REF: 063960-04BCA

SYDNEY INTERNATIONAL CONVENTION, EXHIBITION AND ENTERTAINMENT (SICEEP)

THE HAYMARKET

BUILDING CODE OF AUSTRALIA REPORT FOR SSDA4 HARBOUR

Table of Contents

Date	Revision	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

Executive Summary

As Accredited Certifiers, we have reviewed architectural design documents prepared by Lend Lease Design (refer appendix A) for compliance with the Building Code of Australia 2013.

As Accredited Certifiers, we have reviewed the concept report documentation for "The Haymarket" Commercial Building located within the North West Plot of Darling Harbour 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 with the 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

Stephen Natilli

1.0 Introduction

The building proposed within the North West Lot comprises two primary elements; a four storey, 450-bay Public Car Parking facility (of which 50 bays will be allocated to the Office component) and a six storey A-grade Office tower above. In accordance with Lend Leases commitments to the State for the provision of on-site Public Car Parking, the public car park is to be operational by December 2016.

This report supports a State Significant Development (SSD) Development Application (DA) submitted to the Minister for Planning and Infrastructure pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

The Application (referred to as SSDA 4 follows the submission of a staged SSD DA (SSDA 2) submitted in March 2013 to the Department of Planning and Infrastructure that set out a Concept Proposal for a new mixed use residential neighbourhood at Darling Harbour known as 'The Haymarket'. The Haymarket forms part of the Sydney international convention, exhibition and entertainment precinct (SICEEP) Project, which will deliver Australia's global city with new world class convention, exhibition and entertainment facilities and support the NSW Government's goal to "make NSW number one again".

More specifically this subsequent DA seeks approval for a public car park (above ground) and commercial office building within the North West development plot of The Haymarket and associated public domain works. The DA has been prepared and structured to be consistent with the Concept Proposal DA.

Potential Staging of Development:

The building proposed within the North West Lot comprises two primary elements; a four storey, 450-bay Public Car Parking facility (of which 50 bays will be allocated to the Office component) and —a six storey A-grade Office tower above. In accordance with Lend Leases commitments to the State for the provision of on-site Public Car Parking, the public car park is to be operational by December 2016.

Lend Lease intends to deliver the Car Park and Office tower simultaneously, however in the event that both components are unable to be delivered concurrently, the ability to stage the development and hand over the Public Car Park and Office separately has been factored into the design of the proposal.

In regard to the BCA Compliance assessment, the primary consideration for the above staged development would be whether the completed Car Park would be able to comply without the completed Office tower above. As the completed four storey Car Park will be constructed with a the relevant fire services infrastructure and required health and amenity provisions, the staging would not be expected to alter the BCA compliance elements. Therefore the delivery of the Car Park prior to completion of the Office Tower is not considered to require separate assessment and this report has been prepared on the basis of the completed site.

Overview of Proposed Development

The proposal relates to a detailed ('Stage 2') DA for a commercial office and public car park development in the North West Plot of The Haymarket together with associated public domain works. The Haymarket Site is to be developed for a mix of residential and non-residential uses, including but not limited to residential buildings, commercial, retail, community and open space. The North West Plot is one of six development plots identified in the Concept Proposal DA.

Under the Concept Proposal, the North West Plot will accommodate active ground floor uses, a multi-storey above ground public car park and a commercial office building above. More specifically, this SSD DA seeks approval for the following components of the development:

- Staged demolition of existing site improvements, including the existing Sydney Entertainment Centre (SEC), Entertainment car park, and part of the pedestrian footbridge connected to the Entertainment car park;

- Associated tree removal and replanting;

- Construction and use of a mixed use commercial building comprising:
  - ground level retail/television studio uses/ IQ Hub;
  - public car park (above ground);
  - ancillary parking (above ground); and
  - commercial office space.
- Provision of vehicle access to the development from realigned Exhibition Place;

- Public domain improvements, including:
  - provision (part) of a new north-south pedestrian connection (known as the Boulevard) eventually linking Quay Street to Darling Harbour;
  - provision (part) of a new east-west pedestrian laneway (known as Dickson's Lane) linking Darling Drive to the Boulevard;

- Extension and augmentation of physical infrastructure / utilities as required

Background

On 21 March 2013 a critical step in realising the NSW Government's vision for the SICEEP Project was made, with the lodgement of the first two SSD DAs with the Department of Planning and Infrastructure. The key components of these proposals are outlined below.

Public Private Partnership SSD DA (SSD 12_5752)
The Public-Private Partnership (PPP) SSD DA (SSD 1) includes the core facilities of the SICEEP Project, comprising the new, integrated and world-class convention, exhibition and entertainment facilities along with ancillary commercial premises and public domain upgrades.

The Haymarket Concept Proposal (SSD 13_5878)
The Haymarket Concept Proposal SSD DA (SSDA 2) establishes the vision and planning and development framework which will be the basis for the consent authority to assess detailed development proposals within the Haymarket Site.

More specifically the Stage 1 Concept Proposal seeks approval for the following key components and development parameters:

- Staged demolition of existing site improvements, including the existing Sydney Entertainment Centre (SEC), Entertainment Centre Car Park, and part of the pedestrian footbridge connected to the Entertainment car park and associated tree removal;
- A network of streets, lanes, open space areas and through-site links generally as shown on the Public Domain Concept Proposal, to facilitate reintegration of the site into the wider urban context and connection with the broader SICEEP Site;
- Street layouts;

- Development plot sizes, development plot separation, building envelopes (maximum height in RLs), building separation, building depths, building alignments and a benchmark for natural ventilation and solar provision for the precinct;
- Land uses across the site, including residential and non-residential uses;
- A maximum total gross floor area (GFA) across The Haymarket Site of 197,236m^2 for the mixed use development (excluding ancillary above ground car parking), comprising of:
    - A maximum of 49,545m^2 non-residential GFA; and
    - A maximum of 147,691m^2 residential GFA;
- Above ground parking including public car parking;
- Residential car parking rates to be utilised in the subsequent detailed (Stage 2) Development Applications, being:
    - Zero (0) spaces per studio apartment;
    - Maximum one (1) space per two (2) one bedroom apartments;
    - Maximum one (1) space per one bedroom + study apartment, plus one (1) additional space per five (5) apartments;
    - Maximum one (1) space per two bedroom apartment, plus one (1) additional space per five (5) apartments; and
    - Maximum two (2) spaces per 3+ bedroom apartment.
- Design Guidelines to guide future development and the public domain; and
- A remediation strategy.

This report has been prepared to support a detailed Stage 2 SSD DA for a mixed use commercial and public car park development and associated public domain works within The Haymarket (SSDA 4), consistent with the Concept Proposal SSD DA.

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 Haymarket 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 43,807m^2.

Figure 1 – Aerial Photograph of the SICEEP Site

The Concept Proposal DA provides for six (6) separate development plots across the Haymarket Site (refer to **Figure 2**):

1. North Plot;
2. North East Plot;
3. South East Plot;
4. South West Plot;
5. North West Plot; and
6. Western Plot (Darling Drive).

The Application Site area relates to the North West Plot and surrounds as detailed within the architectural and landscape plans submitted in support of the DA.

1 North Plot
2 North-East Plot
3 South-East Plot
4 South-West Plot
5 North-West Plot
6 Western Plot (Darling Drive)

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

1.2 Purpose of this Report

This report has been prepared to accompany a detailed development application for a commercial office and public car park development located on the North West Plot of the Haymarket Precinct. It addresses the relevant Director-General Requirements for the project.

These Director-General Requirements are discussed in the Environmental Impact Statement (EIS) prepared to support the application.

2.0 Building Assessment Data

Summary of Construction Determination: -

Classification	5, 6, 7a
No. of Storeys	12
Rise in storeys	12
Type of Construction	A
Effective Height (m)	38.1m

1. Note: The effective height may alter as the design progresses, depending on the lowest egress point from the building.

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

Part of Project	Classification	Use
"The Haymarket"	5, 6, 7a	Commercial, Retail, Studio, 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.

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 comply with the BCA. The proposed drawings indicate that the fire stairs shall be discharging within the lobby and via the loading dock respectively. The proposal shall require verification as part of the fire engineering for the building to **DP5** of the BCA.

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 Morris Goding Accessibility Consulting.

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

A fire control room 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.
- An automatic smoke exhaust system to BCA Part E.

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 AS 1735.2
- Stretcher facilities are to be provided within the emergency lifts with minimum dimensions of 600m wide, 2000mm long and 1400mm high.
- An emergency lift with stretcher facilities in accordance with part E of the BCA and AS 1735.2.
- 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 rod across the door opening between 50mm and 1550mm above floor level,
  - Have a set of buttons for operating the lift located at heights complying with AS 1735.12.

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 AS1428.1-2001.

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	Revision	Drawn By
SNW DA10000	DEVELOPMENT APPLICATION TITLE SHEET	REV 02	Lend Lease Design.
SNW DA10001	SITE PLAN - EXISITING	REV 02	Lend Lease Design.
SNW DA10005	SITE PLAN - DEMOLITION	REV 02	Lend Lease Design.
SNW DA10006	SITE PLAN – DETAIL EXCATION	REV 02	Lend Lease Design.
SNW DA10010	SITE PLAN - GROUND FLOOR	REV 02	Lend Lease Design.
SNW DA10016	SITE PLAN - TYPICAL FLOOR	REV 02	Lend Lease Design
SNW DA10020	SITE PLAN - ROOF	REV 02	Lend Lease Design
SNW DA10100	GROUND FLOOR PLAN	REV 02	Lend Lease Design
SNW DA10101	CAR PARK LEVEL 1	REV 02	Lend Lease Design
SNW DA10102	CAR PARK LEVEL 2, 3 & 4	REV 02	Lend Lease Design
SNW DA10105	CAR PARK LEVEL 4A	REV 02	Lend Lease Design
SNW DA10106	TYPICAL FLOOR PLAN - LEVELS 1,2 & 3	REV 02	Lend Lease Design
SNW DA10108	FLOOR PLAN LEVEL 4	REV 02	Lend Lease Design
SNW DA10109	FLOOR PLAN LEVEL 5	REV 02	Lend Lease Design
SNW DA10110	FLOOR PLAN LEVEL 6	REV 02	Lend Lease Design
SNW DA10111	FLOOR PLAN LEVEL 7 - PLANT	REV 02	Lend Lease Design.
SNW DA10112	ROOF PLAN	REV 02	Lend Lease Design.
SNW DA10301	SECTION AA	REV 02	Lend Lease Design.
SNW DA10302	SECTION BB	REV 02	Lend Lease Design.
SNW DA10304	SECTION DD	REV 02	Lend Lease Design
SNW DA10305	TYPICAL FACADE (OFFICE) SECTION DETAIL	REV 02	Lend Lease Design.
SNW DA10306	TYPICAL SOUTH FACADE SECTION DETAIL	REV 02	Lend Lease Design.
SNW DA10307	TYPICAL EAST FACADE SECTION DETAIL	REV 02	Lend Lease Design.
SNW DA10400	NORTH ELEVATION	REV 02	Lend Lease Design.
SNW DA10401	EAST ELEVATION	REV 02	Lend Lease Design.
SNW DA10402	SOUTH ELEVATION	REV 02	Lend Lease Design
SNW DA10403	WEST ELEVATION	REV 02	Lend Lease Design
SNW DA10452	DETAIL GROUND FLOOR ELEVATION	REV 02	Lend Lease Design

Appendix B - Draft Fire Safety Schedule

	Items to be inspected or tested as nominated by the relevant authority	Installation standard/code/conditions of approval
2.	Access Panels, Doors and Hoppers	BCA Clause C3.13
3.	Automatic Fail Safe Devices	BCA Clause D2.19 & D2.21
4.	Automatic Fire Detection and Alarm System	BCA Spec. E2.2a & AS 1670 – 2004
5.	Automatic Fire Suppression System	BCA Spec. E1.5 & AS 2118.1 – 1999
6.	Building Occupant Warning System activated by the Sprinkler System	BCA Spec. E1.5 & AS 1670 – 2004
7.	Emergency Lifts	BCA Clause E3.4 & AS 1735.2 – 2001
8.	Emergency Lighting	BCA Clause E4.2, E4.4 & AS/NZS 2293.1 – 2005
9.	Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS/NZS 2293.1 – 2005
10.	Fire Control Centre	BCA Spec. E1.8
11.	Fire Dampers	BCA Clause C3.15, AS 1668.1 – 1998 & 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 – 2005
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 – 1997
16.	Mechanical Air Handling System	BCA Clause E2.2, AS/NZS 1668.1 – 1998 & AS 1668.2 – 1991
17.	Paths of Travel	EP&A Reg 2000 Clause 186
18.	Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001
19.	Pressurising Systems	BCA Clause E2.2 & AS/NZS 1668.1 – 1998
20.	Smoke Hazard Management System	BCA Part E2 & AS/NZS 1668.1 – 1998
21.	Sound System for Emergency Purposes	BCA Clause E4.9 & AS 1670.4 - 2004
22.	Warning and Operational Signs	Section 183 of the EP & A Regulations 2000, AS 1905.1 – 2005, BCA Clause C3.6, D2.23, E3.3AS 1905.1 – 1997, BCA Clause EP3

Appendix C- Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2013:

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.			