# BUILDING CODE OF AUSTRALIA REPORT

## Mixed Use Development
## Site 9 – Sydney Olympic Park



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## Executive Summary

As Accredited Certifiers, we have reviewed architectural design documents prepared by Bates Smart (refer appendix A) for compliance with the Building Code of Australia 2016.

The assessment of the design documentation has revealed that the following areas are required to be assessed against the relevant performance requirements of the BCA. The submission for Construction Certificate will need to include verification from a suitably accredited fire engineer:

| DTS Clause | Description of Non-Compliance | Performance Requirement |
|---|---|---|
| Spec C1.1, C2.8 & C2.9 | **Separation of Classifications/Reduced FRLS**<br>Rationalisation of fire resistance levels in the following locations will be addressed as part of the fire engineered solution for the proposal:<br><br>Ground Floor (Retail)<br>▪ FRL's to be reduced from 180minutes to 120minutes in the retails areas.<br><br>Level 9<br>▪ FRL between class 7b bike storage area and class 2 residential component have been propped to be reduced from 240minutes to 120minues. | CP1,CP2 |
| D1.4 | **Exit Travel Distances**<br><u>Car Parking</u><br>Level 3 (commercial)<br>▪ Travel distance is up to 53m in lieu of 40m where 2 exits are available<br>Level 4-6 (residential)<br>▪ Travel distance is up to 53m in lieu of 40m where 2 exits are available<br><u>Commercial</u><br>Level 7-8<br>▪ Travel distance is up to 48m in lieu of 40m where 2 exits are available (this is without fixtures being detailed which will increase the travel distances)<br><u>Residential Courtyard</u><br>▪ Travel distance is up to 47m in lieu of 20m to a single exit<br><u>Residential</u><br>Level 7-9, 36-38<br>▪ Entrance doorway of SOU's are up to 14m to an exit in lieu of 6m<br>Level 10-35<br>▪ Entrance doorway of SOU's are up to 15m to an exit in lieu of 6m<br><u>Non-Sole Occupancy Unit</u><br>Level 7<br>▪ Travel distance is up to 27m in lieu of 20m from within non-SOU area.<br>Level 8<br>▪ Travel distance is up to 27m in lieu of 20m from within | DP4, EP2.2 |

| | | |
|---|---|---|
| | non-SOU area.<br><br><u>Roof</u><br>▪ Travel distance to a single exit is up to 27m in lieu of 20m.<br><br>A performance based fire engineered solution will be required as part of the proposal. | |
| D1.5 | **Alternative exits**<br>Alternative exits on level 39 are located 4m apart in lieu of the minimum 9m required.<br><br>This is required to be addressed as part of the fire engineered solution for the proposal. | EP2.2, DP4 |
| D1.7 | **Travel via fire-isolated exits**<br>Path of travel from fire isolated stairs passes within 6m of an external wall of the same building.<br><br>The discharge point leads to a covered area which is less than 1/3 open.<br><br>This is required to be addressed as part of the fire engineered solution for this proposal. | DP4 |
| E1.3 & E1.5 | **Fire Hydrants/Sprinklers**<br>The design proposal indicates that there are multiple entrances – Hydrant booster not in sight of the main entrance. AS2419.1-2005.<br><br>There are currently 2 internal hydrants located within a single fire isolated stair shaft in lieu of separate compartments as outlined in AS 2118.6-2012.<br><br>Internal hydrants are located in fire stairs which has 2 steps higher than the level they are serving.<br><br>The hydrant booster which is located on the external wall of the building is not proposed to be provided with a fire rated shielding wall.<br><br>This is to be addressed as part of the fire engineering solution for the development. | EP1.3 & EP1.4 |
| Spec E1.8 | **Fire Control Centres**<br>The current location has the potential to be obstructed by escaping occupants from adjacent North Wing fire isolated stairs. Additionally the fire control room and associated fire indicator panel is unable to be located at the front entrance as multiple entrances exist.<br><br>This is required to be addressed as part of the fire engineered solution for the proposal. | EP1.6 |

The fire engineered solution relating to EP1.3, EP1.6 & EP2.2 will need to be approved after consultation with the NSW Fire Brigade as part of the Construction Certificate process.

The application for Construction Certificate shall be assessed under the relevant provisions of the Environmental Planning & Assessment Act 1979 (As Amended) and the Environmental Planning & Assessment Regulation 2000.

Assessed By

Andrew Brohier
Senior Building Surveyor

## 1.0 Introduction

The proposed development comprises of ground floor retail and residential lobby, 5 storeys of car parking for the retail, commercial and residential areas, 33 storeys of residential apartments on top with associated plant.

The site is located at on the Corner of Olympic Boulevard and Sarah Durack Avenue, Sydney Olympic Park and is known as Site 9.

## 1.1 Current Legislation

The applicable legislation governing the design of buildings is the Environmental Planning and Assessment Act 1979. This Act requires that all new building works must be designed to comply with the BCA.

The version of the BCA applicable to the development, is version that in place at the time of the application to the Certifying authority for the Construction Certificate. This assessment has been completed based on the **2016 BCA.**

## 2.0 Building Assessment Data

Summary of Construction Determination:

| | |
|---|---|
| Classification | 2,5,6,7a |
| Number of Storeys Contained | 39 |
| Rise In Storeys | 39 |
| Type of Construction | A |
| Effective Height (m) | 121.75m* |

Note: Effective height has been calculated based on the (RL 133.8 – RL12.05)

Summary of the floor areas and relevant populations where applicable:

| Part of Project | BCA Classification | Approx. Floor Area ($m^2$) | Assumed Population (per floor) |
|---|---|---|---|
| Ground Floor-Retail/Club (North Wing) | 6 | 613m2* | 196 patrons*<br>10 staff* |
| Ground Floor-Retail/Club (South Wing) | 6 | 452m2* | 142 patrons*<br>8 staff* |
| Level 2- Retail Parking | 7a | 1179m2* | 12 spaces (Retail)*<br>16 spaces (Residential)* |
| Level 3-Commercial/Residential Parking | 7a | 2929m2* | 3 spaces (Retail)*<br>36 Spaces (Residential)* |

| Part of Project | BCA Classification | Approx. Floor Area ($m^2$) | Assumed Population (per floor) |
|---|---|---|---|
| Level 4-Residential Parking | 7a | 2929m2* | 85 Spaces (Residential)* |
| Level 5- Residential Parking | 7a | 2929m2* | 84 Spaces (Residential)* |
| Level 6-Residential Parking | 7a | 2929m2* | 83 Spaces (Residential)* |
| Level 7-Residential | 2 | 552m2* | 11 occupants* |
| Level 7 – Commercial | 5 | 1314m2* | 64 staff* |
| Plant | Plant | 147m2* | |
| Level 8-Residential | 2 | 538m2* | 11 occupants* |
| Level 8 – Commercial | 5 | 1185m2* | 54 staff* |
| Plant | Plant | 159m2* | |
| Level 9- Residential | 2 | 582m2* | 11 occupants* |
| Level 9-Communal Courtyard | 2 | 1184m2* | |
| Level 10-14- Residential | 2 | 681m2* | 14 occupants* |
| Level 15-26- Residential | 2 | 683m2* | 14 occupants* |
| Level 27-35- Residential | 2 | 678m2* | 15 occupants* |
| Level 36-37- Residential | 2 | 719m2* | 16 occupants* |
| Level 38- Residential | 2 | 635m2* | 12 occupants* |
| Level 39 – Residential | 2 | 290m2* | 4 occupants* |
| **TOTAL** | | 1,065m2 (Retail)<br>12,955m2(Carpark)<br>2,499m2(Commercial) | **136 staff**<br>**353 spaces**<br>**304 spaces**<br>**454 occupants** |

Notes:
1. Population for retail has been calculated based on 3m2 per person as per Table D1.13 for retail areas (department stores)
2. Staff populations have been calculated based on 4% of the total population calculated based on Table D1.13
3. Population numbers in the commercial and residential areas has been advised by client.
4. Ratio of male to females has been assumed as 1:1
5. Client has advised that the ground floor will be retail. In the event that this changes to a club further assessment will be required.
6. Parking space numbers have been advised by client on plans
7. Floor areas for residential areas and carparking has been provided by client.
8. The Carpark areas have been considered ancillary to the use for the purposes of population numbers

## 3.0 Structural Provisions

Any new structural works are to comply with the applicable requirements of AS/NZS 1170.1 and Part B of the BCA.

Glazing is to comply with AS1288, and AS2047.

Prior to the issue of the Construction Certificate structural certification is required to be provided.

## 4.0 Fire Resistance

The buildings should be constructed generally in accordance with Table 3 & 3.9 of Specification C1.1 of the **Building Code of Australia 2016**.

The building is required to be Type **A** Construction.

The building has been assessed on the basis of the following fire separation/ compartmentation within the development;

- Ground floor retail (North wing) considered as one compartment,
- Ground floor retail (South wing) considered as one compartment,
- Carparking located on level 2 to level 6 considered as one compartment,
- Commercial area located on level 7 and 8 are considered as one compartment,
- Fire compartmentation of the building at each floor level,
- Bounding construction to the sole occupancy units of 90 minutes,
- Separation between the carpark levels and the retails portions of 180 minutes,
- Separation between the carpark levels and the residential portions of 120 minutes,

Fire resistance levels for building structural members are as follows:

- Storage portions 240 minutes (Reduced to 120minutes in engineered solution)
- Retail portions 180 minutes (Reduced to 120minutes in engineered solution)
- Commercial portion 120 minutes
- Car park levels 120 minutes
- Residential portions 90 minutes

Note: Rationalisation of fire resistance levels in the following locations will be addressed as part of the fire engineered solution for the proposal:

Ground Floor (Retail)

- FRL's to be reduced from 180minutes to 120minutes in the retails areas.

Level 9

- FRL between class 7b bike storage area and class 2 residential component have been propped to be reduced from 240minutes to 120minues.

## 4.1 Protection of Openings

The prescriptive provisions of the BCA stipulate that openings within building elements required to have an FRL shall be protected as follows:

1. Any external opening within 3m of the fire source feature protected by -/60/- fire rated construction, or externally located wall wetting sprinklers, or an alternate solution be provided to verify CP2 of the BCA.
2. Penetrations through fire rated floors to be protected either by a tested prototype (e.g. fire collar, fire damper, etc) or be installed within a fire rated shaft achieving an FRL of 120 minutes (90 minutes to residential portions);
3. Any penetration through a wall or room required to have an FRL (e.g. substation, boiler room, apartment separating wall etc) is to be protected either by a tested prototype (e.g. fire collar, fire damper, etc) or be installed within a shaft achieving an FRL of 120 minutes (90 minutes to residential portions) (or 120/120/120 where it is a room such as a substation);

4. Self-closing -/60/30 fire doors to the doors opening to the fire isolated stairs (note that this also includes the access doors to the condenser units on the plant platforms).

Note that where fire dampers, fire collars, etc are utilised, allowance needs to be made for access hatches to be provided within the walls / ceilings to ensure that maintenance access is provided.

*Fire source feature is defined as;*
*(a) The far boundary of a road, river, lake or the like adjoining an allotment,*
*(b) The side or rear boundary of the allotment,*
*(c) The external wall of another building on the allotment which is not a class 10 building.*

Note: the proposal is not located within 6m of the far side of the surrounding roads and as such openings are not required to be protected.

### 4.2 Vertical Separation of openings in external walls:

The building is proposed to be sprinkler protected throughout; therefore spandrel separation is not required.

### 4.3 Public Corridors: Class 2 and 3 Buildings

Public corridors exceeding 40m in length to be divided into intervals of not more than 40m by smoke proof walls. The corridor on level 9 is currently 46m in length and as such is required to be separated by a smoke proof compartment in accordance with Specification C2.5.

### 4.4 Passive Fire Protection

Other passive fire protection issues that will need to be addressed in detailed documentation phase include:

- Lift motor rooms,
- Emergency power supply,
- Emergency generators,
- Electricity supply,
- Boilers or batteries,
- Hydrant Pump rooms,
- Sprinkler Pump Rooms,

To be separated from the remainder of the building by construction achieving a minimum fire resistance level of 120 minutes.

### 4.5 Fire Hazard Properties

The fire hazard properties of fixed surface linings and mechanical ductwork will also need to be addressed within the detailed documentation phase pursuant to Specification C1.10 Building Code of Australia.

## 5.0 Egress

The egress provisions from the proposed building are provided by:

- Fire isolated stairways
- External perimeter doorways
- Required non-fire isolated stairways

Other detailing issues that will need to be addressed include:

- Door hardware
- Exit door operation
- Stair construction
- Handrail and balustrade construction
- Discharge from the fire isolated exits
- Details of the egress provisions to the road.

### 5.1 Exit Travel Distances

The locations of the proposed exits would appear to indicate that the deemed to satisfy requirements in terms of travel distances and distance between alternative exits will need to be assessed as part of a fire engineered solution.

The travel distances to exits should not exceed:

Class 5, 6, 7a – Commercial, Retail, Carpark
- 20m to a single exit or point of choice and where two exits are provided, a maximum of 40m to one of those exits; and
- exits shall be located to not be more than 60m apart and not closer than 9m

Class 2- Residential
- 6m from an exit or from a point of choice
- 20m from a single exit at the level of egress to a road or open space
- Alternate exits not more than 45m apart

The following areas exceed the maximum allowable travel distance:

<u>Car Parking</u>
Level 3 (commercial)
- Travel distance is up to 53m in lieu of 40m where 2 exits are available

Level 4-6 (residential)
- Travel distance is up to 53m in lieu of 40m where 2 exits are available

<u>Commercial</u>
Level 7-8
- Travel distance is up to 48m in lieu of 40m where 2 exits are available (this is without fixtures being detailed which will increase the travel distances)

<u>Residential Courtyard</u>
- Travel distance is up to 47m in lieu of 20m to a single exit

<u>Residential</u>
Level 7-9, 36-38
- Entrance doorway of SOU's are up to 14m to an exit in lieu of 6m

Level 10-35
- Entrance doorway of SOU's are up to 15m to an exit in lieu of 6m

<u>Non-Sole Occupancy Unit</u>
Level 7
- Travel distance is up to 27m in lieu of 20m from within non-SOU area.

Level 8
- Travel distance is up to 27m in lieu of 20m from within non-SOU area.

Roof

- Travel distance to a single exit is up to 27m in lieu of 20m.

A performance based fire engineered solution will be required as part of the proposal.
Note: The internal layout of the commercial areas has not been detailed and has the potential to impact travel distance further.

Alternative exits on level 39 are located 4m apart in lieu of the minimum 9m required.

This is required to be addressed as part of the fire engineered solution for the proposal.

### 5.2 Dimensions of Exits

Minimum dimensions of 1000mm and 2000mm height to be provided within exits, with the paths of travel should provide a minimum width of 1000mm (note that all maintenance access, cat walks, etc may comply with AS1657 in which case a 600mm clear width is required).

The following table summarises the exit widths required:

| Floor Level | Exit Width Provided | Number of people (as provided) | Exit Width required |
|---|---|---|---|
| Ground - Retail North Wing | 10m | 192 | 2m |
| Ground - Retail South Wing | 2m | 126 | 1.5m |
| Level 7 Commercial | 1.8m | 64 | 1m |
| Level 8 Commercial | 1.8m | 54 | 1m |

The total aggregate exit width within the building is adequate to cater for the proposed population.

Doorways are permitted to contain a clear opening width of 750mm with a height of 1980mm as part of egress requirements. Access for persons with disabilities however requires a clear doorway opening width of 850mm (i.e minimum 870 mm doors).

### 5.3 Fire Isolated Exits

Each fire-isolated stairway or fire-isolated ramp must provide independent egress from each storey served and discharge directly, or by way of its own fire-isolated passageway to:

- A road or open space; or
- To a point within the confines of the building, that is used only for pedestrian movement, car parking or the like and is open for at least 2/3 of its perimeter; and from which an unimpeded path of travel, not further than 20 m, is available to a road or open space; or
- Into a covered area that adjoins a road or open space, is open for at least 1/3 of its perimeter, has an unobstructed clear height throughout, including the perimeter openings, of not less than 3 m and provides an unimpeded path of travel from the point of discharge to the road or open space of not more than 6 m.

Where a path of travel from the point of discharge of a fire-isolated exit necessitates passing within 6m of any part of an external wall of the same building, measured horizontally at right angles to the path of travel, that part of the wall must have an FRL of not less than 60/60/60 and any openings protected internally in accordance with C3.4, for a distance of 3 m above or below, as appropriate, the level of the path of travel, or for the height of the wall, whichever is the lesser.

Note: Path of travel from fire isolated stairs pass within 6m of an external walls of the same building and as such is required to have an FRL of not less than 60/60/60.

In addition to this the discharge points from the north and south wings lead to a covered site link which is less than 1/3 open.

- 4.6+13.2+4.7+13 = 35.5m perimeter of covered site link
- 1/3 perimeter = 11.84m
- 4.6+4.7= 9.3m open < 11.84m required

This will be required to be addressed as part of the fire engineered solution for the proposal.

### 5.4 Balustrading and Handrail

Balustrading to a height of 1000mm with a maximum opening of 125mm in any direction should be provided adjacent to balconies, landings, corridors etc where located adjacent to a change in level exceeding 1000mm.

Where it is possible to fall more than 4m to the finished floor below, the balustrade shall not contain any horizontal or near horizontal members that facilitate climbing.

Any windows with a sill height of less than 1.7m in bedrooms or 865mm in all other cases with a fall of more than 2m for windows, 4m for all other cases, openings are to be restricted or a protective barrier that does not allow a 125mm sphere to pass through.

Handrails should generally be provided at a minimum height of 865mm alongside of all ramps and stairs.

The main public stairs and ramps should be designed in accordance with the requirements of AS1428.1 for persons with disabilities. This requires a handrail on each side of the stair and ramp and for the handrail to extend approximately 550mm – 600mm past the last tread / end of ramp.

### 5.5 Access for Persons with a Disability

Access for people with disabilities shall be provided to and within the building in accordance with the requirements of Clause D3.2, D3.3 and D3.4 of the BCA 2016. Parts of the building required to be accessible shall comply with the requirements of AS1428.1-2009.
The design would generally comply with the prescriptive provisions of the BCA with additional ongoing review being undertaken as to door widths, circulation, etc. Further details are to be provided or access to these areas is to be assessed by an access consultant.

Where the main public entrance is via a ramp, tactile indicators shall be provided in accordance with AS 1428.4 at the top and bottom. Parking shall be provided for people with disabilities in accordance with in accordance with Clause D3.5 of the BCA. Facilities services and features of the

building accessible to people with disabilities shall be identified by signage complying with Clause D3.6 of the BCA.

*General*

Access to be provided to and within the building pursuant to AS1428.1-2009 as follows:

- Via the principle public entry and at least 50% of all other entrances
- From designated car parking spaces for the use of occupants with a disability.
- From another accessible building connected by a pedestrian link.
- All areas used by the public.

Note that entrances that are not accessible are to be located within 50m of an entrance that is accessible.

## 6.0 Fire Services & Equipment

The following fire services will need to be provided throughout the building:

- An automatic sprinkler system in accordance with the relevant provision of clause E1.5 of the BCA and AS 2118.1-1999, AS 2118.6-2012 throughout the building,
- Fire hydrants in accordance with clause E1.3 of the BCA and AS 2419.1-2005,
- Fire hose reels in accordance with clause E1.4 of the BCA and AS 2441-2005,
- Portable Fire Extinguishers in accordance with Clause E1.6 of the BCA and AS 2444-2001,
- Sound System & Intercom System for Emergency Purposes in accordance with AS 1670.4-2015,
- Emergency lighting, exit signage and directional exit signage is required throughout the building in accordance with Part E of the BCA and AS/NZS 2293.1-2005

A fire Control centre/room shall be provided in accordance with Clause E1.8 of the BCA. The current location has the potential to be obstructed by escaping occupants from adjacent North Wing fire isolated stairs. Additionally the fire control room is unable to be located at the front entrance as multiple entrances exist. This is required to be addressed as part of the fire engineered solution for the proposal.

## 6.1 Fire Hydrants

A system of Fire Hydrants is required to be provided to BCA Clause E1.3 and AS 2419.1-2005.

A booster assembly is required as part of the fire hydrant requirements. The location of the booster assembly is not currently visible from the main entry as multiple entrances exist and as such, is required to be assessed as part of the alternate solution to BCA Performance Requirement EP1.3.

A fire engineered solution will be provided to rationalise not shielding the booster by construction achieving an FRL not less than 90/90/90.
Fire hydrants are to be within 4m for required exits in fire isolated stairs.

## 6.2 Fire Hose Reels

A Fire Hose Reel System is required to BCA Clause E1.4 and AS2441.

To be located within 4m of exits and provide coverage within the building based on a 36m hose length.

Please note that fire hose reel coverage cannot pass through fire or smoke doors.

### 6.3 Automatic Sprinkler Protection

An Automatic Fire Suppression System is required in accordance with Specification E1.5 and AS2118.1-1999 and AS2118.6-2012 throughout.

An occupant warning system that is triggered upon activation of the sprinkler system should be provided in accordance with BCA Specification E1.5.

## 7.0 Ventilation and Smoke Hazard Management

Smoke hazard management shall be provided throughout the building by means of the following systems:

**Throughout:**

- Automatic Air Pressurisation to all fire isolated exits to AS/NZS 1668.1-2015
- Automatic Fire Suppression System (Sprinklers) to AS 2118.1-1999

**Commercial/Retail Portions:**

- Zone Smoke Control System to AS/NZS 1668.1-2015
- Smoke detection and alarm system complying with AS 1670.1 to be provided in retail and commercial areas which activates the BOWS system.

**Carpark Portions:**

- Mechanical ventilation system in accordance with AS 1668.2 must comply with clause 5.5 of AS/NZS 1668.1 except that fans with metal blades suitable for operation at normal temperature may be used and the electrical power and control cabling need not be fire rated.

**Residential Portions:**

- Smoke detection and alarm system complying with AS 3786 to be provided within each sole occupancy unit.
- Smoke detection and alarm system complying with AS 1670.1 to be provided to the common areas in residential portions of the building which activates the BOWS system.

A fire indicator panel is required as part of the detection system. This panel is to be located within 4m of the main entry and should be incorporated within the fire control room. Any variation to the prescriptive provisions will require the consent of the fire brigade and should form part of the fire safety engineering report to verify the performance requirements of the BCA.

Throughout the development the provision of natural or mechanical ventilation is required to all habitable rooms in accordance with F4.5 Building Code of Australia and AS 1668 and AS/NZS 3666.1.

## 8.0 Lift Services

The passenger lifts to be installed are to be:

- fitted with warning signs, fire service controls in accordance with AS 1735.2
- Stretcher facilities are to be provided within the lifts with minimum dimensions of 600m wide, 2000mm long and 1400mm high.
- An emergency lift with stretcher facilities in accordance with part E3.4 of the BCA and AS 1735.2.
- Be provided with the following:
    - A handrail in accordance with AS 1735.12,
    - Minimum internal floor dimensions as specified in AS 1735.12,
    - Fitted with a series of door opening sensory devices which will detect a 75mm diameter or across the door opening between 50mm and 1550mm above floor level,
    - Have a set of buttons for operating the lift located at heights above level complying with AS 1735.12.

## 9.0 Sanitary Facilities

The sanitary & other facilities within the development would generally consist of:

**Retail Portion**

- Closet pan and washbasin for males,
- Closet pan, washbasin and adequate means of disposal of sanitary towels for female

| F2.4 - Sanitary Facility Calculations | | | | | | |
|---|---|---|---|---|---|---|
| Description of building or part | Occupant Number | Population No. | | Required | | |
| | | | | WC | Urinals | Basins |
| Retail Ground Floor (Staff) | 18 | Male | 9 | 1 | - | 1 |
| | | Female | 9 | 1 | - | 1 |
| | | Accessible | | 1 | - | 1 |

The 2 accessible unisex sanitary facilities proposed in the south wing are sufficient to cater for the staff of the retail portion of the proposal. Sanitary facilities are not required for patrons in the retail areas as this is not applicable when there are less than 600 patrons.

Note: Retail areas have been assessed as department stores.

**Commercial Portion**

- Closet pan, urinals and washbasin for males,
- Closet pan, washbasin and adequate means of disposal of sanitary towels for female.

| F2.4 - Sanitary Facility Calculations | | | | | | |
|---|---|---|---|---|---|---|
| Description of building or part | Occupant Number | Population No. | | Required | | |
| | | | | WC | Urinals | Basins |
| Commercial Level 7 | 64 | Male | 32 | 2 | 2 | 1 |
| | | Female | 32 | 3 | - | 2 |
| | | Accessible | | 1 | - | 1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Commercial Level 8 | 54 | Male | 27 | 2 | 2 | 1 |
| | | Female | 27 | 2 | - | 1 |
| | | Accessible | | 1 | - | 1 |

It is noted that the level 7 and 8 fitout which is subject to a separate approval will include additional sanitary facilities in addition to what has been proposed.

**Residential Portion**

- A kitchen sink and facilities for preparation and cooking of food; and
- A bath or shower; and
- A closet pan and wash basin; and
- Clothes washing facilities (tub and space for washing machine); and
- Clothes drying facilities (either 7.5m of clothes line or space for a dryer).

Please note the Unisex facilities provided for people with disabilities may be counted once for each sex. These facilities are to be provided in accordance with AS1428.1-2001.

### 10.0 Energy Efficiency

The proposed development shall comply with Part J of the BCA. To achieve compliance, there are two options available:

1. The building can comply with the deemed-to-satisfy provisions of the BCA, relating to the following areas:

    - Building Fabric
    - Glazing
    - Building Sealing
    - Air Conditioning & Ventilation Systems
    - Artificial Lighting & Power
    - Hot Water Supply

2. The building can be verified against a reference building as per Verification Method JV3. This requires that the proposed building and its services be shown to have an annual energy consumption of equal or less than the reference building which has been modelled as per the requirements of Part J of the BCA.

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

Access for maintenance is to be provided to the building in accordance with the requirements of BCA Part J8.

The proposed site will be located in a **Climate Zone 6.**

Due to special nature of the building some energy provisions may not be appropriate.

### 10.1 Access for Maintenance

Access if to be provided to all plant, equipment and components associated with the provision of the above energy requirements i.e.

- Adjustable or monitored shading devices
- Time switches and motion detectors
- Room temperature thermostats
- Plant thermostats such as boilers or refrigeration units
- Motorised air dampers and central valves
- Reflectors, Lenses and Diffusers of light fittings
- Heat transfer equipment

## Appendix A - Design Documentation

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

| Drawing No. | Title | Date | Drawn By | Revision |
|---|---|---|---|---|
| DA02.001 | Ground | 20/07/2016 | Bates Smart | B |
| DA02.002 | Level 02 | 20/07/2016 | Bates Smart | B |
| DA02.003 | Level 03 | 20/07/2016 | Bates Smart | B |
| DA02.004 | Level 04 | 20/07/2016 | Bates Smart | B |
| DA02.005 | Level 05 | 20/07/2016 | Bates Smart | B |
| DA02.006 | Level 06 | 20/07/2016 | Bates Smart | B |
| DA02.007 | Level 07 | 20/07/2016 | Bates Smart | B |
| DA02.008 | Level 08 | 20/07/2016 | Bates Smart | B |
| DA02.009 | Level 09 | 20/07/2016 | Bates Smart | B |
| DA02.010 | Level 10,12,14 | 20/07/2016 | Bates Smart | B |
| DA02.011 | Level 11,13 | 20/07/2016 | Bates Smart | B |
| DA02.015 | Level 15,17,19 | 20/07/2016 | Bates Smart | B |
| DA02.016 | Level 16,18 | 20/07/2016 | Bates Smart | B |
| DA02.020 | Level 20,22,24,26 | 20/07/2016 | Bates Smart | B |
| DA02.021 | Level 21,23,25 | 20/07/2016 | Bates Smart | B |
| DA02.027 | Level 27,29,31,33,35 | 20/07/2016 | Bates Smart | B |
| DA02.028 | Level 28,30,32,34 | 20/07/2016 | Bates Smart | B |
| DA02.036 | Level 36,37 | 20/07/2016 | Bates Smart | B |
| DA02.038 | Level 38 | 20/07/2016 | Bates Smart | B |
| DA02.039 | Level 39 | 20/07/2016 | Bates Smart | B |
| DA02.040 | Roof | 1/03/2016 | Bates Smart | A |
| DA07.001 | Building Elevations Southwest | 20/07/2016 | Bates Smart | B |
| DA07.002 | Building Elevations Northeast | 20/07/2016 | Bates Smart | B |
| DA07.003 | Building Elevations Northeast & Southeast | 20/07/2016 | Bates Smart | B |

## Appendix B - Draft Fire Safety Schedule

| | Essential Fire Safety Measures | Standard of Performance |
|---|---|---|
| 1. | Access Panels, Doors and Hoppers | BCA Clause C3.13 |
| 2. | Automatic Fire Detection and Alarm System | BCA Spec. E2.2a & AS 1670 – 2015 |
| 3. | Automatic Fire Suppression System | BCA Spec. E1.5 & AS 2118.1 – 1999,<br>AS 2118.4 – 1995 (Residential)<br>AS 2118.6 – 1995 (Combined sprinkler & hydrant) |
| 4. | Building Occupant Warning System activated by the Sprinkler System | BCA Spec. E1.5 & AS 1670 – 2015 |
| 5. | Emergency Lifts | BCA Clause E3.4 & AS 1735.2 – 2001 |
| 6. | Emergency Lighting | BCA Clause E4.2, E4.4 & AS/NZS 2293.1 – 2005 |
| 7. | Sound System and Intercom Systems for Emergency Purposes | BCA Clause E4.9 & AS 1670.4 - 2015 |
| 8. | Exit Signs | BCA Clauses E4.5, E4.6 & E4.8 and AS/NZS 2293.1 – 2005 |
| 9. | Fire Control Centres and Rooms | BCA Spec. E1.8 |
| 10. | Fire Blankets | AS 2444 – 2001 |
| 11. | Fire Dampers | BCA Clause C3.15, AS 1668.1 – 2015 & AS 1682.1 & 2 – 1990 |
| 12. | Fire Doors | BCA Clause C3.2, C3.4, C3.5, C3.6, C3.7 & C3.8 and AS 1905.1 – 2015 |
| 13. | Fire Hose Reels | BCA Clause E1.4 & AS 2441 – 2005 |
| 14. | Fire Hydrant System | Clause E1.3 & AS 2419.1 – 2005 |
| 15. | Fire Seals | BCA Clause C3.15 & AS 1530.4 – 2014 |
| 16. | Lightweight Construction | BCA Clause C1.8 & AS 1530.3 – 1999 |
| 17. | Mechanical Air Handling System | BCA Clause E2.2, AS/NZS 1668.1 – 2015 & AS 1668.2 – 1991 |
| 18. | Paths of Travel | EP&A Reg 2000 Clause 186 |
| 19. | Portable Fire Extinguishers | BCA Clause E1.6 & AS 2444 – 2001 |
| 20. | Pressurising Systems | BCA Clause E2.2 & AS/NZS 1668.1 – 2015 |
| 21. | Smoke Hazard Management System | BCA Part E2 & AS/NZS 1668.1 – 2015 |
| 22. | Smoke and/or Heat Alarm System | BCA Spec. E2.2a & AS 3786 – 1993 |
| 23. | Smoke Dampers | AS/NZS 1668.1 – 2015 |
| 24. | Smoke Doors | BCA Spec. C3.4 |
| 25. | Warning and Operational Signs | Section 183 of the EP & A Regulations 2000, AS 1905.1 – 2015, BCA Clause C3.6, D2.23, E3.3 |

## Appendix C- Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2016:

### Table 3 TYPE A CONSTRUCTION: FRL OF BUILDING ELEMENTS

| **Building element** | **Class of building — FRL: (in minutes)** | | | |
|---|---|---|---|---|
| | ***Structural adequacy*/*Integrity*/*Insulation*** | | | |
| | **2, 3 or 4 part** | **5, 7a or 9** | **6** | **7b or 8** |
| **EXTERNAL WALL** (including any column and other building element incorporated therein) or other external building element, where the distance from any *fire-source feature* to which it is exposed is— | | | | |
| For *loadbearing* parts— | | | | |
| less than 1.5 m | 90/ 90/ 90 | 120/120/120 | 180/180/180 | 240/240/240 |
| 1.5 to less than 3 m | 90/ 60/ 60 | 120/ 90/ 90 | 180/180/120 | 240/240/180 |
| 3 m or more | 90/ 60/ 30 | 120/ 60/ 30 | 180/120/ 90 | 240/180/ 90 |
| For non-*loadbearing* parts— | | | | |
| less than 1.5 m | –/ 90/ 90 | –/120/120 | –/180/180 | –/240/240 |
| 1.5 to less than 3 m | –/ 60/ 60 | –/ 90/ 90 | –/180/120 | –/240/180 |
| 3 m or more | –/–/– | –/–/– | –/–/– | –/–/– |
| **EXTERNAL COLUMN** not incorporated in an *external wall*, where the distance from any *fire-source feature* to which it is exposed is— | | | | |
| less than 3 m | 90/–/– | 120/–/– | 180/–/– | 240/–/– |
| 3 m or more | –/–/– | –/–/– | –/–/– | –/–/– |
| **COMMON WALLS and FIRE WALLS—** | 90/ 90/ 90 | 120/120/120 | 180/180/180 | 240/240/240 |
| **INTERNAL WALLS—** | | | | |
| *Fire-resisting* lift and stair *shafts*— | | | | |
| *Loadbearing* | 90/ 90/ 90 | 120/120/120 | 180/120/120 | 240/120/120 |
| Non-*loadbearing* | –/ 90/ 90 | –/120/120 | –/120/120 | –/120/120 |
| Bounding *public corridors*, public lobbies and the like— | | | | |
| *Loadbearing* | 90/ 90/ 90 | 120/–/– | 180/–/– | 240/–/– |
| Non-*loadbearing* | –/ 60/ 60 | –/–/– | –/–/– | –/–/– |
| Between or bounding *sole-occupancy units*— | | | | |
| *Loadbearing* | 90/ 90/ 90 | 120/–/– | 180/–/– | 240/–/– |
| Non-*loadbearing* | –/ 60/ 60 | –/–/– | –/–/– | –/–/– |
| Ventilating, pipe, garbage, and like *shafts* not used for the discharge of hot products of combustion— | | | | |
| *Loadbearing* | 90/ 90/ 90 | 120/ 90/ 90 | 180/120/120 | 240/120/120 |
| Non-*loadbearing* | –/ 90/ 90 | –/ 90/ 90 | –/120/120 | –/120/120 |
| **OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES and COLUMNS—** | 90/–/– | 120/–/– | 180/–/– | 240/–/– |
| **FLOORS** | 90/ 90/ 90 | 120/120/120 | 180/180/180 | 240/240/240 |
| **ROOFS** | 90/ 60/ 30 | 120/ 60/ 30 | 180/ 60/ 30 | 240/ 90/ 60 |

## Table 3.9 REQUIREMENTS FOR CARPARKS

| Building element | | | | FRL (not less than) Structural adequacy/Integrity/Insulation |
|---|---|---|---|---|
| | | | | ESA/M (not greater than) |
| **Wall** | | | | |
| (a) | *external wall* | | | |
| | (i) | less than 3 m from a *fire-source feature* to which it is exposed: | | |
| | | | *Loadbearing* | 60/60/60 |
| | | | Non-*loadbearing* | –/60/60 |
| | (ii) | 3 m or more from a *fire-source feature* to which it is exposed | | –/–/– |
| (b) | *internal wall* | | | |
| | (i) | *loadbearing*, other than one supporting only the roof (not used for carparking) | | 60/–/– |
| | (ii) | supporting only the roof (not used for carparking) | | –/–/– |
| | (iii) | non-*loadbearing* | | –/–/– |
| (c) | *fire wall* | | | |
| | (i) | from the direction used as a *carpark* | | 60/60/60 |
| | (ii) | from the direction not used as a *carpark* | | as *required* by Table 3 |
| **Column** | | | | |
| (a) | supporting only the roof (not used for carparking) and 3 m or more from a *fire-source feature* to which it is exposed | | | –/–/– |
| (b) | steel column, other than one covered by (a) and one that does not support a part of a building that is not used as a *carpark* | | | 60/–/– or 26 $m^2$/tonne |
| (c) | any other column not covered by (a) or (b) | | | 60/–/– |
| **Beam** | | | | |
| (a) | steel floor beam in continuous contact with a concrete floor slab | | | 60/–/– or 30 $m^2$/tonne |
| (b) | any other beam | | | 60/–/– |
| **Fire-resisting lift and stair shaft** (within the *carpark* only) | | | | 60/60/60 |
| **Floor slab and vehicle ramp** | | | | 60/60/60 |
| **Roof** (not used for carparking) | | | | –/–/– |
| Notes: | 1. ESA/M means the ratio of exposed surface area to mass per unit length. | | | |
| | 2. Refer to Specification E1.5 for special requirements for a sprinkler system in a *carpark* complying with Table 3.9 and located within a multi-classified building. | | | |