



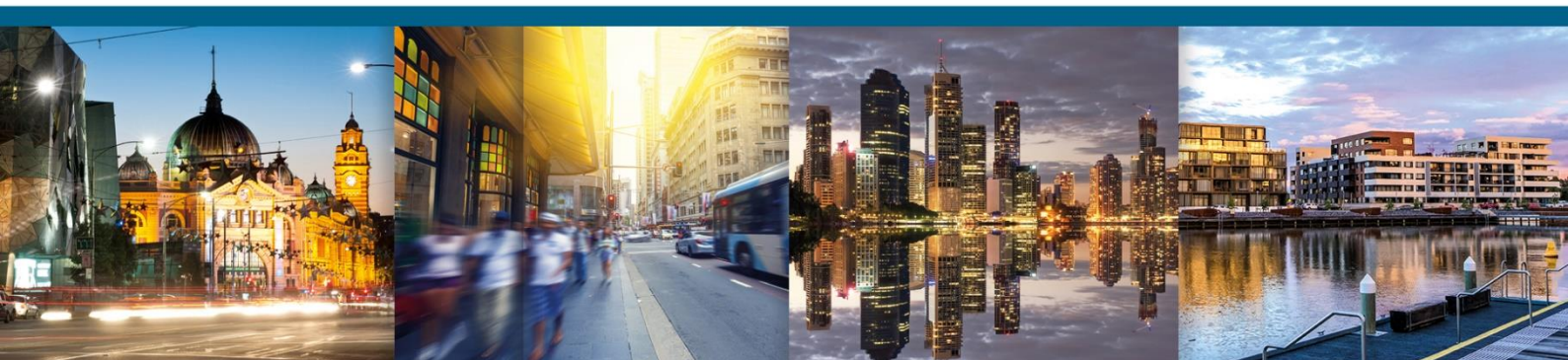
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# Warriewood Valley Community Centre

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## DA Submission BCA Report



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## Table of Contents

REPORT REVISION HISTORY .....	2
INTRODUCTION .....	4
PURPOSE.....	4
SCOPE .....	4
ASSUMPTIONS .....	4
INTERPRETATIONS.....	4
CERTIFICATION WORK .....	4
NATIONAL CONSTRUCTION CODE BCA 2019 AMENDMENT 1– VOLUME 1: BUILDING CODE OF AUSTRALIA CLASS 2 TO	
CLASS 9 BUILDINGS.....	5
PERFORMANCE SOLUTIONS .....	5
NEW WORK .....	5
ACCESS TO PREMISES.....	5
DESCRIPTION OF PROPOSED DEVELOPMENT.....	6
ASSESSMENT .....	6
SECTION A: GENERAL PROVISIONS .....	6
SECTION B: STRUCTURE.....	7
SECTION C: FIRE RESISTANCE.....	7
SECTION D: ACCESS AND EGRESS .....	8
SECTION E: SERVICES AND EQUIPMENT .....	9
SECTION F: HEALTH AND AMENITY .....	9
SECTION G: ANCILLARY PROVISIONS .....	10
SECTION H: ANCILLARY PROVISIONS - CLASS 9B BUILDINGS.....	11
SECTION J: ENERGY EFFICIENCY.....	11
CONCLUSION .....	12
APPENDIX A – REFERENCED DOCUMENTATION.....	13
APPENDIX B – SCHEDULE OF PROPOSED STATUTORY FIRE SAFETY MEASURES .....	13
APPENDIX C – FIRE-RESISTANCE LEVELS.....	14
APPENDIX D – SMOKE HAZARD MANAGEMENT - NSW ASSEMBLY BUILDING PROVISIONS .....	15



## Introduction

This report presents the findings of a preliminary assessment of the proposed new **Warriewood Valley Community Centre** development of the against the Deemed-to-Satisfy (DtS) provisions of Building Code of Australia (BCA) 2019 (Volume 1 - Amendment 1).

It has been prepared by building regulations consultants and certifiers Steve Watson and Partners for Terroir.

## Purpose

The purpose of this report is to identify issues and omissions in the audited documentation that are required to be addressed to permit the lodgement and approval of an application for a Development Application.

## Scope

The scope of this assessment is limited to the design documentation referenced in Appendix A of this report.

## Assumptions

Assumptions made in the preparation of this report are listed below:

1. The development site is located over a number of separate allotments. It is assumed the lots will be amalgamated.

## Interpretations

A number of issues within the BCA are recognised to be interpretive in nature. Where these issues are encountered, interpretations are made that are consistent with Standard Industry Practise and/or Steve Watson & Partners policy formulated in regard of each issue.

1. The main hall is considered an Entertainment Venue as defined under the EP&A Regulation. **Entertainment venue** means a building used as a cinema, theatre or concert hall or an indoor sports stadium. The NSW provisions under the BCA for Entertainment Venues will apply including NSW Part H101.

## Certification Work

This report is provided as part of SWP's contracted scope for this project, which is "Certification Work", as defined in the Building and Development Certifiers Regulation 2020. Due to the strict requirements and limits in terms of conflicts of interest imposed under that regulation, SWP cannot undertake any services other than Certification Services on this project.

Hence, the contents of this report, and any associated correspondence, are provided in the context of a preliminary certification assessment of plans and is intended to identify any BCA or regulatory issues required to be addressed in the design. It may not be construed to constitute involvement in building design, the preparation of plans and specifications, the provision of advice on how to



amend a plan or specification to ensure that the aspect will comply with legislative or code requirements, or to breach any other restriction or limitation imposed under the conflict of interest provisions of that or any other legislation.

## **National Construction Code BCA 2019 Amendment 1– Volume 1: Building Code of Australia Class 2 to Class 9 Buildings**

The National Construction Code (NCC) is a uniform set of technical provisions for the design and construction of buildings, structures and plumbing/drainage systems which is separated into 3 volumes. Volume 1 of the NCC is the Building Code of Australia (BCA) for Class 2 to 9 buildings which is the document to which the assessment in this report has been undertaken against. The BCA is legislated under The Act and specifies the Performance Requirements for the design and construction of Class 2 to 9 buildings that must be satisfied to achieve compliance. The Performance Requirements can only be satisfied by a Performance Solution, Deemed-to-Satisfy (DTS) solution or a combination of both.

### **Performance Solutions**

The BCA is written in a performance format which allows performance-based buildings. This has allowed for innovation and variation from the prescriptive deemed-to-satisfy requirements of the BCA, whilst maintaining the principle levels of health, safety and amenity of building occupants.

Performance solutions are generally adopted when a nominated deemed-to-satisfy provision appears inappropriate for the design, or when a proposed design varies from the prescriptive requirements of the BCA. Subsequently, a performance solution supported by Fire Engineering analysis can determine whether a proposed design that varies from prescriptive requirements, will satisfactorily meet the performance provisions of the BCA. Ultimately, it is with the discretion of the relevant building surveyor whether to accept a deviation from the prescriptive code requirements.

Utilising the performance provisions may result in more economical and somewhat safer building, however alternative solutions may require additional on-going maintenance. It is in this instance that all parties, such as the building owner, insurance companies, proposed tenants, etc., are aware of this decision making process and are kept informed of any additional requirements needed to maintain the level of safety.

### **New Work**

Clause 145 of the EPAR requires that all new work comply with the current requirements of the BCA.

This means that all works proposed in the plans are required to comply but that existing features of an existing building need not comply with the BCA unless required to under other clauses of the legislation.

### **Access to premises**

The Disability (Access to Premises – Buildings) Standards came into force via BCA2011 throughout Australia on 01 May 2011, and with it introduced a higher standard of access to that required by previous versions of the BCA. In prescribed circumstances, the legislation requires upgrade of access and facilities for persons with disabilities when building work is proposed. In particular, unless works are undertaken by a lessee who does not lease the entire building, proposed building work anywhere in the building could trigger a need for enhanced access at the main building pedestrian entry and from that entry to all areas of the building that are subject to the building work. As this is a new building, all works will be required to comply with the Disability (Access to Premises – Buildings) Standards.



## Description of Proposed Development

The proposed works involve a new health hub development to accommodate health consulting, retail, on-grade car parking and associated ancillary works.

Summary of Construction Determination	
BCA Classification	Assembly building – Class 9b
Number of storeys contained	1
Rise in storeys	1
Type of construction required	Type C
Effective height	Building 1– 3m
Floor area	<2000sqm (approx. 1950sqm)

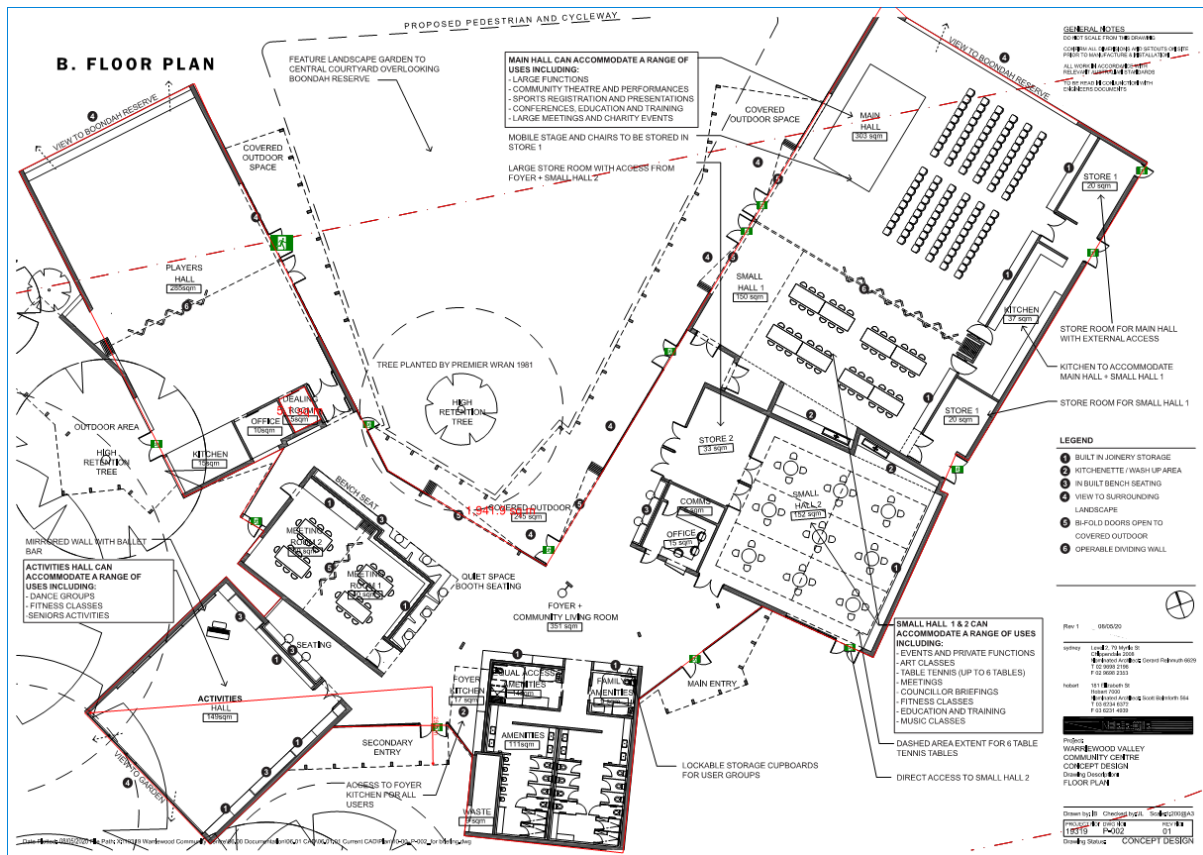
## Assessment

The following is a summary of an assessment of the proposed design against the relevant Deemed-to-Satisfy provision of the BCA.

### Section A: General Provisions

The development is a single Class 9b building consisting primarily of indoor community hall and activity space.





The development is treated as a single building for the purposes of the BCA as there is a common interconnecting roof structure over the entire building linking all areas together. This results in a floor area of approximately 2,000m<sup>2</sup>. Type C construction for a Class 9b building of a single storey is permitted to have a maximum fire compartment of 3,000m<sup>2</sup> and a maximum volume limitation of 18,000m<sup>3</sup>. We have not been provided sufficient detail to accurately determine the building volume and have assumed this is under 18,000m<sup>3</sup>.

## Section B: Structure

The structural engineering design of the building will be required to comply with the structural provisions of Part B1 of the BCA.

## Section C: Fire Resistance

The building is required to be Type C construction.

External walls and columns exposed to fire source features require FRLs prescribed per Specification C1.1, refer to Appendix C for the required FRL to the building.



**Fire-source feature means—**

- (a) the far boundary of a road, river, lake or the like adjoining the allotment; or*
- (b) a side or rear boundary of the allotment; or*
- (c) an external wall of another building on the allotment which is not a Class 10 building.*

Note that the development is proposed to be over a number of separate allotments. For the purposes of this report it has been assumed that these lots will be amalgamated. If this is not the case, then there will be implications relating to FRLs of certain building elements and egress where a path of travel is over a boundary.

Walls of lightweight construction when used in a wall system must comply with Specification C1.8 if the wall is required to have an FRL or if lightweight construction is used for the fire resisting covering of a steel column and the like.

Proposed floor coverings and any proposed wall and ceiling lining materials must comply with the fire hazard properties nominated in Specification C1.10 of the BCA.

Two-hour fire enclosure is required for a battery system installed in the building that has a total voltage of 12 volts or more and a storage capacity of 200 kWh or more as required under Clause C2.12.

Openings in external walls required to have an FRL must meet the requirements of C3.1 and be protected in accordance with C3.4 (note compliance with Specification C3.4)

## **Section D: Access and Egress**

Egress from the building is capable of complying with Clauses D1.4 and D1.5 of the BCA. Future fitouts will be subject the following maximum travel distance limitations:

- 20m to a single exit or point from which travel in different directions where 2 exits are available
- 40m to the nearest exit where 2 or more exits are available
- 60m between alternative exits
- 30m to single exit serving a tenancy on the ground floor which discharges directly to open space.
- In a Class 9b assembly building the distance to one of the exits may be 60m if the room complies with the requirements of D1.4(f)

In accordance with Clause D1.6 (as varied by NSW D1.6) of the BCA, the dimensions of exits provided are capable of compliance if the population of the building does not exceed the requirements contained in this clause

In accordance with Clause D1.10 (as varied by NSW D1.10) of the BCA, the available exits provided are capable of compliance if the population of the building does not exceed the area according to use contained in Table D1.13 as varied for a Class 9b building used as and entertainment venue by NSW Table D1.13 if the building is used as an entertainment venue (as defined in the EP&A Regulation 2000. Note that exit doors serving an Entertainment Venue must have a clear width of not less than 1000mm.

Any new electrical meters, distribution boards (telecommunications or electrical) in the path of travel must be contained within a non-combustible enclosure with the doorways fitted with smoke seals in accordance with Clause D2.7 of the BCA.





Doorways and doors are capable of complying with clauses D2.19, D2.20 and D2.21 as varied for a Class 9b building used as an entertainment venue by clauses NSW D2.19, D2.20 and D2.21. Doorways in the path of travel in a Class 9b entertainment venue must comply with NSW D2.19(b)(v). Doorways serving an Entertainment Venue or a room accommodating more than 100 people must have panic bars installed.

Access for people with disabilities is to be provided in accordance with the provisions of Part D3 of the BCA and AS1428.1 – 2009. Specialist consultation should be sought to ensure compliance to the BCA and Disability (Access to Premises) Standards 2010

## **Section E: Services and Equipment**

The building is required to be served by a fire hydrant system complying with Clause E1.3 of the BCA and AS 2419.1 – 2017. Consideration is to be given to the location of the fire brigade booster assembly. Where located remotely from the buildings the booster assembly is required to be:

- At the boundary of the site and be within sight of the main entrance to the building
- Adjacent to the principal vehicular access to the site
- Located not less than 10m from the external wall of any building served.

The building is required to be served by fire hose reels complying with Clause E1.4 of the BCA and AS 2441.

The building will require portable fire extinguishers complying with Clause E1.6 of the BCA and AS 2444.

The smoke hazard management of the building must comply the requirements of Part E2.2, Table E2.2a & b and Specification E2.2 (see Appendix D)

The building will require emergency lighting in accordance with Clauses E4.2 & E4.4 of the BCA and AS 2293.1.

The building will require exit signage in accordance with Clauses E4.5, NSW E4.6 & E4.8 of the BCA and AS 2293.1 – 2018.

An emergency warning and intercom system complying with AS1670.4 must be installed in a Class 9b building used as a public hall having a floor area more than 1000m<sup>2</sup>. Details demonstrating compliance and design certification will be required from services consultants at Construction Certificate stage.

## **Section F: Health and Amenity**



Weatherproofing of external wall systems must be in accordance with BCA Verification Method FV1.

Stormwater drainage must comply with AS/NZS 3500.3.

Water proofing of wet areas within a building to comply with AS 3740.

The number of persons accommodated is to be calculated according to D1.13 if it cannot be more accurately determined by other means. The number of sanitary facilities are to be provided in accordance with the requirements of F2.2 and F2.3 (as specified in Table F2.3 for employees and patrons). The total number of people accommodated based on D1.13 & adding up the number of seats shown in each room is calculated at 628 a breakdown of employees and patrons is not possible using the information available. The number of required facilities for Class 9b buildings is determined by the use of the space.

An accessible unisex sanitary compartment is required in accordance with Clause F2.4 of the BCA and AS 1428.1 – 2009. A male and female sanitary compartment suitable for a person with an ambulant disability is required in accordance with AS 1428.1 – 2009.

Sanitary compartments are to be constructed in accordance with clause F2.5.

Minimum ceiling heights are to be 2.7m where the room accommodates more than 100 people or 2.4m where it accommodates less than 100 people. 2.1m is permitted in corridors, passageways, bathrooms, sanitary compartments, storerooms or the like.

Artificial lighting is required to all rooms that are frequently occupied, all accessible spaces, all corridors and circulation spaces and path of egress in accordance with AS/NZS 1680.0 – 2009.

Ventilation will be required to all rooms occupied by a person for any purpose by means of natural ventilation complying with Clause F4.6 of the BCA or mechanical ventilation/air-conditioning complying with AS 1668.2 – 2012

Commercial kitchens must be provided with a kitchen hood exhaust complying with AS1668.1 & AS1668.2 where the cooking apparatus in this clause exceeds the requirements of this clause

## **Section G: Ancillary Provisions**

Part G3 Atrium construction does not apply to the proposed development.

Part G5 No part of the development is proposed in a bushfire prone area as indicated in the ePlanning Portal.

Part G6 Occupiable outdoor areas are required to comply with this part



## Section H: Ancillary Provisions - Class 9b Buildings

Part H1.1 does not apply to the building.

If an entertainment venue forms part only of a building, then the whole of the entertainment venue; must be separated from the other parts of the building by construction having an FRL of not less than 60/60/60.

The stage area is determined to be less than 50m<sup>2</sup> in area.

The chairs within the main hall are to securely fastened to the floor or secured together in groups of not less than 4 and not more than 16 in accordance with Clause NSW H101.11.3.

A storeroom must be separated from other parts of the building by construction having an FRL of not less than 60/60/60. The storeroom and kitchen should be separated from the main hall.

The switchboard containing the main isolation switch must:

- be located in a position that is readily accessible to authorised persons, and to the Fire Brigade in the case of an emergency; and
- be enclosed by construction having an FRL not less than 60/60/60

Protection of a final sub-circuit originating at a switchboard or distribution board must be by means of circuit breakers.

Where an entertainment venue has its mains supply in common with that of another building or where it is a part of a building:

- the entertainment venue must be served by a separate and independent sub-main from the main switchboard; and
- each such sub-main, the consumer's main and the supply authority's conductors within the building must be protected against fire by means of:
  - mineral-insulated metal-sheathed cables or other cables that provide at least 2 hours' fire protection; or
  - heavy-duty PVC conduit or metallic pipe, concrete encased in walls or slabs with a minimum of 50 mm cover; or
  - heavy-duty PVC conduit or metallic pipe, buried at least 500 mm below ground level, for underground cabling

Any switch controlling the lighting system must not be accessible. Where, during normal use, general lighting may be dimmed or switched off, an override switch to switch on all the general lighting instantaneously must be installed in the auditorium in a position accessible to management.

## Section J: Energy Efficiency

The buildings are to be designed to achieve compliance with the relevant provisions of Part J0 to J8 respectively.

Key compliance items include:

- The building fabric will be required to achieve compliance with Part J1.



- Building sealing will be required to windows, rooflights & doors in accordance with the relevant sections Part J3
- Air-conditioning and mechanical ventilation systems will need to be designed in accordance with the relevant sections of Part J5
- Artificial lighting and power will need to be designed in accordance with the relevant sections of Part J6
- Heated water supply system for food preparation and sanitary facilities to be designed and installed in accordance with Part B2 of the Plumbing Code of Australia; and
- Facilities for energy monitoring in accordance with Clause J8.3.

## Conclusion

This report documents a preliminary audit of the proposed design against the BCA and the relevant legislative requirements for the issue of a Development Application.

We confirm the proposed design, as shown on the drawings referenced in Appendix A, can achieve compliance with the BCA. The proposed design will therefore be capable of being approved under a Development Application, subject to the provision of further details regarding performance-based solutions and other documentation necessary to satisfy the relevant legislative requirements.



## Appendix A – Referenced Documentation

Drawing No.	Title	Issue	Date	Drawn By
n/a	Concept Design -Public Exhibition	Stage 2	7 <sup>th</sup> July 2020	Terroir Architects

This report is to be used in support of the submission of the application for a DA

## Appendix B – Schedule of proposed statutory Fire Safety Measures

Measure	Standard of Performance
Automatic Fail-Safe Devices	Scheduled devices release upon trip of smoke detection, fire detection and sprinkler activation in accordance with BCA 2019 Amendment 1 Clause D2.21.
Automatic Fire Detection and Alarm System (Smoke Detection System To Automatically Shutdown Air-Handling System)	BCA 2019 Amendment 1 Clause 6 of Specification E2.2a and AS 1670.1 – 2018
Emergency Lighting	BCA 2019 Amendment 1 Clause E4.2, E4.4 and AS/NZS 2293.1 – 2018
Emergency Warning and Intercommunication System	BCA 2019 Amendment 1 Clause E4.9, Specification G3.8 and AS 1670.4 – 2018
Exit Signs	BCA 2019 Amendment 1 Clause E4.5, NSW E4.6, E4.7, E4.8 and AS/NZS 2293.1 – 2018
Fire Dampers	BCA 2019 Amendment 1 Clause C3.15 and AS 1668.1 – 2015 (AS 1682.1 – 2015 and AS 1682.2 – 2015)
Fire Doors	BCA 2019 Amendment 1 Specification C3.4 and AS/NZS 1905.1 – 2015
Fire Hydrants Systems	BCA 2019 Amendment 1 Clause E1.3 and AS 2419.1 – 2005
Fire Seals Protecting Opening In Fire Resisting Components of The Building	BCA 2019 Amendment 1 Clause C3.15, Specification C3.15, AS 1530.4 – 2014, AS 4072.1 – 2005 and installed in accordance with the tested prototype.
Hose Reel System	BCA 2019 Amendment 1 Clause E1.4 and AS 2441 – 2005
Lightweight Construction	BCA 2019 Amendment 1 Specifications C1.8, Clause A2.3 and AS 1530.4 – 2014
Mechanical Air Handling System (Automatic Shut Down of Air-Handling System)	BCA 2019 Amendment 1 Clause E2.2 and AS 1668.1 – 2015
Portable Fire Extinguishers	BCA 2019 Amendment 1 Clause E1.6 and AS 2444 – 2001
Warning and Operational Signs	BCA 2019 Amendment 1 Clause D3.6, and NSW H101.8



## Appendix C – Fire-resistance levels

The below table contain the fire-resistance levels (FRL) required under Specification C1.1 of the BCA.

TYPE C CONSTRUCTION: FRL OF BUILDING ELEMENTS				
Building element	Class of building - FRL: (in minutes)			
	Structural adequacy/Integrity/Insulation			
	2, 3 or 4 part	5, 9 or 7a	6	7b or 8
<b>EXTERNAL WALL</b> (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-				
less than 1.5m	90/90/90	90/90/90	90/90/90	90/90/90
1.5 to less than 3 m	-/-/-	60/60/60	60/60/60	60/60/60
3 m or more	-/-/-	-/-/-	-/-/-	-/-/-
<b>EXTERNAL COLUMN</b> not incorporated in an external wall, where the distance from any fire-source feature to which it is exposed is-				
less than 1.5 m	90/-/-	90/-/-	90/-/-	90/-/-
1.5 or less than 3 m	-/-/-	60/-/-	60/-/-	60/-/-
3 m or more	-/-/-	-/-/-	-/-/-	-/-/-
<b>COMMON WALLS</b>				
<b>and FIRE WALLS</b>	90/90/90	90/90/90	90/90/90	90/90/90
<b>INTERNAL WALLS</b>				
Bounding public corridors, public lobbies and the like-				
	60/60/60	-/-/-	-/-/-	-/-/-
Between or bounding sole-occupancy units-				
	60/60/60	-/-/-	-/-/-	-/-/-
Bounding a stair if required to be rated-				
	60/60/60	-/-/-	-/-/-	-/-/-
<b>ROOFS</b>	-/-/-	-/-/-	-/-/-	-/-/-





## Appendix D – Smoke Hazard Management - NSW Assembly Building Provisions

Class 9b - Assembly buildings	
The following provisions apply to all Class 9b <i>assembly buildings</i> :	
(a) <b>Automatic shutdown:</b>	<p>A building or part of a building used as an <i>assembly building</i> must be provided with <i>automatic</i> 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 6 of AS 1668.1) which does not form part of the smoke hazard management system, on the activation of—</p> <ul style="list-style-type: none"> <li>(i) smoke detectors installed complying with <a href="#">Clause 6 of Specification E2.2a</a>; and</li> <li>(ii) any other installed fire detection and alarm system, including a sprinkler system (other than a FPAA101D or FPAA101H system) complying with <a href="#">Specification E1.5</a>.</li> </ul>
(b) <b>Basements:</b>	<p>A basement not counted in the <i>rise in storeys</i> in accordance with <a href="#">C1.2</a>, less than 2000 m<sup>2</sup> used as an <i>assembly building</i> or part of an <i>assembly building</i> containing an <i>auditorium</i> or other public area, must be equipped with—</p> <ul style="list-style-type: none"> <li>(i) an <i>automatic</i> smoke detection system in accordance with <a href="#">Specification E2.2a</a>; or</li> <li>(ii) an <i>automatic</i> zone pressurisation system in accordance with AS 1668.1 if the basement has more than one <i>fire compartment</i>; or if the basement forms part of a multi <i>fire compartmented</i> building served by the zone pressurisation system; or</li> <li>(iii) a sprinkler system (other than a FPAA101D or FPAA101H system) complying with <a href="#">Specification E1.5</a>.</li> </ul>
(c) <b>Stages and backstages:</b>	<ul style="list-style-type: none"> <li>(i) For the purposes of this Table, where a <i>stage</i> is separated from the <i>auditorium</i> by a proscenium wall incorporating a proscenium opening, a backstage room or area that is not separated from the <i>stage</i> by construction having an FRL of not less than 60/60/60, is taken to form part of the <i>stage</i>.</li> <li>(ii) A building or part of a building used as an <i>assembly building</i> which has a <i>stage</i>— <ul style="list-style-type: none"> <li>(A) with a <i>floor area</i> of more than 50 m<sup>2</sup> and not more than 150 m<sup>2</sup> must, over the <i>stage</i>, be provided with— <ul style="list-style-type: none"> <li>(aa) an <i>automatic</i> smoke exhaust system complying with <a href="#">Specification E2.2b</a> (including <a href="#">Figure 2</a>); or</li> <li>(ab) roof mounted <i>automatic smoke-and-heat vents</i> complying with <a href="#">NSW H101.22</a>, in a single <i>storey</i> building or the top <i>storey</i> of a multi <i>storey</i> building; or</li> </ul> </li> <li>(B) with a <i>floor area</i> of more than 150 m<sup>2</sup> must, over the <i>stage</i>, be provided with an <i>automatic</i> smoke exhaust system complying with <a href="#">Specification E2.2b</a> (including <a href="#">Figure 2</a>); or</li> <li>(C) equipped with means of <i>flying scenery</i> must, over the <i>stage</i>, be provided with an <i>automatic</i> smoke exhaust system complying with <a href="#">Specification E2.2b</a> (including <a href="#">Figure 2</a>).</li> </ul> </li> </ul>
Other assembly buildings	
(a)	<p>Unless otherwise described in (b), in a building or part of a building used as an <i>assembly building</i> (not being a night club, discotheque or the like; or an exhibition hall, museum or art gallery) where the <i>floor area</i> of a <i>fire compartment</i> is more than 2000 m<sup>2</sup>, the <i>fire compartment</i> must be provided with—</p> <ul style="list-style-type: none"> <li>(i) an <i>automatic</i> smoke exhaust system complying with <a href="#">Specification E2.2b</a>; or</li> <li>(ii) roof mounted <i>automatic smoke-and-heat vents</i> complying with <a href="#">Specification E2.2c</a>, in a single <i>storey</i> building or the top <i>storey</i> of a multi <i>storey</i> building; or</li> <li>(iii) if the <i>floor area</i> of the <i>fire compartment</i> is not more than 5000 m<sup>2</sup> and the building has a <i>rise in storeys</i> of not more than 2— <ul style="list-style-type: none"> <li>(A) an <i>automatic</i> smoke detection and alarm system complying with <a href="#">Specification E2.2a</a>; or</li> <li>(B) a sprinkler system (other than a FPAA101D or FPAA101H system) complying with <a href="#">Specification E1.5</a>.</li> </ul> </li> </ul>
(b)	<p>The following buildings are exempt from the provisions of (a):</p> <ul style="list-style-type: none"> <li>(i) Sporting complexes, (including sports halls, gymnasiums, <i>swimming pools</i>, ice and roller rinks, and the like) other than indoor sports stadiums with total spectator seating for more than 1000 persons.</li> <li>(ii) Churches and other places used solely for religious worship.</li> <li>(iii) <i>School</i> classrooms.</li> </ul>

**Note to NSW Table E2.2b:** Smoke hazard management provisions for an *assembly building* used for multiple purposes must comply with all the relevant provisions of [NSW Table E2.2b](#) according to usage.