REF: 063960-10BCA

SYDNEY INTERNATIONAL CONVENTION, EXHIBITION AND ENTERTAINMENT (SICEEP)

DARLING SQUARE

BUILDING CODE OF AUSTRALIA REPORT FOR SECTION 96 FOR SSDA4 (NORTH-WEST PLOT)

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Date	Rev	Pages	Issue	Checked By	Approved By	Approved
08/04/2013	A	17	Final	Brigitte Thearle	Stephen Natilli	26/04/2013
09/04/2013	B	17	Final	Brigitte Thearle	Stephen Natilli	09/05/2013
31/05/2013	C	17	Final	Brigitte Thearle	Stephen Natilli	31/05/2013
25/02/2015	D	14	S96	Brigitte Thearle		03/03/2015
03/03/2015	E	14	S96	Brigitte Thearle		11/03/2015
01/07/2015	F	60	Clause By Clause Assessment	Brigitte Thearle	Stephen Natilli	24/07/2015
24/07/15	G	14	Section 96	Brigitte Thearle		15/09/2015

Executive Summary

As Accredited Certifiers, we have reviewed architectural design documents prepared by Woods Bagot (refer appendix A) for compliance with the Building Code of Australia 2015.

As Accredited Certifiers, we have reviewed the drawings for the Section 96 application to modify the building located within the North West Plot of the Darling square site against the relevant provisions of the Building Code of Australia.

It is anticipated that due to the size and nature of the building, there will be alternate solutions that address non-compliances deemed to satisfy provisions of the BCA. The alternate solutions will be assessed against the relevant Performance Requirements of the BCA by suitably qualified persons.

Where items for which an alternate solution is prepared relate to Category 2 items under the Environmental Planning & Assessment Regulation 2000, approval will be required by 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

Brigitte Thearle

1.0 Introduction

This report supports an application made under section 96 of the Environmental Planning and Assessment Act 1979 (EP&A Act) to modify Development Consent, SSD-6013 relating to the development of the North West Plot of Darling Square which is part of the Sydney International Convention, Exhibition and Entertainment Precinct (SICEEP).

Development Consent SSD-6013 was granted on 7 May 2014 by the delegate of the Minister for Planning for the following components of development:

- site preparation works including demolition of existing structures, tree removal, minor excavation, and site remediation as required;
- staged construction of a 12 storey building to be used for commercial premises, and above ground car parking;
- various public domain improvements including provision (part) new east-west pedestrian laneway (known as Dickson's Lane) linking Darling Drive to the Boulevard, upgrading of existing footpaths, provision of street trees, and provision of bicycle parking facilities;
- building identification signage and wall advertising sign.

This section 96 application (the Modification Application) constitutes the second modification to the consent. This Modification Application follows the approval and current assessment of a number of SSDAs within the SICEEP site, including:

- SSDA1 which secured approval for the core convention, exhibition and entertainment facilities of the SICEEP Project;
- SSDA2, a staged application that established a Concept Proposal for a new mixed use neighbourhood at Darling Harbour known as Darling Square;
- SSDA3, SSDA4, and SSDA5 which related to three detailed proposals for use of the development plots within Darling Square;
- SSDA 6 which secured approval for the construction of the ICC Hotel; and
- SSDA7 which secured approval for the construction and use of a mixed use development on the North-East Plot of Darling Square.

1.1 Overview of Proposed Modifications

This Modification Application seeks approval for the following amendments:

- rationalisation of plant requirements resulting in a consequential increase in Gross Floor Area; and
- minor external amendments to the building design including the addition of solar panels on the roof and changes to the façade and signage zones.

A range of other minor amendments resulting from design development (including in response to feedback from a range of potential tenants and commercial property agents) are illustrated on the amended Architectural Drawings. These changes are to be expected in any project, especially given the nature and scale of the approved North West Plot development.

1.2 Site Description

The SICEEP Site is located within Darling Harbour. Darling Harbour is a 60 hectare waterfront precinct on the south-western edge of the Sydney Central Business District that provides a mix of functions including recreational, tourist, entertainment and business.

With an area of approximately 20 hectares, the SICEEP Site is generally bound by the Light Rail Line to the west, Harbourside shopping centre and Cockle Bay to the north, Darling Quarter, the Chinese Garden and Harbour Street to the east, and Hay Street to the south (refer to Figure 1). The Darling Square Site is:

- located in the south of the SICEEP Site, within the northern portion of the suburb of Haymarket;
- bounded by the Powerhouse Museum to the west, the Pier Street overpass and Little Pier Street to the north, Harbour Street to the east, and Hay Street to the south; and
- irregular in shape and occupies an area of approximately 43,807m2.

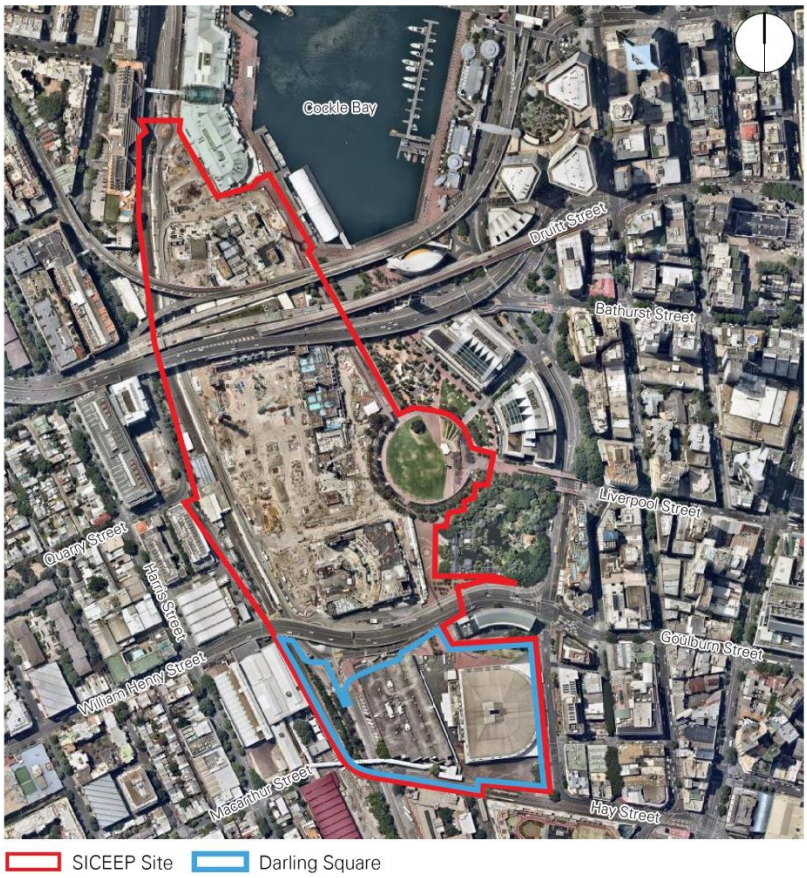

Figure 1 – Aerial Photograph of the SICEEP Site

The Modification Application Site relates to the North West Plot and surrounds as detailed within the architectural and landscape plans submitted in support of Modification Application. Figure 1 illustrates the North West Plot in the approved Concept Proposal.

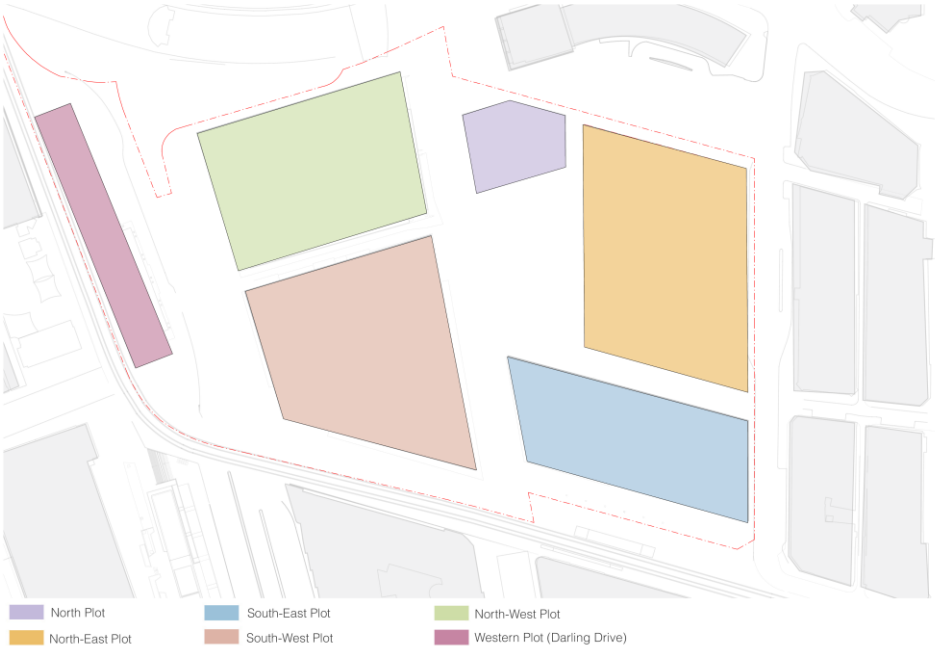

Figure 2 – Concept Proposal Development Plots

1.3 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 the version that is in place at the time of the application to the Certifying authority for the Construction Certificate.

The Modification Application Site relates to the North West Plot and surrounds as detailed within the architectural and landscape plans submitted in support of Modification Application. Figure 2 illustrates the North West Plot in the approved Concept Proposal.

2.0 Building Assessment Data

Summary of Construction Determination: -

Classification	5, 6, 7a
No. of Storeys	13
Rise in storeys	13
Type of Construction	A
Effective Height (m)	45.52m*

1. Note: The effective height may alter as the design progresses, depending on the lowest egress point from the building. The effective height is measured from the floor of the top most storey to the lowest floor having direct egress to road or open space.

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

Part of Project	Classification	Use
North-West Plot, Darling Square	5, 6, 7a	Commercial, Retail, Carpark

3.0 Fire Resistance

The buildings should be constructed generally in accordance with Part C of the Building Code of Australia.

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

- Separation between the carpark levels and the retail portions
- Separation between the retail levels and the commercial portions
- Fire compartmentation of the building at each floor level as appropriate.
- Separation of the atrium from the carpark levels
- Atrium compartmentation to be assessed on a performance basis

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.

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.

4.0 Egress

The egress provisions from the proposed building are provided in fire isolated stairways and external perimeter doorways. The locations of the proposed exits would appear to indicate that the travel distances and distances between alternative exits and egress widths will need to be assessed on a performance basis to BCA Performance Requirement **DP4** and **EP2.2**.

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 & descending Stairs
- Discharge from the Fire Isolated Exits
- Details of the egress provisions to the Road.

4.1 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 Part D3 of the BCA. Parts of the building required to be accessible shall comply with the requirements of AS1428.1-2009.

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 Part D3 of the BCA. Facilities services and features of the building accessible to people with disabilities shall be identified by signage complying with Part D3 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.
- Where access is not proposed to be provided as required by the BCA, these items will be address by an alternate solution prepared by an accredited access consultant.

5.0 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 Part E of the BCA
- Fire hydrants in accordance with the BCA and AS 2419-2005 including access to the proposed Booster assembly for fire brigade vehicles.
- Fire hose reels in accordance with the BCA and AS 2441-2005
- Portable Fire Extinguishers in accordance with BCA and AS 2444
- Sound System and Intercom System for Emergency Purposes in accordance with the BCA.
- Emergency lighting, exit signage and directional exit signage is required throughout the building in accordance with Part E of the BCA
- Stand-by power in accordance with Specification G3.8 of the BCA

A fire control centre shall be provided to the building in accordance with Part E of the BCA.

6.0 Ventilation and Smoke Hazard Management

Smoke hazard management shall be provided throughout the building by means of:
- An automatic air pressurisation system to the fire isolated exits
- Zone smoke control system.
- Automatic smoke detection and alarm system
- Automatic shutdown of mechanical systems
- An automatic smoke exhaust system to BCA Part E.

It is anticipated that the smoke hazard management will be assessed on a performance basis to BCA Performance Requirement **EP2.2**.

Throughout the development the provision of natural or mechanical ventilation is required to all habitable rooms in accordance with Part F of the Building Code of Australia.

7.0 Lift Services

The passenger lifts to be installed are to be: -

- fitted with warning signs, fire service controls in accordance with Clauses E3.3, E3.7, E3.9 and E3.10 of the BCA
- Stretcher facilities are to be provided within the lifts with minimum dimensions of 600m wide, 2000mm long and 1400mm high.
- At least two emergency lifts with stretcher facilities in accordance with part E3.4 of the BCA. The two emergency lifts shall be located in separate shafts.
- Provided with the following: -
    - A handrail in accordance with AS 1735.12
    - Minimum internal floor dimensions as specified in Table E3.6b of the BCA i.e. 1,400mm x 1,600mm,
    - Minimum clear door opening complying with AS 1735.12
    - Passenger protection system complying with AS 1735.12
    - Have a set of buttons for operating the lift located at heights above level complying with AS 1735.12.
    - Lighting in accordance with AS 1735.12
    - Automatic audible information within the lift car to identify the level each time the car stops
    - Audible and visual indication at each lift landing to indicate the arrival of the lift car

Where two or more passenger lifts are installed and serve the same storeys, at least two emergency lifts must be provided to serve those storeys and, if located within different shafts, at least one emergency lift must be provided in each shaft.

An emergency lift must be contained within a fire-resisting shaft in accordance with the requirements of Part C.

8.0 Sanitary Facilities

The sanitary facilities for the commercial areas will generally be required at the rate of 1 WC per 20 males and 1 WC per 15 females. Urinals will be required to the male facilities at the rate of 1 per 50 occupants. Basins will be required for each sex at the rate of 1 per 30 occupants.

For the retail portions, facilities are required for patrons where the number of patrons exceeds 600. Staff facilities to the retail portions are to be provided at the same rate as those for the commercial areas.

Sanitary facilities will be provided to the project as per the requirements of BCA Part F2.

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 AS1428.1-2009.

9.0 Energy Efficiency

The building is required to comply with the energy provisions of the BCA. It is proposed that the ESD assessment shall incorporate the relevant part J provision of the BCA as part of the construction certificate process.

Options available are:

- Comply with either JV3

Or

- Comply with the deemed to satisfy provisions in relation to:
  - Building Fabric
  - External Glazing
  - Building dealing
  - Air movement
  - Air conditioning and ventilation systems
  - Artificial light and power
  - Hot water supply

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

10.0 Access for Maintenance

The following criteria must also be observed in the special design of the plant areas.

NSW J8.2 Access for maintenance

Access for maintenance must be provided to—

a) adjustable or motorised shading devices; and
b) time switches and motion detectors; and
c) room temperature thermostats; and
d) plant thermostats such as on boilers or refrigeration units; and
e) motorised air dampers and control valves; and
f) reflectors, lenses and diffusers of light fittings; and
g) heat transfer equipment; and
h) plant that receives a concession under verification method JV3(b) for the use of energy obtained from—
   i). a source that is renewable on-site such as solar, geothermal or wind; or
   ii). another process as reclaimed energy.

Appendix A - Design Documentation

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

Drawing No.	Title	Rev	Drawn By
DA6001	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – PLAN – GROUND FLOOR	D	WOODS BAGOT
DA6002	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – PLAN – CARPARK LEVEL 1	E	WOODS BAGOT
DA6003	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – PLAN – CARPARK LEVEL 2	E	WOODS BAGOT
DA6004	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – PLAN – CARPARK LEVEL 3	C	WOODS BAGOT
DA6005	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – PLAN – CARPARK LEVEL 4	C	WOODS BAGOT
DA6007	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – PLAN – LEVEL 5	C	WOODS BAGOT
DA6008	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – PLAN – LEVEL 6	C	WOODS BAGOT
DA6009	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – PLAN – LEVEL 7	C	WOODS BAGOT
DA6010	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – PLAN – LEVEL 8	C	WOODS BAGOT
DA6011	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – PLAN – LEVEL 9	C	WOODS BAGOT
DA6012	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – PLAN – LEVEL 10	C	WOODS BAGOT
DA6013	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – PLAN – LEVEL 11	C	WOODS BAGOT
DA6014	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – PLAN – LEVEL 12 AND PLANT	B	WOODS BAGOT
DA6015	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – PLAN – ROOF	B	WOODS BAGOT
DA6101	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – SECTION AA	D	WOODS BAGOT
DA6102	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – SECTION BB	C	WOODS BAGOT
DA6103	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – SECTION CC	C	WOODS BAGOT
DA6104	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – SECTION DD	C	WOODS BAGOT
DA6105	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – SECTION EE	C	WOODS BAGOT
DA6201	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – NORTH ELEVATION	E	WOODS BAGOT
DA6202	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – EAST ELEVATION	D	WOODS BAGOT
DA6203	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – SOUTH ELEVATION	C	WOODS BAGOT
DA6204	COMPARISON BETWEEN DA SSDA4 VS. SECTION 96 – WEST ELEVATION	C	WOODS BAGOT

Appendix B - Draft Fire Safety Schedule

	Essential Fire Safety Measures	Standard of Performance
1.	Access Panels, Doors	BCA Clause C3.13
2.	Automatic Fail Safe Devices	BCA Clause D2.19 & D2.21
3.	Automatic Fire Detection and Alarm System	BCA Spec. E2.2a, Spec G3.8 & AS 1670 – 2004
4.	Automatic Fire Suppression System	BCA Spec. E1.5, Spec G3.8 & AS 2118.1 – 1999, AS 2118.6 – 2012 (Combined sprinkler & hydrant)
5.	Building Occupant Warning System activated by the Sprinkler System	BCA Spec. E1.5 & AS 1670 – 2004
6.	Emergency Lifts	BCA Clause E3.4 & AS 1735.2 – 2001 Alternate solution prepared by fire safety engineer
7.	Emergency Lighting	BCA Clause E4.2, E4.4 & AS/NZS 2293.1 – 2005
8.	EWIS	BCA Clause E4.9 & AS 1670.4 - 2004 Alternate solution prepared by fire safety engineer
9.	Emergency Evacuation Plan	AS 3745 – 2002 Alternate solution prepared by fire safety engineer
10.	Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS/NZS 2293.1 – 2005
11.	Fire Control Centres	BCA Spec. E1.8 Alternate solution prepared by fire safety engineer
12.	Fire Dampers	BCA Clause C3.15, AS 1668.1 – 1998 & AS 1682.1 & 2 – 1990
13.	Fire Doors	BCA Clause C3.2, C3.4, C3.5, C3.6, C3.7 & C3.8 and AS 1905.1 – 2005
14.	Fire Hose Reels	BCA Clause E1.4 & AS 2441 – 2005
15.	Fire Hydrant System	Clause E1.3 & AS 2419.1 – 2005 Alternate solution prepared by fire safety engineer
16.	Fire Seals	BCA Clause C3.15 & AS 1530.4 – 1997
17.	Lightweight Construction	BCA Clause C1.8 & AS 1530.3 – 1999
18.	Mechanical Air Handling System	BCA Clause E2.2, AS/NZS 1668.1 – 1998 & AS 1668.2 – 1991
19.	Paths of Travel	EP&A Reg 2000 Clause 186 Alternate solution prepared by fire safety engineer
20.	Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001
21.	Pressurising Systems	BCA Clause E2.2 & AS/NZS 1668.1 – 1998
22.	Required Exit Doors (power operated)	BCA Clause D2.19(d)
23.	Smoke Hazard Management System	BCA Part E2, Spec G3.8 & AS/NZS 1668.1 – 1998 Alternate solution prepared by fire safety engineer
24.	Stand-by Power System	BCA Clause G3.8
25.	Wall-Wetting Sprinklers	BCA Clause C3.4 & AS 2118.2 – 1995

	Essential Fire Safety Measures	Standard of Performance
26.	Warning and Operational Signs	Section 183 of the EP & A Regulations 2000, AS 1905.1 – 2005, BCA Clause 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

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.