a Sprinkler System throughout the whole building including basement levels. Details and design certification are required from the Hydraulic Consultant for the Certification stage.

Note: Sprinkler Valve enclosures must be located in a secure enclosure which has direct egress to a road or open space for use by the Fire Brigade; in addition a building occupant warning system is required connected to the Sprinkler System with a direct data link to the Fire Brigade.

#### **43. E1.6: Portable Fire Extinguishers**

Portable Fire Extinguishers in accordance with this clause and AS 2444 are required to Emergency Switch Room locations and to kitchens associated with the café/restaurant.

#### **44. E1.8: Fire Control Centres**

A Fire Control Centre is required to be provided in the building complying with Specification E1.8, given the building has an effective height greater than 25 metres. The Fire Control Centre must be located so that egress from any part of its floor does not involve a change in level to a road or open space of more than 300mm.

Further given that the building has an effective height over 50 metres it requires the Fire Control Centre to be located in a dedicated Fire Control Room which has an FRL of 120/120/120. The provisions of Clauses 6, 7, 8, 9, 10, 11 and 12 detail compliance requirements for a Fire Control Room.

#### **45. E2.2: Smoke Hazard Management**

The fire-isolated exits/passageways serving a storey above an effective height of 25 metres, or more than 2 storeys below ground (not counted in the rise in storeys) must be provided with an Automatic Air Pressurization System complying with AS/NZS 1668.1.

The Class 2 Residential part and Class 3 hotel part must be provided with an Automatic Smoke Detection and Alarm System complying with Specification E2.2a requiring the provision of AS3786 Smoke Detectors to residential units (Class 2 only) linked to an AS1670 Fire Detection System to all common areas, public corridors, fire stairs and commercial uses including a Building Occupant Warning System. (Note: The Class 3 hotel part requires an AS 1670 Detection System throughout, including within hotel rooms).

The Class 6 café/ Restaurant, Class 7b storage, Class 9b gym are to be provided with a zone Smoke Control System complying with AS/NZS 1668.1 and the provision of a Fire Detection System as detailed above. A fire engineered alternative solution is to be provided to omit zone smoke control to these areas of the building, see Arup's Fire engineering statement dated 29<sup>th</sup> June 2010.

The Basement carpark levels require the provision of a Mechanical Exhaust System in accordance with AS 1668.2 and a Sprinkler System throughout, as detailed above.

The provisions of Clause E2.3 are applicable where a Basement with more than 3 storeys below ground is proposed. This would require special considerations of the use, nature, egress and fire loadings in consultation with the NSW Fire Brigade.

#### **46. Part E3: Lift Installations**

Two emergency lifts are required to serve the building where two or more passenger lifts are provided to each storey, at least one is required to be a stretcher use facility to serve all floors, having a clear space not less than 600mm wide x 2000mm long x 1400mm high. Emergency Lifts are required to comply with AS1735.2 and contained in separate fire rated shafts.

Each lift is required to have facilities for use by persons with disabilities in accordance with AS1735.12 and contain fire service controls.

**47. E4.2, E4.4, E4.5, E4.6, E4.8 & E4.9: Emergency Lighting & Exit Signage and Sound/Intercom Systems**

Emergency Lighting and Exit signage are required to be installed throughout the building in accordance with AS 2293.1 - 2005.

A Sound and Intercom System is required for the whole building where over 25m effective height.

### **3.5 SECTION F – HEALTH AND AMENITY**

**48. F2.1: Facilities in Residential Buildings**

Each residential unit and hotel room would appear to have adequate sanitary facilities as per Table F2.1 of the BCA. Note, where more than 10 units in a class 2 part are provided separate WC facilities are required at Ground Floor level for employees to service these levels. Please confirm laundry facilities are provided to each residential unit.

**49. F2.3: Facilities in Class 3 to 9 Buildings**

Having regards to the café, gym and hotel parts of the building, sanitary facilities and locations are required to be provided to the plans confirming that the proposed number of sanitary facilities complies with Table F2.3 of the BCA for each building classification type and tenancy. This would include sanitary facilities for employees and patrons. (Note for Class 3 hotel use for employees only).

We note adequate facilities to the Class 6 café area for shared use of the facilities by staff and patrons.

Furthermore, shower facilities are required to the gym area.

**50. F2.4: Facilities for People with Disabilities**

Disabled toilet facilities are required to be provided in accordance with AS 1428.1 to the Class 6, 7 and 9b uses. The location and number of accessible WC's are to be detailed to the plans. Note where 1-100 WC's are provided for the building, one unisex-accessible WC is required, however additional accessible WCs may be required considering different uses of the building and locations. We note this provision to the Class 6 café area. Such facilities are required for the Class 3 hotel sole occupancy units (4 hotel rooms), common areas to the hotel and the Class 9b gym use.

**51. F2.5: Construction of Sanitary Compartments**

Sanitary compartment facilities are required to have door and partitions that extend from floor to ceiling levels. In all other cases 1.8 metres above the floor level. Doors to a fully enclosed sanitary compartment must open outwards, or slid, or be readily removable from the outside unless there is a clear space of at least 1.2 metre between the closet pan and the nearest part of the doorway.

**52. F3.1: Room Sizes**

The ceiling heights within the Class 2 residential parts and Class 3 hotel rooms of the building must be no less than 2.4 metre in habitable rooms and not less than 2.1 metres in corridors and bathrooms.

The ceiling height within the Class 6 café and Class 9b gym parts are required to be no less than 2.4 metres above the finished floor level, except for corridors and passageways, bathrooms, store rooms. The basement car park is required to have a floor to ceiling height of at least 2.1 metres, however this varies to AS2890.1 compliance for car parking layouts.

### **53. F4.1: Provision of Natural Light**

Details are to be provided demonstrating that all habitable rooms in the Class 2 residential apartments and Class 3 hotel rooms (bedrooms) are provided with natural light complying with F4.2 and F4.3 for the Certification stage.

### **54. F4.5: Ventilation of Rooms**

The building is required to be ventilated in accordance with the natural ventilation requirements under F4.6 or a Mechanical Ventilation System complying with AS 1668.2. Details and design certification are required to be provided from the Mechanical Consultant.

### **55. F4.11: Carparks**

Every storey of the car park is required to be provided with a Ventilation System complying with AS 1668.2. Details and design certification are required to be provided from the Mechanical Consultant.

### **56. F4.12: Kitchen Local Exhaust Ventilation**

Where provisions are being made for commercial kitchens to food tenancies or the café/restaurant, kitchen exhaust hoods are required to comply with AS/NZS 1668.1 and AS 1668.2 where any cooking apparatus has a total power input exceeding 8kW, or a total gas power output exceeding 29MJ/h, or where the total power input to more than one apparatus exceeds 0.5 kW or 1.8 MJ for gas per m<sup>2</sup> of floor area of the room of the enclosure. In this regard advice will be required from a Mechanical Consultant.

### **57. Part F5: Sound Transmission & Insulation (Class 2/3 uses)**

The floors between sole occupancy units to the Class 2 residential apartments and Class 3 hotel rooms (SOU), plant rooms and public corridors is to have an airborne sound insulation rating of not less than 50 and an impact sound insulation rating of not less than 62.

The walls between sole occupancy units are to have an airborne sound insulation rating of not less than 50. Walls separating sole occupancy units from sanitary compartments, public corridors, lift shafts and plant rooms are to have a weighted sound reduction index  $R_w$  (airborne) of not less than 50.

The door assemblies to the sole occupancy units separating public corridors are to have a weighted sound reduction index of not less than 30.

The sound insulation ratings to services that pass through sole occupancy units must be not less than 40 adjacent to habitable rooms and not less than 25 adjoining kitchens and non-habitable rooms.

Details are required from an Acoustic Consultant prior to the Certification stage to ensure the design complies with the above requirements.

## **3.6 SECTION J: ENERGY EFFICIENCY**

### **58. Section J: Energy Efficiency**

Details demonstrating that the proposed hotel, retail (café) and gym areas comply with Parts J1 – Building Fabric, J2 – External Glazing and J3 – Building Sealing will be required from a qualified consultant detailing either deem to satisfy compliance or the provision of an overall building modelling report that details the buildings annual energy consumption.

Details and design certification are to be provided from the Mechanical and Electrical Consultants having regards to Parts J5 – Air Conditioning and Ventilation, J6 - Lighting and Power and J7 – Hot Water Supply to the building.

A BASIX certificate will be required to be provided having regard to the Class 2 residential part of the building. In addition, the Class 2 part is required to comply with the NSW sub section provisions of Section J – Energy Efficiency.

## 4.0 CONCLUSION

This review contains an assessment of the proposed residential, hotel and commercial building under the Deemed-to-Satisfy provisions of the Building Code of Australia 2010 (BCA).

It is considered that the building can achieve an acceptable level of compliance with the current provisions of the BCA upon resolution of the compliance issues identified in this report by way of complying with the Deemed-to-Satisfy provisions and/or Alternative Solutions that satisfy the Performance Requirements of the BCA.

Signed:



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Lee Kippax  
Senior Building Surveyor  
**Dix Gardner Pty Ltd**

Date: 15<sup>th</sup> April 2011