BCA LOGIC

Building Regulation, BCA,
Fire, Access and Energy Consultants

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| **To:** | Frenchman's Lodge Properties c/o Centurion Project Management |
| **Project:** | Summit Care Randwick |
| **Report:** | BCA Assessment Report |
| **Reference No:** | 111012-BCA-r2 |
| **Date:** | 24 August 2020 |
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**DOCUMENT CONTROL**

| Revision | Date | Description | |
|---|---|---|---|
| 111012-BCA-r1 | 17/12/19 | Preliminary BCA Assessment Report | |
| 111012-BCA-r2 | 24/08/20 | Final BCA Assessment Report for DA | |
| | | Prepared by | Verified by |
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# 1 BASIS OF ASSESSMENT

## 1.1 Location and Description

The building development, the subject of this report, is located at 11-19 Frenchman's Road, Randwick. The development involves the construction of a residential aged care building, including onsite car parking at basement level.

Vehicular and pedestrian access to the site is provide directly from Frenchman's Road.

## 1.2 Purpose

The purpose of this report is to assess the current design proposal against the Deemed-to-Satisfy Provisions of BCA 2019, and to clearly outline those areas (if any) where compliance is not achieved, where areas may warrant redesign to achieve strict BCA compliance or where areas may be able to be assessed against the relevant performance criteria of BCA 2019. Such assessment against relevant performance criteria will need to be addressed by means of a separate Performance Solution Report to be prepared under separate cover.

## 1.3 Building Code of Australia

This report is based on the Deemed-to-Satisfy Provisions of the National Construction Code Series Volume 1 – Building Code of Australia, 2019 Edition, Amendment 1 (BCA) incorporating the State variations where applicable. Please note that the version of the BCA applicable to new building works is the version applicable at the time of the lodgement of the Construction Certificate application to the Accredited Certifying Authority. The BCA is updated generally on a three-yearly cycle, starting from the 1st of May 2016.

## 1.4 Limitations

This report does not include nor imply any detailed assessment for design, compliance or upgrading for:

(a) the structural adequacy or design of the building;

(b) the inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and

(c) the design basis and/or operating capabilities of any proposed electrical, mechanical or hydraulic fire protection services.

This report does not include, or imply compliance with:

(a) the National Construction Code – Plumbing Code of Australia Volume 3

(b) the Disability Discrimination Act 1992 including the Disability ((Access to Premises – Buildings) Standards 2010 – unless specifically referred to), (Note: The provision of disabled access to the subject development has been assessed against the deemed to satisfy provision of Part D3 and F2.4 of BCA2019 only);

(c) Demolition Standards not referred to by the BCA;

(d) Work Health and Safety Act 2011;

(e) Requirements of Australian Standards unless specifically referred to;

(f) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Telecommunications Supply Authority, Water Supply Authority, Electricity Supply Authority, Work Cover, Roads and Maritime Services (RMS), Local Council, ARTC, Department of Planning and the like; and

(g) Conditions of Development Consent issued by the Local Consent Authority.

## 1.5 Design Documentation

This report has been based on the Design plans and Specifications listed in Annexure A of this Report.

## 1.6 Definitions

*Critical radiant flux*

Critical radiant flux (CRF) means the critical heat flux at extinguishment (CHF in kW/m2) as determined by AS ISO 9239.1.

*Effective height*

Effective height means the vertical distance between the floor of the lowest storey included in a determination of rise in storeys and the floor of the topmost storey (excluding the topmost storey if it contains only heating, ventilating, lift or other equipment, water tanks or similar service units).

*Exit*

Exit means–

(a) Any, or any combination of the following if they provide egress to a road or open space—

  (i) An internal or external stairway.

  (ii) A ramp.

  (iii) A fire-isolated passageway.

  (iv) A doorway opening to a road or open space.

(b) A horizontal exit or a fire-isolated passageway leading to a horizontal exit.

*Fire compartment*

Fire compartment means—

(a) the total space of a building; or

(b) when referred to in—

  (i) the Performance Requirements — any part of a building separated from the remainder by barriers to fire such as walls and/or floors having an appropriate resistance to the spread of fire with any openings adequately protected; or

  (ii) the Deemed-to-Satisfy Provisions — any part of a building separated from the remainder by walls and/or floors each having an FRL not less than that required for a fire wall for that type of construction and where all openings in the separating construction are protected in accordance with the Deemed-to Satisfy Provisions of the relevant Part.

*Fire-resistance level (FRL)*

Fire-resistance level (FRL) means the grading periods in minutes determined in accordance with Specification A2.3, for the following criteria—

(a) structural adequacy; and

(b) integrity; and

(c) insulation,

and expressed in that order.

Note: A dash means that there is no requirement for that criterion. For example, 90/–/– means there is no requirement for an FRL for integrity and insulation, and –/–/– means there is no requirement for an FRL.

*Fire-source feature*

Fire-source feature means—

(a) the far boundary of a road, river, lake or the like adjoining the allotment; or

(b) a side or rear boundary of the allotment; or

(c) an external wall of another building on the allotment which is not a Class 10 building

*Fire wall*

Fire wall means a wall with an appropriate resistance to the spread of fire that divides a storey or building into fire compartments

*Flammability index*

Flammability Index means the index number as determined by AS 1530.2.

*Group number*

Group number means the number of one of 4 groups of materials used in the regulation of fire hazard properties and applied to materials used as a finish, surface, lining, or attachment to a wall or ceiling.

*Non-combustible*

Non-combustible means—

(a) applied to a material — not deemed combustible as determined by AS 1530.1 — Combustibility Tests for Materials; and

(b) applied to construction or part of a building — constructed wholly of materials that are not deemed combustible

*Performance Requirement*

Performance Requirement means a requirement which states the level of performance which a Performance Solution or Deemed-to-Satisfy Solution must meet.

*Performance Solution*

Performance Solution (Alternative Solution) means a method of complying with the Performance Requirements other than by a Deemed-to-Satisfy Solution.

*Sarking-type material*

Sarking-type material means a material such as a reflective insulation or other flexible membrane of a type normally used for a purpose such as waterproofing, vapour management or thermal reflectance.

*Sole-occupancy unit*

Sole-occupancy unit means a room or other part of a building for occupation by one or joint owner, lessee, tenant, or other occupier to the exclusion of any other owner, lessee, tenant, or other occupier and includes—

(a) a dwelling; or

(b) a room or suite of rooms in a Class 3 building which includes sleeping facilities; or

(c) a room or suite of associated rooms in a Class 5, 6, 7, 8 or 9 building; or

(d) a room or suite of associated rooms in a Class 9c building, which includes sleeping facilities and any area for the exclusive use of a resident.

## 2 BUILDING DESCRIPTION

For the purposes of the Building Code of Australia (BCA) the development may be described as follows.

### 2.1 Rise in Storeys (Clause C1.2)

The building has a *rise in storeys* of four (4).

Note: the building contains six storeys.

### 2.2 Classification (Clause A6.0)

The building has been classified as follows.

Table 1. Building Classification

| Class | Level | Description |
|---|---|---|
| 9c | Lower Basement, part Basement and Ground Floor, First Floor, Second Floor and Third Floor | *Residential care building & aged care building* |
| 7a | Part Basement | *Carpark* |

### 2.3 Effective Height (Clause A1.0)

The building has an *effective height* of less than 12 metres.

### 2.4 Type of Construction Required (Table C1.1)

The building is required to be of Type A Construction.

### 2.5 Floor Area and Volume Limitations (Table C2.2)

The building is subject to and complies with the maximum floor area and volume limits of:-

| | | |
|---|---|---|
| Class 9c | Maximum Floor Area | 8,000 $m^2$ |
| | Maximum Volume | 48,000 $m^3$ |
| Class 7a | The carpark is to be sprinkler protected and as such there are no maximum floor area or volume limitations for this area. | |

### 2.6 Fire Compartments

Each level of the building is generally a separate *fire compartment.*

### 2.7 Exits

The following points in the building have been considered as the exits:

- Lower basement level: Stairs 1 and 2
- Basement level: Stairs 1, 2 and 3
- Ground, first and second level: Stairs 1, 4 and 5
- Third floor: Stairs 4 & 5

### 2.8 Climate Zone (Clause A1.0)

The building is located within Climate Zone 5.

## 2.9 Location of Fire-source features

The *fire source features* for the subject development are:

North: The far boundary of McLennan Avenue (> 6m) and the boundaries with neighbouring allotments (< 3m in places)

South: The far boundary of Frenchman's Road (> 6m)

East: The boundaries with neighbouring allotments (< 3m in places)

West: The boundaries with neighbouring allotments (< 3m in places)

## 3 ESSENTIAL FIRE SAFETY MEASURES

The following fire safety measures are required to be installed in the building, this table will be required to be updated as the design develops and options for compliance are confirmed.

Table 2. Essential Fire Safety Measures

| Item | Essential Fire and Other Safety Measures | Standard of Performance |
|---|---|---|
| **Fire Resistance (Floors – Walls – Doors – Shafts)** | | |
| 1. | Access Panels & doors/hoppers (fire rated) | **BCA2019 C3.13** (Openings in Shafts)<br>**BCA2019 Spec. C3.4**<br>AS1905.1:2015 (Fire-resistant Doorsets) |
| 2. | Fire doors | **BCA2019 C2.12** (Separation of Equipment)<br>**BCA2019 C3.4** (Acceptable methods of Protection)<br>**BCA2019 C3.8** (Openings in Fire Isolated Exits)<br>**BCA2019 C3.10** (Opening in Fire Isolated Lift Shafts)<br>AS1735.11- 1986<br>**BCA2019 C3.13** (Opening in Shafts)<br>Spec C3.4<br>AS1905.1: 2015 |
| 3. | Fire seals protecting openings in fire resisting components of the building | **BCA2019 C3.15** (Openings for service installations)<br>**BCA2019 Spec. C3.15**<br>AS1530.4:2014 & AS4072.1-2005 |
| 4. | Lightweight construction<br>• Internal walls bounding sole occupancy units and public corridors in resident use areas | **BCA2019 NSW C2.5** (Class 9c) |
| 5. | Smoke Walls | **BCA2019 NSW C2.5, Clause 3 of Spec. C2.5**<br>& ***Fire Engineering Report**** |
| 6. | Smoke doors<br>• Smoke Seals<br>• Solid Core<br>• Swing in direction of egress/or both ways | **BCA2019 NSW C2.5, Clause 4 of Spec. C2.5**<br>**BCA2019 Spec. C3.4** |

| Item | Essential Fire and Other Safety Measures | Standard of Performance |
|---|---|---|
| | • Connected to AS1670.1 if held open Smoke detectors within 1.5m both sides<br>• Fail close on power failure | |
| **General** | | |
| 7. | Portable fire extinguishers | **BCA2019 E1.6**<br>AS2444–2001 |
| **General - Egress** | | |
| 8. | Path of travel for stairways, passageway and ramps | EP&A Reg. 2000 Clauses 184-186 |
| 9. | Warning & operational signs | **BCA2019 D2.23** (Signs on Fire Doors)<br>**BCA2019 D3.6** (Braille Exit Signs) (Note: E4.5 (Exit Signs))<br>**BCA2019 E3.3** (Lift Signs) |
| **Electrical Services** | | |
| 10. | Automatic fail-safe devices<br>• Automatic-closing device to smoke doors<br>• Re-entry from fire-isolated stairs | **BCA2019 Clause 3.2(d) of Spec. C3.4**<br>**BCA2019 D2.22** (Re-entry from fire-isolated stairs)<br>AS 1670.1:2018 (Fire) |
| 11. | Automatic fire detection & alarm system | **BCA2019 E2.2**, **NSW Table E2.2a**<br>**Spec E2.2a** – Clause 4<br>**Spec E2.2a** – Clause 6 (Smoke detection for air pressurisation systems)<br>**Spec E2.2a** - Clause 7 (BOWS)<br>**Spec E2.2a** - Clause 8 (System Monitoring)<br>AS1670.1:2018<br>AS1670.3 – 2018 (Fire Alarm Monitoring) |
| 12. | Emergency lighting | **BCA2019 E4.2, E4.4**<br>AS/NZS 2293.1 –2018 |
| 13. | Exit signs | **BCA2019 E4.5** (Exit Signs)<br>**BCA2019 E4.6** (Direction Signs)<br>**BCA2019 E4.8** (Design and Operation - Exits)<br>AS/NZS 2293.1 –2018 |

| Item | Essential Fire and Other Safety Measures | Standard of Performance |
|---|---|---|
| **Hydraulic Services** | | |
| 14. | Automatic fire suppression system (sprinklers) | **BCA2019 E1.5, Spec. E1.5**<br>AS2118.4–2012 (Residential not exceeding 4 storey)<br>AS2118.1–2017<br>& ***Fire Engineering Report**** |
| 15. | Fire hydrant system | **BCA2019 E1.3**<br>AS2419.1–2005<br>FRNSW Technical Sheet D15/45534.V9 issued 10.01.19, 'Compatible Hose Connections' |
| 16. | Hose reel system (to carpark) | **BCA2019 E1.4**<br>AS2441–2005 |
| 17. | External spray sprinklers | ***Fire Engineering Report**** |
| **Mechanical Services** | | |
| 18. | Fire dampers | **BCA2019 C3.15**<br>AS/NZS1668.1:2015, AS1682.1:2015 & AS1682.2:2015 |
| 19. | Mechanical air handling systems<br>1. Auto-shutdown of air-handling Systems<br>2. Fire-isolated exit pressurisation system | **BCA2019 E2.2, Table E2.2a, Table E2.2b**<br>**Spec E2.2a, Spec E2.2b**<br>AS/NZS 1668.1:2015 |
| 20. | Smoke dampers | **BCA2019 C2.5 and Spec C2.5**<br>**BCA2019 E2.2, Spec E2.2a**<br>AS/NZS 1668.1:2015, AS1682.1:2015 & AS1682.2:2015 |
| **Performance Solutions** | | |
| **** Fire Engineering Report to be prepared under separate cover*** | | |

## 4 FIRE RESISTANCE LEVELS

The following fire resistance levels (FRL's) are required for the various building elements, with a *fire-source feature* being the far boundary of a road adjoining the allotment, a side or rear boundary or an external wall of another building on the allotment except a Class 10 structure.

**Type A Construction**

Table 3. Type A Construction

| Item | Class 7a & 9c |
|---|---|
| Loadbearing External Walls (including columns and other building elements incorporated therein)<br>• Less than 1.5m to a *fire- source feature*<br>• 1.5 – less than 3m from a *fire-source feature*<br>• 3m or more from a *fire source feature* | 120/120/120<br>120/90/90<br>120/60/30 |
| Non-Loadbearing External Walls<br>• Less than 1.5m to a *fire-source feature*<br>• 1.5 – less than 3m from a *fire-source feature*<br>• 3m or more from a *fire-source feature* | -/120/120<br>-/90/90<br>-/-/- |
| External Columns<br>• Loadbearing<br>• Non-loadbearing | 120/-/-<br>-/-/- |
| Stair and Lift Shafts required to be fire-resisting<br>• Loadbearing<br>• Non-loadbearing | 120/120/120<br>-/120/120 |
| Ventilating, pipe, garbage and like shafts:<br>• Loadbearing<br>• Non-loadbearing | 120/90/90<br>-/90/90 |
| Other loadbearing internal walls, beams trusses and columns | 120/-/- |
| Floors | 120/120/120 |
| Roofs | Not applicable[1] |

[1] In accordance with Clause 3.5 of Specification C1.1, the roof need not comply with any FRLs due to the provision of a non-combustible roof covering and sprinkler protection of the entire building.

# 5 MATTERS FOR FURTHER CONSIDERATION

## 5.1 General

Assessment of the Architectural design documentation against the Deemed-to Satisfy Provisions of the Building Code of Australia, 2019 (BCA) has revealed the following areas where compliance with the BCA may require further consideration and/or may involve assessment as Performance Based Solutions. Any Performance Solutions will be required to clearly indicate methodologies for achieving compliance with the relevant Performance Requirements.

Annexure B to this report provides a detailed assessment of the proposal against ALL relevant Deemed-to-Satisfy Provisions of the BCA.

Note: It is important that Annexure B is read in conjunction with the items below, as some matters may not have had sufficient information provided to allow a detailed assessment to be undertaken.

## 5.2 Dimensions and Tolerances

The BCA contains the minimum standards for building construction and safety, and therefore generally stipulates minimum dimensions which must be met. BCA Logic's assessment of the plans and specifications has been undertaken to ensure the minimal dimensions have been met.

The designer and builder should ensure that the minimum dimensions are met onsite and consideration needs to be given to construction tolerances for wall set outs, applied finishes and skirtings to corridors and bathrooms for example, tiling bed thicknesses and the like which can adversely impact on critical maters such as access for people with disabilities, stair and corridor widths and balustrade heights.

## 5.3 Performance Based Design – Performance Solutions

There are specific areas throughout the development where strict Deemed-to-Satisfy BCA Compliance will not be achieved by the proposed design and site constraints. These matters will need to be address in a detailed Performance Solution Report & Fire Engineering Report (for the fire safety matters) to be prepared for this development under separate cover:

Table 4. Performance Solutions

| Item | Description of Performance Solution | DTS Provision |
|---|---|---|
| 1. | The following areas exceed the maximum 500m$^2$ floor area for smoke compartmentation:<br>• The western smoke compartment on ground floor – approximately 516m$^2$.<br>• The western smoke compartment on the second floor – approximately 566m$^2$. | C2.5 |
| 2. | Window openings within 2.3m to 3m of the allotment boundary will be protected by means other than via a Clause C3.2 & C3.4 compliant method of protection. | C3.2 & C3.4 |
| 3. | A travel distance to a point of choice of exits of up to 26m will be permitted from the Staff Room, Kitchen and Laundry at Basement level. | D1.4 |
| 4. | Within Stair 1, a direct connection will be permitted between the stair flight rising from basement level and the stair flight descending from first floor. | D2.4 |
| 5. | The construction of the roof and external walls is such that they will prevent the penetration of water that could cause unhealthy or dangerous conditions or loss of amenity to occupants and undue dampness or deterioration of building elements. | No DtS Provisions – FP1.4 Performance Provisions Only |

### 5.4 When fire-isolated stairways are required – BCA Clauses D1.3, D1.8 & E2.2

In accordance with BCA Clause D1.3, every exit stair serving the Class 9c building (i.e. all stairs except Stair 3 serving the carpark only), must be fire-isolated. Currently the building's exit stairs are a combination of open, enclosed and partially enclosed stairways.

Furthermore, BCA Clause E2.2 requires fire-isolated exits to be provided with an automatic air pressurisation system for fire-isolated exits in accordance with AS/NZS 1668.1.

It is understood that the design will be developed further in this regard, in consultation with the fire engineer and BCA compliance sought via a *performance solution* at CC stage.

### 5.5 Path of travel from fire stairs – BCA Clause D1.7 (c)

The egress routes from fire stairs 1, 2, 4 & 5 at ground level necessitate passing within 6m of the external walls of the same building. Clause D1.7 (c) requires walls and openings of the same building within 6m horizontal distance of the path of travel to be protected.

It is understood that the design will be developed further in this regard, in consultation with the fire engineer and BCA compliance sought via a *performance solution* at CC stage.

### 5.6 Methods and extent of natural lighting – BCA Clause F2.4

Natural light must be provided to all rooms used for sleeping purposes.

In a Class 9c aged care building, a required window must be transparent and located—

(i) in an external wall with the window sill not more than 1 m above the floor level; and

(ii) where the window faces an adjoining allotment, another building or another wall of the same building, **it must not be less than a horizontal distance of 3 m from the adjoining allotment**, other building or wall.

A three-metre setback has not been provided to the windows of the following bedrooms:

- the bedroom containing bed 14 at ground floor level;
- the bedroom containing bed 5 at first floor level;
- the bedroom containing beds 14 & 15 at first floor level;
- the bedroom containing bed 5 at second floor level; and
- the bedroom containing beds 12 & 13 at second floor level.

It is understood that a *performance solution* will be sought in relation to the above at CC stage.

## ANNEXURE A - DESIGN DOCUMENTATION

This report has been based on the following design documentation.

Table 5. Architectural Plans

| Architectural Plans Prepared by Boffa Robertson Group | | | |
|---|---|---|---|
| **Drawing Number** | **Revision** | **Date** | **Title** |
| 1912 / DA03 | 9 | 14/08/20 | LOWER BASEMENT FLOOR PLAN |
| 2017 / DA04 | 11 | 14/08/20 | BASEMENT FLOOR PLAN |
| 2017 / DA05 | 12 | 14/08/20 | GROUND FLOOR PLAN |
| 2017 / DA06 | 12 | 14/08/20 | FIRST FLOOR PLAN |
| 2017 / DA07 | 12 | 14/08/20 | SECOND FLOOR PLAN |
| 2017 / DA08 | 12 | 14/08/20 | THIRD FLOOR PLAN |
| 2017/ DA09 | 12 | 14/08/20 | ROOF PLAN |

## ANNEXURE B - DETAILED BCA 2019 ASSESSMENT

Outlined below is a detailed assessment of the design under the Deemed-to-Satisfy Provisions of the Building Code of Australia (BCA) including the State variations where applicable.

All Deemed-to-Satisfy clauses that are applicable to the subject building have been referred to below, including a comment adjacent to each clause of the proposal's ability to satisfy each respective clause.

The abbreviations outlined below have been used in the following table.

| | |
|---|---|
| **N/A** | Not Applicable. The Deemed-to-Satisfy clause is not applicable to the proposed design. |
| **Complies** | The relevant provisions of the Deemed-to-Satisfy clause have been satisfied by the proposed design. |
| **CRA** | 'COMPLIANCE READILY ACHIEVABLE'. It is considered that there was not enough information included in the documentation to accurately determine strict compliance with the individual clause requirements. However, subject to noting the requirements of each clause, compliance can be readily achieved. |
| **FI** | Further Information is necessary to determine the compliance potential of the building design. |
| **PS** | Performance Solution with respect to this Deemed-to-Satisfy Provision is necessary to satisfy the relevant Performance Requirements. |
| **DNC** | Does Not Comply. |
| **Noted** | BCA Clause simply provides a statement not requiring specific design comment or confirmation. |

## DEEMED TO SATISFY CLAUSE ASSESSMENT

Table 6. Deemed to Satisfy Clause Assessment

| Clause | Comment | Status |
|---|---|---|
| **SECTION B: STRUCTURE** | | |
| **PART B1 – STRUCTURAL PROVISIONS** | | |
| B1.0: Deemed-to-Satisfy Provisions | Informational | Noted |
| B1.1: Resistance to actions | The resistance of the building must be greater than the most critical action effect resulting from different combinations of actions, where the most critical action has been determined in accordance with this Part – Structural Engineer to certify at CC stage. | CRA |
| B1.2: Determination of individual actions | The magnitude of actions must be determined in accordance with this Clause – Structural Engineer to certify at CC stage. | CRA |
| B1.4: Determination of structural resistance of materials and forms of construction | The structural resistance of materials and forms of construction must be determined in accordance with this Clause – Structural Engineer, Architect and Manufacturers to certify at CC stage. | CRA |
| B1.5 Structural software | Structural software used in computer aided design of a building or structure within the geometrical limits of (b) of this Clause must comply with the ABCB Protocol for Structural Software. Structural Engineer to certify. | CRA |
| B1.6 Construction of buildings in flood hazard areas | Not applicable | NA |
| **SECTION C: FIRE RESISTANCE** | | |
| **PART C1 – FIRE RESISTANCE AND STABILITY** | | |
| C1.0: Deemed-to-Satisfy Provisions | Informational | Noted |
| C1.1: Type of construction required | The building is required to be of Type A Construction in accordance with BCA Specification C1.1.<br>Refer to Specification C1.1 requirements at the end of this Section. | CRA |
| C1.2: Calculation of rise in storeys | The building has a rise in storeys of four (4).<br>The basement floor, ground floor, first floor and second floor are counted in the rise in storeys. | Note |
| C1.3: Buildings of multiple classification | Not applicable | NA |
| C1.4: Mixed Types of construction | Not applicable | NA |
| C1.5: Two Storey Class 2, 3 or 9c buildings | Not applicable | NA |
| C1.6: Class 4 Parts of building | Not applicable | NA |
| C1.7: Open spectator stands and indoor sports stadium | Not applicable | NA |

| SECTION C: FIRE RESISTANCE | | |
|---|---|---|
| C1.8: Lightweight construction | Lightweight construction used in a fire-rated application is to comply with Specification C1.8. | CRA |
| C1.9: Non-combustible building elements | (a) The following building elements and their components must be non-combustible:<br>(i) External walls and common walls, including all components incorporated in them including the facade covering, framing and insulation.<br>(ii) The flooring and floor framing of lift pits.<br>(iii)Non-loadbearing internal walls where they are required to be fire-resisting.<br>(b) A shaft, being a lift, ventilating, pipe, garbage, or similar shaft that is not for the discharge of hot products of combustion, that is non-loadbearing, must be of non-combustible construction.<br>(c) A loadbearing internal wall and a loadbearing fire wall, including those that are part of a loadbearing shaft, must comply with Specification C1.1.<br>(d) The requirements of (a) and (b) do not apply to gaskets, caulking, sealants, termite management systems, Glass including laminated glass, thermal breaks associated with glazing systems and damp-proof courses.<br>(e) The following materials, may be used wherever a non-combustible material is required:<br>(i) Plasterboard.<br>(ii) Perforated gypsum lath with a normal paper finish.<br>(iii) Fibrous-plaster sheet.<br>(iv) Fibre-reinforced cement sheeting.<br>(v) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0.<br>(vi) Sarking-type materials that do not exceed 1 mm in thickness and have a *Flammability Index* not greater than 5.<br>(vii) Bonded laminated materials where—<br>(A) each lamina, including any core, is non-combustible; and<br>(B) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and<br>(C) the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated | CRA |

| SECTION C: FIRE RESISTANCE | | |
|---|---|---|
| | material as a whole do not exceed 0 and 3 respectively.<br><br>This clause also prohibits the use of in situ formwork containing combustible elements including PVC lined formwork products where the PVC lining remains in place for the life of the building. Where the use of such products is proposed – in all instances the material must be the subject of a site specific Performance Assessment Report. | |
| C1.10: Fire hazard properties | Fire hazard properties of internal linings, materials and assemblies must comply with C1.10 of the BCA and Specification C1.10, including floor, wall and ceiling linings, air-handling ductwork, lift cars, insulation, sarking-type materials and attachments, or be considered non-combustible. | CRA |
| C1.11: Performance of external walls in fire | Not applicable | NA |
| C1.12: Non-combustible materials | Clause now deleted and relocated to C1.9. | Noted |
| C1.13: Fire-protected timber: Concession | Not applicable | NA |
| C1.14: Ancillary elements | An ancillary element must not be fixed, installed or attached to the internal parts or external face of an external wall that is required to be non-combustible unless it is one of the following:<br><br>(a) An ancillary element that is non-combustible.<br><br>(b) A gutter, downpipe or other plumbing fixture or fitting.<br><br>(c) A flashing.<br><br>(d) A grate or grille not more than 2 $m^2$ in area associated with a building service.<br><br>(e) An electrical switch, socket-outlet, cover plate or the like.<br><br>(f) A light fitting.<br><br>(g) A required sign.<br><br>(h) A sign other than one provided under (a) or (g) that—<br><br>(i) achieves a group number of 1 or 2; and<br><br>(ii) does not extend beyond one storey; and<br><br>(iii) does not extend beyond one fire compartment; and<br><br>(iv) is separated vertically from other signs permitted under (h) by at least 2 storeys.<br><br>(i) An awning, sunshade, canopy, blind or shading hood other than one provided under (a) that—<br><br>(i) meets the relevant requirements of Table 4 of Specification C1.10 as for an internal element; and | CRA |

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| | (ii) serves a storey—<br>(A) at ground level; or<br>(B) immediately above a storey at ground level; and<br>(iii) does not serve an exit, where it would render the exit unusable in a fire.<br>(j) A part of a security, intercom or announcement system.<br>(k) Wiring.<br>(l) A paint, lacquer or a similar finish.<br>(m) A gasket, caulking, sealant or adhesive directly associated with (a) to (k). | |
| **PART C2 – COMPARTMENT AND SEPARATION** | | |
| C2.0: Deemed-to-Satisfy Provisions | Informational | Noted |
| C2.1: Application of Part | Informational – Clause C2.2 does not apply to a carpark provided with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5. | Noted |
| C2.2: General floor area and volume limitations | The size of fire compartments in the building must not exceed that specified in Table C2.2. | Complies |
| C2.3: Large isolated buildings | Not applicable | NA |
| C2.4: Requirements for open spaces and vehicular access | Not applicable | NA |
| C2.5: Class 9a and 9c Buildings | NSW C2.5(b)<br>(i) The building must be divided into areas not more than 500m$^2$ by smoke-proof walls complying with Specification C2.5.<br>(ii) NA – (b) (ii) is not applicable<br>(iii) Except for walls provided in accordance with (b)(i), non-loadbearing internal walls between and bounding sole-occupancy units and bounding a public corridor in a resident use area must:<br>(A) be lined on each side with standard grade plasterboard not less than 13 mm thick or a material with at least an equivalent level of fire protection; and<br>(B) if provided with cavity insulation, contain only non-combustible insulation; and<br>(C) extend to the underside of—<br>(aa) the floor next above; or<br>(bb) a ceiling lined with standard grade plasterboard not less than 13 mm thick or an equivalent non-combustible material; or<br>(cc) a non-combustible roof covering; and | PS<br>Refer to Part 5 of Report |

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| | (D) not incorporate any penetrations above door head height unless the penetrations are adequately stopped to prevent the free passage of smoke; and<br><br>(E) be smoke sealed with intumescent putty or other suitable material at any construction joint, space or the like between the top of the wall and the floor, ceiling or roof.<br><br>(iv) Loadbearing internal walls must comply with the requirements of Specification C1.1 and (iii)(B), (C), (D) and above.<br><br>(v) Ancillary use areas containing equipment or materials that are a high potential fire hazard, must be separated from the sole-occupancy units by smoke proof walls complying with Specification C2.5.<br><br>(vi) The ancillary use areas referred to in (v) include, but are not limited to, the following:<br><br>(A) A kitchen and related food preparation areas having a combined floor area of more than 30 $m^2$.<br><br>(B) A laundry, where items of equipment are of the type that are potential fire sources (e.g. gas fire dryers).<br><br>(C) Storage rooms greater than 10 $m^2$ used predominantly for the storage of administrative records.<br><br>(vii) NA – (b) (vii) is not applicable<br><br>The following areas exceed the maximum 500$m^2$ for smoke compartmentation:<br><br>• The western smoke compartment on ground floor – approximately 516$m^2$.<br>• The western smoke compartment on the second floor – approximately 566$m^2$. | |
| C2.6: Vertical separation of openings in external walls | Not applicable – this clause does not apply to a building that has a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5 installed throughout. | NA |
| C2.7: Separation by fire walls | Not applicable – there are no fire walls required within the building. | NA |
| C2.8: Separation of classifications in the same storey | Where a storey has different classifications located alongside one another:<br><br>• each building element in that storey must have the higher FRL prescribed in Specification C1.1 for that element for the classifications concerned; or<br><br>• the parts must be separated in that storey by a fire wall having the higher FRL prescribed in Table 3; or | Note |

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| | • where one part is a carpark complying with Table 3.9 Specification C1.1, the parts may be separated by a fire wall complying with the appropriate Table.<br><br>As Class 9c and 7a attract the same FRLs, separation of classifications by fire walls is not required. | |
| C2.9: Separation of classifications in different storeys | Floors separating storeys of different classifications must have an FRL of not less than that prescribed in Specification C1.1 for the classification of the lower storey. | CRA |
| C2.10: Separation of lift shafts | The passenger lifts must be contained within a fire-resisting shaft having an FRL of not less than 120/120/120. | Complies |
| C2.11: Stairways and lifts in one shaft | A stairway and lift must not be in the same shaft if either the stairway or the lift is required to be in a fire-resisting shaft. | Complies |
| C2.12: Separation of equipment | Any of the following equipment located in the building must be separated from the remainder of the building:<br>• lift motors and lift control panels; or<br>• emergency generators used to sustain emergency equipment operating in the emergency mode; or<br>• central smoke control plant; or<br>• boilers; or<br>• a battery system installed in the building that has a total voltage of 12 volts or more and a storage capacity of 200 kWh or more.<br><br>Equipment need not be separated in if the equipment comprises:<br>• smoke control exhaust fans located in the air stream which are constructed for high temperature operation in accordance with Specification E2.2b; or<br>• stair pressurizing equipment installed in compliance with the relevant provisions of AS/NZS 1668.1; or<br>• a lift installation without a machine room; or<br>• equipment otherwise adequately separated from the remainder of the building.<br><br>Separation must be by construction having an FRL as required by Specification C1.1, but not less than FRL 120/120/120 with openings protected by self-closing fire doors having an FRL of not less than –/120/30. | CRA |
| C2.13: Electricity supply system | • Any main switchboard which sustains emergency equipment operating in the emergency mode must be fire separated from any other part of the building by construction having an FRL of not less than 120/120/120 and have the doorway fitted with self- | CRA |

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| | closing fire door having an FRL of not less than –/120/30.<br>• Any electrical conductors located within the building that supply a substation or main switchboard for emergency equipment must comply with BCA clause C2.13.<br>• Emergency equipment switchgear must be separated from non-emergency equipment switchgear by metal partitions designed to minimize the spread of a fault from the non-emergency equipment switchgear.<br>Emergency equipment includes but is not limited to the following:<br>– fire hydrant booster pumps;<br>– sprinkler pumps;<br>– hose reel pumps;<br>– air-handling systems designed to exhaust and control the spread of smoke;<br>– emergency lifts;<br>– control and indicating equipment; and<br>– sound systems and intercom systems for emergency purposes. | |
| C2.14: Public corridors in Class 2 and 3 Buildings | Not applicable | NA |
| **PART C3 – PROTECTION OF OPENINGS** | | |
| C3.0: Deemed-to-Satisfy Provisions | Informational | Noted |
| C3.1: Application of Part | (a) The Deemed-to-Satisfy Provisions of this Part do not apply to–<br>(i) Control joints, weep holes and the like in external walls of masonry construction if they are not larger than necessary for the purpose; and<br>(ii) Non-combustible ventilators for subfloor or cavity ventilation, if each does not exceed 45 000 $mm^2$ in face area and is spaced not less than 2 m from any other ventilator in the same wall; and<br>(iii) Openings in the vertical plane formed between building elements at the construction edge or perimeter of a balcony or verandah, colonnade, terrace, or the like; and<br>(b) For the purposes of the Deemed-to-Satisfy Provisions of this Part, openings in building elements required to be fire-resisting include doorways, windows (including any associated | Note |

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| | fanlight), infill panels and fixed or openable glazed areas that do not have the required FRL.<br>(c) For the purposes of the Deemed-to-Satisfy Provisions of this Part, openings, other than those covered under (a)(iii), between building elements such as columns, beams and the like, in the plane formed at the construction edge or perimeter of the building, are deemed to be openings in an external wall. | |
| C3.2: Protection of openings in external walls | Openings in an external wall that is required to have an FRL must be protected in accordance with C3.4 if the distance between the opening and the fire-source feature is:<br>• less than 3 m from a side or rear boundary; or<br>• less than 6 m from the far boundary of a road, if not located in a storey at or near ground level; or<br>• less than 6 m from another building on the allotment that is not Class 10; and<br>Where wall-wetting sprinklers are used, they must be located externally.<br>Window openings within 2.3m to 3m of the allotment boundary will be protected by means other than via a Clause C3.2 & C3.4 compliant method of protection, under the proposed performance solution. | PS<br>Refer to Part 5 of Report |
| C3.3: Separation of external walls and associated openings in different fire compartments | Not applicable | NA |
| C3.4: Acceptable methods of protection | Where protection is required, openings must be protected as follows:<br><u>Doorways:</u><br>(i) Internal or external wall-wetting sprinklers as appropriate used with doors that are self-closing; or<br>(ii) –/60/30 fire doors that are self-closing.<br><u>Windows:</u><br>(i) Internal or external wall-wetting sprinklers as appropriate used with windows that are automatic closing or permanently fixed in the closed position; or<br>(ii) –60/– fire windows that are automatically closing or permanently fixed in the closed position; or<br>(iii) –/60/– automatic closing fire shutters.<br><u>Other openings:</u><br>(i) Excluding voids – internal or external wall-wetting sprinklers; or | PS<br>Refer to Part 5 of Report |

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| | (ii) Construction having an FRL not less than –/60/–<br><br>Fire doors, fire windows and fire shutters must comply with BCA Specification C3.4. | |
| C3.5: Doorways in fire walls | Not applicable – there are no fire walls proposed or required | NA |
| C3.6: Sliding fire doors | Not applicable | NA |
| C3.7: Protection of doorways in horizontal exits | Not applicable | NA |
| C3.8: Openings in fire-isolated exits | Doorways that open to fire-isolated stairways that are not doorways opening to a road or open space, must be protected by –/60/30 fire doors that are self-closing, or automatic-closing in accordance with (ii) and (iii) of Clause C3.8. | CRA |
| C3.9: Service penetrations in fire-isolated exits | The fire isolated exits are not to be penetrated by any services **other** than:<br>• electrical wiring associated with:<br>– a lighting, detection, or pressurization system serving the exit; or<br>– a security, surveillance or management system serving the exit; or<br>– an intercommunication system or an audible or visual alarm system in accordance with D2.22; or<br>– the monitoring of hydrant or sprinkler isolating valves.<br>• ducting associated with a pressurisation system if it;<br>(i) is constructed of material having an FRL of not less than –/120/60 where it passes through any other part of the building; and<br>(ii) does not open into any other part of the building; or<br>• water supply pipes for fire services. | CRA |
| C3.10: Openings in fire-isolated lift shafts | • Lift landing doors are required to be fire doors with an FRL of -/60/- that comply with AS 1735.11-1986, and be set to remain closed except when discharging or receiving, passengers, goods or vehicles.<br>• Panels in the wall of the lift shaft must be backed by construction having an FRL of not less than –/60/60 if it exceeds 35 000 mm$^2$ in area. | CRA |
| C3.11: Bounding Construction: Class 2, 3 and 4 Buildings | Not applicable | NA |

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| C3.12: Openings in floors and ceilings for services | Where services pass through a floor which is required to achieve an FRL or a ceiling required to have a resistance to the incipient spread of fire, the service must be enclosed within a fire resisting shaft or fire protected in accordance with Clause C3.15. | CRA |
| C3.13: Openings in shafts | Openings in shafts must be protected by:<br>a) if it is in a sanitary compartment – a door or panel which together with its frame, is non-combustible or has an FRL of not less than –/30/30; or<br>b) a self-closing –/60/30 fire door or hopper; or<br>c) an access panel having an FRL of not less than –/60/30; or<br>d) if the shaft is a garbage shaft – a door or hopper of non-combustible construction. | CRA |
| C3.15: Openings for service installations | Where services pass through an element which is required to achieve an FRL (other than an external wall or roof), the service must be fire protected in accordance with BCA Clause C3.15. | CRA |
| C3.16: Construction joints | Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation must be protected in a manner identical with a prototype tested in accordance with AS 1530.4 to achieve the required FRL. | CRA |
| C3.17: Columns protected with lightweight construction to achieve an FRL | Not applicable | NA |
| **SPECIFICATION C.1.1 – FIRE-RESISTING CONSTRUCTION** | | |
| 2.0: General Requirements | Informational | Noted |
| 2.1: Exposure to fire-source features | A building element is exposed to a *fire-source feature* if any of the horizontal straight lines between that part and the fire-source feature, or vertical projection of the feature, is not obstructed by another part of the building that–<br>(i) has an FRL of not less than 30/–/–; and<br>(ii) is neither transparent nor translucent. | Noted |
| 2.2: Fire protection for a support of another part | Where a part of a building required to have an FRL depends upon direct vertical or lateral support from another part to maintain its FRL, that supporting part must have an FRL not less than that required by other provisions of this Specification; and if located within the same fire compartment as the part it supports have an FRL in respect of structural adequacy the greater of that required for the supporting part itself and for the part it supports. | CRA |
| 2.3: Lintels | A lintel must have the FRL required for the part of the building in which it is situated unless it does not contribute | CRA |

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| | | to the support of a fire door, fire window or fire shutter and meets the requirements of Spec C1.1 clause 2.3 (a) & (b). | |
| 2.4: | Attachments not to impair fire-resistance | The method of attaching or installing a finish, lining, ancillary element or service installation to a building element must not reduce the fire-resistance of that element to below that required. | CRA |
| 2.5: | General concessions | Structures on roofs — A non-combustible structure situated on a roof need not comply with the other provisions of this Specification if it only contains—<br>(i) lift motor equipment; or<br>(ii) one or more of the following:<br>(A) Hot water or other water tanks.<br>(B) Ventilating ductwork, ventilating fans and their motors.<br>(C) Air-conditioning chillers.<br>(D) Window cleaning equipment.<br>(E) Other service units that are non-combustible and do not contain flammable or combustible liquids or gases. | CRA |
| 2.6: | Mezzanine floors: Concession | Not applicable | NA |
| 2.7: | Enclosure of shafts | Fire-isolated shafts are required to be enclosed at the top and bottom of the shaft with fire rated construction having an FRL required for the walls of a non-load-bearing shaft in the same building, as per specification C1.1. This fire rating is required in two directions.<br>The above does not apply to shafts extending beyond the roof covering, other than fire isolated stair and lift shafts and the bottom of non-combustible shafts laid directly on the ground. | CRA |
| 2.8: | Carparks in Class 2 and 3 Buildings | Not applicable | NA |
| 2.9: | Residential Aged Care building: Concession | Not applicable | NA |
| 3.0: | Type A fire-resisting construction | Refer to the section 3 clauses below. | - |
| 3.1: | Fire-resistance of building elements | • The FRL's of all elements are to be in accordance with the FRL's detailed in the Table contained within Part 4.0 of this report.<br>• External walls, common walls and the flooring and floor framing of lift pits must be non-combustible. (Note: insulation and sarking used must be non-combustible)<br>• Load bearing internal walls (including those part of a loadbearing shaft) must be of concrete or masonry. | CRA |

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| | | • Non-loadbearing internal walls required to be fire rated, as well as non-load bearing lift, ventilating, pipe, garbage or similar shaft wall must be of non-combustible construction.<br><br>**Note:** This includes non-combustible insulation. When an insulation material is not certified as non-combustible, this material will need to be the subject of a Fire Engineering Assessment at the CC stage. | |
| 3.2: | Concessions for floors | A floor need not achieve an FRL if it is laid directly on the ground. | Note |
| 3.3: | Floor Loading of Class 5 and 9b buildings: Concession | Not applicable | NA |
| 3.4: | Roof superimposed on concrete slab: Concession | Not applicable | NA |
| 3.5: | Roof: Concession | In accordance with Clause 3.5 of Specification C1.1, the roof need not comply with any FRLs due to the provision of a non-combustible roof covering and sprinkler protection of the entire building. | Noted |
| 3.6: | Roof lights | Not applicable | NA |
| 3.7: | Internal columns and walls: Concession | Not applicable | NA |
| 3.8: | Open spectator stands and indoor sports stadiums concession | Not applicable | NA |
| 3.9: | Carparks | Not applicable | NA |
| 3.10: | Class 2 and 3 buildings Concession | Not applicable | NA |
| **SPECIFICATION C1.10 – FIRE HAZARD PROPERTIES** | | | |
| 1. | Scope | Informational | - |
| 2. | Application | Informational | Noted |
| 3. | Floor linings and floor coverings | A floor lining or floor covering must have–<br><br>a) a *critical radiant flux* not less than that listed in Table 2; and<br><br>b) in a building not protected by a sprinkler system complying with Specification E1.5, a maximum *smoke development rate* of 750 percent-minutes; and<br><br>c) a *group number* complying with Clause 6(b), for any portion of the floor covering that is continued more than 150 mm up a wall. | CRA |
| 4. | Wall and ceiling linings | a) A wall or ceiling lining system must comply with the *group number* specified in Table 3 of BCA Specification C1.10.<br><br>b) A *group number* of a wall or ceiling lining must be determined in accordance with AS 5637.1. | CRA |

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| 5. | Air-handling ductwork | Rigid and flexible ductwork must comply with the *fire hazard properties* set out in AS 4254 Parts 1 and 2. | CRA |
| 6. | Lift cars | Materials used as—<br>a) floor linings and floor coverings must have a *critical radiant flux* not less than 2.2; and<br>b) wall and ceiling linings must be a Group 1 material or a Group 2 material in accordance with AS 5637.1. | CRA |
| 7. | Other materials | Materials and assemblies not included in Clauses 3, 4, 5 or 6 must not exceed the indices set out in Table 4. | CRA |
| **SPECIFICATION C2.5 – SMOKE PROOF WALLS IN HEALTH CARE AND AGED BUILDINGS** | | | |
| 1. | Scope | Informational | Noted |
| 2. | Class 9a health-care buildings | Not applicable | NA |
| 3. | Class 9c aged care buildings | Smoke-proof walls required by C2.5 in Class 9c buildings must comply with the following:<br>(a) The wall may be lined on one side only.<br>(b) Linings on the wall must be non-combustible and extend to the underside of—<br>(i) the floor above; or<br>(ii) a non-combustible roof covering; or<br>(iii) a flush plasterboard ceiling lined with 13 mm standard grade plasterboard or a fire-protective covering,<br>with all penetrations sealed against the free passage of smoke.<br>(c) If plasterboard is used in the lining on a wall, it must be a minimum of 13 mm standard grade plasterboard.<br>(d) Not incorporate any glazed areas unless the glass is safety glass as defined in AS 1288.<br>(e) Only have doorways which are fitted with smoke doors complying with Specification C3.4.<br>(f) Have all openings around penetrations and the junctions of the smoke-proof wall and the remainder of the building stopped with non-combustible material to prevent the free passage of smoke.<br>(g) Incorporate smoke dampers where air-handling ducts penetrate the wall unless the duct forms part of a smoke hazard management system required to continue air movement through the duct during a fire. | CRA |
| 4. | Doorways in smoke-proof walls | A door required by C2.5 or this Specification to be smoke-proof or have an FRL, other than one that serves a fire compartment provided with a zone pressurisation system in accordance with AS 1668.1, must provide a smoke | CRA |

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| | reservoir by not extending within 400 mm of the underside of—<br>(a) a roof covering; or<br>(b) the floor above; or<br>(c) an imperforate false ceiling that will prevent the free passage of smoke. | |
| **SPECIFICATION C3.4 – FIRE DOORS, SMOKE DOORS, FIRE WINDOWS AND SHUTTERS** | | |
| 1. Scope | Informational - This Specification sets out requirements for the construction of fire doors, smoke doors, fire windows and fire shutters. | Noted |
| 2. Fire doors | Fire doorsets must comply with AS1905.1 and not fail by radiation through any glazed part during the period specified for integrity in the required FRL. | CRA |
| 3. Smoke doors | Smoke doors must be constructed so that smoke will not pass from one side of the doorway to the other and, if they are glazed, there is minimal danger of a person being injured by accidentally walking into them. Refer to full Clause 3.2 of BCA Specification C3.4. | CRA |
| 4. Fire shutters | Fire shutters must comply with Clause 4 of BCA Specification C3.4. | CRA |
| 5. Fire windows | Fire window must be identical to the prototype which achieved the required FRL and be installed in the same manner and in an opening that is not larger than the tested prototype. | CRA |

| SECTION D: ACCESS AND EGRESS | | |
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| **PART D1 – PROVISION FOR ESCAPE** | | |
| D1.0: Deemed-to-Satisfy Provisions | Informational | Noted |
| D1.1: Application of Part | Informational | Noted |
| D1.2: Number of exits required | • Not less than 2 exits must be provided from:<br>– the basement and lower basement levels<br>– a storey that contains sleeping areas<br>– a storey that accommodates more than 50 persons, calculated under D1.13<br>• Without passing through another sole-occupancy unit, every occupant of a storey or part of a storey must have access to an exit or at least 2 exit, if 2 or more are required. | Complies |
| D1.3: When fire-isolated stairways and ramps are required | **Class 9c**<br>Every stairway serving as an exit in the Class 9c building must be fire-isolated.<br>**Class 7a** | FI<br>Refer to Part 5 of Report |

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| | Stair 3 at the southwest corner of the carpark at basement level need not be fire-isolated, being located within a Class 7a part and connecting 2 storeys in a sprinkler protected building.<br><br>It is understood that the design will be developed further in consultation with the fire engineer and BCA compliance sought via a performance solution at CC stage. | |
| D1.4: Exit travel distances | No point on a floor must be more than 20 m from an exit, or a point from which travel in different directions to 2 exits is available, in which case the maximum distance to one of those exits must not exceed 40 m.<br><br>The travel distance to a point of choice of exits from the Staff Room, Kitchen and Laundry on Basement level exceeds 20m, being up to 26m. It is recommended that BCA compliance be achieved via a Performance Solution. | PS<br>Refer to Part 5 of Report |
| D1.5: Distance between alternative exits | Exits that are required as alternative means of egress must be not less than 9 m apart and not more than 60m apart. | Complies |
| D1.6: Dimensions of exits and paths of travel to exits | In a required exit or path of travel to an exit–<br><br>• the unobstructed height throughout exits and paths of travel to exits must not be less than 2 m, except the unobstructed height of any doorway may be reduced to not less than 1980 mm; and<br><br>• public corridors in the Class 9c building must have an unobstructed width of not less than 1.5m; and 1.8m for the full width of the doorway, providing access into a *sole-occupancy unit* or communal bathroom; and<br><br>• the unobstructed width of doorways in Class 9c parts must be not less than–<br><br>(A) 1070 mm where it opens from a public corridor to a sole-occupancy unit; or<br><br>(B) 870 mm in other resident use areas; or<br><br>(C) 800 mm in non-resident use areas, and where the doorway is fitted with two leaves and one leaf is secured in the closed position in accordance with D2.21(b)(v), the other leaf must permit an unobstructed opening not less than 870 mm wide in resident use areas and 800 mm wide in non-resident use areas; or<br><br>• the unobstructed width of doorways in other parts of the building must be not less than 750 mm, unless providing access for people with disabilities in which case the unobstructed width must be not less than 850 mm. | CRA |

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| D1.7: Travel via fire-isolated exits | • D1.7 (a) - A doorway from a room must not open directly into a stairway that is required to be fire-isolated unless it is from –<br>(i) a public corridor, public lobby or the like; or<br>(ii) a sole-occupancy unit occupying all of a storey; or<br>(i) a sanitary compartment, airlock or the like.<br>• D1.7 (b) - 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—<br>(i) to a road or open space; or<br>(ii) to a point—<br>(A) in a storey or space, 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<br>(B) from which an unimpeded path of travel, not further than 20 m, is available to a road or open space; or<br>(iii) into a covered area that—<br>(A) adjoins a road or open space;<br>(B) and is open for at least 1/3 of its perimeter; and<br>(C) has an unobstructed clear height throughout, including the perimeter openings, of not less than 3 m; and<br>(D) provides an unimpeded path of travel from the point of discharge to the road or open space of not more than 6 m.<br>• D1.7 (c) - Where a path of travel from the point of discharge of a fire-isolated exit necessitates passing within 6 m 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—<br>(i) an FRL of not less than 60/60/60; and<br>(ii) any openings protected internally in accordance with C3.4,<br>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.<br>The following compliance matters have been identified on the plans:<br>The egress routes from fire stairs 1, 2, 4 & 5 at ground level necessitate passing within 6m of the external walls | FI<br>Refer to Part 5 of Report |

| SECTION D: ACCESS AND EGRESS | | |
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| | of the same building. Clause D1.7 (c) requires walls and openings of the same building within 6m horizontal distance of the path of travel to be protected.<br>It is understood that the design will be developed further in this regard, in consultation with the fire engineer and BCA compliance sought via a performance solution at CC stage. | |
| D1.8: External stairways or ramps in lieu of fire-isolated exits | (a) An external stairway or ramp may serve as a required exit in lieu of a fire-isolated exit serving a storey below an effective height of 25 m, if the stairway or ramp is—<br>(i) non-combustible throughout; and<br>(ii) protected in accordance with (c) if it is within 6 m of, and exposed to any part of the external wall of the building it serves.<br>(b) For the purposes of this clause—<br>(i) exposure under (a)(ii), is measured in accordance with Clause 2.1 of Specification C1.1, as if the exit was a building element and the external wall of the building was a fire-source feature to the exit, except that the FRL required in Clause 2.1(a)(i) must not be less than 60/60/60; and<br>(ii) the plane formed at the construction edge or perimeter of an unenclosed building or part such as an open-deck carpark, open spectator stand or the like, is deemed to be an external wall; and<br>(iii) openings in an external wall and openings under (c) and (d), are determined in accordance with C3.1.<br>(c) The protection referred to in (a)(ii), must adequately protect occupants using the exit from exposure to a fire within the building, in accordance with one of the following methods:<br>(i) The part of the external wall of the building to which the exit is exposed must have—<br>(A) an FRL of not less than 60/60/60; and<br>(B) no openings less than 3 m from the exit (except a doorway serving the exit protected by a –/60/30 fire door in accordance with C3.8(a)); and<br>(C) any opening 3 m or more but less than 6 m from the exit, protected in accordance with C3.4 and if wall wetting sprinklers are used, they are located internally.<br>(ii) The exit must be protected from—<br>(A) any part of the external wall of the building having an FRL of less than 60/60/60; and<br>(B) any openings in the external wall, by the construction of a wall, roof, floor or other shielding element as appropriate in accordance with (d).<br>(d) The wall, roof, floor or other shielding element required by (c)(ii) must—<br>(i) have an FRL of not less than 60/60/60; and | FI<br>Refer to Part 5 of Report |

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| | (ii) have no openings less than 3 m from the external wall of the building (except a doorway serving the exit protected by a –/60/30 fire door in accordance with C3.8(a)); and<br>(iii) have any opening 3 m or more but less than 6 m from any part of the external wall of the building protected in<br>accordance with C3.4 and if wall wetting sprinklers are used, they are located on the side exposed to the external wall.<br><br>**Note: D1.8 applies to the stair construction only and does not provide an exemption from the Clause D1.7 (c) requirements relating to the protection of the path of travel from the exits to the road.**<br>It is understood that the design of the exit stairs will be developed further in consultation with the fire engineer and BCA compliance sought via a *performance solution* at CC stage. | |
| D1.9: Travel by non-fire-isolated stairways or ramps | • A non-fire-isolated stairway serving as a required exit must provide a continuous means of travel by its own flights and landings from every storey served to the level at which egress to a road or open space is provided.<br>• The distance from any point on a floor to a point of egress to a road or open space by way of a required non-fire-isolated stairway or non-fire-isolated ramp must not exceed 80m. | Complies |
| D1.10: Discharge from exits | • Exits must not be blocked at the point of discharge and where necessary, suitable barriers must be provided to prevent vehicles from blocking the exit.<br>• If a required exit leads to open space, the path of travel to the road must have an unobstructed width of not less than 1m.<br>• If an exit discharges to open space that is at a different level that the public road to which it is connected, the path of travel to the road must be by a ramp or other incline not steeper than 1:8, or a BCA compliant stairway.<br>• The discharge points of alternative exits must be as far apart as practical. | Complies |
| D1.11: Horizontal exits | Not applicable | NA |
| D1.12: Non-required stairways, ramps or escalators | Not applicable | NA |
| D1.13: Number of persons accommodated | Informational | Noted |
| D1.14: Measurement of distances | Informational –<br>The nearest part of an exit means in the case of— | Noted |

| SECTION D: ACCESS AND EGRESS | | |
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| | (a) a fire-isolated stairway, fire-isolated passageway, or fire-isolated ramp, the nearest part of the doorway providing access to them; and<br>(b) a non-fire-isolated stairway, the nearest part of the nearest riser; and<br>(c) a non-fire-isolated ramp, the nearest part of the junction of the floor of the ramp and the floor of the storey; and<br>(d) a doorway opening to a road or open space, the nearest part of the doorway; and<br>(e) a horizontal exit, the nearest part of the doorway. | |
| D1.15: Method of Measurement | Informational | Noted |
| D1.16: Plant rooms, lift motor rooms and electricity network substations: concession | Not applicable | NA |
| D1.17: Access to lift pits | Access to the lift pit is assumed to be through the bottom landing doors as the pit is assumed to be less than 3m deep. | CRA |
| **PART D2 – CONSTRUCTION OF EXITS** | | |
| D2.0: Deemed-to-Satisfy Provisions | Informational | Noted |
| D2.1: Application of Part | Informational | Noted |
| D2.2: Fire-isolated stairways and ramps | The fire-isolated stairways must be constructed of non-combustible materials and constructed so that if there is local failure it will not cause structural damage to, or impair the fire-resistance of the shaft. | CRA |
| D2.3: Non-fire-isolated stairways and ramps | Required stairs and ramps (including landings and any supporting building elements) must be constructed according to D2.2, or only of-<br>(a) reinforced or prestressed concrete; or<br>(b) steel in no part less than 6 mm thick; or<br>(c) timber that—<br>(i) has a finished thickness of not less than 44 mm; and<br>(ii) has an average density of not less than 800 kg/m3 at a moisture content of 12%; and<br>(iii) has not been joined by means of glue unless it has been laminated and glued with resorcinol formaldehyde or resorcinol phenol formaldehyde glue". | CRA |
| D2.4: Separation of rising and descending stair flights | If a stairway serving as an exit is required to be fire-isolated— | PS<br>Refer to Part 5 of Report |

| SECTION D: ACCESS AND EGRESS | | |
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| | (a) there must be no direct connection between—<br>(i) a flight rising from a storey below the lowest level of access to a road or open space; and<br>(ii) a flight descending from a storey above that level; and<br>(b) any construction that separates or is common to the rising and descending flights must be<br>(i) non-combustible; and<br>(ii) smoke proof in accordance with Clause 2 of Specification C2.5.<br>A direct connection exists between the rising and descending flights of Stair 1 at ground level. That is, the flight descending from level 1 opens directly into the stairway of the flight ascending from the basement level.<br>It is recommended that a doorway be provided at the top of the ascending flight in accordance with Figure D2.4 of the Guide to the BCA, or BCA compliance achieved via a Performance Solution. | |
| D2.5: Open access ramps and balconies | Not applicable | NA |
| D2.6: Smoke lobbies | Not applicable | NA |
| D2.7: Installations in exits and paths of travel | • Access to service shafts and services other than to fire-fighting or detection equipment must not be provided from a fire-isolated stairway or fire-isolated passageway.<br>• Gas or other fuel services must not be installed in a required exit.<br>• Any electricity meters, distribution boards or ducts, or telecommunications distribution boards or equipment installed in corridors/hallways/lobbies or the like must be enclosed with non-combustible construction or a fire protective covering with doorways suitably sealed against smoke spread.<br>• Electrical wiring may be installed in a fire-isolated exit if the wiring is associated with:<br>– a lighting, detection, or pressurization system serving the exit; or<br>– a security, surveillance or management system serving the exit; or<br>– an intercommunication system or an audible or visual alarm system in accordance with D2.22; or<br>– the monitoring of hydrant or sprinkler isolating valves. | CRA |

| SECTION D: ACCESS AND EGRESS | | |
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| D2.8: Enclosure of space under stairs and ramps | The space under the fire-isolated stairways within the shaft must not be enclosed to form a cupboard or similar enclosed space.<br>The space below a required non fire-isolated stairway must not be enclosed to form a cupboard or other enclosed space unless the enclosing walls and ceilings have an FRL of not less than 60/60/60 and the doorway is fitted with a self-closing –/60/30 fire door. | CRA |
| D2.9: Width of stairways and ramps | Informational | Noted |
| D2.10: Pedestrian ramps | Not applicable | NA |
| D2.11: Fire-isolated passageways | Not applicable | NA |
| D2.12: Roof as open space | Roof of basement level must achieve an FRL of 120/120/120 as exits discharge onto it. | CRA |
| D2.13: Goings and risers | Stairways must comply with the following:<br>• stairways must have not more than 18 and not less than 2 risers in each flight;<br>• goings must be between 250 mm and 355 mm;<br>• risers must be between 115 mm high and 190 mm high;<br>• the slope relationship (2 x riser dimension + going dimension) must be within the range of 550-700;<br>• the goings and risers must be constant (uniform) throughout each flight and the dimensions of goings (G) and risers (R) are considered constant if the variation between–<br>(A) adjacent risers, or between adjacent goings, is no greater than 5 mm; and<br>(B) the largest and smallest riser within a flight, or the largest and smallest going within a flight, does not exceed 10 mm.<br>• Risers must not contain any openings that would permit a 125 mm sphere to pass through.<br>• each tread must have a non-slip finish or an adequate non-skid strip near the edge of the nosings;<br>• Treads must have a surface or nosing strip with a slip-resistant classification not less than that listed in Table D2.14 when tested in accordance with *AS 4586-2013 Slip resistance classification of new pedestrian surface materials.* | CRA |

<table>
<tr><th colspan="3">SECTION D: ACCESS AND EGRESS</th></tr>
<tr><td>D2.14: Landings</td><td>Landings must be not less than 750 mm long and have either a surface with a slip-resistance classification complying with Table D2.14 or a strip at the edge of the landing with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586.
<table>
<tr><th rowspan="2">Application</th><th colspan="2">Surface Condition</th></tr>
<tr><th>Dry</th><th>Wet</th></tr>
<tr><td>Ramp steeper than 1:14</td><td>P4 or R11</td><td>P5 or R12</td></tr>
<tr><td>Ramp steeper than 1:20 but not steeper than 1:14</td><td>P3 or R10</td><td>P4 or R11</td></tr>
<tr><td>Tread or landing surface</td><td>P3 or R10</td><td>P4 or R11</td></tr>
<tr><td>Nosing or landing edge strip</td><td>P3</td><td>P4</td></tr>
</table></td><td>CRA</td></tr>
<tr><td>D2.15: Thresholds</td><td>The threshold of a doorway must not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf unless–<br>• in a Class 9c part, a ramp is provided with a maximum gradient of 1:8 for a maximum height of 25 mm over the threshold; or<br>• in a building required to be accessible, the doorway–<br>(i) opens to a road or open space; and<br>(ii) is provided with a threshold ramp or step ramp in accordance with AS 1428.1; or<br>• in other cases–<br>(i) the doorway opens to a road or open space, external stair landing or external balcony; and<br>(ii) the door sill is not more than 190 mm above the finished surface of the ground, balcony, or the like, to which the doorway opens.</td><td>CRA</td></tr>
<tr><td>D2.16: Barriers to prevent falls</td><td>Balustrades must be provided to stairs and balconies, driveway ramps etc where there is a fall of more than 1m. Balustrades must comply with the following:<br><u>Balustrade minimum heights</u><br>• 865 mm above stair nosings;<br>• 865 mm above landings to a stair where the barrier is provided along the inside edge of the</td><td>CRA</td></tr>
</table>

| SECTION D: ACCESS AND EGRESS | | |
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| | landing and does not exceed 500 mm in length; and<br>• 1 m in all other locations.<br><u>Balustrade openings – fire-isolated stairs</u><br>• maximum openings of 300 mm; or<br>• where rails are used–<br>– a 150 mm sphere must not be able to pass through the opening between the nosing line of the stair treads and the rail or between the rail and the floor of the landing, balcony or the like; and<br>– the opening between rails must not be more than 460 mm<br><u>Balustrade openings – other than fire-isolated stairs</u><br>• A 125 mm sphere must not be able to pass through any opening and for stairways, the 125 mm is measured above the nosing line of the stair treads.<br><u>Climbability – other than fire-isolated stairs</u><br>For floors more than 4m above the surface beneath, the balustrade must not incorporate any horizontal or near horizontal elements between 150 mm and 760 mm above the floor that could facilitate climbing. | |
| D2.17: Handrails | <u>Handrails to passageways</u><br>Handrails must be provided along both sides of every passageway or corridor used by residents, and must be—<br>(A) fixed not less than 50 mm clear of the wall; and<br>(B) where practicable, continuous for their full length.<br><u>Handrails to stairways</u><br>Handrails to stairways must:<br>• be located along at least one side of the ramp or flight (a flight being 2 or more risers); and<br>• located along each side if the total width of the stairway or ramp is 2m or more; and<br>• be fixed at a height of not less than 865 mm above the nosings of the stair treads and the floor surface of the ramp, landing, or the like; and<br>• be continuous between stair flight landings and have no obstruction that will break a hand-hold.<br>• be constructed to comply with clause 12 of AS 1428.1 (including handrails to the fire stairs). | CRA |

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| | • Handrails in common areas (other than fire stairs) must also accord with D3.3 (refer to Access Report). | |
| D2.18: Fixed platforms, walkways stairways and ladders | Not applicable | NA |
| D2.19: Doorways and doors | • Exit doors that are power operated must be able to be opened manually under a force of not more than 110 N if there is a malfunction or failure of the power source and if leading to road or open space, open automatically if there is a power failure or on the activation of a fire or smoke alarm anywhere in the fire compartment served by the door.<br>• A power operated door in a path of travel to a required exit must be able to be opened manually under a force of not more than 110 N if there is a malfunction of the power source. | CRA |
| D2.20: Swinging doors | Swinging doors in a required exit must not encroach–<br>(i) at any part of its swing by more than 500 mm on the required 1m width of the exit and<br>(ii) when fully open, by more than 100 mm on the required 1m exit width; and<br>the measurement of encroachment in each case is to include door handles or other furniture or attachments to the door.<br>A swinging door in a required exit must swing in the direction of egress. | Complies |
| D2.21: Operation of latch | D2.21 (a) - All doors in a required exit or forming part of a required exit AND doors in a path of travel to a required exit must be readily openable without a key from the side that faces a person seeking egress, by–<br>(i) a single hand downward action or pushing action on a single device which is located between 900mm and 1.1 m from the floor and if serving an area required to be accessible by Part D3 –<br>A. be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and<br>B. have a clearance between the handle and the back plate or door face at the centre grip section of the handle of not less than 35mm and not more than 45mm; or<br>(ii) a single hand pushing action on a single device which is located between 900mm and 1.2m from the floor.<br>(iii) where the latch operation device referred to in (ii) is not located on the door leaf itself— | CRA |

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| | (A) manual controls to power-operated doors must be at least 25 mm wide, proud of the surrounding surface and located—<br><br>(aa) not less than 500 mm from an internal corner; and<br><br>(bb) for a hinged door, between 1 m and 2 m from the door leaf in any position; and<br><br>(cc) for a sliding door, within 2 m of the doorway and clear of a surface mounted door in the open position.<br><br>(B) braille and tactile signage complying with Clause 3 and 6 of Specification D3.6 must identify the latch operation device.<br><br>D2.21 (b) - The above requirements do not apply to the following doors:<br><br>• A door that is in a Class 9c building and—<br>(A) is one leaf of a two-leaf door complying with D1.6(f)(i) or D1.6(f)(iv) provided that it is not held closed by a locking mechanism and is readily openable; and<br>(B) the door is not required to be a fire door or smoke door.<br>• A door that is fitted with a fail-safe device which automatically unlocks the door upon the activation of an AS 1670.1 detection system installed throughout the building and is readily openable when unlocked. | |
| D2.22: Re-entry from fire-isolated exits | Doors of the fire-isolated exits must not be locked from the inside unless the door is fitted with a fail-safe device which automatically unlocks the door upon the activation of a fire alarm and –<br><br>(i) on at least every fourth storey, the doors are not able to be locked and a sign is fixed on such doors stating that re-entry is available; or<br><br>(ii) an intercommunication system, or an audible or visual alarm system, operated from within the enclosure is provided near the doors and a sign is fixed adjacent to such doors explaining its purpose and method of operation. | CRA |
| D2.23: Signs on doors | Signage in accordance with this clause is to be located on all fire and smoke doors stating “Fire Safety Door, Do Not Obstruct, Do Not Keep Open” and the discharge door from the fire isolated stairways are to state “Fire Safety Door – Do Not Obstruct” in capital letters not less than 20mm in height.<br><br>Note: Fire signage in accordance with clause 183 of the Environmental Planning and Assessment Regulation 2000 is also required. | CRA |

| SECTION D: ACCESS AND EGRESS | | | |
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| D2.24: | Protection of openable windows | Not applicable | NA |
| D2.25: | Timber stairways: concession | Not applicable | NA |
| **PART D3 - ACCESS FOR PEOPLE WITH A DISABILITY** | | | |
| Assessment against Part D3 is not in the scope of this report - Refer to report by separate Access Consultant | | | |

| SECTION E: SERVICES AND EQUIPMENT | | | |
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| **PART E1 – FIRE FIGHTING EQUIPMENT** | | | |
| E1.0: | Deemed-to-Satisfy Provisions | Informational | Noted |
| E1.3: | Fire hydrants | As the building has a floor area greater than 500 $m^2$, a fire hydrant system complying with AS 2419.1-2005 must be provided to serve the building. | CRA |
| E1.4: | Fire hose reels | A fire hose reel system complying with BCA clause E1.4 and AS 2441-2005 must be provided to serve the carpark.<br><br>All points on a floor shall be within reach of a 4 m hose stream issuing from a nozzle at the end of the hose laid on floor. The hose length shall not exceed 36 m. | CRA |
| E1.5: | Sprinklers | The building must be provided with a sprinkler system complying with Table E1.5 and Specification E1.5 installed throughout. | CRA |
| E1.6: | Portable fire extinguishers | Portable fire extinguishers must be provided in accordance with Clause E1.6 & Table E1.6 of the BCA and must be selected, located and distributed in accordance with Sections 1, 2, 3 and 4 of AS 2444-2001 to cover the following fire risks:<br>• To cover Class AE or E fire risks associated with emergency services switchboards (if applicable). an emergency services switchboard is one which sustains emergency equipment operating in the emergency mode.<br>• To cover Class F fire risks involving cooking oils and fats in kitchens.<br>• To cover Class A and E fire risks. A Class E fire extinguisher need only be located at each nurses' station, supervisors' station or the like. | CRA |
| E1.8: | Fire control centres | Not applicable | NA |
| E1.9: | Fire precautions during construction | Informational–<br>During construction, not less than one portable fire extinguisher to suit Class A, B and C fires and electrical fires must be provided at all times on each storey adjacent to each required / temporary exit. | Noted |
| E1.10: | Provision for special hazards | Not applicable | NA |
| **Specification E1.5 – FIRE SPRINKLER SYSTEMS** | | | |
| 1. | Scope | Informational | Noted |

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| 2. | Application of automatic fire sprinkler standards | An automatic fire sprinkler system shall comply with AS2118 as relevant to the building classification and the design of the hydraulic consultant. | CRA |
| 3. | Separation of sprinklered and non-sprinklered areas | Not applicable | NA |
| 4. | Protection of openings | Not applicable | NA |
| 5. | Fast response sprinklers | Fast response sprinklers may be installed only if they are suitable for the type of application proposed and it is demonstrated that the sprinkler system is designed to accommodate their use. | Note |
| 6. | Sprinkler valve enclosures | (a) Sprinkler alarm valves must be located in a secure room or enclosure which has direct egress to a road or open space.<br>(b) All sprinkler valve rooms and enclosures must be secured with a system suitable for use by the fire brigade. | PS<br>Refer to Part 5 of Report |
| 7. | Water supply | A required sprinkler system must be provided with at least one water supply. | CRA |
| 8. | Building occupant warning system | A required sprinkler system must be connected to and activate a building occupant warning system complying with Clause 7 of Specification E2.2a. | CRA |
| 9. | Connection to Other Systems | Where a smoke hazard management system is installed and is actuated by smoke detectors, the sprinkler system must, wherever practicable, be arranged to also activate the smoke hazard management system. | CRA |
| 10. | Anti-tamper Devices | Not applicable | NA |
| 11. | Sprinkler Systems in Carparks | Not applicable | NA |
| 12. | Residential Care Buildings | In addition to the provisions of AS 2118.4, a sprinkler system must –<br>(a) be provided with a monitored main stop valve in accordance with AS 2118.1; and<br>(b) be permanently connected with a direct data link or other approved monitoring system to a fire station or fire station dispatch centre. | CRA |
| 13. | Sprinkler systems in lift installations | (a) Where sprinklers are installed in a space housing lift electrical and control equipment, including machine rooms, secondary floors and sheave rooms, sprinklers in these spaces must –<br>(i) have heads protected from accidental damage by way of a guard that will not impair the performance of the head; and<br>(ii) be capable of being isolated and drained, either separately or collectively, without isolating any other sprinklers within the building.<br>(b) Valves provided to control sprinklers referred to in (a) must be installed in accordance with Clause 10(b). | CRA |
| **PART E2 – SMOKE HAZARD MANAGEMENT** | | | |
| E2.0: | Deemed-to-Satisfy Provisions | Informational | Noted |

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| E2.1: | Application of Part | Informational | Noted |
| E2.2: | General requirements (including Tables E2.2a and E2.2b) | **General smoke hazard management requirements**<br>An air-handling system which does not form part of a smoke hazard management system and which recycles air from one fire compartment to another fire compartment or operates in a manner that may unduly contribute to the spread of smoke from one fire compartment to another fire compartment must—<br>(i) be designed and installed to operate as a smoke control system in accordance with AS/NZS 1668.1; or<br>(ii)<br>(A) incorporate smoke dampers where the air-handling ducts penetrate any elements separating the fire compartments served; and<br>(B) be arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke detectors complying with clause 4.10 of AS/NZS 1668.1.<br><br>Miscellaneous air-handling systems covered by Sections 5 and 11 of AS/NZS 1668.1 serving more than one fire compartment (other than a carpark ventilation system) and not forming part of a smoke hazard management system must comply with that Section of the Standard.<br><br>A smoke detection system must be installed in accordance with Clause 5 of Specification E2.2a to operate AS1668.1 systems that are provided for automatic air pressurisation for fire-isolated exits.<br>**Fire-isolated exits**<br>All fire-isolated exits must be provided with an automatic air pressurisation system for fire-isolated exits in accordance with AS/NZS 1668.1. The automatic air pressurisation system applies to the entire exit.<br>**Class 9c**<br>The building must be provided throughout with–<br>(a) an automatic smoke detection and alarm system complying with Specification E2.2a; and<br>(b) automatic shutdown of any air-handling system (other than individual room units with a capacity not more than 1000 L/s and miscellaneous exhaust air systems installed in accordance with Sections 5 and 6 of AS 1668.1) on the activation of—<br>(i) smoke detectors installed in accordance with (a); and<br>(ii) any other installed fire detection and alarm system including a sprinkler system complying with Specification E1.5; and<br><br>**Class 7a**<br>A Class 7a part provided with a mechanical ventilation system in accordance with AS 1668.2 must comply with | FI<br>Refer to Part 5 of Report |

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| | | clause 5.5 of AS/NZS 1668.1 except that fans with metal blades for operation at normal temperatures may be used, and the electrical power and control cabling need not be fire rated. | |
| E2.3: | Provisions for special hazards | Not applicable | NA |
| **SPECIFICATION E2.2a – SMOKE DETECTION AND ALARM SYSTEM** | | | |
| 1. | Scope | Informational | Noted |
| 2. | Type of system | A smoke detection system in accordance with Clause 4 of Specification E2.2a must be provided. | CRA |
| 3. | Smoke alarm system | Not applicable | NA |
| 4. | Smoke detection system | (a) The smoke detection system must—<br>(A) comply with AS 1670.1; and<br>(B) activate a building occupant warning system in accordance with Clause 7.<br>In kitchens and other areas where the use of the area is likely to result in smoke detectors causing spurious signals—<br>(A) any other detector deemed suitable in accordance with AS 1670.1 may be installed provided that smoke detectors are installed elsewhere in the sole-occupancy unit in accordance with the requirements for alarms in Clause 3(b)(i) and Clause 3(b)(ii) of Specification E2.2a; or<br>(B) an alarm acknowledgement facility may be installed,<br>except where the kitchen or other area is in a building protected with a sprinkler system complying with Specification E1.5 (other than a FPAA101D or FPAA101H system), the detectors need not be installed in the kitchen or other areas likely to result in spurious signals.<br><br>(d) In a Class 9c building—<br>(i) remote automatic indication of each zone must be given in each smoke compartment by means of—<br>(A) mimic panels with an illuminated display; or<br>(B) annunciator panels with alpha numeric display; and<br>(ii) manual call points must be installed in paths of travel so that no point on a floor is more than 30 m from a manual call point. | CRA |
| 5. | Combined smoke alarm and smoke detection system | Not applicable | NA |
| 6. | Smoke detection for smoke control system | (a) Smoke detectors required to activate air pressurisation systems for fire-isolated exits must—<br>(i) be installed in accordance with AS 1670.1; and<br>(ii) have additional smoke detectors installed adjacent to each bank of lift landing doors set back | CRA |

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| | | horizontally from the door openings by a distance of not more than 3 m.<br>(b) Smoke detectors required to activate automatic shutdown of air-handling systems in accordance with Table E2.2b must be spaced not more than 20 m apart and not more than 10 m from any wall, bulkhead or smoke curtain. | |
| 7. | Building occupant warning system | Subject to E4.9, a building occupant warning system provided as part of a smoke hazard management system must comply with clause 3.22 of AS 1670.1 to sound through all occupied areas except the system—<br>(i) must be arranged to provide a warning for occupants; and<br>(ii) must notify staff caring for the residents of the building; and<br>(iii) in areas used by residents, may have its alarm adjusted in volume and content to minimise trauma consistent with the type and condition of residents. | CRA |
| 8. | System Monitoring | The smoke detection system must be connected to a fire alarm monitoring system connected to a fire station or fire station dispatch centre in accordance with AS 1670.3. | CRA |
| **PART E3 – LIFT INSTALLATIONS** | | | |
| E3.0: | Deemed-to-Satisfy Provisions | Informational | Noted |
| E3.1: | Lift installations | An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with BCA Specification E3.1 | CRA |
| E3.2: | Stretcher facility in lifts | Clause E3.8 requires at least one lift must contain a stretcher facility in accordance with this clause. The stretcher facility must accommodate a raised stretcher with a patient lying on it horizontally by providing a clear space not less than 600 mm wide x 2000 mm long x 1400 mm high above the floor level. | CRA |
| E3.3: | Warning against use of lifts in fire | Warning signs indicating “DO NOT USE LIFTS IF THERE IS A FIRE” shall be displayed near every call button for a passenger lift or group of lifts throughout a building as per E3.3. | CRA |
| E3.4: | Emergency lifts | Not applicable | NA |
| E3.5: | Landings | Access and egress to and from lift-well landings must comply with the Deemed-to-Satisfy Provisions of Section D. | CRA |
| E3.6: | Passenger lifts | In an accessible building, every passenger lift must be one of the types specified in Table E3.6a, have accessible features in accordance with Table E3.6b, and not rely on a constant pressure device for its operation if the lift car is fully enclosed. | CRA |
| E3.7: | Fire service controls | Not applicable | NA |
| E3.8: | Aged care buildings | At least one lift must accommodate a stretcher in accordance with E3.2. | CRA |
| E3.9: | Fire service recall switch | Not applicable | NA |

| SECTION E: SERVICES AND EQUIPMENT | | | |
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| E3.10: | Lift car service drive control switch | Not applicable | NA |
| **PART E4 – VISIBILITY IN AN EMERGENCY, EXIT SIGNS AND WARNING SYSTEMS** | | | |
| E4.0: | Deemed-to-Satisfy Provisions | Informational | Noted |
| E4.2: | Emergency lighting requirements | An emergency lighting system must be installed throughout the building, excluding within *sole-occupancy units* in accordance with Clause E4.2 of the BCA and AS 2293.1-2018. | CRA |
| E4.3: | Measurement of distance | Informational | Noted |
| E4.4: | Design and operation of emergency lighting | The emergency lighting system must comply with AS 2293.1-2018. | CRA |
| E4.5: | Exit signs | Exits signs are to be provided above or adjacent to a door providing egress as well as directional signage throughout the entire development where necessary. | CRA |
| E4.6: | Direction signs | Where an exit is not readily apparent, directional signage is to be installed indicating the direction of egress. | CRA |
| E4.7: | Class 2 and 3 buildings and Class 4 Parts: Exemptions | Not applicable | NA |
| E4.8: | Design and operation of exit signs | Exit signs must comply with AS 2293.1-2018 and be clearly visible at all times when the building is occupied. | CRA |
| E4.9: | Emergency warning and intercom systems | Not applicable | NA |

| SECTION F: HEALTH AND AMENITY | | | |
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| **PART F1 – DAMP AND WEATHERPROOFING** | | | |
| F1.0: | Deemed-to-Satisfy Provisions | Performance Requirement FP1.4, for the prevention of the penetration of water through external walls, must be complied with. There are no Deemed-to-Satisfy Provisions for this Performance Requirement in respect of external walls. The assessment contained within this report does not include an assessment against Performance Provision FP1.4. | PS Required |
| F1.1: | Stormwater drainage | Stormwater drainage to comply with AS3500.3-2003. | CRA |
| F1.4: | External above ground membranes | Waterproofing membranes for external above ground use to comply with AS4654 Parts 1 and 2-2012. | CRA |
| F1.5: | Roof coverings | Roof coverings are to comply with BCA Clause F1.5. | CRA |
| F1.6: | Sarking | Sarking-type materials used for weatherproofing must comply with AS/NZS 4200 Part 1 and 2-1994. | CRA |
| F1.7: | Water proofing of wet areas in buildings | Wet areas must be constructed in accordance with AS 3740-2010 and F1.7 of the BCA. | CRA |
| F1.9: | Damp-proofing | Moisture is to be prevented from reaching the walls above a damp-proof course, and the underside of the suspended floors. | CRA |
| F1.10: | Damp-proofing of floors on the ground | If a floor of a room is laid on the ground or on fill, moisture from the ground must be prevented from reaching the upper surface of the floor and adjacent walls by the insertion of a | CRA |

| SECTION F: HEALTH AND AMENITY | | | |
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| | | vapour barrier in accordance with AS 2870-2011 (N/A to areas that do not require weatherproofing – refer specific clause exemptions). | |
| F1.11: | Provision of floor wastes | In Class 2 or 3 buildings or Class 4 part of a building, a bathroom or laundry is to have a floor waste where the floor is graded to the floor waste to permit the drainage of water. | CRA |
| F1.12: | Sub-floor ventilation | Subfloor spaces must be ventilated in accordance with Clause F1.12. | CRA |
| F1.13: | Glazed Assemblies | Glazed assemblies are to comply with AS2047 and AS1288. | CRA |
| **PART F2 – SANITARY AND OTHER FACILITIES** | | | |
| F2.0: | Deemed-to-Satisfy Provisions | Informational | Noted |
| F2.1: | Facilities in residential buildings (including Table F2.1) | The following facilities not shown in the current plans are required in accordance with Clause F2.1:<br>• a suitable bath, fixed or mobile.<br>• one clinical hand washing basin for each 16 residents or part thereof. | DNC<br>Refer to Part 5 of Report |
| F2.2: | Calculation of number of occupants and facilities | Informational | Noted |
| F2.3: | Facilities in Class 3 to 9 buildings (including Table F2.3) | Other than unisex accessible toilets, separate sanitary facilities for male and female staff must be provided in accordance with Table F2.3.<br>Accordingly, the sanitary facilities provided for staff use must be designated as either male or female. | CRA |
| F2.4: | Accessible sanitary facilities (including Table F2.4) | Refer to Access Report by separate consultant | - |
| F2.5: | Construction of sanitary compartments | The door to a fully enclosed sanitary compartment must—<br>(i) open outwards; or<br>(ii) slide; or<br>(iii) be readily removable from the outside of the sanitary compartment, unless there is a clear space of at least 1.2 m, measured in accordance with Figure F2.5, between the closet pan within the sanitary compartment and the doorway. | CRA |
| F2.6: | Interpretation: urinals and washbasins | Informational | Noted |
| F2.8: | Waste Management | The following facilities must be provided on each storey containing resident use areas—<br>(i) one slop-hopper or other device other than a water closet pan or urinal for the safe handling and disposal of liquid and solid wastes with a flushing apparatus, tap and grating; and<br>(ii) an appliance for the disinfection of pans or an adequate means to dispose of receptacles. | CRA |
| F2.9: | Accessible adult change facilities | Not applicable | NA |
| **PART F3 – ROOM SIZES** | | | |
| F3.0: | Deemed-to-Satisfy Provisions | Informational | Noted |

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| **SECTION F: HEALTH AND AMENITY** | | | |
| F3.1: | Height of rooms and other spaces | The height of rooms and other spaces must be not less than—<br>• In a Class 9c building—<br>(i) a kitchen, laundry, or the like — 2.1 m; and<br>(ii) a corridor, passageway or the like — 2.4 m; and<br>(iii) a habitable room excluding a kitchen — 2.4 m; and<br>• In any building—<br>(i) a bathroom, shower room, sanitary compartment, airlock, tea preparation room, pantry, store room, car parking area, or the like — 2.1 m; and<br>(ii) a commercial kitchen — 2.4 m; and<br>(iii) above a stairway, ramp, landing or the like — 2 m measured vertically above the nosing line of stairway treads or the floor surface of the ramp, landing or the like. | CRA |
| **PART F4 – LIGHT AND VENTILATION** | | | |
| F4.0: | Deemed-to-Satisfy Provisions | Informational | Noted |
| F4.1: | Provision of natural light | Natural light must be provided to all rooms used for sleeping purposes. | CRA |
| F4.2: | Methods and extent of natural lighting | • Natural light must be provided by windows with an aggregate light transmitting area of not less than 10% the floor area of the room; and that are open to the sky or face a court or other space open to the sky<br>• In a Class 9c aged care building, a required window must be transparent and located—<br>(i) in an external wall with the window sill not more than 1 m above the floor level; and<br>(ii) where the window faces an adjoining allotment, another building or another wall of the same building, it must not be less than a horizontal distance of 3 m from the adjoining allotment, other building or wall.<br>A three metre setback has not been provided to one bedroom on ground floor, first floor and second floor facing the eastern boundary. It is recommended that the design be amended to comply. | DNC<br>Refer to Part 5 of Report |
| F4.3: | Natural light borrowed from adjoining room | Not applicable | NA |
| F4.4: | Artificial Lighting | Lighting to the all areas is to comply with AS 1680.0. | CRA |
| F4.5: | Ventilation of rooms | All rooms to be provided with Clause F4.6 compliant natural ventilation **OR** a mechanical ventilation or air-conditioning system complying with AS 1668.2-2012. | CRA |
| F4.6: | Natural ventilation | (a) Natural ventilation provided in accordance with F4.5(a) must consist of permanent openings, windows, doors or other devices which can be opened—<br>(i) with an aggregate opening or openable size not less than 5% of the floor area of the room required to be ventilated; and<br>(ii) open to— | CRA |

| SECTION F: HEALTH AND AMENITY | | | |
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| | | (A) a suitably sized court, or space open to the sky; or<br>(B) an open verandah, carport, or the like; or<br>(C) an adjoining room in accordance with F4.7. | |
| F4.7: | Ventilation borrowed from adjoining room | Not applicable | NA |
| F4.8: | Restriction on position of water closets and urinals | Sanitary compartments must not open directly into a –<br>• kitchen or pantry<br>• public dining room or restaurant<br>• workplace normally occupied by more than one person. | Note |
| F4.9: | Airlocks | If sanitary compartments are prohibited from opening directly to another room:<br>• access must be by an airlock, hallway or other room with a floor area of not less than 1.1m$^2$ and fitted with self-closing doors at all access doorways; or<br>• the sanitary compartments must be provided with mechanical exhaust ventilation and the doorway to the room adequately screened from view. | CRA |
| F4.11: | Carparks | The carpark must have a system of mechanical ventilation complying with AS1668.2-2012. | CRA |
| F4.12: | Kitchen local exhaust ventilation | The commercial kitchen must be provided with a kitchen exhaust hood complying with AS/NZS 1668.1 and AS 1668.2 where:<br>• any cooking apparatus has:<br>– a total maximum electrical power input exceeding 8 kW; or<br>– a total gas power input exceeding 29 MJ/h; or<br>• the total maximum power input to more than one apparatus exceeds:<br>– 0.5 kW electrical power; or<br>– 1.8 MJ gas,<br>Per m$^2$ of floor area of the room or enclosure. | CRA |
| **PART F5 – SOUND TRANSMISSION AND INSULATION** | | | |
| F5.0: | Deemed-to-Satisfy Provisions | Informational | Noted |
| F5.1: | Application of Part | Informational–<br>The Deemed-to-Satisfy Provisions of this Part apply to Class 9c buildings. | Noted |
| F5.2: | Determination of airborne sound insulation ratings | A form of construction required to have an airborne sound insulation rating must—<br>(a) have the required value for weighted sound reduction index (Rw) or weighted sound reduction index with spectrum adaptation term (Rw + Ctr) determined in accordance with AS/NZS 1276.1 or ISO 717.1 using results from laboratory measurements; or<br>(b) comply with Specification F5.2. | CRA |

| SECTION F: HEALTH AND AMENITY | | | |
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| F5.3: | Determination of impact sound insulation ratings | (a) A floor in a building required to have an impact sound insulation rating must—<br>(i) have the required value for weighted normalised impact sound pressure level with spectrum adaptation term (Ln,w + CI) determined in accordance with AS/ISO 717.2 using results from laboratory measurements; or<br>(ii) comply with Specification F5.2.<br>(b) A wall in a building required to have an impact sound insulation rating must –<br>A. for other than masonry, be two or more separate leaves without rigid mechanical connection except at the periphery; or<br>B. be identical with a prototype that is no less resistant to the transmission of impact sound when tested in accordance with Specification F5.5 than a wall listed in Table 2 of Specification F5.2.<br>(c) For the purposes of this Part, discontinuous construction means a wall having a minimum 20 mm cavity between 2 separate leaves, and<br>(i) for masonry, where wall ties are required to connect leaves, the ties are of the resilient type; and<br>(ii) for other than masonry, there is no mechanical linkage between leaves except at the periphery. | CRA |
| F5.4: | Sound insulation rating of floors | A floor in a Class 9c building separating sole-occupancy units must have an Rw not less than 45. | CRA |
| F5.5: | Sound insulation rating of walls | • A wall in a Class 9c building must have an Rw not less than 45 if it separates—<br>(i) sole-occupancy units; or<br>(ii) a sole-occupancy unit from a kitchen, bathroom, sanitary compartment (not being an associated ensuite), laundry, plant room or utilities room.<br>• Where a wall required to have sound insulation has a floor above, the wall must continue to:<br>(i) the underside of the floor above; or<br>(ii) a ceiling that provides the sound insulation required for the wall.<br>• Where a wall required to have sound insulation has a roof above, the wall must continue to:<br>(i) the underside of the roof above; or<br>(ii) a ceiling that provides the sound insulation required for the wall. | CRA |
| F5.6: | Sound insulation rating of services | (a) If a duct, soil, waste or water supply pipe, including a duct or pipe that is located in a wall or floor cavity, serves or passes through more than one sole-occupancy unit, the duct or pipe must be separated from the rooms of any sole occupancy unit by construction with an Rw + Ctr (airborne) not less than—<br>(i) 40 if the adjacent room is a habitable room (other than a kitchen); or<br>(ii) 25 if the adjacent room is a kitchen or non-habitable room. | CRA |

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| | (b) If a storm water pipe passes through a sole-occupancy unit it must be separated in accordance with (a)(i) and (ii). | |
| F5.7: Sound isolation of pumps | A flexible coupling must be used at the point of connection between the service pipes in a building and any circulating pump. | CRA |
| **PART F6 – CONDENSATION MANAGEMENT** | | |
| F6.0: Deemed-to-satisfy provisions | Informational | Noted |
| F6.1: Application of Part | Informational - The Deemed-to-Satisfy Provisions of this Part only apply to a sole-occupancy unit of a Class 2 building and a Class 4 part of a building. | Noted |
| F6.2: Pliable building membrane | Not applicable | NA |
| F6.3: Flow rate and discharge of exhaust systems | Not applicable | NA |
| F6.4: Ventilation of roof spaces | Not applicable | NA |

| SECTION G: ANCILLARY PROVISIONS | | |
|---|---|---|
| **PART G1 – MINOR STRUCTURES AND COMPONENTS** | | |
| G1.0: Deemed-to-Satisfy Provisions | Informational | Noted |
| G1.1: Swimming pools | Not applicable | NA |
| G1.2: Refrigerated chambers, strong-rooms and vaults | (a) A coolroom which is of sufficient size for a person to enter must have—<br>(i) a door which is capable of being opened by hand from inside without a key; and<br>(ii) internal lighting controlled only by a switch which is located adjacent to the entrance doorway inside the chamber, strongroom or vault; and<br>(iii) an indicator lamp positioned outside the chamber, strongroom or vault which is illuminated when the interior lights required by (a)(ii) are switched on; and<br>(iv) an alarm that is—<br>(A) located outside but controllable only from within the chamber, strongroom or vault; and<br>(B) able to achieve a sound pressure level outside the chamber, strongroom or vault of 90 dB(A) when measured 3 m from the sounding device.<br>(b) A door required by (a)(i) in a refrigerated or cooling chamber must have a doorway with a clear width of not less than 600 mm and a clear height not less than 1.5 m. | CRA |
| G1.3: Outdoor play spaces | Not applicable | NA |
| NSW G1.101: Provision for cleaning windows | A safe manner for cleaning of windows located 3 or more storeys above ground level must be provided, and compliance is achieved where: | CRA |

| SECTION G: ANCILLARY PROVISIONS | | |
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| | • the windows can be cleaned wholly from within the building; or<br>• via a method complying with the Work Health and Safety Act 2011 and regulations made under that Act. | |
| **PART G2 – BOILERS, PRESSURE VESSELS, HEATING APPLIANCES, FIREPLACES, CHIMNEYS AND FLUES** | | |
| G2.0: Deemed-to-Satisfy Provisions | Informational | Noted |
| G2.2: Installation of Appliances | The installation of any proposed boilers and pressure vessels must comply with Specification G2.2 | CRA |
| G2.3: Open Fireplaces | Not applicable | NA |
| G2.4: Incinerator Rooms | Not applicable | NA |
| **PART G3 – ATRIUM CONSTRUCTION** | | |
| Part G3 is not applicable | | |
| **PART G4- CONSTRUCTION IN ALPINE AREAS** | | |
| Part G4 is not applicable | | |
| **PART G5 – CONSTRUCTION IN BUSHFIRE PRONE AREAS** | | |
| Part G5 is not applicable | | |
| **PART G6 – OCCUPIABLE OUTDOOR AREAS** | | |
| G6.1: Application of part | a) The Deemed-to-Satisfy Provisions of this Part apply to buildings containing an occupiable outdoor area in addition to the other Deemed-to-Satisfy Provisions of the BCA.<br>b) The Deemed-to-Satisfy Provisions of this Part take precedence where there is a difference to the Deemed-to-Satisfy Provisions of Sections C, D, E, F and G.<br>c) Except for G6.2, the Deemed-to-Satisfy Provisions of this Part do not apply to—<br>(i) an occupiable outdoor area of a Class 9c *sole-occupancy unit;* or<br>(ii) an occupiable outdoor area with an area less than 10m$^2$. | Noted |
| G6.2: Fire hazard properties | (a) Subject to (b), a lining, material or assembly in an occupiable outdoor area must comply with C1.10 as for an internal element.<br>(b) The following fire hazard properties of a lining, material or assembly in an occupiable outdoor area are not required to comply with C1.10:<br>(i) Average specific extinction area.<br>(ii) Smoke-Developed Index.<br>(iii) Smoke development rate.<br>(iv) Smoke growth rate index (SMOGRA $_{RC}$). | CRA |
| G6.3: Fire Separation | Not applicable | NA |
| G6.4: Provision for escape | For the purposes of the Deemed-to-Satisfy Provisions of Part D1, a reference to a storey or room includes an occupiable outdoor area. | Note |

| SECTION G: ANCILLARY PROVISIONS | | |
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| G6.5: Construction of exits | For the purposes of the Deemed-to-Satisfy Provisions of Part D2, a reference to a storey or room includes an occupiable outdoor area. | Note |
| G6.6: Fire fighting equipment | Except for Clause 7(b)(i) of Specification E1.5, for the purposes of the Deemed-to-Satisfy Provisions of Part E1, a reference to a storey includes an occupiable outdoor area. | Note |
| G6.7: Lift installations | For the purposes of the Deemed-to-Satisfy Provisions of Part E3, a reference to a storey includes an occupiable outdoor area | CRA |
| G6.8: Visibility in an emergency, exit signs and warning systems | For the purposes of the Deemed-to-Satisfy Provisions of Part E4, a reference to a storey includes an occupiable outdoor area. | CRA |
| G6.9: Light and ventilation | For the purposes of the Deemed-to-Satisfy Provisions of F4.4, F4.8 and F4.9, a reference to a room includes an occupiable outdoor area. | CRA |
| G6.10 Fire orders | Not applicable | NA |

| SECTION I: MAINTENANCE |
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| **PART I1 – EQUIPMENT AND SAFETY INSTALLATIONS** |
| This Part has been deleted in BCA2019. |

| SECTION J: ENERGY EFFICIENCY (Class 9c) | | |
|---|---|---|
| **PART J1 – BUILDING FABRIC** | | |
| J1.0: Deemed-to-Satisfy Provisions | Informational | Noted |
| J1.1: Application of Part | The provisions of Part J1 apply to building elements forming part of the *envelope* of the building. | Note |
| J1.2: Thermal construction general | Where required insulation is to comply with AS4859.1 and be installed in accordance with this clause.<br>The required Total R-Value and Total System U-Value, must be determined in accordance with J1.2 (e) clause. | CRA |
| J1.3: Roof and ceiling construction | (a) A roof or ceiling must achieve a Total R-Value greater than or equal to R3.7 for a downward direction of heat flow.<br>(b) The solar absorptance of the upper surface of a roof must be not more than 0.45. | CRA |
| J1.4: Roof lights | Not applicable | NA |
| J1.5: Walls | (a) The Total System U-Value of wall-glazing construction must not be greater than U2.0.<br>(b) The Total System U-Value of display glazing must not be greater than U5.8.<br>(c) The Total System U-Value of wall-glazing construction must be calculated in accordance with Specification J1.5a.<br>(d) Wall components of a wall-glazing construction must achieve a minimum Total R-Value of—<br>(i) where the wall is less than 80% of the area of the wall-glazing construction, R1.0; or | CRA |

| SECTION J: ENERGY EFFICIENCY (Class 9c) | | | |
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| | | (ii) where the wall is 80% or more of the area of the wall-glazing construction, the value specified in Table J1.5a.<br>(e) The solar admittance of externally facing wall-glazing construction must not be greater than the values specified in Table J1.5c.<br>(f) The solar admittance of a wall-glazing construction must be calculated in accordance with Specification J1.5a.<br>(g) The Total system SHGC of display glazing must not be greater than 0.81 divided by the applicable shading factor specified in Clause 7 of Specification J1.5a. | |
| J1.6: | Floors | (a) A floor must achieve the Total R-Value specified in Table J1.6.<br>(b) A floor must be insulated around the vertical edge of its perimeter with insulation having an R-Value greater than or equal to 1.0 when the floor—<br>(i) is a concrete slab-on-ground in climate zone 8; or<br>(ii) has an in-slab or in-screed heating or cooling system, except where used solely in a bathroom, amenity area or the like.<br>(c) Insulation required by (b) for a concrete slab-on-ground must—<br>(i) be water resistant; and<br>(ii) be continuous from the adjacent finished ground level—<br>(A) to a depth not less than 300 mm; or<br>(B) for the full depth of the vertical edge of the concrete slab-on-ground. | CRA |
| **PART J2 – GLAZING** | | | |
| J2.0: | Deemed-to-Satisfy Provisions | Part J2 has deliberately been left blank from the BCA2019 | Noted |
| J2.1: | Application of Part | N/A | Noted |
| J2.4: | Glazing | N/A | Noted |
| J2.5: | Shading | N/A | Noted |
| **PART J3 – BUILDING SEALING** | | | |
| J3.0: | Deemed-to-Satisfy Provisions | Informational | Noted |
| J3.1: | Application of Part | The requirements of this Part apply to elements forming the *envelope* of the building other than:<br>• a building in a climate zones 1, 2, 3 and 5 where the only means of air-conditioning is by using an evaporative cooler; or<br>• a permanent building opening necessary for the safe operation of a gas appliance;<br>• a building or space where mechanical ventilation required by Part F4 provides sufficient pressurisation to prevent infiltration;<br>• parts of building that cannot be fully enclosed. | Noted |
| J3.2: | Chimneys and flues | Not applicable | NA |

| SECTION J: ENERGY EFFICIENCY (Class 9c) | | | |
|---|---|---|---|
| J3.3: | Roof lights | Not applicable | NA |
| J3.4: | Windows and doors | (a) A door, openable window or the like must be sealed.<br>(b) The above does not apply to:<br>(i) a window complying with AS 2047; or<br>(ii) a fire door or smoke door.<br>(c) A seal to restrict air infiltration—<br>(i) for the bottom edge of a door, must be a draft protection device; and<br>(ii) for the other edges of a door or the edges of an openable window or other such opening, may be a foam or rubber compression strip, fibrous seal or the like.<br>(d) An entrance to a building, if leading to a conditioned space must have an airlock, self-closing door, revolving door or the like. | CRA |
| J3.5: | Exhaust fans | The exhaust fans serving conditioned spaces or habitable room in climate 4 - 8, must be fitted with a sealing device, such as a self-closing damper of the like. | CRA |
| J3.6: | Construction of ceilings, walls and floors | The roof, walls, floors and any other openings, such as window or doors, are to be constructed to minimise air leakage by being enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or are sealed by expanding architraves, skirting, cornices; or expanding foam, rubber compressible strip, caulking or the like. | CRA |
| J3.7: | Evaporative Coolers | Not applicable | NA |
| PART J4 | | | |
| J4.0: | | This part has deliberately been left blank in the BCA2019 | N/A |
| **PART J5 – AIR CONDITIONING AND VENTILATION SYSTEMS** | | | |
| J5.0: | Deemed-to-Satisfy Provisions | Informational | Noted |
| J5.1: | Application of Part | Informational | Noted |
| J5.2: | Air-conditioning systems | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.3: | Mechanical ventilation system control | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.4: | Fan systems | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.5: | Ductwork Insulation | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.6: | Ductwork Sealing | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.7: | Pump Systems | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.8: | Pipework Insulation | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.9: | Space Heating | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.10: | Refrigerant Chillers | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |

| SECTION J: ENERGY EFFICIENCY (Class 9c) | | | |
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| J5.11: | Unitary Air-Conditioning Equipment | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.12: | Heat Rejection Equipment | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| **PART J6 – ARTIFICIAL LIGHTING AND POWER** | | | |
| J6.0: | Deemed-to-Satisfy Provisions | Informational | Noted |
| J6.1: | Application of Part | Informational | Noted |
| J6.2: | Artificial lighting | Artificial lighting must comply with BCA Clause J6.2.<br>Design certification to be provided by the electrical designer. | CRA |
| J6.3: | Interior artificial lighting and power control | Lighting switches and control devices must comply with BCA Clause J6.3. Design certification to be provided by the electrical designer. | CRA |
| J6.4: | Interior decorative and display lighting | Lighting falling under this clause is to be separately switched from other lighting, be under a manual switch and controlled with a time switch. Design certification to be provided by the electrical designer. | CRA |
| J6.5: | Exterior artificial lighting | Exterior lighting attached to or directed at the façade of the building must be controlled by daylight sensors or time switches in accordance with the specific requirements of this clause. Design certification to be provided by the electrical designer. | CRA |
| J6.6: | Boiling water and chilled water storage units | The power supply to a fixed boiling water or chilled water storage unit must be controlled by a time switch in accordance with BCA Specification J6. Design certification to be provided by the electrical designer. | CRA |
| J6.7: | Lifts | Lifts must be configured to ensure artificial lighting and ventilation in the car are turned off when it is unused for 15 minutes; it also must achieve energy control requirements that comply to Clause J6.7 (b) and (c). | CRA |
| J6.8: | Escalators and moving walkways | Not applicable | NA |
| **PART J7 – HEATED WATER SUPPLY** | | | |
| J7.0: | Deemed-to-Satisfy Provisions | Informational | Noted |
| J7.2: | Heated water supply system | The hot water supply systems must be designed and installed in accordance with Part B2 of NCC Volume Three — Plumbing Code of Australia. | CRA |
| J7.3: | Swimming pool heating and pumping | Not applicable | NA |
| J7.4: | Spa pool heating and pumping | Not applicable | NA |
| **PART J8 – FACILITIES FOR ENERGY MONITORING** | | | |
| J8.0: | Deemed-to-Satisfy Provisions | Informational | Noted |
| J8.1 | Application of Part | Informational | Noted |
| J8.3 | Facilities for energy monitoring | • The building must have an energy meter configured to record the time-of-use consumption of gas and electricity. | CRA |

| SECTION J: ENERGY EFFICIENCY (Class 9c) | | |
|---|---|---|
| | • The building must have the energy meters configured to enable individual time-of-use energy consumption data recording of the energy consumption of –:<br>– air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and<br>– artificial lighting; and<br>– appliance power; and<br>– central hot water supply; and<br>– internal transport devices including lifts where there is more than one serving the building; and<br>– other ancillary plant.<br>• Energy meters required must be interlinked by a communication system that collates the time-of-use energy consumption data to a single interface monitoring system where it can be stored, analysed and reviewed. | |

| SECTION J: ENERGY EFFICIENCY (Class 7a Carpark) | | |
|---|---|---|
| **PART J0 – ENERGY EFFICIENCY** | | |
| J0.1: Application of Section J | Informational | Noted |
| J0.2: Heating & cooling loads of SOU's to Class 2 & 4 parts | Not applicable | NA |
| J0.3: Ceiling fans | Not applicable | NA |
| J0.4: Roof thermal breaks | Not applicable | NA |
| J0.5: Wall thermal breaks | Not applicable | NA |
| **PART J1 – BUILDING FABRIC** | | |
| J1.0: Deemed-to-Satisfy Provisions | Informational | Noted |
| J1.1: Application of Part | This part is not applicable to the carpark (unconditioned) | NA |
| J1.1 – J1.6 | Not applicable | NA |
| **PART J2 – GLAZING** | | |
| J2.0: Deemed-to-Satisfy Provisions | Part J2 provisions are now in Part J1 | Noted |
| J2.1: Application of Part | This part is not applicable to the carpark. | NA |
| J2.4 – J2.5 | This part is not applicable to the carpark. | NA |
| **PART J3 – BUILDING SEALING** | | |
| J3.0: Deemed-to-Satisfy Provisions | Informational | Noted |
| J3.1: Application of Part | This part is not applicable to the carpark. | NA |
| J3.2 – J3.7 | Not applicable | NA |
| **PART J4 – AIR MOVEMENT** | | |
| Deleted | Part J4 deleted in BCA2016 | - |
| **PART J5 – AIR CONDITIONING AND VENTILATION SYSTEMS** | | |
| J5.0: Deemed-to-Satisfy Provisions | Informational | Noted |
| J5.2: Air-conditioning system control | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |

| SECTION J: ENERGY EFFICIENCY (Class 7a Carpark) | | | |
|---|---|---|---|
| J5.3: | Mechanical ventilation system control | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.4: | Fan systems | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.5: | Ductwork Insulation | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.6: | Ductwork Sealing | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.7: | Pump Systems | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.8: | Pipework Insulation | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.9: | Space Heating | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.10: | Refrigerant Chillers | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.11: | Unitary Air-Conditioning Equipment | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| J5.12: | Heat Rejection Equipment | Compliance required, design certification to be provided by Mechanical Engineer. | CRA |
| **PART J6 – ARTIFICIAL LIGHTING AND POWER** | | | |
| J6.0: | Deemed-to-Satisfy Provisions | Informational | Noted |
| J6.1: | Application of Part | Applies to all buildings except a Class 8 electricity network substation. | Noted |
| J6.2: | Artificial lighting | Artificial lighting must comply with J6.2(a), J6.2(b) and J6.2(c), relevant to maximum permitted illumination power loads.<br>Design certification to be provided by the electrical designer. | CRA |
| J6.3: | Interior artificial lighting and power control | Lighting switches and control devices must comply with BCA Clause J6.3. Design certification to be provided by the electrical designer. | CRA |
| J6.4: | Interior decorative and display lighting | Not applicable | NA |
| J6.5: | Exterior artificial lighting | Not applicable | NA |
| J6.6: | Boiling water and chilled water storage units | Not applicable | NA |
| J6.7: | Lifts | Not applicable | NA |
| J6.8: | Escalators and moving walkways | Not applicable | NA |
| **PART J7 – HEATED WATER SUPPLY** | | | |
| J7.0: | Deemed-to-Satisfy Provisions | Informational | Noted |
| J7.2: | Heated water supply system | Not applicable | NA |
| **PART J8 – FACILITIES FOR ENERGY MONITORING** | | | |
| J8.0: | Deemed-to-Satisfy Provisions | Informational | Noted |
| J8.1: | Application of Part | Informational | Noted |

| SECTION J: ENERGY EFFICIENCY (Class 7a Carpark) | | | |
|---|---|---|---|
| J8.3: | Facilities for energy monitoring | • The building must have an energy meter configured to record the time-of-use consumption of gas and electricity.<br>• The building must have the energy meters configured to enable individual time-of-use energy consumption data recording of the energy consumption of –:<br>– air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and<br>– artificial lighting; and<br>– appliance power; and<br>– central hot water supply; and<br>– internal transport devices including lifts where there is more than one serving the building; and<br>– other ancillary plant.<br>• Energy meters required must be interlinked by a communication system that collates the time-of-use energy consumption data to a single interface monitoring system where it can be stored, analysed and reviewed. | CRA |