NATIONAL CONSTRUCTION CODE REPORT

Proposed construction of a Senior Living Development
54 Bardo Road, Newport

Dated: 8th October 2021

Prepared for: Giles Tribe Architects

Prepared by: **Construction Certification Group Pty Ltd**
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1.09.2020	A	14	DA Stage	Hannah O"Rouke	Avi Prasad	7.09.2020
8.10.2021	B	14	DA Stage	Guy Bartle	Guy Bartle	8.10.2021

Executive Summary

As Accredited Certifiers, we have reviewed architectural design documents prepared by (refer appendix A) for compliance with the Nation Construction Code 2019.

The assessment of the design documentation has revealed that the proposed design is capable of complying with the Deemed to Satisfy requirements of the Nation Construction Code 2019.

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

Guy Bartle
Building Regulation Consultant

1.0 Introduction

The proposed development comprises of a basement & two levels above to the front and single level to the rear.

The site is located on the northern side of Bardo road, Newport.

2.0 Building Assessment Data

Summary of Construction Determination: -

Classification	2,7a
Number of Storeys Contained	3
Rise In Storeys	2
Type of Construction	B
Effective Height (m)	3.1m (RL's 18.48m-15.38m)

3.0 Structural Provisions

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

Glazing is to comply with AS1288, and AS2047.

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

4.0 Fire Resistance

The buildings should be constructed generally in accordance with Table 4 specification C1.1 of the National Construction Code 2019.

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 60 minutes,
- Separation between the carpark levels and the residential portions of 90 minutes,
- Fire compartmentation of the building at each floor level of 90 minutes
- Internal walls for the lift and stairs shaft loadbearing of 90 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.

5.0 Egress

The egress provisions form the proposed building are provided external perimeter doorways & non-fire isolated stairways.

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 the buildings.

Other detailing issues that will need to be addressed include:

- Door Hardware
- Exit door operation
- Stair construction
- Handrail and balustrade construction

Exit Travel Distances

The travel distances to exits should not exceed:

Class 7a (Carpark)

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

Class 2

- 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 travel distances comply with the above DTS requirements:

Dimensions of Exits

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

The exit width provided is sufficient for the proposed populations.

Doorways are permitted to contain a clear opening width of the required width of the exit minus 250mm 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).

Fire Isolated Exits

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

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

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

Balustrading and Handrail

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

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

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

Walls adjacent to windows and balustrades which are required to be not climbable are to be clear of climbable elements for a distance of 1m from the balustrade. This includes GPO's, gas outlets, climbable window and doors sills and the like.

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.

6. 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 NCC 2019. Parts of the building required to be accessible shall comply with the requirements of SEPP Seniors Requirements.

The design would generally comply with the prescriptive provisions of the NCC & the SEPP Seniors Requirements. Refer to the Accessibility Consultant report for specific compliance details.

7. Fire Services & Equipment

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

- Fire hydrants in accordance with clause E1.3 of the BCA and AS 2419.1-2005,
- Fire hose reels in accordance with clause E1.4 of the BCA and AS 2441-2005,
- Portable Fire Extinguishers in accordance with Clause E1.6 of the BCA and AS 2444-2001,
- 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

Fire Hydrants

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

Hydraulic engineer to verify the design compliance at the Construction Certificate stage with either a Street Hydrant design compliance or onsite Hydrant design compliance in accordance with the standard.

Fire Hose Reels

A Fire Hose Reel System is required to BCA Clause E1.4 and AS2441 to all non-residential portions.

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

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 2 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
    - to serve only the storey at which they are located; and
    - 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.

8. Ventilation and Smoke Hazard Management

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

Carpark Portions:

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

Residential Portions:

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

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.

9. 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
- 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. Sanitary Facilities

Residential Apartment - Each sole occupancy unit is to be provided with:

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

As the development contains more than 10 apartments, a closet pan and basin is to be provided at or near ground level for employees that can be accessed without going through a sole occupancy unit. This can be shared with the retail facilities.

11. Sound Transmission & Insulation

The sound transmission and insulation requirements for the Class 2 portions shall be provided in accordance with Part F5 of the NCC 2015 for the following elements:

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.

12. Energy Efficiency

The proposed development shall be provided insulation Building sealing and services in accordance with NSW Part J of the NCC 2019.

The residential (Class 2) portions of the building are subject to BASIX, and a BASIX Certificate will be required prior to the issuance of the Construction Certificate for the works.

The Class 7a (carpark), of the proposed development shall comply with Part J of the BCA. To achieve compliance, there are two options available:

Option 1.

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

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

Option 2.

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

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

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

The proposed site will be located in a climate zone 6.

Appendix A - Design Documentation

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

Drawing No.	Title	Date	Drawn By	Revision
DA001	Cover Page	08.10.2021	Giles Tribe	M
DA002	Demolition Plan	08.10.2021	Giles Tribe	G
DA003	Site Analysis	08.10.2021	Giles Tribe	I
DA005	Site Plan	08.10.2021	Giles Tribe	I
DA006	Basement Plan	08.10.2021	Giles Tribe	Q
DA007	Ground Floor Plan	08.10.2021	Giles Tribe	S
DA008	Level 1 Plan	08.10.2021	Giles Tribe	P
DA009	Roof Plan	08.10.2021	Giles Tribe	J
DA010	North & West Elevations	08.10.2021	Giles Tribe	K
DA011	South & East Elevations	08.10.2021	Giles Tribe	J
DA012	Section AA & BB	08.10.2021	Giles Tribe	I
DA013	Section CC & DD	08.10.2021	Giles Tribe	I

Appendix B - Draft Fire Safety Schedule

	Items to be inspected or tested as nominated by the relevant authority	Deemed to satisfy installation standard/code/conditions of approval
1.	Automatic Fire Detection and Alarm System	BCA Spec. E2.2a & AS 1670 – 2004
2.	Emergency Lighting	BCA Clause E4.2, E4.4 & AS/NZS 2293.1 – 2005
3.	Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS/NZS 2293.1 – 2005
4.	Fire Hose Reels (Carpark)	BCA Clause E1.4 & AS 2441 – 2005
5.	Fire Hydrant System (Street)	Clause E1.3 & AS 2419.1 – 2005
6.	Mechanical Air Handling System (Carpark)	BCA Clause E2.2, AS/NZS 1668.1 – 1998 & AS 1668.2 – 1991
7.	Paths of Travel	EP&A Reg 2000 Clause 186
8.	Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001
9.	Smoke Alarm System	BCA Spec. E2.2a & AS 3786 – 1993
10.	Solid Core Doors (Type B)	BCA Clause C3.11
11.	Warning and Operational Signs	Section 183 of the EP & A Regulations 2000, AS 1905.1 – 1997, BCA Clause C3.6, D2.23, E3.3

Appendix C – BCA Specifications

The following BCA specifications have been compiled to ensure those BCA requirements not included in the architectural design plans will be met. Accordingly, to demonstrate full BCA compliance, the following matters will need to be certified by the relevant consultant or included in the project specifications, prior to the issue of the Construction Certificate.

Structural Engineers Design Certification

1. The structural design is in accordance with Clause B1.1, B1.2 and B1.4 of BCA2019 including the following (as applicable):

a. Dead and Live Loads – AS/NZS 1170.1:2002
b. Wind Loads – AS/NZS 1170.2:2011
c. Earthquake actions – AS 1170.4:2007
d. Masonry – AS 3700:2018
e. Concrete Construction – AS 3600:2018
f. Steel Construction AS 4100:1998
g. Timber Construction – AS 1684, AS 1720.1 & AS 1720.5
h. Piling – AS 2159

2. The FRL's of the structural elements for the proposed works have been designed in accordance with Specification C1.1 of BCA2019, including Table 4 for a building of Type B Construction.
3. The structural design complies with the ABCB Standard for Construction of Buildings in Flood Hazard Areas. Architectural / general Design Certification
4. The general design complies with the ABCB Standard for Construction of Buildings in Flood Hazard Areas.
5. The FRL's of building elements will comply with Specification C1.1 of BCA2019, including Table 4 for a building of Type B Construction.
6. Lightweight construction used in a fire-rated wall system or for the fire-resisting covering of a steel column or the like will comply with Specification C1.8 of BCA2019.
7. Building elements will be non-combustible in accordance with C1.9 of BCA2019.
8. Fire hazard properties of internal linings, materials and assemblies must comply with BCA Clause C1.10 and Specification C1.10.
9. Ancillary elements fixed, installed or attached to the internal parts or external face of an external wall will comply with Clause C1.14 of BCA2019.
10. The walls separating the Class 2 stairways from the Class 7a carpark parts at basement level will achieve an FRL of not less than (120)/60/60.
11. The floor separating the basement level from the ground level will achieve an FRL of not less than 120/120/120.
12. The Lift shaft walls, if load-bearing will have the relevant FRL prescribed by Table 4 of Specification C1.1 and if non-loadbearing, be of non-combustible construction.
13. The doorways separating the carpark parts from the residential stairways at basement level will be fire doors compliant with BCA Specification C3.4 and achieve an FRL of not less than -/60/60.
14. The entry doors to the sole-occupancy units and the door from the garbage room to the lobby will be protected by self-closing, tight-fitting, solid core doors, not less than 35 mm thick, in accordance with Clause C3.11 of BCA2019.
15. Any services passing through fire-rated building elements (other than external walls) will be fire sealed in accordance with Clauses C3.12 & C3.15 of BCA2019. 16. The construction joints to the structure will be in accordance with Clause C3.16 of BCA2019 to reinstate the FRL of the element concerned.
17. A lintel will have the FRL required for the part of the building in which it is situated, unless it is exempted by Clause 2.3 of Specification C1.1, BCA2019.
18. All attachments to fire-rated building elements will be fixed in a way that does not affect the fire resistance of that element in accordance with Clause 2.4 of Specification C1.1 of BCA2019.

19. Any electricity distribution boards, ducts or equipment installed in corridors leading to an exit will be enclosed with non-combustible construction or a fire-protective covering with doorways suitably sealed against smoke spread, in accordance with Clause D2.7 of BCA2019.
20. Gas or other fuel services will not be installed in the required exits, in accordance with Clause D2.7 of BCA2019.
21. The external ramps will have a slip rating of P5 or R12 when tested in accordance with AS 4586:2013.
22. Stair and landing construction will comply with the dimensional and slip resistance requirements of Clauses D2.13 & D2.14 of BCA 2019.
23. Door thresholds will not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf unless the doorway opens to open space and is either provided with an AS 1428.1-2009 compliant threshold ramp if on an accessible path of travel, or otherwise, is not more than 190mm above the finished surface to which the doorway opens, as per BCA Clause D2.15.
24. Balustrades compliant with BCA Clause D2.16 will be provided to stairs and balconies where there is a fall of 1m or more.
25. Handrails will be provided to stairways and ramps in accordance with BCA Clause D2.17.
26. Doors (other than within SOUs) will be readily openable without a key from the side that faces a person seeking egress, by a single hand downward action or pushing action on a single device which is located between 900mm and 1.1 m from the floor, in accordance with BCA Clause D2.21.
27. The openable windows to bedrooms, where the floor below the window is 2m or more above the surface beneath, will be protected with a restricting device or secure screen that does not allow a 125mm sphere to pass through the opening or screen and resists an outward horizontal action of 250N in accordance with Clause D2.24 of BCA2019. In addition to window protection, and for other openable windows 4 meters or more above the ground below, a barrier with a height not less than 865mm above the floor will be installed to the openable window.
28. Warning signage will be provided to the lifts in accordance with Clause E3.3 of BCA2019.
29. External above ground waterproofing membranes will comply with Clause F1.4 of BCA2019 and AS 4654 Parts 1 & 2-2012.
30. Metal sheet roofing will comply with AS 1562.1-2018.
31. Sarking-type materials used for weatherproofing will comply with AS/NZS 4200 Part 1 and 2-2017.
32. Wet areas will comply with Clause F1.7 of BCA2019 and AS 3740-2010.
33. Damp proofing of the proposed structure will be carried out in accordance with Clause F1.9 and F1.10 of BCA2019.
34. Floor wastes will be installed to bathrooms and laundries in accordance with Clause F1.11 of BCA2019.
35. Glazed assemblies will comply with AS 2047-2014 and AS 1288-2006 in accordance with Clauses B1.4 (h) and F1.13 of BCA2019.
36. Ceiling heights will be in accordance with Clause F3.1 of BCA2019.
37. Natural light will be provided in accordance with Clause F4.1 and F4.2 of BCA2019.
38. Ventilation will be provided in accordance with Clause F4.5 of BCA2019.
39. Pliable building membranes installed in external walls will comply with Clause F6.2 of BCA2019 and where a pliable building membrane is not installed in an external wall, the primary water control layer will be separated from water sensitive materials by a drained cavity.
40. A roof that has metal sheet roofing fixed to metal purlins, metal rafters or metal battens and has a ceiling fixed directly to those metal purlins, metal rafters or metal battens, will have a thermal break, consisting of a material with an R-Value of not less than R0.2, installed at all points of contact between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens, in accordance with Clause J0.4 of BCA 2019.
41. Where a wall lining is fixed directly to the metal wall frame and lightweight external cladding is used, a thermal break consisting of a material with an R-Value of not less than R0.2 will be installed at all points of contact between the external cladding and the metal frame.
42. General thermal construction will comply with Clause J1.2 of BCA 2019.
43. Where an in-slab or in-screed heating or cooling system is proposed, insulation will be provided to the perimeter of the slab in accordance with Clauses J1.6(b) & J1.6(c) of BCA2019.
44. Building sealing will comply with Clause J3.4 of BCA 2019.

45. During construction, not less than one portable fire extinguisher to suit Class A, B and C fires and electrical fires will be provided at all times on each storey adjacent to each required / temporary exit, in accordance with BCA Clause E1.9.

Lift Design Certification

46. An electric passenger lift installation and an electrohydraulic passenger lift installation will comply with Specification E3.1 of BCA2019.

47. Lift car floor linings and coverings will have a critical radiant flux not less than 2.2kW/m2.

48. Lift car wall and ceiling linings will be a Group 1 or 2 material in accordance with AS 5637.1.

49. Lift landing doors will be fire doors with an FRL of -/60/- that comply with AS 1735.11:1986 and are set to remain closed except when discharging or receiving passengers.

50. A panel in the wall of the lift shaft will be backed by construction having an FRL of not less than –/60/60 if it exceeds 35 000 mm2 in area.

51. In accordance with Clause J6.7 of BCA2019, the lift will—

a. be configured to ensure artificial lighting and ventilation in the car are turned off when it is unused for 15 minutes; and

b. achieve the idle and standby energy performance level in BCA Table 6.7a; and

c. achieve the energy efficiency class in BCA Table 6.7b.

Acoustic Services Design Certification:

52. The sound transmission and insulation of the residential portions of the development will comply with the deemed to satisfy provisions of Part F5 of BCA2019.

Hydraulic Services Design Certification:

53. Storm water drainage will be provided in accordance with Clause F1.1 of BCA2019 and AS/NZS 3500.3-2018

54. A fire hydrant system will be installed in accordance with Clause E1.3 of BCA2019 and AS 2419.1-2005 and the requirements of any relevant fire engineering report.

55. A fire hose reel system will be installed provided to the basement level in accordance with Clause E1.4 of BCA2019 and AS 2441-2005.

56. The heated water supply systems will be designed and installed to NCC Volume 3 – Plumbing Code of Australia. Mechanical Ventilation Services Design Certification:

57. Rigid and flexible ductwork will comply with the fire hazard properties set out in AS 4254 Parts 1 and 2.

58. The carpark will be ventilated in accordance with AS 1668.2-2012 and Table E2.2a of BCA 2019.

59. Exhaust systems installed in a kitchen, bathroom, sanitary compartment or laundry of the Class 2 sole-occupancy units will have a minimum flow rate and discharge location in accordance with Clause F6.3 of BCA2019.

60. Exhaust fans serving a conditioned space or habitable room will be fitted with a sealing device, such as a self-closing damper of the like, in accordance with Clause J3.5 of BCA2019.

61. The air-conditioning and ventilation systems will be designed and installed in accordance with the deemed-to-satisfy provisions of Part J5 of BCA2019, excluding J5.9.

Electrical Services Design Certification:

62. Any switchboard in the electrical installation, which sustains the electricity supply to emergency equipment, will be constructed so that emergency equipment switchgear is separated from non-emergency equipment switchgear by metal partitions designed to minimise the spread of a fault from the non-emergency equipment switchgear, in accordance with Clause C2.13 of BCA2019.

63. A smoke detection and alarm system will be provided within the Class 2 sole-occupancy units in accordance with Clause 3, 4 or 5 of Specification E2.2a of BCA2019.

64. Emergency lighting will be installed throughout the building in accordance with Clause E4.2, E4.4 of BCA2019 and AS/NZS 2293.1-2018.

65. Exit signage will be installed in accordance with Clause E4.5, E4.6 and E4.8 of BCA2019 and AS/NZS 2293.1-2018.

66. Artificial lighting to all areas will comply with Clause F4.4 of BCA2019 and AS/NZS 1680.0-2009.

67. Artificial lighting for the Class 7a part will comply with BCA Clause J6.2 (b).

68. Lighting switches and control devices for the Class 7a part will comply with BCA Clause J6.3.

Appendix D- Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2019:

Table 4 TYPE B 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/ 30	120/ 90/ 60	180/120/ 90	240/180/120
3 to less than 9 m	90/ 30/ 30	120/ 30/ 30	180/ 90/ 60	240/ 90/ 60
9 to less than 18 m	90/ 30/–	120/ 30/–	180/ 60/–	240/ 60/–
18 m or more	–/–/–	–/–/–	–/–/–	–/–/–
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/ 30	–/ 90/ 60	–/120/ 90	–/180/120
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
Fire-resisting stair *shafts*				
Non-*loadbearing*	–/ 90/ 90	–/120/120	–/120/120	–/120/120
Bounding *public corridors*, public lobbies and the like—				
Loadbearing	60/ 60/ 60	120/–/–	180/–/–	240/–/–
Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
Between or bounding *sole-occupancy units*—				
Loadbearing	60/ 60/ 60	120/–/–	180/–/–	240/–/–
Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
OTHER LOADBEARING INTERNAL WALLS and COLUMNS—	60/–/–	120/–/–	180/–/–	240/–/–
ROOFS	–/–/–	–/–/–	–/–/–	–/–/–

Table 4.2 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 4
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)		60/–/– or 26 m^2/tonne
(c)	any other column not covered by (a) or (b)		60/–/–
Beam			
(a)	less than 3 m from a *fire-source feature*:		
	(i)	steel floor beam in continuous contact with a concrete floor slab	60/–/– or 30 m^2/tonne
	(ii)	any other beam	60/–/–
(b)	3 m or more from a *fire-source feature*		–/–/–
Lift shaft			–/–/–
Fire-resisting stair shaft (within the *carpark* only)			60/60/60
Roof, floor slab and vehicle ramp			–/–/–
Note: ESA/M means the ratio of exposed surface area to mass per unit length.			