BUILDING CODE OF AUSTRALIA REPORT

Proposed DFS Galleria Building Refurbishment Works - 155 George Street, Sydney NSW 2000

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Date	Revision Number	No. of pages	Issue or Description of Amendment	Checked By	Approved By	Date Approved
3.12.14	01	18	Draft	Tracey McCann	Vanessa Batty	3.12.14

Executive Summary

As Accredited Certifiers, we have reviewed the architectural design documents prepared by PDML (refer appendix A) for compliance with the Building Code of Australia 2014. This report has been prepared to respond specifically to key issue number 7 as identified in the Secretary's Environmental Assessment Requirements (SEARs).

The assessment of the design documentation has revealed that the following areas are required to be assessed against the relevant performance requirements of the Building Code of Australia (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
C1.1 & Spec C1.1	**Fire Ratings** For Type A Construction, the fire rating requirement for a Class 6 building (retail) is a minimum of 180 minutes. The current rating of the building is to be verified by the Structural Engineer. A performance based solution may be required to verify any reductions to FRLs within the existing building	CP1
C2.2 & Table C2.2	**Fire Compartmentation** The retail areas on levels 1-4 exceed the maximum areas prescribed in Table C2.2 of the BCA (i.e. 5840m2) by 2077m2, volumes (TBC). The nature of this oversized compartment is to be either, addressed through design development and reduced to be within the parameters of the DtS provisions of the Building Code of Australia, or a Fire Engineered solution is to be prepared to address Performance Requirements (CP2 and EP2.2).	CP2 & EP2.2
D1.4 & D1.5	**Travel Distances** Travel distance to a point of choice on Level 3 (open plan office) is up to 27m in lieu of 20m. Further design development will be required to reduce the travel distances to a level which will either achieve compliance with the DtS provisions of the BCA or alternatively verified against DP4 and EP2.2 by the Fire Engineer.	DP4 & EP2.2
D1.7 & C3.4	**Discharge of Fire Isolated exits** The enclosure of the atrium space will result in new openings in the external wall which occupants will need to pass on the path of travel to the road along the northern facade. The FRL of the external wall and protection of openings are to be addressed in the Fire Engineering Report verifying compliance with CP2 and DP5.	CP2 & DP5
D1.12 & Spec D1.12	**Travelator and Escalators** The proposed escalators will connect four (4) storeys in lieu of 3 storeys as prescribed in the BCA for a sprinkler protected building and the escalators are not proposed to be provided with bounding construction to BCA Spec D1.12 (i.e. FRL	CP4 & EP2.2

	120/120/120 or glazed construction with FRL of -/60/30 and wall wetting sprinklers). This non-compliance is to be addressed as part of the Fire Engineered Solution addressing DP4, and EP2.2.	
E1.3	**Fire Hydrants** Category 1 Fire Safety Measure - where the existing fire hydrants are to be maintained to Ordinance 70 Clause 27.3 and ministerial specification No.10 justification will be required to confirm compliance with performance requirement EP1.3 some of the following issues have been noted from a site visit; • The location and configuration of the hydrant booster and sprinkler booster assembly- the assembly is not in sight of the main entrance; • Hydrants are located outside of the fire isolated stair; • Hydrants and booster assembly are not provided with storz couplings; • Hydrant booster assembly is not within 8m of hardstand of FRNSW pumping appliances.	EP1.3
E1.4	**Automatic Fire Suppression Systems** Category 1 Fire Safety Measure -where the existing sprinklers are to be maintained to AS 2118-1982, justification will required to confirm compliance with performance requirement EP1.4	EP1.4
E1.6	**Fire Control Centre or Room** Category 1 Fire Safety Measure - the current location of the fire control room is to be verified by Arup Fire addressing performance requirement EP1.6	EP1.6
E2.2b	**Smoke Hazard Management System** Category 1 Fire Safety Measure - the existing smoke hazard management system is to be reviewed in accordance with the new layout and form part of the performance based solution for the project.	EP2.2
E3.4	**Emergency Lifts** Category 1 Fire Safety Measure - where the current emergency lifts are not proposed to be upgraded, they are to be reviewed as part of a performance based solution by Arup Fire verifying EP3.2	EP3.2
Part G3	**Atrium Provisions** The BCA provisions for an atrium are to be addressed in Fire Engineering Report including, Bounding Construction, Egress through an atrium Smoke hazard management & FRL of roof.	CP1, CP2, DP4 & EP2.2

The fire engineered solutions relating to EP1.3, EP1.4, EP1.6, EP2.2 & EP3.2, 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.

The design documentation will need further detailing such as door hardware, specifications & service design.

We have reviewed the draft DA design documentation prepared by PDML (see appendix A) against the provisions of the BCA 2014 and confirm that the project is capable of complying with the BCA 2014, through further design development and where DtS provisions cannot be met, performance based solutions relating to fire and accessibility elements.

Assessed By

Tracey McCann

1.0 Introduction

The proposed development comprises of four adjoining heritage buildings fronting George Street, an office building fronting Harrington Street and an atrium space between the buildings facing Globe Street. The proposed works involve a refurbishment of the existing DFS Galleria building to include; the enclosure of the Globe Street entrance, internal configuration of ground floor, levels 2 to 5, installation of escalators and an upgrade of amenities throughout the existing building.

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 (BCA 2014).

1.2 Consent Authority May Require The Building To Be Upgraded

The local authority when assessing the development application may require that the existing building be brought into partial or full compliance with the current provisions at the BCA. The trigger for upgrade includes:

- Where the building works, together with any other works completed or authorised within the previous 3 years, represents more than half the total volume of the building; or

- Council are not satisfied the measures contained in the building are not adequate for the safety of present using the building or prevention of special to adjacent buildings.

As this project does not involve the more than 50% of the volume of the building, it is McKenzie Group's opinion that the risk of the Department of Planning conditioning the consent to require a BCA upgrade of the building is low.

2.0 Building Assessment Data

Summary of Construction Determination: -

Building Data	
Classification	5, 6 & 7a
Number of Storeys Contained	13
Rise In Storeys	10
Type of Construction	A
Effective Height (m)	>25m

Summary of the floor areas and relevant populations where applicable: -

Part of Project	BCA Classification	Approx. Floor Area (m^2)	Assumed Population
Level 1	6	1875	625
Level 2	5	468	46
Level 2	6	965	193
Level 3	5	496	49
Level 3	6	1040	208
Level 4	6	1847	369
Level 5	5	1226	122
Total	**-**	**7917 m²**	**1612**

Notes:
1. The above populations have been base on the floor areas and calculations in accordance with Table D1.1.3 of the BCA (Level 1 Retail 3m2/person, level 2-level 4 retail 5m2/person office space on Levels 1-5 10m2/person).
2. The floor areas for each level have been broken into classifications and areas calculated in accordance with BCA Table C2.2 Maximum size of fire compartments or Atria.

3.0 Structural Provisions

Any new structural works are to comply with the applicable requirements of AS/NZS 1170.1, AS/NZS 1170.2, AS/NZS 1170.4 & Part B of 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 new elements of the building should be constructed generally in accordance with Table 3 of Specification C1.1 of the Building Code of Australia 2014. The building is Type A Construction.

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

- Separation between the carpark levels and the office/ retails portions of 180 minutes,
- Fire compartmentation of the building at each floor level,

Fire resistance levels for building structural members are as follows:
- Retail Portions 180 minutes
- Commercial portions 120 minutes

The retail portions and office portions on levels 2 & 3 are to be fire separated with fire rated construction achieving 180 minutes.

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 if loadbearing an FRL of 180/120/120 or non-loadbearing -120/120;
3. Any penetration through a wall or room required to have an FRL (e.g. substation, boiler room, etc.) is to be protected either by a tested prototype (e.g. fire collar, fire damper, etc.) or be installed within a shaft achieving if loadbearing an FRL of 180/-/- or non- load bearing -/-/-.
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).

The enclosure of the atrium space will result in new openings in the external wall facing Globe St which occupants will need to pass on the path of travel to the road along the northern façade. In addition, the exits from the tower stair which discharge along the southern facade of the building involve passing within 6m of the external walls and openings of the existing building.

The DtS provisions require that where egress to the road from a fire isolated exit involves passing within 6m of the building, the external wall of the building is to achieve an FRL of 60/60/60 (loadbearing) or FRL -/60/60 (non-load bearing). In addition, openings are to be protected in accordance with BCA Clause C3.4 with internal or external wall wetting sprinklers as appropriate; or -/60/- fire windows; -/60/- fire shutters / fire doors to FRL -/60/30.

The FRL of the external wall and protection of openings are to be addressed in the Fire Engineering Report verifying compliance with CP2 and DP5.

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.

4.2 Vertical Separation of openings in external walls:

A building of Type A construction must be provided with spandrel separation between opening on different storeys unless the building is sprinkler protected throughout.

Where the building is not provided with sprinkler protection, spandrels are required in accordance with BCA Clause C2.6, which stipulates a 900mm high spandrel; with 600mm of this spandrel being above the finished floor level. Alternatively, an 1100mm horizontal slab may be utilized. The spandrel material is required to achieve an FRL of 60/60/60.

4.3 Passive Fire Protection

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

- Emergency power supply,
- Emergency generators,
- Electricity supply,
- 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, this is to be confirmed by the structural engineer.

4.4 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 to include details of proposed escalators
- Handrail and balustrade construction
- Details of Separation of rising & descending stairs
- Fire door enclosing the fire isolated passageway on level 3

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 be satisfied for Levels 1, 2, 4 & 5 parts of the buildings.

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

The following area exceeds the maximum allowable travel distance:

- Travel distance from the open plan office on level 3 to a point of choice is up to 27m in lieu of 20m- further design revisions will be required to comply with DtS provisions of the BCA or alternatively verified by Arup Fire.

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).

The dimensions of all new doorways required to accessible are to be reviewed by the architect, the areas of non-compliance are mainly concerned with the office areas on levels 2 & 3.

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 enclosure of the atrium space will result in new openings in the external wall facing Globe St which occupants will need to pass on the path of travel to the road along the northern façade. In addition, the exits from the tower stair which discharge along the southern facade of the building involve passing within 6m of the external walls and openings of the existing building.

The DtS provisions require that where egress to the road from a fire isolated exit involves passing within 6m of the building, the external wall of the building is to achieve an FRL of 60/60/60 (loadbearing) or FRL -/60/60 (non-load bearing). In addition, openings are to be protected in accordance with BCA Clause C3.4 with internal or external wall wetting sprinklers as appropriate; or -/60/- fire windows; -/60/- fire shutters / fire doors to FRL -/60/30.

The FRL of the external wall and protection of openings are to be addressed in the Fire Engineering Report verifying compliance with CP2 and DP5.

Further detailing is required to show the discharge of the modified fire Isolated passageway linking levels 2 & 3 to determine compliance with D1.7.

5.4 Balustrading and Handrail

Balustrading to a minimum 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; this is mainly concerned with Levels 1-3 which overlook into the atrium area.

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 2014. 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 level access to George St tenancies, door widths, circulation, etc. Access to these areas is to be assessed by an access consultant to provide an alternative solution.

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.
- 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.

A hearing augmentation-listening system shall be installed throughout the building in accordance with the requirements of Clause D3.7 of the BCA.

6.0 Fire Services & Equipment

The following fire services are currently provided throughout the building:

- Fire hydrants in accordance with Ordinance 70 Clause 27.3 and ministerial specification No.10
- Automatic fire detection and alarm systems to AS 1670-1986 to levels 6 to 10, smoke/heat detectors in car park spaced to AS1668.1-1991, AS1668.1-1998 on levels G to 5 and AS1603
- Automatic Fire Suppression systems in accordance with AS 2118-1982 and AS 2118-1999 for amenities on level B1
- Fire hose reels in accordance with Ordinance No.70, Clause 27.2 and Ministerial Spec No.10
- Portable Fire Extinguishers in accordance with Clause E1.6 of the BCA and AS 2444-2001,
- Emergency lighting, exit signage and directional exit signage throughout the building in accordance with Part E of the BCA and AS/NZS 2293.1
- Emergency warning and intercommunications system to AS 2220.1-1989, AS 2220.2-1989 and AS 1670.4-2004 for amenities on level B1
- Emergency lifts to AS1735.2

The fire control centre will not be affected as part of the proposed works but will need to be reference on the Annual Fire Safety Statement and reviewed as part of the new performance based solution prepared by Arup Fire and verified in accordance with EP3.2.

Level 2 will require a Development Consent for change of use and will therefore trigger a review of the Category 1 Fire Safety Measures in accordance with (EP & A Regs. Clause 143).

Key Measures to be reviewed are;

- Fire Hydrants- where the existing fire hydrants are to be maintained to Ordinance 70 Clause 27.3 and ministerial specification No.10 justification will be required to confirm compliance with performance requirement EP1.3
- Automatic Fire Suppression Systems- where the existing sprinklers are to be maintained to AS 2118-1982, justification will required to confirm compliance with performance requirement EP1.4
- Fire Control Centre/ Room the current location of the fire control room is to be verified by Arup Fire addressing performance requirement EP1.6
- Smoke Hazard Management System- the current Smoke Hazard Management System is to be reviewed as part of a performance based solution by Arup Fire Verifying compliance with EP2.2.
- Emergency Lifts- where the current emergency lifts are not proposed to be upgraded, they are to be reviewed as part of a performance based solution by Arup Fire verifying EP3.2

6.1 Fire Hydrants

The existing fire hydrants, if not to be upgraded, are to be verified by the fire service engineer as part of performance based solution confirming compliance with EP1.3, some of the following issues have been noted from a site visit.

- The location and configuration of the hydrant booster and sprinkler booster assembly- the assembly is not in sight of the main entrance;
- Hydrants are located outside of the fire isolated stair;
- Hydrants and booster assembly are not provided with storz couplings;
- Hydrant booster assembly is not within 8m of hardstand of FRNSW pumping appliances.

If compliance with DtS cannot be achieved a fire engineered solution will be required to address the performance requirements of the BCA.

6.2 Fire Hose Reels

The location of existing fire hose reels is to be detailed on the plans; the coverage of the existing fire hose reels is to be reviewed by the hydraulic engineer to confirm compliance to all new parts.

6.3 Automatic Sprinkler Protection

An Automatic Fire Suppression System in accordance with AS2118-1982 currently serves the building, if the existing system is to be maintained; it is to be reviewed by Arup Fire as part of a performance based solution verifying compliance with EP1.4.

7.0 Ventilation and Smoke Hazard Management

The current Smoke Hazard Management System is to be reviewed as part of a performance based solution by Arup Fire Verifying compliance with EP2.2.

The existing fire indicator panel is to remain within 4m of the main entry. 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 Atrium Provisions

The BCA provisions for an atrium are to be addressed in Fire Engineering Report including;

1. Bounding Construction verifying compliance with CP1 & CP2
2. Egress through an atrium verifying compliance with DP4 & EP2.2
3. Smoke hazard management verifying compliance with EP2.2
4. FRL of roof verifying compliance with CP1

9.0 Lift Services

The existing passenger lifts to be refurbished 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.

10.0 Sanitary Facilities

The sanitary & other facilities within the development are proposed to generally consist of: -

Level 1- Retail
Required: 4WC's, 2 Urinals, 4WB's
Proposed: 3 WC's, 1 ambulant, 3 WB's and 1 accessible WC
Level 2 – Office & Retail
Required: 4 WC's, 1 Urinal & 2 WB's
Proposed: 2 WC's 1 ambulant, 2 basins and 1 accessible WC
Level 3- Office & Retail
Required: 4WC's (2M & 2FM) 1 Urinal & 2 WB's (1M & 1FM)
Proposed: to be detailed on the proposed plans
Level 4 – Retail
Required: Sanitary facilities for employees
Proposed: 4 WC's, 2 ambulant, 6 basins and 1 accessible WC
Level 5- Retail
Required: Sanitary facilities for employees
Currently retail – sanitary facilities for any new use will require further assessment by future tenant.

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.

Based on the expected occupant numbers the proposed sanitary facilities are to be reviewed in accordance with the above findings from an initial assessment. Where detailed fitout is pending, analysis will be undertaken once tenants and indicative layouts/tenant numbers are known.

11.0 Energy Efficiency

All new parts of the 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 & Building Sealing
    - Glazing
    - 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.

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

Appendix A - Design Documentation

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

Drawing No.	Title	Date	Drawn By
DA000	Cover page & drawing list	Nov 2014	RM
DA001	Site Analysis	Nov 2014	RM
DA101	Ground Floor Demolition Plan	Nov 2014	RM
DA102	Level 2 Demolition Plan	Nov 2014	RM
DA103	Level 3 Demolition Plan	Nov 2014	RM
DA104	Level 4 Demolition Plan	Nov 2014	RM
DA105	Level 5 Demolition Plan	Nov 2014	RM
DA106	George St & Harrington St Demolition	Nov 2014	RM
DA107	Globe Lane Demolition	Nov 2014	RM
DA201	Proposed Ground Floor Plan	Nov 2014	RM
DA202	Proposed Level 2 Plan	Nov 2014	RM
DA203	Proposed Level 3 Plan	Nov 2014	RM
DA204	Proposed Level 4 Plan	Nov 2014	RM
DA205	Proposed Level 5 Plan	Nov 2014	RM
DA401	George St and Harrington St Elevation	Nov 2014	RM
DA402	Globe Lane Elevation	Nov 2014	RM
DA501	North Section AA	Nov 2014	RM
DA502	South Section BB	Nov 2014	RM
DA511	West CC & East DD Section	Nov 2014	RM
DA600	Internal Renders	Nov 2014	RM
DA601	Internal Renders	Nov 2014	RM
DA701	Proposed Ground Floor Fixtures	Nov 2014	RM
DA702	Proposed Level 2 Fixtures Plan	Nov 2014	RM
DA703	Proposed Level 3 Fixtures Plan	Nov 2014	RM
DA704	Proposed Level 4 Fixtures Plan	Nov 2014	RM

Appendix B - Draft Fire Safety Schedule

	Essential Fire Safety Measures	Standard of Performance
1.	Access panels, doors and hoppers to fire-resisting shafts	Ordinance No. 70 clause 22.12
2.	Automatic fail safe devices	BCA 1996 clause D2.21(d) & AS 1670-1986 to offices on levels 6 to 10, fail safe devices to doors to offices below level 6 activate on activation of smoke detectors complying with AS 1668.1-1998 BCA 2012 Clauses C3.4 and D2.21(a)(iv) on level 3
3.	Automatic fire detection and alarm systems	AS 1668.1-1998 to levels G to 5
4.	Automatic fire suppression systems (sprinklers)	AS 2118-1982 and AS 2118-1999 for amenities on level B1 & Fire Engineering Report prepared by Arup Fire.
5.	Automatic opening windows (to zone smoke control system)	AS 1668.1-1998 to levels G to 5 & Fire Engineering Report prepared by Arup Fire.
6.	Electromagnetic door holders (to fire doors at the top of escalators on level 3)	AS 4178, release on activation of smoke detectors complying with AS 1668.1-1998
7.	Emergency lifts	AS1735.2 (as applicable) & Fire Engineering Report prepared by Arup Fire.
8.	Emergency lighting	BCA Clauses E4.2 & E4.4 and AS/NZS 2293.1
9.	Emergency warning and intercommunication systems	AS 2220.1-1989, AS 2220.2-1989 and AS 1670.4- 2004 for amenities on level B1
10.	Exit signs	BCA Clauses E4.5 & NSW E4.6 and AS/NZS 2293.1
11.	Fire blankets	AS 2444
12.	Fire dampers	AS1668 Part 1-1979 and AS1682-1979
13.	Fire doors	AS/NZS 1905.1
14.	Fire hydrant systems	Ordinance No. 70 Clause 27.3 and Ministerial Specification No.10 & Fire Engineering Report prepared by Arup Fire.
15.	Fire seals protecting openings in fire resisting components of the building	BCA clauses A2.4 & C3.15 and Specification C3.15, AS 1530.4, AS 2072.1 and installed in accord with tested prototype and manufacturers' recommendations
16.	Hose reel systems	Ordinance No. 70 Clause 27.2 and Ministerial Specification No. 10
17.	Mechanical air handling systems	AS 1668 Part 1-1979 for base building services & car park and AS 1668.1-1998 for levels G to 5
18.	Portable fire extinguishers	AS 2444
19.	Pressurising systems	AS 1668 Part 1-1979 for levels 6 to 10 & car park and AS 1668.1-1998 for levels G to 5
20.	Smoke control system (smoke hazard management)	AS 1668.1-1998 for levels G to 5 & Fire Engineering Report prepared by Arup Fire.
21.	Smoke curtains (in duty free retail area above escalators)	AS 1530.7 and manufacturer's specification & Fire Engineering Report prepared by Arup Fire.
22.	Smoke dampers (to zone smoke control system)	AS 1668.1-1998 for levels G to 5 & Fire Engineering Report prepared by Arup Fire.
23.	Wall wetting sprinklers	AS 2118-1982 & Fire Engineering Report prepared by Arup Fire.
24.	Warning and operational signs	LGA 1993, EP&A Reg 2000 Clause 183 and BCA Clauses D2.23 & E3.3

Appendix C- Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2014:

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