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# BUILDING CODE OF AUSTRALIA COMPLIANCE ASSESSMENT REPORT

# PROPOSED MIXED-USE HIGH-RISE DEVELOPMENT

## 26 Elizabeth Road, Liverpool

**DATE ►** 5.11.18

**REPORT NO. ►** 8291 Rev 3

**PREPARED FOR ►** Rothelowman

**PREPARED BY ►** AED

BCA / Certifiers

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## 1.0 EXECUTIVE SUMMARY AND RECOMMENDATIONS

This report provides a Building Code of Australia (BCA) 2016 – Amdt 1 assessment of the proposed mixed-use, high-rise development, to be located at 26 Elizabeth Street, Liverpool.

The primary purpose of this report is to identify the non-compliance matters contained in the proposed design against the current Deemed-to-Satisfy (DTS) Provisions of the BCA and to provide compliance recommendations to overcome the DTS non-compliances.

### 1.1 Recommendations

The following table lists the non-compliances identified with the Deemed-to-Satisfy Provisions of the BCA which should be addressed either by design amendments, additional information **OR** by way of a Performance Solution:

| BCA Clause | Deemed-to-Satisfy Provision to be addressed |
|---|---|
| C1.9<br>Non-combustible building elements | • Proposed cladding system must be demonstrated to be *non-combustible* and achieve minimum FRL's required under Specification C1.1 where applicable.<br>• All components of the external and internal walls including sarking and insulation must be non - combustible as determined by AS 1530.1 or current CodeMark certification.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| C2.8<br>Separation of classifications in the same storey | This building will contain different classifications located alongside each other in the same storey on the following levels:<br>- **Basement 1** - Between Class 7a (carpark) and Class 5 (offices) and between class 7b (storage rooms).<br>- **Ground** – The ground level contains a significant amount of differing classes all attracting various FRL requirements with the 7b storage areas being the most onerous (240/240/240 FRL). It is recommended that the FRL's of the floor be rationalized to FRL 120/120/120 under a performance solution developed by a fire engineer addressing relevant Performance Requirements of the BCA<br>- **Lvl 1** – Between Class 7a (carpark) and Class 9b (meeting rooms)<br>- **Lvl 2** - Between Class 7a (carpark) and Class 5 (commercial offices)<br>- **Lvl 3** – N/A<br>- **Lvl 4** – N/A<br>- **Lvl 5** – Class 9b (gym and changerooms) and Class 2/3 (residential). Between 7b (linen and residential stores rooms) and Class 2/3 (residential).<br>- **Lvl 6** –Between 7b (linen and residential stores rooms) and Class 2/3 (residential).<br>- **Lvl 7-** Between 7b (linen and residential stores rooms) and Class 2/3 (residential).<br>- **Lvl 8** - Between Class 7b (h/w, pool plant and linen room) and Class 2/3 (residential)<br>- **Lvl 9** - N/A (whole floor considered 9b)<br>- **Lvl 10** – N/A (whole floor considered class 2/3)<br>- **Lvl 11-34** - N/A (whole floor considered class 2/3)<br>- **Lvl 35** – Between class 6 restaurant and Class 7b hyd/mech rooms (further detail reqd on these rooms to confirm).<br>Therefore, the above levels must comply with one of the following DTS options:<br>• each building element in that storey must have the higher FRL prescribed in Specification C1.1 for that element for the classifications concerned (i.e. up to FRL 240/240/240); or |



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<table>
<tr><th>BCA Clause</th><th>Deemed-to-Satisfy Provision to be addressed</th></tr>
<tr><td></td><td>• the different classifications must be fire wall separated.<br><br>Alternatively it is recommended the FRLs required for the Class 6 & 7b parts (most onerous) be rationalised to FRL 120/120/120 under a performance solution developed by a fire engineer addressing relevant Performance Requirements of the BCA.</td></tr>
<tr><td>C2.9<br><br>Separation of Classifications in different stories</td><td>Fire separation is required between parts of a building which are of different occupancy classification, when situated one above the other.<br><br>The level of fire protection required to the storey above is determined by BCA Table 3 of Specification C1.1 corresponding with the building classification of the lower storey. An excerpt from Table 3 has been produced below:<br><br>
<table>
<tr><th>BCA Class</th><th>FRL<br>(Table 3 of Spec C1.1)</th></tr>
<tr><td>Class 2/3</td><td>90/90/90</td></tr>
<tr><td>Class 5, 7a & 9b</td><td>120/120/120</td></tr>
<tr><td>Class 6</td><td>180/180/180</td></tr>
<tr><td>Class 7b</td><td>240/240/240</td></tr>
</table>
<br>Alternatively, it is recommended the FRLs required for the Class 6 & 7b parts (most onerous) be rationalised to FRL 120/120/120 under a performance solution developed by a fire engineer addressing relevant Performance Requirements of the BCA.</td></tr>
<tr><td>C2.13<br><br>Electrical supply system</td><td><u>Compliance Issue(s):</u><br><br>The electrical sub-station, MSB/COMM room, Fire Pump Room and Sprinkler Pump Room must achieve an FRL 120/120/120 and any be separated from any other part of the building by construction having an FRL of not less than 120/120/120; and have any doorway in that construction protected with a self-closing fire door having an FRL of not less than –/120/30.<br><br>Plans to be updated to demonstrate FRL’s and BCA DTS compliance</td></tr>
<tr><td>C2.14<br><br>Public corridors in Class 2 and 3 buildings</td><td><u>Compliance Issue(s):</u><br><br>The public corridors throughout serving the upper tower levels 10-31, class 2/3 portions, are currently non-compliant throughout the building being greater than 40m (measures 43m) and require smoke proof walls/doors.<br><br>The public corridors serving the levels 5 to 8 are non-compliant in that the circular corridors are over 40m and require smoke proof walls/doors.<br><br>Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification or alternatively, a performance solution should be sought for the non-compliance.</td></tr>
<tr><td>D1.4<br><br>Exit Travel Distances</td><td><u>Compliance issue(s):</u><br><br>Level 32-34</td></tr>
</table>



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| BCA Clause | Deemed-to-Satisfy Provision to be addressed |
|---|---|
| | The travel distance to an exit or point of choice exceeds 6m (12m worst case – end units)<br>***Level 15, 20, 25, and 30***<br>The travel distance to an exit or point of choice exceeds 6m (13m worst case – end units)<br>***Level 11-14, 16-19, 21-24, 26-29, and 31***<br>The travel distance to an exit or point of choice exceeds 6m (12m worst case – end units)<br>***Level 10***<br>The travel distance to an exit or point of choice exceeds 6m (12m worst case – end units)<br>***Level 9***<br>The travel distance to an exit or point of choice exceeds 20m (22m worst case – northern and southern rooms)<br>***Level 5 to 8***<br>Appears compliant<br>***Level 4***<br>*Appears compliant.*<br>**Lvl 3**<br>*Appears compliant.*<br>**Lvl 2**<br>*Appears compliant.*<br>**Level 1**<br>*Appears compliant.*<br>**Grd Lvl**<br>*All areas are to be provided with 2 exits from the rooms to comply. DTS compliance readily achievable assuming sliding doors comply with D2.19 regarding operation of doors.*<br>***Basement Level 1***<br>*Appears compliant.*<br>***Basement Level 2***<br>*Appears compliant.*<br>***Basement Level 3***<br>*Appears compliant.*<br>***Basement Level 4***<br>*Appears compliant*<br>***Plans to be updated to demonstrate BCA DTS compliance or fire engineered Performance Solution developed supporting current exit design.*** |
| D1.5<br>Distance Between Alternate Exits | **Compliance issue(s):**<br>*The exits on levels 5-35 are located less than 9m apart (measures 5.2m typical)* |



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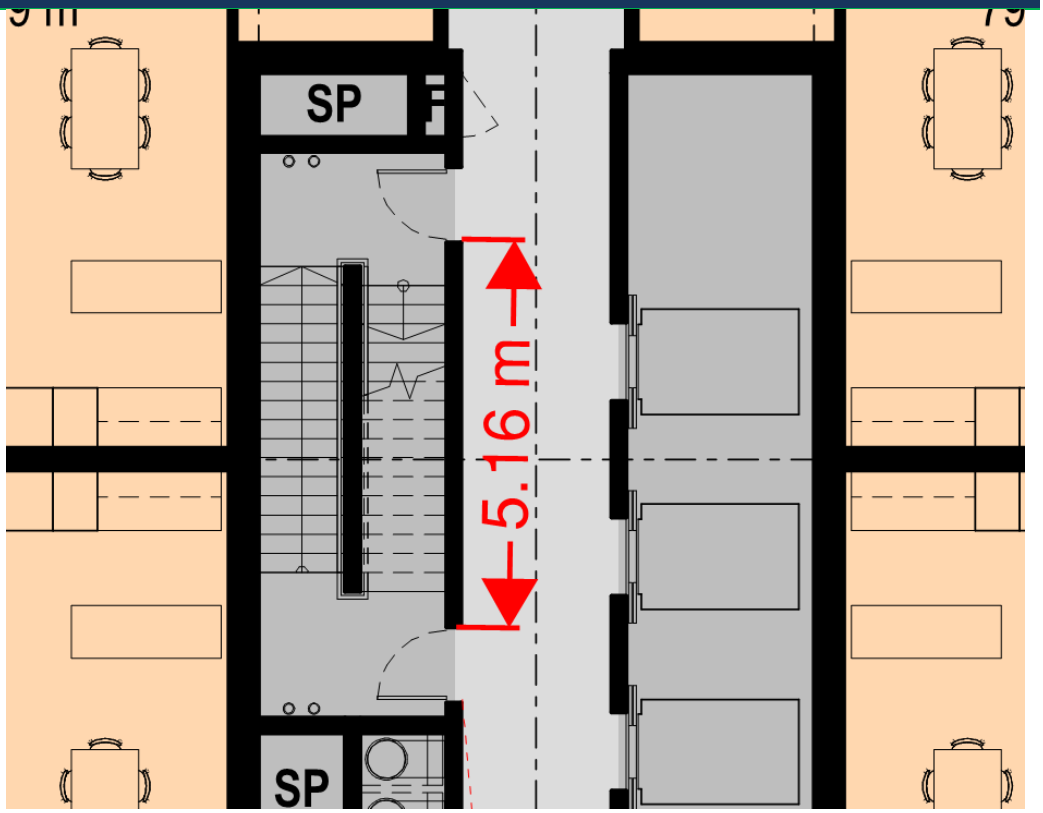
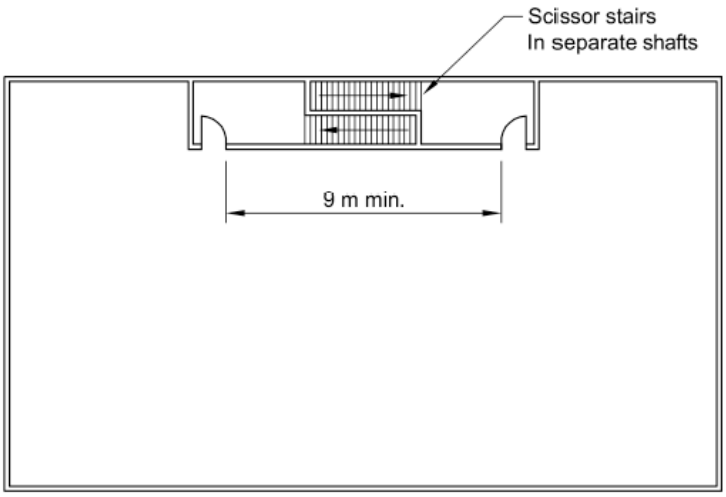
| BCA Clause | Deemed-to-Satisfy Provision to be addressed |
|---|---|
| |  <br>*Further, the stairs are to be within separate shafts in a scissor stair arrangement as below (note: each/both shafts are to be provided with stair pressurization as required later in report):*<br>  <br>**(b) Minimum separation**<br>***Plans to be updated to demonstrate BCA DTS compliance or fire engineered Performance Solution developed supporting current exit design.*** |
| E1.3<br>Fire Hydrants | A hydrant system complying with AS 2419.1-2005 must be provided to serve the whole building.<br>All internal hydrant outlets must be located within the fire stairs and be located on the same RL as the storey which they serve.<br>As the building has an effective height over 25m onsite water storage and be connected to a ring main. |



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| BCA Clause | Deemed-to-Satisfy Provision to be addressed |
|---|---|
| | **Compliance issue(s):**<br>• **The hydrant booster (affixed to the building) shall be provided with a shield wall of construction achieving 90/90/90 FRL.**<br>• **Hydrant valves are not detailed within fire isolated stairs serving the building.**<br>***Plans to be provided for assessment of the fire hydrant system***<br>***Hydraulic engineer to provide design on hydrant system detailing compliant flow, pressure and coverage requirements applicable to the hydrant system.*** |
| E1.4<br>Fire Hose Reels | A fire hose reel system complying with AS 2441-2005 must be provided to serve the whole building (except that the class 2 and 3 parts need not be served with a fire hose reel system and can be removed from plans).<br>All fire hose reels must be located not more than 4m from an exit.<br>Fire hose reels must not pass through a fire or smoke door unless permitted by clause E1.4(f).<br>**Compliance issue(s):**<br>• **Fire hose reel coverage is not detailed to the building for assessment.**<br>***Plans to be provided to satisfy BCA DTS requirements.***<br>***Hydraulic engineer to provide design on fire hose reel system detailing compliant location and coverage applicable to the abovementioned requirements.*** |
| E1.5<br>Sprinklers | A sprinkler system complying with Specification E1.5 is required to be installed throughout the building as follows:<br>- The building must be served with a sprinkler system in accordance with the requirements of AS 2118.1-1999;<br>- Grade 1 water supply to be provided for the sprinkler systems;<br>- The sprinkler systems must be connected to activate the BOWS system as per clause 6 of Spec E2.2a.<br>***Hydraulic Services Design Certification must be incorporated into the construction certificate specification*** |
| E2.2<br>General Requirements | **General smoke hazard management requirements**<br>An air-handling system which does not form part of a smoke hazard management system in accordance with Table E2.2a or Table E2.2b 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 (such as lobby air supply) 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; and for the purposes of this provision, each sole-occupancy unit in a Class 2 building is treated as a separate fire compartment.<br>Miscellaneous air-handling systems covered by Sections 5 and 11 of AS/NZS 1668.1 |



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| BCA Clause | Deemed-to-Satisfy Provision to be addressed |
|---|---|
| | 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 systems provided for **zone smoke control / automatic air pressurization for fire-isolated exits.**<br><br>**Fire isolated exits**<br><br>All fire isolated stairway including basement must be provided with automatic stair pressurization system as per AS 1668.1-2015. Note: each/both shafts in a scissor stair configuration are to be provided with stair pressurization.<br><br>**Class 7a (carpark)**<br><br>The Class 7a building parts must be provided with a mechanical ventilation system in accordance with AS 1668.2-2012 must comply with clause 5.5 of AS/NZS 1668.1-2015 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.<br><br>**Class 2/3 parts**<br><br>An **Automatic Smoke Detection and Alarm System** must be installed throughout the Class 2 parts of the building (sole-occupancy units, public corridors / lobbies, etc) complying with Clause 2 of Specification E2.2a.<br><br>Clause 2 of Specification E2.2a provides options for the installation of an automatic smoke detection and alarm system. The Class 2/3 parts must be provided with:<br><br>• a smoke detection system (and building occupant warning system) complying with Clause 4 of Specification E2.2a;<br>.<br><br>A smoke detection system (including a **Building Occupant Warning System**) would need to comply with AS 1670.1-2015. A building occupant warning system, complying with Clause 6 of Specification E2.2a is also required including throughout the car park area.<br><br>Detection must also be provided to other internal spaces located within the class 2/3 parts other than SOUs in accordance with AS 1670.1-2015 and must be connected to activate a BOWS in accordance with clause 6 of Spec E2.2a.<br><br>**System monitoring**<br><br>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 1670.3-2004.<br><br>**Zone Smoke Control**<br><br>Zone smoke control system in accordance with AS/NZS 1668.1-2015 will be required to the class 5, 9 and 6 parts.<br><br>**Automatic shutdown of air handling**<br><br>The class 9b parts must be provided with automatic shutdown of any air-handling system (other than non-ducted individual room units with a capacity not more than 1000 l/s and miscellaneous exhaust air systems installed in accordance with Sections 5 and 11 of AS/NZS 1668.1-2015) which does not form part of the smoke hazard management system, on the activation of–<br><br>(i) smoke detectors installed complying with Clause 5 of Specification E2.2a; and<br><br>(ii) any other installed fire detection and alarm system, including a sprinkler system complying with Specification E1.5.<br><br>***Plans to be updated to demonstrate BCA DTS compliance. Alternatively, it is recommended a fire engineered Performance Solution developed supporting*** |



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| BCA Clause | Deemed-to-Satisfy Provision to be addressed |
|---|---|
| | ***the omission of zone smoke control.***<br>***Note - FRNSW approval must be obtained as the building exceeds 2000sqm.***<br>***Appropriate Design Certification must be incorporated into the construction certificate specification*** |
| E4.9<br>Sound System and Intercom System For Emergency Purposes | A sound system and intercom system for emergency purposes (SSISEP) complying with AS 1670.4-2015 must be installed throughout the whole building.<br>***Electrical Design Certification must be incorporated into the construction certificate specification*** |



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## 2.0 INTRODUCTION

This report provides a Building Code of Australia (BCA) 2016 – Amdt 1 assessment of the proposed mixed-use, high-rise development, to be located at 26 Elizabeth Street, Liverpool.

This report provides a BCA assessment table in Section 4.0 that summarises the identified non-compliance matters and offers recommendations.

### 2.1 Basis of Report

The key basis of this report is to address compliance with the Building Code of Australia (BCA) 2016 – Amdt 1. The scope of services is limited to Sections B – "Structural Provisions", Sections C – "Fire Resistance", Section D – "Access & Egress", Section E – "Services & Equipment", Section F "Health and Amenity" and Section J "Energy Efficiency" except where specific parts of the BCA are excluded under section 2.3 'Limitations of the Report'

This report is based on a desktop assessment of the proposed plans, with specific reference to the following:

- Architectural plans prepared by Rothelowman Architects – Project 11528,
- The Building Code of Australia 2016 – Amdt 1 prepared by the Australian Building Codes Board.
- The Guide to the BCA 2016 Amdt 1, prepared by the Australian Building Codes Board.

### 2.2 Purpose of the Report

The purpose of this report is to assess the following:

- Assessment under the current Building Code of Australia 2016 – Amdt 1 and list any departures from the BCA 2016.
- Provide recommendations to address identified non-compliances, and/or identify potential alternative solutions.

### 2.3 Limitations of the Report

This report does not assess the following:

- Disability Discrimination Act 1992 (DDA) is outside the scope of this report. It should be noted that BCA compliance does not necessarily meet the requirements of the Disability Discrimination Act (DDA).
- Reporting on hazardous materials, OH&S matters or site contamination
- Assessment of any structural elements or geotechnical matters relating to the building, including any structural or other assessment of the existing fire resistant levels of the building
- Consideration of any fire services operations (including hydraulic, electrical or other systems)
- Assessment of plumbing and drainage installations, including stormwater
- Assessment of mechanical plant operations, electrical systems or security systems
- Heritage significance
- Consideration of energy or water authority requirements
- Consideration of Council's local planning policies
- Environmental or planning issues
- Requirements of statutory authorities
- Pest inspection or assessment building damage caused by pests (general/visual pest invasion or damage will be reported, however invasive or intrusive inspections have not be carried out)
- Sections G & H of the BCA are not considered.
- Provision of any construction approvals or certification under Part 4A or Part 5 of the Environmental Planning & Assessment Act 1979.
- Glazing, shading, lighting calculations and the like required by Section J of the BCA have not been carried out.
- This assessment excludes BCA clauses D3.0-3.12 (Inclusive), F2.4 and E3.6. Refer to separate access consultant's report.



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- The BCA does not directly specify slip-resistance classification(s) for all *accessible paths of travel*; however, we highlight the need under AS 1428.1-2009 for all *accessible paths of travel* to have a slip-resistant surface. We recommend the client seeks surface finish advice from an independent specialist slip safety consultant.
- This report does not assess the requirements of adaptable housing under AS 4299.
- This report does not assess the requirements of State Environmental Planning Policy No 65—Design Quality of Residential Flat Development.



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## 3.0 BCA ASSESSMENT DATA

The following data is provided in respect to review of the building under the Building Code of Australia 2016 – Amdt 1 in respect to the compliance assessment of the proposed mixed-use, high-rise development, to be located at 26 Elizabeth Street, Liverpool.

| | |
|---|---|
| **BCA Building Classifications:** | Class 2 (residential)<br>Class 3 (motel)<br>Class 5 (offices and meeting rooms)<br>Class 6 (retail and restaurant)<br>Class 7a (carpark)<br>Class 7b (storage, plant and service rooms)<br>Class 9b (communal open space, pool/gym area, media, amenities) |
| **Building Rise In Storeys (RIS):** | 36 – Roof not counted in RIS – (determined in accordance with C1.2 of the BCA). |
| **Type of Construction:** | A (determined in accordance with C1.1 of the BCA) |
| **Effective Height (m):** | >50m (Approx. **115.90m**; RL 128.80– RL 12.90 |

### 3.1 Location of Fire Source features

The fire source features for the subject development are:

- Private allotment boundary to the South >3m
- The far side of Elizabeth St to the North >6m.
- Private allotment boundary to west (<3m setback - exposed).
- Private allotment boundary to east (>3m setback).

### 3.2 Summary of Fire Services Required

Summarised below are the BCA deemed to satisfy fire services required for the building which has an effective height of more than 50m:

- Fire hydrants are required to serve all areas and be provided in accordance with BCA E1.3 and AS 2419.1-2005.
- A fire hose reel system complying with BCA E1.4 and AS 2441-2005 must be provided to serve all areas other than class 2/3 SOUs. Note: FHR's no longer required to serve a Class 2/3 building, however additional fire extinguishers are required in all class 2/3 parts.
- A sprinkler system throughout all parts of the building complying with E1.5 and AS 2118.1-1999.
- Portable fire extinguishers must be provided in accordance with BCA E1.6 & Table E1.6 and must be selected, located and distributed in accordance with Sections 1, 2, 3 and 4 of AS 2444-2001.
- A fire control room (FCR) must be provided in accordance with BCA E1.8 and Clauses 2 to 5 of BCA Specification E1.8 for a building >25m in height.
- Automatic smoke and fire detection to be provided throughout the building in accordance with Part E2 and BCA Specification E2.2a. and AS 1670.1-2015
- Automatic air pressurisation to fire isolated stairs serving residential and lower levels in accordance with BCA E2.2 and AS/NZS 1668.1 – 2015.
- A zone smoke control system must be provided to the Class 5,6 and 9b building parts in accordance with Part E2 and BCA Specification E2.2a. and AS 1670.1-2015



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- A sound system and intercom system for emergency purposes (SSISEP) complying with BCA E4.2 and AS 1670.4-2015 must be installed throughout the whole building
- An emergency lighting system must be installed throughout the building in accordance with BCA E4.2 of the BCA and AS 2293.1-2005.
- Exit signs must be installed throughout the building in accordance with BCA E4.5 and AS 2293.1-2005.
- Mechanical ventilation to the carpark in accordance with BCA Table E2.2a and AS 1668.1 - 2015 and AS 1668.2 - 2012.
- Signage to be provided exits in accordance with D2.23 and Clause 183 of *Environmental Planning & Assessment Regulation* 2000.
- Emergency lifts must be provided in accordance with BCA E3.4 and C2.10.
- Stretcher facility and fire service controls in the lift must be provided in accordance with BCA E3.2 and E3.7.

Summarised below are the potential fire engineering matters that could be considered to address BCA deemed to satisfy non - compliances:

- Rationalisation of FRL's to the lower levels.
- Minimum number of exits.
- Extended exit travel distances.
- Distance between alternative exits less than 9m apart.
- Omission of zone smoke control.
- Omission of stair pressurisation in part or full.
- Location/ shielding requirements to hydrant booster.
- Location of fire hydrant valves.
- Discharge from fire isolated passageways to open space.



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## 4.0 BCA ASSESSMENT SUMMARY

The following table details the BCA compliance of the assessed design.

| BCA DEEMED-TO-SATISFY PROVISION | COMPLIES | DOES NOT COMPLY | NA or Informational | Compliance Required | COMMENTS |
|---|---|---|---|---|---|
| SECTION B: STRUCTURAL PROVISIONS | | | | | |
| B1.1<br>Resistance to actions<br>&<br>B1.2<br>Determination of individual loads | | | | X | The structural engineer is required to provide structural drawings/details and accompanying structural design certification to demonstrate that the building and its elements will withstand the combination of loads and other actions in accordance with the requirements of this clause.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification (and structural details)*** |
| B1.3 | | | X | | This clause has been deleted. |
| B1.4<br>Determination of structural resistance of materials and forms of construction | | | | X | The structural resistance of the materials and forms of construction must be certified by the structural engineer as having been designed to the relevant Australian Standards as listed under this clause.<br>All glazing assemblies must be designed to comply with the requirements of AS 1288-2006 and AS 2047-2014.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification (and structural details)*** |
| B1.5<br>Structural software | | | X | | Refer to the clause for information. |
| B1.6<br>Construction of buildings in flood hazard areas | | | | X | Consult with the local Council to determine whether the building is located in a flood hazard area prior to the issue of the design approval.<br>Where the building has been identified to be situated in a flood hazard area it must then comply with the ABCB Standard for Construction of Buildings in Flood Hazard Areas.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification (and structural details)*** |
| **SECTION C**<br>**FIRE RESISTANCE** | | | | | |
| **Part C1**<br>**Fire Resistance & Stability** | | | | | |
| C1.1<br>Type of construction | | | | X | Refer to Spec C1.1 and Attachment B for Schedule of FRLs for Type A Construction. These are to be certified by the architect and structural engineer as having been met, based on the proposed design. |



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| BCA DEEMED-TO-SATISFY PROVISION | COMPLIES | DOES NOT COMPLY | NA or Informational | Compliance Required | COMMENTS |
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| required<br>&<br>Specification C1.1<br>Fire-resisting construction | | | | | Please note that Specification C1.1 also requires design compliance with the following:<br>1. 2.4 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 be below that *required*.<br>2. 2.5 A balcony and any incorporated supporting part, which forms part of the building need not comply with table 3 if it does not form part of the only path of travel to a required exit from the building and in Type A it is situated not more than 2 storeys above the lowest storey providing direct egress to road or open space; and any supporting columns are of non-combustible construction.<br>3. 2.7 Fire isolated shafts are required to be enclosed at the top and bottom of the shaft with fire rated construction as per specification C1.1.<br>4. The walls to fire rated shafts must achieve the fire rating from both directions i.e. from inside and outside the shaft.<br>5. 3.5 Roof: The roof of the building does not need an FRL, provided the roof covering is non-combustible (as per the concession in Clause 3.5 of Specification C1.1 of the BCA) for a Class 2 building.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification or FRL's rationalised under a fire engineered solution at CC stage.*** |
| C1.2<br>Calculation of rise in storeys | | | X | | The building has been calculated to have a rise in storeys of 28 based on the roof (open space) likely having a roofed pergola and thus counted in the RIS. |
| C1.3<br>Buildings of multiple classifications | | | X | | The building is required to be of Type A Construction under this clause. |
| C1.4<br>Mixed types of construction | | | X | | The building is required to be of Type A Construction throughout. |
| C1.5<br>Two storey class 2, 3 or 9 buildings | | | X | | Not applicable as this building exceeds a RIS of 2. |
| C1.6<br>Class 4 parts of buildings | | | X | | There are no Class 4 parts proposed to this development. |
| C1.7<br>Open spectator stands and indoor sports stadiums | | | X | | There are no spectator stands or indoor sports stadiums proposed to this development. |



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| C1.8<br>Lightweight construction | | | | X | Where it is proposed to use *lightweight construction* (within the meaning of the BCA) this must comply with Specification C1.8 if it is used in a wall system—<br>(i) that is required to have an FRL; or<br>(ii) for a lift shaft, stair shaft or service shaft or an external wall bounding a public corridor including a non fire-isolated passageway or non fire-isolated ramp.<br>If lightweight construction is used for the fire-resisting covering of a steel column or the like, and if —<br>(i) the covering is not in continuous contact with the column, then the void must be filled solid, to a height of not less than 1.2 m above the floor to prevent indenting; and<br>(ii) the column is liable to be damaged from the movement of vehicles, materials or equipment, then the covering must be protected by steel or other suitable material.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| C1.9<br>Non-combustible building elements | | | | x | (a) In a building *required* to be of Type A construction, 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 in—<br>(i) a building *required* to be of Type A construction; and<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 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) 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 exceed2mm; and<br>(C) the *Spread-of-Flame Index* and the *Smoke-Developed Index* of the bonded laminated material as a whole do not exceed 0 and 3 respectively. |



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| | | | | | **Compliance Issue:**<br><br>*Proposed cladding system must be demonstrated to be non-combustible and achieve minimum FRL's required under Specification C1.1 where applicable.*<br><br>*All components of the external and internal walls including sarking and insulation must be non - combustible as determined by AS 1530.1 or current CodeMark certification.*<br><br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| C1.10<br><br>Fire hazard properties | | | | X | The fire hazard properties of the following linings, materials and assemblies must comply with Specification C1.10 by way of test reports / certificates provided from a *registered testing authority* (within the meaning of the BCA):<br><br>(i) Floor linings and floor coverings.<br><br>(ii) Wall linings and ceiling linings.<br><br>(iii) Air-handling ductwork.<br><br>(iv) Lift cars.<br><br>(v) sarking-type materials<br><br>(vi) Attachments to floors, ceilings, internal walls and the internal linings of external walls.<br><br>(vii) Other materials including insulation materials other than sarking-type materials.<br><br>Except that:<br><br>1. Paint or fire-retardant coatings must not be used to achieve compliance with the required fire hazard properties; and<br><br>2. The requirements of this clause are exempted to the martials and assemblies listed under C1.10(c)(i) to (xiv)<br><br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| C1.11<br><br>Performance of External Walls in Fire | | | X | | Not applicable |
| C1.12<br><br>Non-combustible materials | | | X | | The following materials, though combustible or containing combustible fibres, may be used wherever a non-combustible material is required within the BCA:<br><br>(a) Plasterboard.<br><br>(b) Perforated gypsum lath with a normal paper finish.<br><br>(c) Fibrous-plaster sheet.<br><br>(d) Fibre-reinforced cement sheeting.<br><br>(e) Pre-finished metal sheeting having a combustible surface finish not |



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| | | | | | exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0.<br>(f) Bonded laminated materials where—<br>(i) each laminate is non-combustible; and<br>(ii) each adhesive layer does not exceed 1 mm in thickness; and<br>(iii) the total thickness of the adhesive layers does not exceed 2 mm; and<br>(iv) the Spread-of-Flame Index and the Smoke-Developed Index of the laminated material as a whole does not exceed 0 and 3 respectively. |
| C1.14<br>Ancillary elements | | | | X | 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>(a) An ancillary element that is non-combustible.<br>(b) A gutter, downpipe or other plumbing fixture or fitting.<br>(c) A flashing.<br>(d) A grate or grill not more than 2m² in an area associated with a building service.<br>(e) An electrical switch, socket outlet, cover plate or the like.<br>(f) A light fitting.<br>(g) A *required* sign.<br>(h) A sign other than one provided under (a) or (g) that –<br>(1) Achieves a group number 1 or 2; and<br>(2) Does not extend beyond one storey; and<br>(3) Does not extend beyond one fire compartment; and<br>(4) Is separated vertically from other signs permitted under (h) by at least 2 storeys.<br>(i) An awning, sunshade, canopy , blind or shading hood other than one provided under (a) that –<br>(1) Meets the requirements of Table 4 of Specification C1.10 as an internal element;and<br>(2) Serves a storey -<br>(A) At ground level; or<br>(B) Immediately above a storey at ground level ; and<br>(3) Does not serve an exit, where it would render the exit unuseable in a fire.<br>(j) A part of a security, intercom or announcement system.<br>(k) Wiring.<br>(l) A paint, lacquer or similar finish,<br>(m) A gasket, caulking, sealant or adhesive directly associated with (a) to (k).<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| **Part C2**<br>**Compartmentation & Separation** | | | | | |



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| C2.1<br>Application of part | | | X | | The requirements of C2.2 do not apply to the carpark as it will have a sprinkler system complying with Specification E1.5. |
| C2.2<br>General floor area & volume limitations | X | | | | There are no fire compartments exceeding the floor area and volume limitations of Table C2.2. |
| C2.3<br>Large isolated buildings | | | X | | The building has not been considered a large isolated building. |
| C2.4<br>Requirements for open spaces and vehicular access | | | X | | The building has not been considered a large isolated building. |
| C2.5<br>Class 9a & 9c Buildings | | | X | | There is no class 9a or 9c proposed to this development. |
| C2.6<br>Vertical Separation of openings in external walls | | | X | | The building is to be sprinkler protected throughout as per clause E1.5 therefore spandrels need not be provided. |
| C2.7<br>Separation by fire walls | | | | X | Any fire walls constructed must comply as follows:<br>• The fire wall has the relevant FRL prescribed by Specification C1.1 for each of the adjoining parts, and if these are different, the greater FRL; and<br>• Any openings in the fire wall must not reduce the FRL required by SpecificationC1.1 for the fire wall, except where permitted by the Deemed-to-Satisfy Provisions of Part C3; and<br>• Building elements, other than roof battens with dimensions of 75 mm x 50 mm or less or sarking-type material, must not pass through or cross the fire wall unless the required fire resisting performance of the fire wall is maintained.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| C2.8<br>Separation of classifications | | | | X | This building will contain different classifications located alongside each other in the same storey on the following levels:<br>- **Basement 1** - Between Class 7a (carpark) and Class 5 (offices) and |



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| in the same storey | | | | | between class 7b (storage rooms).<br>- **Ground** – The ground level contains a significant amount of differing classes all attracting various FRL requirements with the 7b storage areas being the most onerous (240/240/240 FRL). It is recommended that the FRL's of the floor be rationalized to FRL 120/120/120 under a performance solution developed by a fire engineer addressing relevant Performance Requirements of the BCA<br>- **Lvl 1** – Between Class 7a (carpark) and Class 9b (meeting rooms)<br>- **Lvl 2** - Between Class 7a (carpark) and Class 5 (commercial offices)<br>- **Lvl 3** – N/A<br>- **Lvl 4** – N/A<br>- **Lvl 5** – Class 9b (gym and changerooms) and Class 2/3 (residential). Between 7b (linen and residential stores rooms) and Class 2/3 (residential).<br>- **Lvl 6** –Between 7b (linen and residential stores rooms) and Class 2/3 (residential).<br>- **Lvl 7-** Between 7b (linen and residential stores rooms) and Class 2/3 (residential).<br>- **Lvl 8** - Between Class 7b (h/w, pool plant and linen room) and Class 2/3 (residential)<br>- **Lvl 9** - N/A (whole floor considered 9b)<br>- **Lvl 10** – N/A (whole floor considered class 2/3)<br>- **Lvl 11-34** - N/A (whole floor considered class 2/3)<br>- **Lvl 35** – Between class 6 restaurant and Class 7b hyd/mech rooms (further detail reqd on these rooms to confirm).<br>Therefore, the above levels must comply with one of the following DTS options:<br>• each building element in that storey must have the higher FRL prescribed in Specification C1.1 for that element for the classifications concerned (i.e. up to FRL 240/240/240); or<br>• the different classifications must be fire wall separated.<br>***Alternatively it is recommended the FRLs required for the Class 6 & 7b parts (most onerous) be rationalised to FRL 120/120/120 under a performance solution developed by a fire engineer addressing relevant Performance Requirements of the BCA.*** |
| C2.9<br>Separation of Classifications in different stories | | | | X | Fire separation is required between parts of a building which are of different occupancy classification, when situated one above the other.<br>The level of fire protection required to the storey above is determined by BCA Table 3 of Specification C1.1 corresponding with the building classification of the lower storey. An excerpt from Table 3 has been produced below:<br><br>**BCA Class** \| **FRL** ***(Table 3 of Spec C1.1)***<br>Class 2/3 \| 90/90/90 |



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| | | | | | <table><tr><td>Class 5, 7a & 9b</td><td>120/120/120</td></tr><tr><td>Class 6</td><td>180/180/180</td></tr><tr><td>Class 7b</td><td>240/240/240</td></tr></table><br>***Alternatively, it is recommended the FRLs required for the Class 6 & 7b parts (most onerous) be rationalised to FRL 120/120/120 under a performance solution developed by a fire engineer addressing relevant Performance Requirements of the BCA.*** |
| C2.10<br>Separation of lifts shafts | | | | X | All lifts must be fire separated from the remainder of the building by enclosure in a fire rated shaft which achieves an FRL of not less than that prescribed under Table 3 of Specification C1.1 for the building classification in which the lift shaft passes through.<br>The emergency lifts must be contained within a fire-resisting shaft having an FRL of not less than 120/120/120.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| C2.11<br>Stairways and lifts in one shaft | X | | | | There are no stairways located in the same shaft as a lift. |
| C2.12<br>Separation of Equipment | | | | X | The following equipment must be fire separated from the remaining parts of the building via construction achieving an FRL of not less than 120/120/120 and any access doorway must be fitted with a self-closing fire door having an FRL of not less than -/120/30:<br>• Lift motors and lift control panels (except that when separating a lift shaft from a lift motor room, an FRL of not less than 120/-/- is required);<br>• Emergency generators used to sustain emergency equipment operating in the emergency mode;<br>• Central smoke control plant;<br>• Boilers;<br>• a battery or batteries installed in the building that have a voltage exceeding 24 volts and a capacity exceeding 10 ampere hours;<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification.*** |
| C2.13<br>Electrical supply system | | | | X | The electricity substation located within the building must –<br>(i) be separated from any other part of the building by construction having an FRL of not less than 120/120/120; and<br>(ii) have the doorway in that construction protected with a self-closing fire door having an FRL of not less than –/120/30.<br>The main switchboard located within the building must – |



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| | | | | | (i) be separated from any other part of the building by construction having an FRL of not less than 120/120/120; and<br><br>(ii) have any doorway in that construction protected with a self-closing fire door having an FRL of not less than –/120/30.<br><br>Electrical conductors located within the building which supply –<br><br>(i) a substation located within the building which supplies a main switchboard covered above; or<br>(ii) a main switchboard covered above, must—<br>(iii) have a classification in accordance with AS/NZS 3013-2005 of not less than—<br><br>(A) if located in a position that could be subject to damage by motor vehicles — WS53W; or<br><br>(B) otherwise — WS52W; or<br><br>(iv) be enclosed or otherwise protected by construction having an FRL of not less than 120/120/120<br><br>All switchboards in the electrical installation, which sustain the electricity supply to the emergency equipment, must be constructed so that emergency equipment switchgear is separated from non-emergency equipment switchgear by metal partitions designed to minimise the spread of a fault from the non-emergency equipment switchgear.<br><br>Emergency equipment includes but it is not limited to –<br><br>(i) Fire hydrant booster pumps<br>(ii) Pumps for automatic sprinkler systems, water spray, chemical fluid suppression systems or the like.<br>(iii) Pumps for fire hose reels where such pumps and fire hose reels form the sole means of fire protection in the building.<br>(iv) Air handling systems designed to exhaust and control the spread of fire and smoke.<br>(v) Emergency lifts.<br>(vi) Control and indicating equipment.<br>(vii) Sound systems and intercom systems for emergency purposes.<br><br>**Compliance Issue(s):**<br><br>*The electrical sub-station, MSB/COMM room, Fire Pump Room and Sprinkler Pump Room must achieve an FRL 120/120/120 and any be separated from any other part of the building by construction having an FRL of not less than 120/120/120; and have any doorway in that construction protected with a self-closing fire door having an FRL of not less than –/120/30.*<br><br>***Plans to be updated to demonstrate FRL's and BCA DTS compliance CC stage.*** |
| C2.14<br>Public | | X | | | In the Class 2/3 building parts, the public corridors, if more than 40 m in length, must be divided at intervals of not more than 40 m with smoke-proof |



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| corridors in Class 2 Buildings | | | | | walls complying with Clause 2 of Specification C2.5.<br>**Compliance Issue(s):**<br>*The public corridors throughout serving the upper tower levels 10-31, class 2/3 portions, are currently non-compliant throughout the building being greater than 40m (measures 43m) and require smoke proof walls/doors.*<br>*The public corridors serving the levels 5 to 8 are non-compliant in that the circular corridors are over 40m and require smoke proof walls/doors.*<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification.*** |
| **Part C3**<br>**Protection of Openings** | | | | | |
| C3.2<br>Protection of openings in external walls | | | | X | Openings in an external wall that is required to have an FRL must be protected in accordance with C3.4:<br>• if the distance between the opening and the fire-source feature is less than 3 m from a side or rear boundary; or<br>• less than 6 m from the far boundary of a road, river, lake or the like adjoining the allotment, 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>if required to be protected under (a), not occupy more than 1/3 of the area of the external wall of the storey in which it is located.<br>**Potential Compliance Issue(s):**<br>*All openings within the western elevation where within 3m of the boundary are to be protected in accordance with this Clause.*<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification.*** |
| C3.3<br>Separation of external walls and associated openings in different fire compartments | X | | | | There are no associated openings in a different fire compartments within the building. |
| C3.4<br>Acceptable Methods of Protection | | | | X | Any protection required by C3.2 must accord with the following:<br>Doorways:<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>Windows:<br>(i) Internal or external wall-wetting sprinklers as appropriate used with |



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| | | | | | 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>Other openings:<br>(i) Excluding voids – internal or external wall-wetting sprinklers; or<br>(ii) Construction having an FRL not less than –/60/–<br>Fire doors, fire windows and fire shutters must comply with BCA Specification C3.4.<br>***Any openings identified in C3.2 must comply with the above unless fire engineered solution developed by fire engineer.*** |
| C3.5<br>Doorways in Fire Walls | | | | X | Any doorways in firewalls (i.e. service rooms) are required to have an integrity rating equivalent to the firewall in which they are located in and a minimum of 30 minutes for insulation e.g. a four hour fire wall would require a -/240/30 fire door or automatic closing shutter.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| C3.6<br>Sliding Fire Doors | | | X | | Not applicable. |
| C3.7<br>Protection of Doorways in horizontal exits | | | X | | Not applicable. |
| C3.8<br>Openings in fire isolated exits | | | | X | Doors to fire stairs must be self or auto closing -/60/30 fire doors.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| C3.9<br>Service Penetrations in fire-isolated exits | | | | X | The fire isolated exits are not to be penetrated by any services **other** than water supply pipes for fire services OR 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 (it is noted that re-entry from fire-isolated exits will not be required); or<br>• the monitoring of hydrant or sprinkler isolating valves<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| C3.10<br>Openings in | | | | X | • Lifts 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 |



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| Fire isolated lift shafts | | | | | discharging or receiving, passengers, goods or vehicles.<br>• Lift indicator panels must also be fire rated in accordance with this clause.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| C3.11<br>Bounding Construction | | | | x | The doorways between the class 2 and 3 sole occupancy units and the public lobbies and any common rooms and the public lobbies (class 2/3 parts) must be protected by self–closing -/60/30 fire doors.<br>In a Class 2/3 building where a path of travel to an exit does not provide a person seeking egress with a choice of travel in different directions to alternative exits and is along an open balcony, landing or the like and passes an external wall of –<br>(i) Another sole occupancy unit; or<br>(ii) A room not within a sole occupancy unit.<br>Then the external wall must –<br>(iii) Be constructed of concrete or masonry, or be lined internally with a fire protective covering; and<br>(iv) Have any windows or other openings –<br>(A) Protected internally in accordance with C3.4; or<br>(B) Located at least 1.5m above the floor of the balcony, landing or the like.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| C3.12<br>Openings in floors and ceilings for services | | | | X | Where services pass through a floor which is required to achieve a FRL or a ceiling required to have a RISF, the service must be enclosed within a fire resisting shaft or fire protected in accordance with Clause C3.15.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| C3.13<br>Openings in shafts | | | | X | In a building of Type A construction, an opening in a wall providing access to a ventilating, pipe, garbage or other service shaft must be protected by—<br>• if it is in a sanitary compartment — a door or panel which, together with its frame, is noncombustible or has an FRL of not less than –/30/30; or<br>• a self-closing –/60/30 fire door or hopper; or<br>• an access panel having an FRL of not less than –/60/30; or<br>• if the shaft is a garbage shaft — a door or hopper of non-combustible construction.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| C3.14 | | | X | | This clause has been deleted. |
| C3.15 | | | | X | Where services are required to pass through an element which is required to achieve an FRL (other than an external wall or roof), the service must be fire |



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| BCA DEEMED-TO-SATISFY PROVISION | COMPLIES | DOES NOT COMPLY | NA or Informational | Compliance Required | COMMENTS |
|---|---|---|---|---|---|
| Opening for service Installations | | | | | protected in accordance with:<br>• Tested system; or<br>• In the case of ventilating or air-conditioning ducts or equipment, the installation is in accordance with AS 1668.1-1998; or<br>• Specification C3.15.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| C3.16<br>Construction Joints | | | | X | 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 1530.4-2005 to achieve the required FRL.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| C3.17<br>Columns protected in lightweight construction to achieve an FRL | | | | X | Any column proposed to be protected by lightweight construction to achieve an FRL which passes through a building element that is required to have an FRL or a resistance to the incipient spread of fire, must be installed using a method and materials identical with a prototype assembly of the construction which has achieved the required FRL or resistance to the incipient spread of fire.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| **SECTION D**<br>**ACCESS & EGRESS** | | | | | |
| **Part D1**<br>**Provision for Escape** | | | | | |
| D1.1<br>Application of Part | | | X | | The Deemed-to-Satisfy Provisions of this Part do not apply to the internal parts of the class 2 or 3 sole-occupancy units. |
| D1.2<br>Number of Exits required | | | | X | *DTS Compliance appears achieved based on current design* |
| D1.3<br>When Fire Isolated exits are required | X | | | | The stairs serving as required exits are all indicated as being fire-isolated. |
| D1.4<br>Exit Travel Distances | | X | | | **Compliance issue(s):**<br>***Level 32-34***<br>The travel distance to an exit or point of choice exceeds 6m (12m worst case – end units) |



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|---|---|---|---|---|---|
| | | | | | ***Level 15, 20, 25, and 30***<br>The travel distance to an exit or point of choice exceeds 6m (13m worst case – end units)<br>***Level 11-14, 16-19, 21-24, 26-29, and 31***<br>The travel distance to an exit or point of choice exceeds 6m (12m worst case – end units)<br>***Level 10***<br>The travel distance to an exit or point of choice exceeds 6m (12m worst case – end units)<br>***Level 9***<br>The travel distance to an exit or point of choice exceeds 20m (22m worst case – northern and southern rooms)<br>***Level 5 to 8***<br>Appears compliant<br>***Level 4***<br>*Appears compliant.*<br>**Lvl 3**<br>*Appears compliant.*<br>**Lvl 2**<br>*Appears compliant.*<br>**Level 1**<br>*Appears compliant.*<br>**Grd Lvl**<br>*All areas are to be provided with 2 exits from the rooms to comply. DTS compliance readily achievable assuming sliding doors comply with D2.19 regarding operation of doors.*<br>***Basement Level 1***<br>*Appears compliant.*<br>***Basement Level 2***<br>*Appears compliant.*<br>***Basement Level 3***<br>*Appears compliant.*<br>***Basement Level 4***<br>*Appears compliant*<br>***Plans to be updated to demonstrate BCA DTS compliance or fire engineered Performance Solution developed supporting current exit design.*** |
| D1.5<br>Distance Between Alternative | | X | | | Exits that are required as alternative means of egress must be—<br>(a) distributed as uniformly as practicable within or around the storey served and in positions where unobstructed access to at least 2 exits is readily |



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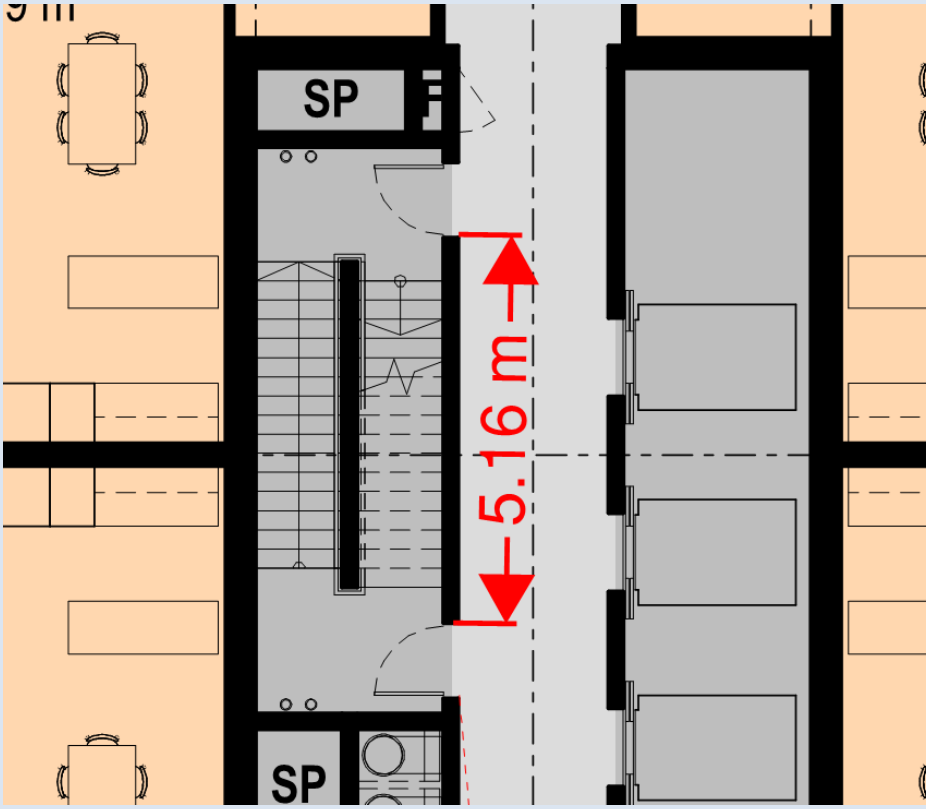
|---|---|---|---|---|---|
| Exits | | | | | available from all points on the floor including lift lobby areas; and<br>(b) not less than 9 m apart; and<br>(c) not more than—<br>(i) in a Class 2 building — 45 m apart; or<br>(ii) in all other cases — 60 m apart; and<br>(d) located so that alternative paths of travel do not converge such that they become less than 6 m apart.<br>**Compliance issue(s):**<br>*The exits on levels 5-35 are located less than 9m apart (measures 5.2m typical)*<br>  <br>*Further, the stairs are to be within separate shafts in a scissor stair arrangement as below (note: each/both shafts are to be provided with stair pressurization as required later in report):* |



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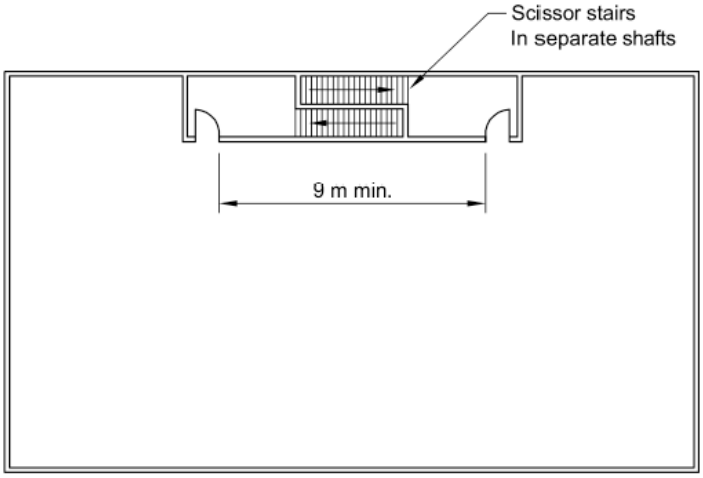
|---|---|---|---|---|---|
| | | | | |  <br>(b) Minimum separation<br>***Plans to be updated to demonstrate BCA DTS compliance or fire engineered Performance Solution developed supporting current exit design.*** |
| D1.6<br>Dimensions of Exits and paths of Travel to Exits | | | | x | In a required exit or path of travel to an exit —<br>the unobstructed height throughout must be not less than 2 m, except the unobstructed height of any doorway may be reduced to not less than 1980 mm; and<br>• the unobstructed width of each exit or path of travel to an exit, except for doorways, must be not less than 1m<br>• if the storey accommodates more than 100 persons but not more than 200 persons, the aggregate unobstructed width, except for doorways, must be not less than 1 m plus 250 mm for each 25 persons (or part) in excess of 100; or<br>• if the storey accommodates more than 200 persons, the aggregate unobstructed width, except for doorways, must be increased to 2 m plus 500 mm for every 60 persons (or part) in excess of 200 persons if egress involves a change in floor level by a stairway or ramp with a gradient steeper than 1 in 12; or in any other case, 2 m plus 500 mm for every 75 persons (or part) in excess of 200; and<br>• the unobstructed width of a doorway must be not less than the unobstructed width of each exit provided to comply with the above, minus 250 mm.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| D1.7<br>Travel via Fire Isolated Stairs | | | | X | • D1.7(a) A doorway from a room must not open directly into a stairway, passageway or ramp 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>(iii) 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 |



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|---|---|---|---|---|---|
| | | | | | 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) (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>• D1.7 (d) If more than 2 access doorways, not from a sanitary compartment or the like, open to a required fire-isolated exit in the same storey—<br>(i) a smoke lobby in accordance with D2.6 must be provided; or<br>(ii) the exit must be pressurised in accordance with AS/NZS 1668.1.<br>• D1.7(e) A doorway from a room must not open directly into a stairway, passageway or ramp 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>(iii) a sanitary compartment, airlock or the like.<br>***DTS compliance appears achieved*** |
| D1.8<br>External Stairways or ramps in lieu of Fire Isolated Stairs | | | X | | Not applicable |
| D1.9<br>Travel by | | | X | | Not applicable as all required stairways are detailed to be fire isolated. |



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| non-fire-isolated stairs | | | | | |
| D1.10<br>Discharge from Exits | | | | x | a) An exit must not be blocked at the point of discharge and where necessary, suitable barriers must be provided to prevent vehicles from blocking the exit, or access to it.<br>(b) If a required exit leads to an open space, the path of travel to the road must have an unobstructed width throughout of not less than—<br>(i) the minimum width of the required exit;<br>(ii) or 1 m,<br>whichever is the greater.<br>(c) If an exit discharges to open space that is at a different level than the public road to which it is connected, the path of travel to the road must be by—<br>(i) a ramp or other incline having a gradient not steeper than 1:8 at any part, or not steeper than 1:14 if required by the Deemed-to-Satisfy Provisions of Part D3; or<br>(ii) a stairway complying with the Deemed-to-Satisfy Provisions of the BCA.<br>(d) The discharge point of alternative exits must be located as far apart as practical.<br>An exit must not be blocked at the point of discharge and where necessary, suitable barriers must be provided to prevent vehicles from blocking the exit, or access to it.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| D1.11<br>Horizontal Exits | | | X | | Not applicable as there are no horizontal exits relied upon in this development. |
| D1.12<br>Non-required stairways, ramps or escalators | | | | x | Spiral stairway on the ground/1st level considered to be a non-required non-fire isolated stairway. See D2.13 for requirements of construction for the stairway. |
| D1.13<br>Number of Persons Accommodated<br>Note NSW Table D1.13 Area per person according to use | | | X | | The number of persons accommodated in a storey, room or mezzanine must be determined with consideration to the purpose for which it is used and the layout of the floor area by—<br>(a) calculating the sum of the numbers obtained by dividing the floor area of each part of the storey by the number of square metres per person listed in Table D1.13 according to the use of that part, excluding spaces set aside for—<br>(i) lifts, stairways, ramps and escalators, corridors, hallways, lobbies and the like; and<br>(ii) service ducts and the like, sanitary compartments or other ancillary uses; or |



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| | | | | | (iii) reference to the seating capacity in an assembly building or room; or<br>b) any other suitable means of assessing its capacity.<br>*The following preliminary population calculations are provided based on floor area and use per Table D1.13 –*<br>• *Lvl 1 meeting rooms – 29 persons*<br>• *Lvl 2 commercial – 74 persons*<br>• *Lvl 3 commercial – 74 persons*<br>• *Lvl 4 commercial – 203 persons*<br>• *Lvl 5 gym – 36 persons*<br>• *Lvl 9 Dining 112 persons, pool/gym/amenity areas/media – 325 persons*<br>• *Lvl 35 dining/kitchen - 250 persons, and bar – 69 persons*<br>***It is noted the above figures are estimates only and will likely change once the exact nature of each tenancy is known at fit-out stage.*** |
| D1.14<br>Measurement of Distances | | | X | | The nearest part of an exit means in the case of—<br>(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<br>Method of Measurement | | | X | | Informational clause only |
| D1.16<br>Plant Rooms and lift Motor Rooms: Concession | | | X | | a) A ladder may be used in lieu of a stairway to provide egress from—<br>(i) a plant room with a floor area of not more than 100 $m^2$; or<br>(ii) all but one point of egress from a plant room, a lift machine room or a Class 8 electricity network substation with a floor area of not more than 200 m2.<br>(b) A ladder permitted under (a)—<br>(i) may form part of an exit provided that in the case of a fire-isolated stairway it is contained within the shaft; or<br>(ii) may discharge within a storey in which case it must be considered as forming part of the path of travel; and<br>(iii) for a plant room or a Class 8 electricity network substation, must comply with AS 1657; and<br>(iv) for a lift machine room, where access is provided from within a machine room to a secondary floor, a fixed rung type ladder complying with AS 1657 may be used, provided that—<br>(A) the height between the floors is not more than 2800 mm; and |



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| | | | | | (B) the ladder is inclined at an angle to the horizontal not less than 65 degrees nor more than 75 degrees; and<br>(C) the distance between the front face of the ladder and any adjacent obstruction is not less than—<br>(aa) 960 mm, where the ladder is inclined 65 degrees to the horizontal; or<br>(bb) 760 mm, where the ladder is inclined 75 degrees to the horizontal; or<br>(cc) a distance that is determined by interpolating the values in (aa) and (bb), where the ladder is inclined at any angle between 65 degrees and 75 degrees to the horizontal; and<br>(D) a clear space not less than 600 mm exists between the foot of the ladder and any equipment.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| D1.17<br>Access to lift pits | | | X | | The lift pit depths shall be detailed on the plans to enable assessment.<br>Where more than 3m in depth the following applies—<br>(a) where the pit depth is not more than 3 m, be through the lowest landing doors; or<br>(b) where the pit depth is more than 3 m, be provided through an access doorway complying with the following:<br>(i) In lieu of D1.6, the doorway must be level with the pit floor and not be less than 600 mm wide by 1980 mm high clear opening, which may be reduced to 1500 mm where it is necessary to comply with (ii).<br>(ii) No part of the lift car or platform must encroach on the pit doorway entrance when the car is on a fully compressed buffer.<br>(iii) Access to the doorway must be by a stairway complying with AS 1657.<br>(iv) In lieu of D2.21, doors fitted to the doorway must be—<br>(A) of the horizontal sliding or outwards opening hinged type; and<br>(B) self-closing and self-locking from the outside; and<br>(C) marked on the landing side with the letters not less than 35 mm high:<br>**“DANGER LIFTWELL − ENTRY OF UNAUTHORIZED PERSONS PROHIBITED − KEEP CLEAR AT ALL TIMES”**<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification (and structural details)*** |
| **Part D2**<br>**Construction of Exits** | | | | | |



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|---|---|---|---|---|---|
| D2.1<br>Application of Part<br>Note NSW D2.1 | | | X | | The following concessions apply:<br>• Except for D2.13, D2.14(a), D2.16, D2.17(d), D2.17(e) and D2.18, the Deemed-to-Satisfy Provisions of this Part do not apply to the internal parts of the class 2 sole-occupancy units.<br>• Except for D2.13, D2.14(a), D2.16, D2.17(d), D2.17(e) and D2.21, the Deemed-to-Satisfy Provisions of this Part do not apply to the internal parts of the class 3 sole-occupancy units. |
| D2.2<br>Fire-Isolated stairways and ramps | | | | X | 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.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification (and structural details)*** |
| D2.3<br>Non-fire Isolated stairways and ramps | | | X | | Not applicable to current design however if incorporated must comply with the following –<br>Non-fire isolated stairways 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". |
| D2.4<br>Separation of Rising and Descending Stairs | | | | X | A stairway serving as an exit that is required to be fire-isolated —<br>(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>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification (and structural details)*** |
| D2.5<br>Open Access ramps and | | | X | | Not applicable |



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|---|---|---|---|---|---|
| balconies | | | | | |
| D2.6<br>Smoke Lobbies | | | | X | Smoke lobbies have been provided throughout to overcome issues with doors opening directly onto FIS.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification (and structural details)*** |
| D2.7<br>Installations in Exits and Paths of Travel | | | | X | In this building –<br>• Access to service shafts and services other than to fire-fighting or detection equipment as permitted in the Deemed-to-Satisfy Provisions of Section E, must not be provided from a fire-isolated stairway.<br>• Gas or other fuel services must not be installed in a required exit<br>• Services or equipment comprising of electricity meters, distribution boards, telecommunications distribution boards or equipment, electrical motors or other motors located within the path of travel to an exit must be enclosed with non-combustible construction or a fire protective covering with doorways suitably sealed against smoke spread from the enclosure.<br>• Electrical wiring may be installed in a fire isolated exit, but only where associated with a lighting, detection, pressurisation, security, surveillance, intercommunication, or hydraulic fire services monitoring valves.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| D2.8<br>Enclosure of Space Under Stairs and ramps | | | X | | The space under any fire-isolated stairway must not be enclosed to form a cupboard or similar enclosed space.<br>Any space under a non-fire-isolated stair must be enclosed in 60-minute fire rated construction. |
| D2.9<br>Width of Stairs | | | X | | Not applicable |
| D2.10<br>Pedestrian Ramps | | | | X | All pedestrian ramps are to have a non-slip finish complying with AS 4586-2013 Slip resistance classification of new pedestrian surface materials.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| D2.11<br>Fire-Isolated Passageways | | | | X | The enclosing construction of a fire isolated passageways must have an FRL when tested for fire outside the passageway in another part of the building.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| D2.12<br>Roof as Open Space | | | | X | Portion of development on ground level between gridline 6 and the front boundary (over the basement) shall achieve a minimum of 120/120/120 FRL: |



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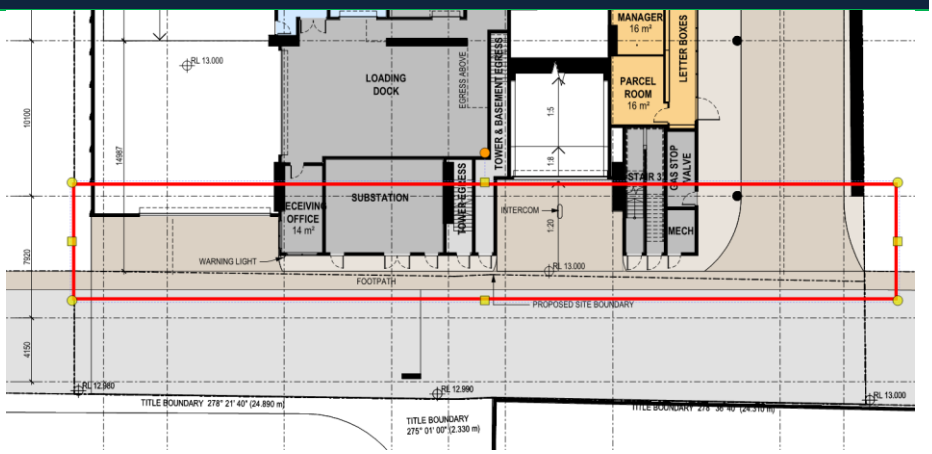
| | | | | |  <br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| D2.13<br>Goings & Risers | | | | X | The stairway treads and risers must comply in accordance with Table D2.13 -<br>• The goings would need to be between 250mm and 355mm; and<br>• the risers must be between 115mm high and 190mm high; and<br>• The stair going to riser ratio (2R + G) must be within the range of 700-550mm.<br>• The goings and risers must be constant as follows:<br>  • Adjacent risers, or between adjacent goings, is not greater than 5mm; and<br>  • The largest and smallest riser within a flight, or the largest and smallest going within a flight, does not exceed 10mm.<br>• Treads must have a surface 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.*<br>• BCA 2016 does not directly specify slip-resistance classification(s) for all *accessible paths of travel*; however, we highlight the need under AS 1428.1-2009 for all *accessible paths of travel* to have a slip-resistant surface. We recommend you should seek surface finish advice from an independent specialist slip safety consultant.<br>***Further details required on the spiral stairway is required to determine level of compliance. DTS compliance readily achievable.***<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| D2.14<br>Landings | | | | X | Landings must not be less than 750mm long and have 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.*<br>BCA 2016 does not directly specify slip-resistance classification(s) for all *accessible paths of travel*; however, we highlight the need under AS 1428.1-2009 for all *accessible paths of travel* to have a slip-resistant surface. We recommend you should seek surface finish advice from an independent |



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|---|---|---|---|---|---|
| | | | | | specialist slip safety consultant.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| D2.15<br>Thresholds | | | | X | 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 leaves unless the doorway is in a building required to be accessible by Part D3, and in which case the doorway opens to a road or open space and is provided with a threshold ramp or step ramp in accordance with AS 1428.1.<br>**Important note – The above also applies to residential plant rooms and fire stairs.**<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| D2.16<br>Barriers to prevent falls | | | | X | In this building –<br>• A continuous barrier must be provided to the fire stairs, balconies and roof (where public access is provided) if the trafficable surface is 1m or more above the surface beneath;<br>• A barrier provided to a stairway must have a minimum height of not less than 865mm;<br>• A barrier provided to the balconies, stair landings and roof must not be less than 1m high (note transition zone requirements between stair flight and landing);<br>***Note*** *– The above barrier heights are measured vertically from the surface beneath i.e. where the barrier sits above a balcony hob, the 1m vertical measurement would be taken from the level of the hob.*<br>• A barrier provided to a fire stair must not contain openings greater than 300mm or where rails are used, the maximum opening permissible is a 150mm between the nosing line of the stair treads and the rail and the opening thereafter between the rails must not be more than 460mm;<br>• A barrier provided to a balcony or roof must not contain any openings greater than 125mm;<br>• Where a fall of 4m or more occurs, barriers provided to the balconies or roof must not consist of any horizontal or near horizontal elements between 150-760mm above the surface beneath to facilitate climbing.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| D2.17<br>Handrails | | | | X | In this building –<br>• All fire stairs must be provided with a handrail to at least one side of the stair flight;<br>• Handrail must be fixed at a height of not less than 865mm when measured above the nosings of the stair treads, landing or the like;<br>• Handrails must be continuous between stair flight landings and have no obstruction on or above them that will tend to break a hand hold; and<br>• The handrails to the required exits must be designed and constructed to comply with Clause 12 of AS 1428.1-2009. |



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| | | | | | ***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification.*** |
| D2.18<br>Fixed Platforms, walkways and ladders | | | | X | Plant areas may be accessed via stairs and ladders compliant with AS 1657-2013.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification.*** |
| D2.19<br>Doorways & Doors | | | X | | Any proposed sliding exit doors must be openable manually under a force of not more than 110N and if the doors are power operated they must be capable of being opened automatically if there is a power failure to the door or on the activation of a fire or smoke alarm anywhere in the fire compartment served by the door. |
| D2.20<br>Swinging Doors | | | X | | Doors in a required exit or forming part of a required exit must swing in the direction of travel unless serving a building part with a floor area not more than 200m$^2$, it is the only required exit from the building part and it is fitted with a device for holding it in the open position.<br>A door in a required exit or forming part of a required exit must not encroach at any part of its swing by more than 500mm on the required width of a required stairway, ramp or passageway.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification.*** |
| D2.21<br>Operation of Latch | | | | X | 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 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 center grip section of the handle of not less than 35mm and not more than 45mm; or<br>C. a single hand pushing action on a single device which is located between 900mm and 1.2m from the door.<br>The above requirements do not apply to doors that serve only or is within a:<br>- Class 2 SOUs;<br>- A space which is otherwise inaccessible to persons at all times when the door is locked.<br>- Doors on auto unlock on activation of a fire alarm.<br>The stacker doors in the path of travel to an alternative the retail tenancies must have a latching mechanism complying with the requirements of the clause.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |



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| D2.22<br>Re-entry from Fire isolated exits | | | | X | Re-entry from the fire stairs must be provided as per the requirements of this clause as the building has an effective height of greater than 25m.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| D2.23<br>Signs on Doors | | | | X | Signs are to be installed on the doors into and out of the fire-isolated stair and smoke doors to alert persons that the operation of these doors is not to be impaired in accordance with the requirements of this clause.<br>In addition, signage in accordance with Clause 183 of the EP&A Reg (EPAR) 2000 is required to be installed in conspicuous locations adjacent to doorways providing access to fire-isolated exits. The installation requirements are stipulated under Clause 183 of the EPAR 2000.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| D2.24<br>Protection of openable windows | | | | X | **Class 2/3 (Bedrooms)**<br>A window opening in a bedroom of a class 2 and 3 SOUs must be provided with protection if:<br>• the level of the floor outside the window is below 2m or more; and<br>• the lowest level of the window opening is less than 1.7m above the inside floor level.<br>A window required to be protected must comply with any of the following methods:<br>1. The window is designed such that any opening does not allow a 125mm sphere to pass through (E.g. louvres); or<br>2. The window is fitted with a fixed or dynamic device that is capable of restricting the window opening so it does not allow a 125mm sphere to pass through and is difficult for a young child to operate. The restricting device must be capable of resisting a 250 N force when directed against the window such as a casement window or in attempting to push a sliding window open. An internal screen with similar parameters may be installed; or<br>3. The window is fitted with an internal or external screen that does not permit a 125 mm sphere to pass through and is capable of resisting an outward horizontal force of 250 N against the window restrained by a device or screen protecting the opening.<br>The device or screen protection referred above (Points 2 and 3) must also have a child resistant release mechanism if the screen or device is capable of being removed, unlocked or overridden.<br>**Class 2/3 (other than bedrooms) and in any other area**<br>Where the window is required to have a child release mechanism to be installed and where an openable window, in any location, is 4m or more above the external surface beneath, a barrier with a height not less than 865 mm above the floor would also be required. The barrier must not permit a 125mm sphere to pass through it and not have any horizontal or near horizontal elements between 150mm and 760mm above the floor that would facilitate climbing.<br>***Details demonstrating compliance with this clause must be provided*** |



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| | | | | | ***prior to the issue of the Construction Certificate.*** |
| SECTION E<br>SERVICES & EQUIPMENT | | | | | |
| Part E1<br>Fire Fighting Equipment | | | | | |
| E1.3<br>Fire Hydrants | | X | | | A hydrant system complying with AS 2419.1-2005 must be provided to serve the whole building.<br>All internal hydrant outlets must be located within the fire stairs and be located on the same RL as the storey which they serve.<br>As the building has an effective height over 25m onsite water storage and be connected to a ring main.<br>**Compliance issue(s):**<br>• **The hydrant booster (affixed to the building) shall be provided with a shield wall of construction achieving 90/90/90 FRL.**<br>• **Hydrant valves are not detailed within fire isolated stairs serving the building.**<br>***Plans to be provided for assessment of the fire hydrant system***<br>***Hydraulic engineer to provide design on hydrant system detailing compliant flow, pressure and coverage requirements applicable to the hydrant system.*** |
| E1.4<br>Fire Hose Reels | | x | | | A fire hose reel system complying with AS 2441-2005 must be provided to serve the whole building (except that the class 2 and 3 parts need not be served with a fire hose reel system and can be removed from plans).<br>All fire hose reels must be located not more than 4m from an exit.<br>Fire hose reels must not pass through a fire or smoke door unless permitted by clause E1.4(f).<br>**Compliance issue(s):**<br>• **Fire hose reel coverage is not detailed to the building for assessment.**<br>***Plans to be provided to satisfy BCA DTS requirements.***<br>***Hydraulic engineer to provide design on fire hose reel system detailing compliant location and coverage applicable to the abovementioned requirements.*** |
| E1.5<br>Sprinklers | | X | | | A sprinkler system complying with Specification E1.5 is required to be installed throughout the building as follows:<br>- The building must be served with a sprinkler system in accordance with the requirements of AS 2118.1-1999;<br>- Grade 1 water supply to be provided for the sprinkler systems;<br>- The sprinkler systems must be connected to activate the BOWS system as per clause 6 of Spec E2.2a.<br>***Hydraulic Services Design Certification must be incorporated into the construction certificate specification*** |



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| E1.6<br>Portable Fire Extinguishers | | | | X | Portable fire extinguishers must be provided in accordance with 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.<br>Portable fire extinguishers provided in the class 2 parts of the building must be:<br>• An ABE type fire extinguisher; and<br>• A minimum size of 2.5kg; and<br>• Distributed outside the SOU to serve only the storey at which they are located and so that travel distance from the entrance doorway of any SOU to the nearest PFE is not more than 10m.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| E1.8<br>Fire Control Centre | | | | X | A Fire Control Room (FCR) complying with Specification E1.8 must be provided as per Spec E1.8 as the building has an effective height of more than 50m. |
| E1.9<br>Fire Precautions during construction | | | | X | The builder to note:<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; and<br>• After the building has reach an effective height of 12m, the required fire hydrants and fire hose reels must be operational on all floor / roof covered storeys, except for the 2 uppermost storeys; and<br>• All required booster connections must be installed. |
| E1.10<br>Provision for Special Hazards | | | X | | Not applicable |
| Part E2<br>Smoke Hazard Management | | | | | |
| E2.2<br>General Requirements<br>(inclusive of Table E2.2a / Table E2.2b & NSW amendments) | | | | X | **<u>General smoke hazard management requirements</u>**<br>An air-handling system which does not form part of a smoke hazard management system in accordance with Table E2.2a or Table E2.2b 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 (such as lobby air supply) 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>(C) incorporate smoke dampers where the air-handling ducts penetrate any elements separating the fire compartments served; and<br>(D) be arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke |



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| | | | | | detectors complying with clause 4.10 of AS/NZS 1668.1; and for the purposes of this provision, each sole-occupancy unit in a Class 2 building is treated as a separate fire compartment.<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 systems provided for **zone smoke control / automatic air pressurization for fire-isolated exits.**<br><br>**Fire isolated exits**<br><br>All fire isolated stairway including basement must be provided with automatic stair pressurisation system as per AS 1668.1-2015. Note: both shafts in a scissor stair configuration are to be provided with stair pressurization.<br><br>**Class 7a (carpark)**<br><br>The Class 7a building parts must be provided with a mechanical ventilation system in accordance with AS 1668.2-2012 must comply with clause 5.5 of AS/NZS 1668.1-2015 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.<br><br>**Class 2/3 parts**<br><br>An **Automatic Smoke Detection and Alarm System** must be installed throughout the Class 2 parts of the building (sole-occupancy units, public corridors / lobbies, etc) complying with Clause 2 of Specification E2.2a.<br><br>Clause 2 of Specification E2.2a provides options for the installation of an automatic smoke detection and alarm system. The Class 2/3 parts must be provided with:<br><br>• a smoke detection system (and building occupant warning system) complying with Clause 4 of Specification E2.2a;<br>.<br><br>A smoke detection system (including a **Building Occupant Warning System**) would need to comply with AS 1670.1-2015. A building occupant warning system, complying with Clause 6 of Specification E2.2a is also required including throughout the car park area.<br><br>Detection must also be provided to other internal spaces located within the class 2/3 parts other than SOUs in accordance with AS 1670.1-2015 and must be connected to activate a BOWS in accordance with clause 6 of Spec E2.2a.<br><br>**System monitoring**<br><br>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 1670.3-2004.<br><br>**Zone Smoke Control**<br><br>Zone smoke control system in accordance with AS/NZS 1668.1-2015 will be required to the class 5, 9 and 6 parts.<br><br>**Automatic shutdown of air handling**<br><br>The class 9b parts must be provided with automatic shutdown of any air- |



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| | | | | | handling system (other than non-ducted individual room units with a capacity not more than 1000 l/s and miscellaneous exhaust air systems installed in accordance with Sections 5 and 11 of AS/NZS 1668.1-2015) which does not form part of the smoke hazard management system, on the activation of–<br>(iii) smoke detectors installed complying with Clause 5 of Specification E2.2a; and<br>(iv) any other installed fire detection and alarm system, including a sprinkler system complying with Specification E1.5.<br>***Plans to be updated to demonstrate BCA DTS compliance. Alternatively, it is recommended a fire engineered Performance Solution developed supporting the omission of zone smoke control.***<br>***Note - FRNSW approval must be obtained as the building exceeds 2000sqm.***<br>***Appropriate Design Certification must be incorporated into the construction certificate specification*** |
| E2.3<br>Provision for Special Hazards | | | X | | Informational clause. |
| Part E3<br>Lift Installations | | | | | |
| E3.1<br>Lift installations | | | | X | An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with Specification E3.1<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| E3.2<br>Stretcher Facility in Lifts | | | | X | Each emergency lift must have the internal lift car dimensions capable of accommodating a raised stretcher facility which is not less than 600mm wide x 2000mm long x 1400mm high above floor level.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| E3.3<br>Warning Against the use of lifts in Fire | | | | X | 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.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| E3.4<br>Emergency Lifts | | | | X | • A minimum of 2 emergency lifts are required to serve each storey that is served by two or more passenger lifts i.e. ground to level 30. Where the passenger lifts are located in different shafts, then at least one emergency lift is to be provided in each shaft.<br>• Every other level served by one passenger only; the same lift must also be an emergency lift.<br>• Emergency lifts to be contained within a fire resisting shaft as per C2.10.<br>• The emergency lifts must have a rating of at least: |



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| | | | | | - 600 kg if not provided with a stretcher facility; or<br>- 900kg if provided with stretcher facility.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| E3.5<br>Landings | | | | X | Access and egress to and from lift-well landings must comply with the Deemed-to-Satisfy Provisions of Section D.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| E3.7<br>Fire Service Controls | | | | X | The lifts in this building must be provided with a:<br>• fire service recall control switch complying with E3.9 (for a group of lifts or a single lift not in a group that serves the storey); and<br>• lift car fire drive control switch complying with E3.10 for every lift.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| E3.8<br>Aged Care Buildings | | | X | | Not applicable. |
| E3.9<br>Fire service recall operation switch | | | | X | The lifts in this building must be provided with fire service recall control switch relevant to the requirements of this clause.<br>Lift contractor to document this requirement into the CC design.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| E3.10<br>Lift car fire service drive control switch | | | | X | The lifts in this building must be provided with a fire service drive control switch as per the requirements of this clause.<br>Lift contractor to document this requirement into the CC design.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| Part E4<br>Emergency Lighting, Exit Signs and Warning Systems | | | | | |
| E4.2<br>Emergency Lighting Requirements | | | | X | Emergency lighting must be provided throughout relevant to the requirements of this clause.<br>***Electrical Design Certification must be incorporated into the construction certificate specification*** |
| E4.3<br>Measurement of Distance | | | X | | Noted. Informational clause only. |
| E4.4<br>Design and Operation of | | | X | | The emergency lighting system must comply with AS 2293.1-2005. |



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| Emergency Lighting | | | | | |
| E4.5<br>Exit Signs | | | | X | Exit signs must be provided throughout relevant to the requirements of this clause.<br>***Electrical Design Certification must be incorporated into the construction certificate specification and exit sign locations must be illustrated on the architectural floor plans*** |
| E4.6<br>Direction Signs<br>(inclusive of NSW E4.6) | | | | X | If an exit is not readily apparent to persons occupying or visiting the building, then directional exit signs must be installed in appropriate positions.<br>***Electrical Design Certification must be incorporated into the construction certificate specification and directional exit sign locations must be illustrated on the architectural floor plans*** |
| E4.7<br>Class 2 & 3 Buildings & Class 4 Parts: Exemption | | | X | | Exit doors in Class 2 parts need not comply with E4.5 provided every exit door is clearly and legibly labelled on the side remote from the exit with the word “EXIT” in capital letters 25mm high in a colour contrasting with that of the background or some other suitable method. |
| E4.8<br>Design & Operation of Exit Signs | | | | X | Exit signs must comply with:<br>• AS 2293.1-2005; or<br>• For a photoluminescent exit sign, Specification E4.8.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| E4.9<br>Sound System and Intercom System For Emergency Purposes | | | | X | A sound system and intercom system for emergency purposes (SSISEP) complying with AS 1670.4-2015 must be installed throughout the whole building.<br>***Electrical Design Certification must be incorporated into the construction certificate specification*** |
| SECTION F<br>HEALTH & AMENITY | | | | | |
| Part F1<br>Damp & Weatherproofing | | | | | |
| F1.1<br>Stormwater Drainage | | | | X | Stormwater drainage must comply with AS/NZS 3500.3-2015.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F1.4<br>External above ground membranes | | | | X | Any external above ground membranes must be waterproofed as per AS 4654 Parts 1 and 2-2012.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |



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| F1.5<br>Roof coverings | | | | X | Information clause relevant to the Australian Standards applicable to different types of roof coverings.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F1.6<br>Sarking | | | | X | Sarking-type materials used for weatherproofing must comply with AS/NZS 4200 Part 1 and 2-1994.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F1.7<br>Waterproofing of wet area | | | | X | Wet areas must be waterproofed in accordance with AS 3740-2010 and F1.7 of the BCA.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F1.9<br>Damp-proofing | | | | X | Where a damp-proof course is required, it must consist of a material that complies with AS/NZS 2904-1995; or impervious termite shields in accordance with AS 3660.1-2000<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F1.10<br>Damp-proofing of floors on the ground | | | | X | 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 vapour barrier in accordance with AS 2870-2011 (N/A to areas that do not require weatherproofing – refer specific clause exemptions).<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F1.11<br>Provision of Floor Wastes | | | | X | Bathrooms and laundries in the Class 2 must be provided with a floor waste, and the floor of such areas must be graded to such floor waste.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F1.12<br>Sub Floor Ventilation | | | X | | No sub floors indicated. |
| F1.13<br>Glazed Assemblies | | | X | | Refer to Part B1 |
| Part F2<br>Sanitary & Other Facilities | | | | | |
| F2.1<br>Facilities in residential buildings | X | | | x | **Further details needed on the internal layouts of each unit. Generally, the following is required within each *Class 2 SOUs*:**<br>**Facilities required** \| **Facilities provided** |



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| | | | | | <table><tr><td>Kitchen sink and facilities for the preparation and cooking of food</td><td></td></tr><tr><td>A bath or shower</td><td>-</td></tr><tr><td>A closet pan and washbasin</td><td>-</td></tr><tr><td>Clothes washing facilities, comprising at least one washtub and space for a washing machine</td><td>-</td></tr><tr><td>Clothes drying facilities comprising a clothes line or hoist with not less than 7.5m of line or a space for one heat-operated drying cabinet or appliance in the same room as the clothes washing facilities</td><td>N/A – Each SOU is assumed to have its own drying facility in the laundry.</td></tr></table> **Provide the following for the class 2 parts:** <table><tr><td>Cleaners toilet containing a closet pan and washbasin in a compartment or room at or near ground level and accessible to employees without entering an SOU.</td><td>A cleaner's toilet is indicated on ground lvl.</td></tr></table> ***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F2.2<br>Calculation of number of occupants and fixtures | | | X | | Noted. Informational clause only. |
| F2.3<br>Facilities for Class 3 to 9 Buildings | | | | X | Sanitary facilities must be provided for the staff of 5, 9 and, 6 building parts in accordance with Table F2.3.<br>Furthermore, sanitary facilities must be provided for the patrons of any proposed cafes / restaurant at fit out.<br>Employees and the public may share the same facilities in a Class 6 building provided the number of facilities provided is not less than the total number of |



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| | | | | | facilities required for employees plus those required for the public.<br>Adequate means of disposal of sanitary towels must be provided in sanitary facilities for use by females.<br>**Compliance Issue(s):**<br>**A detailed assessment is required to be carried out. In order to carry out the assessment we need the following information:**<br>- **Anticipated staff numbers of commercial, retail, gym and restaurant/bar parts.**<br>- **The proposed use of any not already noted retail tenancies as a café or restaurant will result in increased facility requirements.**<br>**Detailed plans showing the proposed location of the sanitary facilities serving the commercial, retail, gym and restaurant/bar parts shall be provided for assessment to determine compliance.** |
| F2.5<br>Construction of Sanitary Compartments | | | | X | Sanitary compartments must have:<br>• Doors and partitions that separate adjacent compartments; and<br>• the door to a fully enclosed sanitary compartment must open outwards, or slide, or be removable from outside of the compartment, unless there is a clear space of at least 1.2m between the closet pan within the compartment and the doorway.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F2.6<br>Interpretation: Urinals and washbasins | | | X | | Informational clause relevant to urinal and washbasin design. |
| F2.7<br>Microbial Control<br>Note NSW F2.7 (Clause Deleted) | | | X | | N/A Clause Deleted in NSW. |
| F2.8<br>Waste Management | | | X | | Not applicable |
| Part F3<br>Room Sizes | | | | | |
| F3.1<br>Height of Rooms and other spaces | | | | X | The ceiling height must be not less than—<br>**Class 2/3 —**<br>• a kitchen, laundry, or the like — 2.1 m;<br>• a corridor, passageway or the like — 2.1 m;<br>• a habitable room excluding a kitchen — 2.4 m; |



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| | | | | | **Class 5, 6 and 7 —**<br>• Generally (except carparking area – refer below) — 2.4 m;<br>• a corridor, passageway, or the like — 2.1 m; and<br>**Everywhere else**<br>• a bathroom, shower room, sanitary compartment, airlock, tea preparation room, pantry, store room, garage, car parking area, or the like — 2.1 m; and<br>• a commercial kitchen — 2.4 m; and<br>• 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.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| Part F4<br>Light & Ventilation | | | | | |
| F4.1<br>Provision of natural light | | | | X | Natural lighting must be provided to all *habitable rooms* in the class 2 as per Clause F4.2. |
| F4.2<br>Methods and extent of natural lighting | | | | X | Required natural lighting must be provided by—<br>(i) windows, excluding roof lights, that—<br>(A) have an aggregate light transmitting area measured exclusive of framing members, glazing bars or other obstructions of not less than 10% of the floor area of the room; and<br>(B) are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like; or<br>(ii) roof lights, that—<br>(A) have an aggregate light transmitting area measured exclusive of framing members, glazing bars or other obstructions of not less than 3% of the floor area of the room; and<br>(B) are open to the sky; or<br>(iii) a proportional combination of windows and roof lights required by (i) and (ii).<br>Except in a Class 2 or 9 building part<br>A required window that faces a boundary of an adjoining allotment or a wall of the same building or another building on the allotment must not be less than a horizontal distance from that boundary or wall that is the greater of—<br>• generally — 1 m; and<br>• 50% of the square root of the exterior height of the wall in which the window is located, measured in metres from its sill.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |



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| F4.3<br>Natural light borrowed from adjoining room | | | | X | Natural lighting to a room in a Class 2/3 SOU, may come through a glazed panel or opening from an adjoining room (including an enclosed verandah) if—<br>(i) both rooms are within the same sole-occupancy unit or the enclosed verandah is on common property; and<br>(ii) the glazed panels or openings have an aggregate light transmitting area of not less than 10% of the floor area of the room to which it provides light<br>(iii) the glazed panel or opening has an area of not less than 10% of the floor area of the room to which it provides light; and the adjoining room has—<br>(A) windows, excluding roof lights, that—<br>(aa) have an aggregate light transmitting area of not less than 10% of the combined floor areas of both rooms; and<br>(bb) are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like; or<br>(B) roof lights, that—<br>(aa) have an aggregate light transmitting area of not less than 3% of the combined floor areas of both rooms; and<br>(bb) are open to the sky; or<br>(C) a proportional combination of windows and roof lights required by (A) and (B).<br>The areas specified in (ii) and (iii) may be reduced as appropriate if direct natural light is provided from another source.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F4.4<br>Artificial lighting | | | | X | Artificial lighting must be provided to all areas required by this clause in accordance with AS 1680.0-2009.<br>***Electrical Design Certification must be incorporated into the construction certificate specification*** |
| F4.5<br>Ventilation of Rooms | | | | X | All rooms must be provided with the following –<br>(a) natural ventilation complying with Clause F4.6; or<br>(b) a mechanical ventilation or air-conditioning system complying with AS 1668.2-2012.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F4.6<br>Natural Ventilation | | | | X | 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—<br>(A) a suitably sized court, or space open to the sky; or<br>(B) an open verandah, carport, or the like; or |



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| | | | | | (C) an adjoining room in accordance with F4.7.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F4.7<br>Ventilation borrowed from adjoining room | | | | X | Natural ventilation to a room may come through a window, opening, ventilating door or other device from an adjoining room (including an enclosed verandah) if both rooms are within the same sole-occupancy unit or the enclosed verandah is common property, and—<br>(a) in the Class 2 sole-occupancy units—<br>(i) the room to be ventilated is not a sanitary compartment; and<br>(ii) the window, opening, door or other device has a ventilating area of not less than 5% of the floor area of the room to be ventilated; and<br>(iii) the adjoining room has a window, opening, door or other device with a ventilating area of not less than 5% of the combined floor areas of both rooms.<br>(b) in the Class 5, 6 & 7 parts —<br>(i) the window, opening, door or other device has a ventilating area of not less than 10% of the floor area of the room to be ventilated, measured not more than 3.6m above the floor; and<br>(ii) the adjoining room has a window, opening, door or other device with a ventilating area of not less than 10% of the combined floor areas of both rooms.<br>The ventilating areas specified in (a) and (b) may be reduced as appropriate if direct natural ventilation is provided from another source.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F4.8<br>Restriction of position of water closets and urinals | X | | | | A room containing a closet pan or urinal must not open directly into —<br>• a kitchen or pantry;<br>• a public dining room or restaurant; or<br>• a workplace normally occupied by more than one person;<br>Unless compliance with F4.9 below.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F4.9<br>Airlocks | | | | X | If a room containing a closet pan or urinal is prohibited under F4.8 from opening directly to another room —<br>(a) in a sole-occupancy unit in a Class 2 building part —<br>(i) access must be by an airlock, hallway or other room; or<br>(ii) the room containing the closet pan or urinal must be provided with mechanical exhaust ventilation; and<br>(b) in a Class 5, 6 & 7 building —<br>(i) access must be by an airlock, hallway or other room with a floor area of not less than 1.1 m2 and fitted with self-closing doors at all |



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| | | | | | access doorways; or<br>(ii)the room containing the closet pan or urinal must be provided with mechanical exhaust ventilation and the doorway to the room adequately screened from view.<br><br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F4.11<br>Carparks | | | | X | Every storey of carpark must have a system of mechanical ventilation complying with AS 1668.2-2012.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F4.12<br>Kitchen local exhaust | | | | X | Any proposed commercial kitchen in the future fit out of the Class 6 retail parts must be provided with a kitchen exhaust hood complying with AS 1668.1-2015 and AS 1668.2-2012 where—<br>(a) any cooking apparatus has—<br>(i) a total maximum electrical power input exceeding 8 kW; or<br>(ii) a total gas power input exceeding 29 MJ/h; or<br>(b) the total maximum power input to more than one apparatus exceeds—<br>(i) 0.5 kW electrical power; or<br>(ii) 1.8 MJ gas, per m2 of floor area of the room or enclosure. |
| Part F5<br>Sound Transmission | | | | | |
| F5.1 Application of Part | | | | X | The provisions of this Part will apply to the Class 2 building parts. |
| F5.2<br>Determination of airborne sound insulation ratings | | | X | | 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.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F5.3<br>Determination of impact sound insulation ratings | | | | X | 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>A wall in a building required to have an impact sound insulation rating must be of ***discontinuous construction***.<br>***Discontinuous construction*** means a wall having a minimum 20 mm cavity |



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| | | | | | 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.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F5.4<br>Sound Insulation of floors between units | | | | X | A floor in a Class 2 and 3 building part must achieve an $R_w + C_{tr}$ (airborne) not less than 50, and an $L_{n,w}+C_I$ (impact) not more than 62, if separating:<br>• SOU's; or<br>• An SOU from a plant room, lift shaft, public corridor, public lobby or parts of a different classification.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F5.5<br>Sound insulation of walls between units | | | | X | A wall in a Class 2 and 3 building must—<br>(i) have an Rw + Ctr (airborne) not less than 50, if it separates sole-occupancy units; and<br>(ii) have an Rw (airborne) not less than 50, if it separates a sole-occupancy unit from a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification; and<br>(iii) comply with F5.3(b) if it separates—<br>(A) a bathroom, sanitary compartment, laundry or kitchen in one sole-occupancy unit from a habitable room (other than a kitchen) in an adjoining unit; or<br>(B) a sole-occupancy unit from a plant room or lift shaft.<br>A door may be incorporated in a wall in a Class 2 building part that separates a sole occupancy unit from a stairway, public corridor, public lobby or the like, provided the door assembly has an Rw not less than 30.<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.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| F5.6<br>Sound insulation rating of services | | | | X | Ducts and pipes must achieve an $R_w + C_{tr}$ (airborne) of no less than 40 if the adjacent room is habitable or 25 if non-habitable.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |



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| F5.7<br>Sound isolation of pumps | | | | X | A flexible coupling must be used at the point of connection between the service pipes in a building and any circulating pump.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| SECTION G<br>ANCILLIARY PROVISIONS | | | | | |
| Part G1<br>Minor Structures and Components | | | | | |
| NSW G1.101 Provision for cleaning windows | | | | X | A safe manner for cleaning of windows located 3 or more storeys above ground level must be provided, and compliance is achieved where:<br>• 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.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| SECTION J<br>ENERGY EFFICIENCY | | | | | |
| NSW SECTION J<br>ENERGY EFFICIENCY | | | | | |
| NSW SUBSECTION J(A) ENERGY EFFICIENCY - CLASS 2 BUILDINGS PARTS | | | | X | The requirements of the BASIX Certificate must be incorporated into the design.<br>***Details demonstrating compliance with the approved BASIX design must be incorporated into the construction certificate plans / specification*** |
| NSW J(A)1 BUILDING FABRIC | | | | | |
| NSW J(A)1.1<br>Application of Part | | | X | | Part J(A)1 is only applicable to Class 2 building parts, where a development consent or complying development certificate specifies that thermal insulation is to be provided as part of the development. |
| NSW J(A)1.2<br>Compliance with BCA provisions | | | | X | Class 2 building parts, must comply with the National Provisions of J0.2(b) to (e) i.e.:<br>(b) for general thermal construction, comply with J1.2; and<br>(c) for thermal breaks, comply with J1.3(d) and J1.5(c); and<br>(d) for compensating for a loss of ceiling insulation, comply with J1.3(c); and<br>(e) for floor edge insulation, comply with J1.6(c) and J1.6(d); and<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |



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| NSW J(A)2 BUILDING SEALING | | | | | |
| NSW J(A)2.1<br>Application of Part | | | | X | The requirements of this Part are applicable to Class 2 building parts, excluding:<br>• A building in a climate zones 2 and 5 where the only means of air-conditioning is by using an evaporative cooler;<br>• A building ventilation opening necessary for the safe operation of a gas appliance;<br>• parts of the building that cannot be fully enclosed. |
| NSW J(A)2.2<br>Compliance with BCA Provisions | | | | X | Class 2 building parts must comply with the following National Provisions:<br>(a) J3.2 Chimneys and flues;<br>(b) J3.3 Roof lights;<br>(c) J3.4 External doors and windows;<br>(d) J3.5 Exhaust fans;<br>(e) J3.6 Construction of roofs walls and floors; and<br>(f) J3.7 Evaporative coolers.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| NSW J(A)3 AIR CONDITIONING AND VENTILATING SYSTEMS | | | | | |
| NSW J(A) 3.1<br>Application of Part | | | X | | Applicable to Class 2 building parts. |
| NSW J(A) 3.2<br>Compliance with BCA Provisions | | | | X | Class 2 part of a building must comply with the following national BCA provisions (as applicable):<br>(a) J5.2 (a) to (d) and (f) to (g) Air conditioning systems; and<br>(b) J5.3 Mechanical ventilation systems; and<br>(c) J5.4 Miscellaneous exhaust systems.<br>**Note**: Compliance is not required with the national BCA provisions of J5.2(e) as those matters are regulated under BASIX.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate specification*** |
| NSW J(A)4 HOT WATER SUPPLY | | | | | |
| NSW J(A)4.1<br>Application of Part | | | X | | Applicable to Class 2 building parts. |



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| NSW J(A)4.2<br>Compliance with BCA Provisions | | | | X | The Class 2 building parts must comply with the following National BCA provisions of Clause J7.2.<br>**Note:** Compliance is not required with the national BCA provisions of J7.3 and J7.4 as those matters are regulated under BASIX.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate specification*** |
| NSW J(A)5 ACCESS FOR MAINTENANCE | | | | | |
| NSW J(A)5.1<br>Application of Part | | | X | | Applies to 'common areas' of Class 2 buildings (not within sole occupancy units). |
| NSW J(A)5.2<br>Access for maintenance | | | X | | This clause has been deleted. |
| NSW J(A)5.3 Compliance with BCA provisions | | | | X | Class 2 buildings must comply with the national BCA provisions of J8.3 |
| NSW SUBSECTION J(B) ENERGY EFFICIENCY - CLASS 5 & 6 BUILDINGS | | | | | |
| NSW J(B) 1<br>Compliance with BCA Provisions | | | | X | Class 5 & 6 building parts must comply with all of the provisions of the national Section J that are applicable to the relevant classifications, except as varied by NSW J3.1 Application of Part. |
| NSW J3.1<br>Application of Part | | | X | | Add the following sub-clause to the National Section J provisions of Clause J3.1:<br>• *J3.1(d) – "parts of buildings that cannot be fully enclosed*" |
| Part J1: Building Fabric | | | | | |
| J1.1<br>Application of Part | | | | X | The provisions of Part J1 apply to building elements forming the envelope of the building other than non-conditioned areas / spaces. |
| J1.2<br>Thermal construction – general | | | | X | Where required, insulation must be provided as per AS/NZS 4859.1-2002 and installed as per this clause.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate specification*** |
| J1.3<br>Roof and ceiling | | | | X | A roof or ceiling that is part of the envelope, other than a sole occupancy unit of a Class 2 building must achieve the Total R-Value specified in Table J1.3a for the direction of heat flow, and must satisfy all requirements of this clause. |



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| construction | | | | | ***Details demonstrating compliance with this clause must be incorporated into the construction certificate specification*** |
| J1.4<br>Roof lights | | | X | | No roof lights detailed on plan |
| J1.5<br>Walls | | | | X | Each part of a wall that is part of the envelope must satisfy one of the thermal performance options in Table J1.5, noting the specific exceptions of this clause relevant to doors, vents, penetrations, shutters, glazing, and an earth retaining wall or earth berm, in other than climate zone 8.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate specification*** |
| J1.6<br>Floors | | | | X | A floor that is part of the building's envelope must achieve the Total R-Value specified in Table J1.6, and must satisfy all requirements of this clause.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate specification*** |
| Part J2: Glazing | | | | | |
| J2.1<br>Application of Part | | | | X | The DTS Provisions of this Part apply to the building elements forming the envelope of the building other than the class 2 SOUs. |
| J2.2 | | | X | | Blank clause. |
| J2.3 | | | X | | Blank clause. |
| J2.4<br>Glazing | | | | X | The glazing in each storey, including any mezzanine, must be assessed separately in accordance with the requirements of this clause, for:<br>• Glazing in the external fabric facing each orientation; and<br>• Glazing in the internal fabric,<br>to ensure that the aggregate air-conditioning energy value attributable to the glazing does not exceed the allowance obtained by multiplying the façade area that is exposed to the conditioned space for the orientation by the energy index in Table J2.4a.<br>***Glazing calculations demonstrating compliance with this clause must be incorporated into the specification*** |
| J2.5<br>Shading | | | | X | Where required to comply with J2.4, shading must be provided in accordance with this clause.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| Part J3: Building Sealing | | | | | |
| J3.1<br>Application of Part | | | | X | 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; |



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| | | | | | • A permanent building opening necessary for the safe operation of a gas appliance;<br>• A building or part where mechanical ventilation required by Part F4 provides sufficient pressurization to prevent infiltration;<br>• Parts of buildings that cannot be fully enclosed. |
| J3.2<br>Chimney and flues | | | X | | Not applicable |
| J3.3<br>Roof lights | | | X | | Not applicable |
| J3.4<br>Window and doors | | | | X | Seals to restrict air infiltration to windows and doors must be provided as required (note exceptions listed in J3.4 (b), and requirements for sealing of main entrance in J3.4 (d).<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| J3.5<br>Exhaust fans | | | | X | Miscellaneous exhaust fans must be fitted with self-closing dampers, where serving a conditioned space or a habitable room in climate zones 4, 5, 6, 7 or 8.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| J3.6<br>Construction of roofs, walls and floors | | | | X | Roofs, ceilings, walls, floors and any openings such as a window frame, door frame, light frame or the like must be sealed in accordance with the requirements of this clause to minimise air leakage.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| J3.7<br>Evaporative coolers | | | | X | Any evaporative cooler must be fitted with a self-closing damper of the like when serving a heated space, or a habitable room or a public area of a building in climate zones 4, 5, 6, 7 or 8.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate plans / specification*** |
| Part J4: Blank | | | | | |
| Part J5: Air-conditioning and ventilation systems | | | | | |
| J5.1<br>Application of Part | | | X | | The requirements of Part J5 apply throughout the building. |
| J5.2<br>Air-conditioning systems | | | | X | An air-conditioning unit or system must comply with J5.2(a) to J5.2(g).<br>***Mechanical Design certification must be submitted in support of the construction certificate application*** |
| J5.3 | | | | X | Mechanical ventilation systems must comply with J5.3(a) to J5.3(c). |



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|---|---|---|---|---|---|
| Mechanical ventilation systems | | | | | ***Mechanical Design certification must be submitted in support of the construction certificate application*** |
| J5.4<br>Miscellaneous exhaust systems | | | | X | A miscellaneous exhaust system with an air flow rate of more than 1000 L/s that is associated with equipment having a variable demand such as a stove in a commercial kitchen or a chemical bath in a factory, must have the means for the operator to reduce the energy used (such as by a variable speed fan), and to stop the motor when it is not needed. Refer concessions contained in this clause.<br>***Mechanical Design certification must be submitted in support of the construction certificate application*** |
| Part J6: Artificial lighting and power | | | | | |
| J6.1 Application of Part | | | X | | The requirements of Part J6 apply throughout the building. |
| J6.2<br>Artificial lighting | | | | X | Artificial lighting must comply with J6.2(a), J6.2(b) and J6.2(c), relevant to maximum permitted illumination power loads.<br>***Electrical Design certification must be submitted in support of the construction certificate application*** |
| J6.3<br>Interior artificial lighting and power control | | | | X | Internal artificial lighting systems must be switched and zoned in accordance with the specific requirements of this clause.<br>***Electrical Design certification must be submitted in support of the construction certificate application*** |
| J6.4<br>Interior decorative and display lighting | | | | X | Interior decorative and display lighting, such as for a foyer mural or art display, must be controlled separately from other artificial lighting, and be switched in accordance with the specific requirements of this clause.<br>***Electrical Design certification must be submitted in support of the construction certificate application*** |
| J6.5<br>Artificial lighting around the perimeter of a building | | | | X | Artificial lighting around the perimeter of a building must be controlled by a daylight sensor or time switches in accordance with the specific requirements of this clause.<br>***Electrical Design certification must be submitted in support of the construction certificate application*** |
| J6.6<br>Boiling water and chilled water storage units | | | | X | Power supply to any proposed boiling or chilled water storage unit must be time switch controlled in accordance with Specification J6.<br>***Electrical Design certification must be submitted in support of the construction certificate application*** |
| Part J7: Hot water supply and swimming pool and spa pool plant | | | | | |



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| BCA DEEMED-TO-SATISFY PROVISION | COMPLIES | DOES NOT COMPLY | NA or Informational | Compliance Required | COMMENTS |
|---|---|---|---|---|---|
| J7.2<br>Hot water supply | | | | X | Any hot water supply for food preparation and sanitary purposes must be designed and installed in accordance with Part B2 of NCC Volume Three – Plumbing Code of Australia.<br>***Hydraulic Design certification must be submitted in support of the construction certificate application*** |
| J7.3<br>Swimming pool heating and pumping | | | | X | ***Hydraulic Design certification must be submitted in support of the construction certificate application*** |
| J7.4<br>Spa pool heating and pumping | | | | x | ***Hydraulic Design certification must be submitted in support of the construction certificate application*** |
| Part J8: Access for maintenance and facilities for monitoring | | | | | |
| J8.1<br>Application of Part | | | X | | The Deemed-to-Satisfy Provisions of this part do not apply within a sole-occupancy unit of a Class 2/3 building. |
| J8.2<br>Access for maintenance | | | X | | This clause has been deleted. |
| J8.3<br>Facilities for energy monitoring | | | | X | The building must have facilities to record individually 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, escalators and travelators where there is more than one serving the building; and<br>• other ancillary plant.<br>***Details demonstrating compliance with this clause must be incorporated into the construction certificate specification*** |



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## 5.0 CONCLUSION

This report provides a Building Code of Australia (BCA) 2016 Amdt 1 assessment of the proposed mixed-use, high-rise development, to be located at 26 Elizabeth Street, Liverpool.

The primary purpose of this report was to identify the non-compliance matters contained in the proposed design philosophy against the current Deemed-to-Satisfy (DTS) Provisions of the BCA and to provide compliance recommendations to overcome the DTS non-compliances.

This report provided a BCA assessment table in Section 3.0 that summarises the identified non-compliance matters and offers specific recommendations that are also outlined in the Executive Summary.

Further, if compliance with the deemed-to-satisfy provisions is not achievable or desirable, Alternative Solutions could be further developed and verified by an appropriately qualified BCA Consultant or Fire Safety Engineer.

| | |
|---|---|
|  <br>**Prepared by:**<br>Adam Whitehouse<br>for AE&D |  <br>**Reviewed and Approved by:**<br>Nathan Halstead<br>for AE&D |



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# 6.0 ATTACHMENT A - INSPECTION & MAINTENANCE

## 6.1 Fire Safety Measures

The fire safety measures within the building must be maintained to ensure correct operation at all times the building is occupied. All fire fighting equipment should be tagged when tested/inspected and log books kept up-to-date for all smoke detection, warning systems and sprinkler systems (where installed).

An annual fire safety certificate must be submitted to the local consent authority and the NSW Fire Brigade each year indicating satisfactory performance of the fire safety measures contained within the building. The annual fire safety statement should be displayed in a prominent place within the building (ie. the main entry foyer)

The correct operation and maintenance of the buildings fire safety measures is critical in affording an adequate level of fire safety.

## 6.2 Good Housekeeping

The ongoing management of the building should ensure good housekeeping procedures. The following matters should be considered by building management:

- Ensure exits and paths of travel to exits remain unobstructed (in particular stairways)
- Avoid storage of materials in unoccupied areas
- Limit storage of flammable/combustible materials to designated and approved areas
- Prevent chocking open fire/smoke doors
- Prevent storage of materials that could hinder access to fire fighting equipment



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## 3. TYPE A FIRE-RESISTING CONSTRUCTION

### 3.1 Fire-resistance of building elements

In a building *required* to be of Type A construction—

(a) each building element listed in Table 3 and any beam or column incorporated in it, must have an FRL not less than that listed in the Table for the particular Class of building concerned; and

(b) any *internal wall required* to have an FRL with respect to *integrity* and *insulation* must extend to—

(i) the underside of the floor next above; or

(ii) the underside of a roof complying with Table 3; or

(iii) if under Clause 3.5 the roof is not required to comply with Table 3, the underside of the non-combustible roof covering and, except for roof battens with dimensions of 75 mm x 50 mm or less or sarking-type material, must not be crossed by timber or other combustible building elements; or

(iv) a ceiling that is immediately below the roof and has a *resistance to the incipient spread of fire* to the roof space between the ceiling and the roof of not less than 60 minutes; and

(c) a *loadbearing internal wall* and a *loadbearing fire wall* (including those that are part of a *loadbearing shaft*) must be of

(i) concrete; or

(ii) masonry; or

(iii) Fire-protected timber provided that –

(iv) The building is a Class 2,3 or 5 building which is -

(v) (aa) a separate building; or

(vi) (bb) a part of a building-

(vii) which only occupies part of a storey, and is separated from the remaining part by a fire wall; or

(viii) which is located above or below a part not containing fire-protected timber and the floor between the adjoining parts is provided with an FRL not less than prescribed for a fire wall for the lower storey; and

(ix) The building has an effective height of not more than 25m; and

(x) The building has a sprinkler system throughout complying with Specification E1.5; and

(xi) Any insulation installed in the cavity of the timber building element required to have an FRL is non-combustible; and

(xii) Cavity barriers are provided in accordance with Specification C1.13

(xiii) a non-loadbearing—

(xiv) internal wall required to be fire-resisting; and

(xv) lift, ventilating, pipe, garbage, or similar shaft that is not for the discharge of hot products of combustion, must be of *non-combustible* construction; and

(d) the FRLs specified in **Table 3** for an external column apply also to those parts of an internal column that face and are within 1.5 m of a *window* and are exposed through that *window* to a *fire-source feature*.



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## Table 3 TYPE A CONSTRUCTION: FRL OF BUILDING ELEMENTS

| Building element | Class of building — FRL: (in minutes) *Structural adequacy/Integrity/Insulation* | | | |
|---|---|---|---|---|
| | 2, 3 or 4 part | 5, 7a or 9 | 6 | 7b or 8 |
| **EXTERNAL WALL** (including any column and other building element incorporated therein) or other external building element, where the distance from any *fire-source feature* to which it is exposed is— | | | | |
| For *loadbearing* parts— | | | | |
| less than 1.5 m | 90/ 90/ 90 | 120/120/120 | 180/180/180 | 240/240/240 |
| 1.5 to less than 3 m | 90/ 60/ 60 | 120/ 90/ 90 | 180/180/120 | 240/240/180 |
| 3 m or more | 90/ 60/ 30 | 120/ 60/ 30 | 180/120/ 90 | 240/180/ 90 |
| For non-*loadbearing* parts— | | | | |
| less than 1.5 m | –/ 90/ 90 | –/120/120 | –/180/180 | –/240/240 |
| 1.5 to less than 3 m | –/ 60/ 60 | –/ 90/ 90 | –/180/120 | –/240/180 |
| 3 m or more | –/–/– | –/–/– | –/–/– | –/–/– |
| **EXTERNAL COLUMN** not incorporated in an *external wall*— | | | | |
| For *loadbearing* columns— | 90/–/– | 120/–/– | 180/–/– | 240/–/– |
| For non-*loadbearing* columns— | –/–/– | –/–/– | –/–/– | –/–/– |
| **COMMON WALLS and FIRE WALLS**— | 90/ 90/ 90 | 120/120/120 | 180/180/180 | 240/240/240 |

*Table 3 TYPE A CONSTRUCTION: FRL OF BUILDING ELEMENTS— continued*

| Building element | Class of building — FRL: (in minutes) *Structural adequacy/Integrity/Insulation* | | | |
|---|---|---|---|---|
| | 2, 3 or 4 part | 5, 7a or 9 | 6 | 7b or 8 |
| **INTERNAL WALLS**— | | | | |
| *Fire-resisting* lift and stair *shafts*— | | | | |
| *Loadbearing* | 90/ 90/ 90 | 120/120/120 | 180/120/120 | 240/120/120 |
| Non-*loadbearing* | - / 90/ 90 | - /120/120 | - /120/120 | - /120/120 |
| Bounding *public corridors*, public lobbies and the like— | | | | |
| *Loadbearing* | 90/ 90/ 90 | 120/ - / - | 180/ - / - | 240/ - / - |
| Non-*loadbearing* | - / 60/ 60 | - / - / - | - / - / - | - / - / - |
| Between or bounding *sole-occupancy units*— | | | | |
| *Loadbearing* | 90/ 90/ 90 | 120/ - / - | 180/ - / - | 240/ - / - |
| Non-*loadbearing* | - / 60/ 60 | - / - / - | - / - / - | - / - / - |
| Ventilating, pipe, garbage, and like *shafts* not used for the discharge of hot products of combustion— | | | | |
| *Loadbearing* | 90/ 90/ 90 | 120/ 90/ 90 | 180/120/120 | 240/120/120 |
| Non-*loadbearing* | - / 90/ 90 | - / 90/ 90 | - /120/120 | - /120/120 |
| **OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES and COLUMNS**— | 90/ - / - | 120/ - / - | 180/ - / - | 240/ - / - |
| **FLOORS** | 90/ 90/ 90 | 120/120/120 | 180/180/180 | 240/240/240 |
| **ROOFS** | 90/ 60/ 30 | 120/ 60/ 30 | 180/ 60/ 30 | 240/ 90/ 60 |



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### 3.2 Concessions for floors A floor need not comply with Table 3 if—

(a) it is laid directly on the ground; or

(b) in a Class 2, 3, 5 or 9 building, the space below is not a *storey*, does not accommodate motor vehicles, is not a storage or work area, and is not used for any other ancillary purpose; or

(c) it is a timber *stage* floor in a Class 9b building laid over a floor having the *required* FRL and the space below the *stage* is not used as a dressing room, store room, or the like; or

(d) it is within a *sole-occupancy unit* in a Class 2 or 3 building or Class 4 part; or

(e) it is an open-access floor (for the accommodation of electrical and electronic services and the like) above a floor with the *required* FRL.

### 3.3 Floor loading of Class 5 and 9b buildings: Concession

If a floor in a Class 5 or 9b building is designed for a live load not exceeding 3 kPa—

(a) the floor next above (including floor beams) may have an FRL of 90/90/90; or

(b) the roof, if that is next above (including roof beams) may have an FRL of 90/60/30.

### 3.4 Roof superimposed on concrete slab: Concession

A roof superimposed on a concrete slab roof need not comply with Clause 3.1 as to *fire-resisting construction* if—

(a) the superimposed roof and any construction between it and the concrete slab roof are *non-combustible* throughout; and

(b) the concrete slab roof complies with Table 3.

### 3.5 Roof: Concession

A roof need not comply with Table 3 if its covering is *non-combustible* and the building—

(a) has a sprinkler system complying with Specification E1.5 installed throughout; or

(b) has a *rise in storeys* of 3 or less; or

(c) is of Class2 or 3; or

(d) has an *effective height* of not more than 25 m and the ceiling immediately below the roof has a *resistance to the incipient spread of fire* to the roof space of not less than 60 minutes.

### 3.6 Rooflights

If a roof is *required* to have an FRL or its covering is *required* to be *non-combustible*, rooflights or the like installed in that roof must—

(a) have an aggregate area of not more than 20% of the roof surface; and

(b) be not less than 3 m from—

  (i) any boundary of the allotment other than the boundary with a road or public place; and

  (ii) any part of the building which projects above the roof unless that part has the FRL *required* of a *fire wall* and any openings in that part of the wall for 6 m vertically above the rooflight or the like are protected in accordance with C3.4; and

  (iii) any rooflight or the like in an adjoining *sole-occupancy unit* if the walls bounding the unit are *required* to have an FRL; and

  (iv) any rooflight or the like in an adjoining fire-separated section of the building; and

(c) if a ceiling with a *resistance to the incipient spread of fire* is *required*, be installed in a way that will maintain the level of protection provided by the ceiling to the roof space.



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### 3.7 Internal columns and walls: Concession

For a building with an *effective height* of not more than 25 m and having a roof without an FRL in accordance with Clause 3.5, in the *storey* immediately below that roof, internal columns other than those referred to in Clause 3.1(f) and *internal walls* other than *fire walls* and *shaft* walls may have—

(a) in a Class 2 or 3 building: FRL 60/60/60; or

(b) in a Class 5, 6, 7, 8 or 9 building—

  (i) with *rise in storeys* exceeding 3: FRL 60/60/60

  (ii) with *rise in storeys* not exceeding 3: no FRL.

### 3.8 Open spectator stands and indoor sports stadiums: Concession

In an open spectator stand or indoor sports stadium, the following building elements need not have the FRL specified in Table 3:

(a) The roof if it is non-combustible.

(b) Columns and loadbearing walls supporting only the roof if they are noncombustible.

(c) Any non-loadbearing part of an external wall less than 3 m—

  (i) from any fire-source feature to which it is exposed if it has an FRL of not less than –/60/60 and is non-combustible; or

  (ii) from an external wall of another open spectator stand if it is non-combustible.

### 3.9 Carparks

(a) Notwithstanding Clause 3.1, a carpark may comply with Table 3.9 if it is an open deck carpark or is protected with a sprinkler system complying with Specification E1.5 and is—

  (i) a separate building; or

  (ii) a part of a building—

    (A) which only occupies part of a storey, and is separated from the remaining part by a fire wall; or

    (B) which is located above or below another classification, and the floor separating the classifications complies with C2.9; or

    (C) which is located above another Class 7 part of the building not used for carparking, and the floor separating the parts complies with Table 3 for a Class 7 part other than a carpark; or

    (D) which is located below another Class 7 part of the building not used for carparking, and the floor separating the parts complies with Table 3.9.

(b) For the purposes of this Clause, a carpark—

  (i) includes—

    (A) an administration area associated with the functioning of the carpark; and

    (B) where the carpark is sprinklered, is associated with a Class 2 or 3 building and provides carparking for separate sole-occupancy units, each carparking area with an area not greater than 10% of its floor area for purposes ancillary to the sole-occupancy units; but

  (ii) excludes—

    (A) except for (b)(i), any area of another classification, or other part of a Class 7 building not used for carparking; and

    (B) a building or part of a building specifically intended for the parking of trucks, buses, vans and the like.



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**Table 3.9 REQUIREMENTS FOR CARPARKS**

| Building element | | | FRL (not less than) *Structural adequacy/Integrity/Insulation*<br>ESA/M (not greater than) |
|---|---|---|---|
| **Wall** | | | |
| (a) | *external wall* | | |
| | (i) | less than 3 m from a *fire-source feature* to which it is exposed: | |
| | | *Loadbearing* | 60/60/60 |
| | | Non-*loadbearing* | –/60/60 |
| | (ii) | 3 m or more from a *fire-source feature* to which it is exposed | –/–/– |
| (b) | *internal wall* | | |
| | (i) | *loadbearing*, other than one supporting only the roof (not used for carparking) | 60/–/– |
| | (ii) | supporting only the roof (not used for carparking) | –/–/– |
| | (iii) | non-*loadbearing* | –/–/– |
| (c) | *fire wall* | | |
| | (i) | from the direction used as a *carpark* | 60/60/60 |
| | (ii) | from the direction not used as a *carpark* | as *required* by **Table 3** |
| **Column** | | | |
| (a) | | supporting only the roof (not used for carparking) and 3 m or more from a *fire-source feature* to which it is exposed | –/–/– |
| (b) | | steel column, other than one covered by (a) and one that does not support a part of a building that is not used as a *carpark* | 60/–/– or 26 $m^2$/tonne |
| (c) | | any other column not covered by (a) or (b) | 60/–/– |
| **Beam** | | | |
| (a) | | steel floor beam in continuous contact with a concrete floor slab | 60/–/– or 30 $m^2$/tonne |



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*Table 3.9 REQUIREMENTS FOR CARPARKS — continued*

| Building element | FRL (not less than) *Structural adequacy/Integrity/Insulation*<br>ESA/M (not greater than) |
|---|---|
| (b) any other beam | 60/–/– |
| **Fire-resisting lift and stair shaft** (within the *carpark* only) | 60/60/60 |
| **Floor slab and vehicle ramp** | 60/60/60 |
| **Roof** (not used for carparking) | –/–/– |
| **Notes:**<br>1. ESA/M means the ratio of exposed surface area to mass per unit length.<br>2. Refer to **Specification E1.5** for special requirements for a sprinkler system in a *carpark* complying with Table 3.9 and located within a multi-classified building. | |

### 3.10 Class 2 and 3 buildings: Concession

(a) A Class 2 or 3 building having a rise in storeys of not more than 3 need not comply with Clauses 3.1(b), (d) and (e) of Specification C1.1 and the requirement of C2.6 for non-combustible material, if it is constructed using—

(i) timber framing throughout; or

(ii) non-combustible material throughout; or

(iii) a combination of (i) and (ii), provided—

(iv) * * * * *

(v) any insulation installed in the cavity of a wall required to have an FRL is noncombustible; and

(vi) the building is fitted with an automatic smoke alarm system complying with Specification E2.2a.

(b) A Class 2 or 3 building having a rise in storeys of not more than 4 may have the top three storeys constructed in accordance with (a) provided—

(i) the lowest storey is used solely for the purpose of parking motor vehicles or for some other ancillary purpose; and

(ii) the lowest storey is constructed of concrete or masonry including the floor between it and the Class 2 or 3 part of the building above; and

(iii) the lowest storey and the storey above are separated by construction having an FRL of not less than 90/90/90 with no openings or penetrations that would reduce the fire-resisting performance of that construction except that a doorway in that construction may be protected by a –/60/30 self-closing fire door.

(c) In a Class 2 or 3 building complying with (a) or (b) and fitted with a sprinkler system complying with Specification E1.5, any FRL criterion prescribed in Table 3—

(i) for any floor and any loadbearing wall, may be reduced to 60, except any FRL criterion of 90 for an external wall must be maintained when tested from the outside; and

(ii) for any non-loadbearing internal wall, need not apply if—

(A) it is lined on each side with 13 mm standard grade plasterboard or similar non-combustible material; and

(B) it extends—

- to the underside of the floor next above; or
- to the underside of a ceiling with a resistance to the incipient spread of fire of 60 minutes; or
- to the underside of a non-combustible roof covering; and

(C) any insulation installed in the cavity of the wall is non-combustible; and

(D) any construction joint, space or the like between the top of the wall and the floor, ceiling or roof is smoke sealed with intumescent putty or other suitable material; and



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(E) any doorway in the wall is protected by a self-closing, tight fitting, solid core door not less than 35 mm thick.



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