BUILDING CODE OF AUSTRALIA REPORT

Australia Habitat and Taronga Wildlife Retreat
Bradleys Head Road, Mosman, NSW, Australia

Contents

Date	Revision Number	No. of pages	Issue or Description of Amendment	Checked By	Approved By	Date Approved
6.10.2016	H	20	BCA Report for DA Submission	Andrew Brohier	Geoffrey Pearce	6.10.2016

Executive Summary

As Accredited Certifiers, we have reviewed the architectural design documents prepared by COX Architecture, CHADA and Green and Dale Associates (refer appendix A) for compliance with the Building Code of Australia 2015.

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 Crown Certificate will need to include verification from a suitably accredited fire engineer:

DTS Clause	Description of Non-Compliance	Performance Requirement
C1.1 & Spec C1.1	**Type of Construction/Reduction in FRL's** The proposal is anticipated to be of CLT in lieu of non-combustible construction and FRL's are proposed to be reduced from 90 minutes to 60 minutes through a performance solution.	CP1 & CP2
C2.10	**Lift Shafts** A glass lift has been proposed between Pods D and E. This lift will serve more than 3 storey's and will be in a partially separated in lieu of being completely separated and will be required to be addressed through a performance solution.	CP2
C3.11	**Bounding Construction** Areas which have not been provided with an alternative exit along an open balcony and pass the external wall of another sole occupancy unit are required to be constructed of concrete, masonry or lined internally with a fire-protective covering. Any openings are required to be protected internally in accordance with C3.4. This is anticipated that this is addressed through a combination of design and performance solutions.	CP1 & CP2
D1.3	**Fire-isolated Stairs** The proposed egress stairs to the south of the site connects 5 storeys of class 3 and is not fire-isolated. In the event that these stairs are not fire-isolated a performance solution will be required to address this.	DP5 & EP2.2
D1.4	**Extended Travel Distances** The following travel distances will be required to be addressed through a performance solution: **Accommodation** Level A,B ▪ Travel distance from entrance doorway of a sole occupancy unit is up to 15m in lieu of 6m Level D ▪ Travel distance is up to 30m where 2 exits are available Level E ▪ Travel distance is up to 29m where 2 exits are available	DP4 & EP2.2

	Non-Sole Occupancy Unit Level C ▪ Travel distance is up to 36m in lieu of 20m from in front of the lift Level D ▪ Travel distance is up to 28m in lieu of 20m from within Platypus Keeper back of house area **Restaurant** Level 1 ▪ Travel distance is 23m in lieu of 20m to a single exit. Level 2 ▪ Travel distance is 22m in lieu of 20m to a single exit.	
D1.5	**Alternative Exits** The following extended distances between alternative exits will be required to be addressed through a performance solution: **Level D** ▪ Distance between alternative is up to 68m in lieu of 45m **Level E** ▪ Distance between alternative is up to 73m in lieu of 45m	DP4 & EP2.2
D1.7	**Discharge from Fire-isolated Exits** The path of travel from the discharge point of the stairs located at the rear of the restaurant on Level E passes within 6m of the external wall of the same building. Fire-isolated stair discharges into a covered area which has an open perimeter less than 1/3. In the event that openings are not protected a performance solution will be required.	DP5 & EP2.2
D1.8	**External Stairs** Openings located within 6m of external stairs are required to be protected in accordance with clause C3.4. In the event that this protection is not provided a performance based solution will be required.	CP2 & DP5
D2.4	**Rising and Descending** Based on the current design it is anticipated that rising and descending stairs between flights will not be in accordance with the requirements of D2.4.	DP4
G5	**Bushfire Prone Areas** The design does not meet the BAL requirements outlined in AS 3959. This is to be addressed as part of the fire engineered solution.	GP5.1

The fire engineered solution relating to EP2.2 will need to be approved after consultation with the NSW Fire Brigade as part of the Crown Certificate process.

Assessed By,

Andrew Brohier
Senior Building Surveyor

1.0 Introduction

The proposed development comprises of 5 residential buildings which are connected via a combination of external stairs and walkways to form a united building. In addition to this, a new lobby "The Nest", restaurant and Australia exhibit has been proposed and will be known as the "Taronga Wildlife Retreat", located at Taronga Zoo on Bradleys Head Road, Mosman NSW.

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 2015.**

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 Crown Certificate.

2.0 Building Assessment Date

Summary of Construction Determination:

	Building Particulars
Classification	10a, 3, 5 & 6
Number of Storeys Contained	7
Rise In Storeys	7
Type of Construction	A
Effective Height (m)	21m (RL71.300 - RL51.020)

Note:
1. The classification for the lobby has been considered ancillary to the accommodation.
2. The walkways between the residential accommodation will be designed to be structurally independent and as such considered class 10a structure.

Summary of the floor areas and relevant populations where applicable:

Part of Project	**BCA Classification**	**Approx. Floor Area (m^2)**	**Assumed Population**
Accommodation			
Level A	3	N/A	12*
Level B			27*
Level C			39*
Level D			63*
Level E			48*
Lobby/bar	6	500	4 staff* + 100 patrons*
Office/Staff Amenities	5	250	4 staff*

Part of Project	BCA Classification	Approx. Floor Area (m^2)	Assumed Population
Kitchen	6	239	10 staff*
Restaurant	6	385	6* + 100 patrons*
Plating/Dinning/Function/Terrace	6*	360	6* + 150 patrons*
TOTAL		**1,734m2**	**539 patrons + 30 staff*** **519**

*Notes:
1. Population numbers in the residential areas has been based on the maximum number of 3 people per room as indicated by client.
2. Populations in the restaurant have been based on seating capacity for patron and the client's information for staff.

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 Crown Certificate structural certification is required to be provided.

Note: the walkways which link the pods will be structurally independent and considered a class 10a structure.

4.0 Fire Resistance

The buildings should be constructed generally in accordance with Table 3 of Specification C1.1 of the **Building Code of Australia 2015**.

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

The existing Taronga Centre is required to be fire separated from the proposed restaurant building by construction achieving an FRL not less than 120/120/120. This is to meet the separation of different classifications requirements outlined in clause C2.8 of the BCA.

The building has been assessed on the basis of the following fire separation/ compartmentation within the development;
- Bounding construction to the sole occupancy units of 90 minutes (subject to performance solution),
- Separation between the existing Taronga Centre and the proposed restaurant building of 120 minutes,
- Fire compartmentation of the building at each floor level,

Fire resistance levels for building structural members are as follows:

- Retail Portions 180 minutes
- Residential Levels 90 minutes (subject to performance solution)

It is noted that the residential areas will be construction of CLT and FRL's will be reduced from 90 minutes to 60 minutes through a performance solution.

Fire-Protected Timber has been proposed to the class 3 accommodation areas and is required to comply with the requirements of Specification A1.1 of the BCA which requires the following:

> (a)(i) utilises a non-combustible fire-protective covering fixed in accordance with system requirements to achieve an FRL not less than that required for the building element; and
> (ii) has a non-combustible fire-protective covering fixed in accordance with system requirements—
>
> (A) so as the temperature at the interface between the protection system and the timber does not exceed 300°C during a fire resistance test performed in accordance with Clause 3 for the application and periods listed in Table 1; or
>
> (B) not less than that specified by Table 1; and
>
> (iii) has no cavities—
>
> (A) between the surface of the timber and the fire-protective covering; or
>
> (B) between timber elements within the fire-protective covering.

For the purposes of (a), the non-combustible fire-protective covering provided under (a)(ii) may form all or part of the non-combustible fire-protective covering provided under (a)(i).

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. External walls and associated openings in different fire compartments must not be less than specified in Table C3.3;
3. 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 90/90/90;
4. 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 90/90/90 (or 120/120/120 where it is a room such as a substation);
5. 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.

Openings within 6m of the external stairs are required to be protected in accordance with Clause C3.4 of the BCA. It is anticipated that this is addressed through a performance solution.

4.2 Passive Fire Protection

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

- Lift motor rooms,
- Hydrant Pump rooms,

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

The proposed lift between Pods D and E will be in a partially fire separated shaft in lieu of being completely fire separated from the remainder of the building. This will be addressed through a performance solution.

4.3 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:

- External stairs
- Fire-isolated stairs
- Perimeter doors

Other detailing issues that will need to be addressed include:

- Door Hardware
- Exit door operation
- Stair construction
- Handrail and balustrade construction
- Details of separation of rising and descending stairs
- 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, distances between alternative exits and egress widths would need to be assessed on a performance basis.

The travel distances to exits should not exceed:
Class 5, 6 & 7a

- 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 and 3
- 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 travel distances will be required to be addressed through a performance solution:

Accommodation
Level A,B
- Travel distance from entrance doorway of a sole occupancy unit is up to 15m in lieu of 6m

Level D
- Travel distance is up to 30m where 2 exits are available

Level E
- Travel distance is up to 29m where 2 exits are available

Non-Sole Occupancy Unit

Level C
- Travel distance is up to 36m in lieu of 20m from in front of the lift

Level D
- Travel distance is up to 28m in lieu of 20m from within Platypus Keeper back of house area

Restaurant
Level 1
- Travel distance is 23m in lieu of 20m to a single exit.

Level 2
- Travel distance is 22m in lieu of 20m to a single exit.

Extended distances between alternative exits are as follows:

Level D
- Distance between alternative is up to 68m in lieu of 45m

Level E
- Distance between alternative is up to 73m in lieu of 45m

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).

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.

The path of travel from the discharge point of the stairs located at the rear of the restaurant on Level E passes within 6m of the external wall of the same building as such 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. This is 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. A performance solution will be required in the event that this is not addressed through design.

The external stairs to the south connect up to 5 storeys and has been proposed to be non-fire isolated.

Based on slop of the site rising and descending stair between flights will not be in accordance with the requirements of D2.4 and will be required to be addressed through a performance solution.

5.4 Balustrading and Handrail

Balustrading to a height of 1000mm with a maximum opening of 125mm in any direction must be provided adjacent to all balconies, landings, corridors etc where there is a fall greater than 1000mm.

For floors more than 4m above the surface beneath, there must be no climbable elements between 150mm and 760mm above the floor which could 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 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 2015. 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: An Accessibility Design Review has been conducted and the recommendations outlined in this report are required to be addressed in the design documentation.

6.0 Fire Service & 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 throughout the proposal,
- Fire hydrants in accordance with clause E1.3 of the BCA and AS 2419.1-2005 throughout the proposal,
- Fire hose reels in accordance with clause E1.4 of the BCA and AS 2441-2005 to the non-residential areas,
- Portable Fire Extinguishers in accordance with Clause E1.6 of the BCA and AS 2444-2001,
- Sound System and Intercom System for Emergency Purposes in accordance with AS 1670.4-2004,
- 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

Note: It is understood that an automatic sprinkler system in accordance with the relevant provision of clause E1.5 of the BCA and AS 2118.1-1999 has been proposed throughout.

6.1 Fire Hydrants

A Fire Hydrants system is required to be provided to the site in accordance with Clause E1.3 of the BCA and AS 2419.1-2005. A design certificate from a Hydraulic Consultant will be required to accompany the design details at Crown Certificate stage.

If a booster assembly is proposed for the fire hydrant system, it must be located at the main entry of the building. If remote from the building it must be at the main vehicle entry or within sight of the main entry of the building within 20m of a hardstand area.

It is noted that details of the essential services has not been provided at this stage and as such additional assessment will be required.

Fire hydrants are to be provided within fire isolated stairs within 4m of required exits.

6.2 Fire Hose Reels

A Fire Hose Reel System is required to be installed in accordance with Clause E1.4 of the BCA and AS 2441-2005 to the kitchen/restaurant – class component of the development.

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.

Note: Fire hose reels are not required for the class 3 accommodation of the development.

6.3 Portable Fire Extinguishers

Portable fire extinguishers are required to be installed in accordance with Table E1.6 of the BCA and AS 2444-2001. In addition, extinguishers are to be provided to the Class 3 portions of the building in accordance with the below:

- an ABE type fire extinguisher is to be installed with a minimum size of 2.5 kg; and
- extinguishers are to be distributed outside a sole-occupancy unit
  a) to serve only the storey at which they are located; and
  b) so that the travel distance from the entrance doorway of any sole-occupancy unit to the nearest fire extinguisher is not more than 10 m.

6.4 Emergency Lighting and Exit Signs

Emergency lighting system must be installed in every passageway, corridor, hallway, or the like, having a length of more than 6m from the entrance doorway of any sole-occupancy in a Class 3 building in accordance with Clause E4.2 of the BCA and AS 2293.1-2005.

Additionally emergency lighting is to be installed in the Class 6 portions of the development in every passageway, corridor, hallway, or the like, that is part of the path of travel to an exit in accordance with Clause E4.2 of the BCA and AS 2293.1-2005.

An exit sign must be clearly visible to persons approaching the exit, and must be installed on, above or adjacent to each door providing direct egress from a storey in accordance with the requirements of Clause E4.5 of the BCA and AS 2293.1-2005.

6.5 Automatic Sprinkler Protection

An Automatic Fire Suppression System has been proposed throughout the development and is required to be installed in accordance with Specification E1.5 and AS 2118.1-1999.

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

7.0 Ventilation and Smoke Hazard Management

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

- Automatic Smoke Detection and Alarm System in accordance with the requirements of BCA Spec E2.2a and AS 1670.1-2004
- An occupant warning system that is triggered upon activation of the sprinkler system must be provided in accordance with Specification E1.5 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 is required to comply with the following:

- 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.

9.0 Sanitary Facilities

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

Class 3 portion

- A bath or shower; and
- A closet pan and washbasin

Class 6 portion

Description of building or part	Occupant Number Accommodated	Population No.		Provided		
				WC	Urinals	Basins
Level D (Restaurant Staff)	52	Male	26	2	-	2
		Female	26	2	-	2
		Accessible		1	-	1
Level E (Patrons)		Male		3	2	2
		Female		5	-	3
		Accessible		1	-	1
Level 1(Patrons)		Male		-	-	-
		Female		-	-	-
		Accessible		-	-	-
Level 2(Patrons)		Male		1	-	1
		Female		3	-	2
		Accessible		1	-	1

Note:

- Unisex facilities provided for people with disabilities may be counted once for each sex. These facilities are to be provided in accordance with AS1428.1-2009.
- The lobby/bar area has been provided with dedicated sanitary facilities for patrons.
- Closet pans may be interpreted as urinals where required.

LEVEL D

- 2 male and 2 female closet pans and basins have been provided as well as an accessible sanitary compartment which has been proposed to be used for the restaurant staff members only.
- Clause F2.4(c) of the BCA states that an ambulant sanitary facility are required to be provided at each bank of toilets where there is one of more accessible unisex sanitary compartments in accordance with AS1428.1.
- Clause F2.6(a)(iii) states that a urinal may be a closet pan used in place of a urinal. As such the accessible sanitary compartment has been counted towards the male urinal staff requirements.
- The sanitary facilities provided on this level is capable of accommodating up to 52 staff (male to female ratio of 1:1).

LEVEL E

- 3 sanitary compartments and an accessible sanitary facility which have not been dedicated to male or female. Clause F2.3 (a) of the BCA states that separate sanitary facilities for males and females must be provided for Class 3,5,6,7,8 or 9 buildings.
- Clause F2.4(c) of the BCA states that an ambulant sanitary facility is required to be provided at each bank of toilets where there is one of more accessible unisex sanitary compartments in accordance with AS1428.1

Level 1 – Restaurant

- Sanitary facilities for patrons are located on Level E.
- There is also a connection into the existing Taronga Centre which has additional sanitary facilities.

Level 2 – Restaurant

- Sanitary facilities for patrons are located on Level 2 in the existing Taronga Centre.
- Clause F2.4(c) of the BCA states that an ambulant sanitary facility is required to be provided at each bank of toilets where there is one of more accessible unisex sanitary compartments in accordance with AS1428.1.

Based on the sanitary facilities proposed as well as the existing within the Taronga Centre a total of 600 occupants can be accommodated across Level's E-2 combined.

10.0 Sound Transmission and Insulation

The sound transmission and insulation requirements shall be provided in accordance with Part F5 of the BCA 2015 for the following elements in the class 3 areas only:

Floors

A floor separating sole-occupancy units or a sole-occupancy unit from a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification:

- Rw + Ctr (airborne) not less than 50
- Ln,w+CI (impact) not more than 62

Walls

A wall separating sole-occupancy units:

- Rw + Ctr (airborne) not less than 50,

A wall separating a sole-occupancy unit from a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification:

- Rw (airborne) not less than 50,

A wall separating a bathroom, sanitary compartment, laundry or kitchen in one sole-occupancy unit from a habitable room (other than a kitchen) in an adjoining unit; or a sole-occupancy unit from a plant room or lift shaft:

- Rw (airborne) not less than 50
- Discontinuous Construction

A door assembly separating a sole-occupancy unit from a stairway, public corridor, public lobby or the like:

- Rw not less than 30

All walls required to have an impact sound insulation rating are to be of discontinuous construction.

11.0 Energy Efficiency

The proposed new works are to 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
    - Swimming pool
    - Facilities for energy monitoring

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.

11.1 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
AR-DA-2101	Level A (RL 51)	29/07/2016	Cox Architecture	04
AR-DA-2102	Level B (RL 54)	29/07/2016	Cox Architecture	04
AR-DA-2103	Level C (RL 57)	29/07/2016	Cox Architecture	04
AR-DA-2104	Level D (RL 60)	29/07/2016	Cox Architecture	04
AR-DA-2105	Level E (RL 63)	29/07/2016	Cox Architecture	04
AR-DA-2106	Level 1- Restaurant (RL 67)	29/07/2016	Cox Architecture	04
AR-DA-2107	Level 2- Terrace (RL 71)	29/07/2016	Cox Architecture	04
AR-DA-3101	Pod A Elevations	29/07/2016	Cox Architecture	04
AR-DA-3201	Pod B Elevations	29/07/2016	Cox Architecture	04
AR-DA-3301	Pod C Elevations	29/07/2016	Cox Architecture	04
AR-DA-3401	Pod D Elevations	29/07/2016	Cox Architecture	04
AR-DA-3501	Pod E Elevations	29/07/2016	Cox Architecture	04
AR-DA-3601	Restaurant Elevations	29/07/2016	Cox Architecture	04
AR-DA-3701	Guest Lodge Elevations	29/07/2016	Cox Architecture	04
AR-DA-3801	Taronga Centre Foyer	29/07/2016	Cox Architecture	04
AR-DA-4001	Site Sections 1	10/03/2016	Cox Architecture	03
AR-DA-4002	Site Sections 2	29/07/2016	Cox Architecture	04
AR-DA-4003	Site Sections 3	29/07/2016	Cox Architecture	04
AR-DA-4101	Section AA & BB	10/03/2016	Cox Architecture	03
AR-DA-4102	Section CC & DD	10/03/2016	Cox Architecture	03
AR-DA-4103	Section EE	10/03/2016	Cox Architecture	03
AR-DA-4104	Section FF & GG	10/03/2016	Cox Architecture	03

Appendix B - Draft Fire Safety Schedule

(subject to final fire engineering report)

	Essential Fire Safety Measures	Standard of Performance
1.	Automatic Fire Detection and Alarm System	BCA Spec. E2.2a & AS 1670 – 2004
2.	Automatic Fire Suppression System	BCA Spec. E1.5 & AS 2118.1 – 1999, AS 2118.6 – 1995 (Combined sprinkler & hydrant)
3.	Building Occupant Warning System activated by the Sprinkler System	BCA Spec. E1.5 & AS 1670 – 2004
4.	Emergency Lighting	BCA Clause E4.2, E4.4 & AS/NZS 2293.1 – 2005
5.	Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS/NZS 2293.1 – 2005
6.	Fire Blankets	AS 2444 – 2001
7.	Fire Dampers	BCA Clause C3.15, AS 1668.1 – 1998 & AS 1682.1 & 2 – 1990
8.	Fire Doors	BCA Clause C3.5, and AS 1905.1 – 2005
9.	Fire Hose Reels	BCA Clause E1.4 & AS 2441 – 2005
10.	Fire Hydrant System	Clause E1.3 & AS 2419.1 – 2005
11.	Fire Seals	BCA Clause C3.15 & AS 1530.4 – 1997
12.	Lightweight Construction	BCA Clause C1.8 & AS 1530.3 – 1999
13.	Paths of Travel	EP&A Reg 2000 Clause 186
14.	Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001
15.	Smoke Hazard Management System	BCA Part E2 & AS/NZS 1668.1 – 1998
16.	Solid Core Doors	BCA Clause C3.11
17.	Warning and Operational Signs	Section 183 of the EP & A Regulations 2000, AS 1905.1 – 2005, 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 2015:

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