



# CREDWELL

Consulting NCC . Access . Fire Safety

**Project** 125-133 Sale Street, Orange –  
Former Nurses Quarters & Health Care Facilities

**Report** Fire Safety Audit Report

**Reference** 10598-Audit-r1

**Date** 16 May 2018

**Client** Health Infrastructure

**Contact** Peter Basha  
Peter Basha Planning & Development  
[peter@bashaplanning.com.au](mailto:peter@bashaplanning.com.au)


Suite 509, 410 Elizabeth St,  
Surry Hills, NSW 2010  
[info@credwell.com.au](mailto:info@credwell.com.au)  
02 9281 8555

---

## Contents

Document Control .....	3
1 Introduction .....	4
1.1 Building Location.....	4
1.2 Objectives.....	4
1.3 Audit Scope and Criteria .....	5
1.4 Limitations.....	5
2 Building Description.....	6
3 Assessment .....	7
3.1 General.....	7
3.2 Fire Resistance (Part C1) .....	7
3.3 Fire Compartmentation (Part C2) .....	9
3.4 Protection of Openings (Part C3) .....	10
3.5 Occupant Egress (Section D) .....	11
3.6 Fire Fighting Equipment (Part E1) .....	16
3.7 Smoke Hazard Management (Part E2).....	17
3.8 Lift Installations (Part E3) .....	17
3.9 Emergency Lighting, Exit Signs and Warning Systems (Part E4) .....	17
4 Essential Fire Safety Measures .....	19
5 Upgrading Strategy Summary .....	20
6 Conclusion .....	22

## Document Control

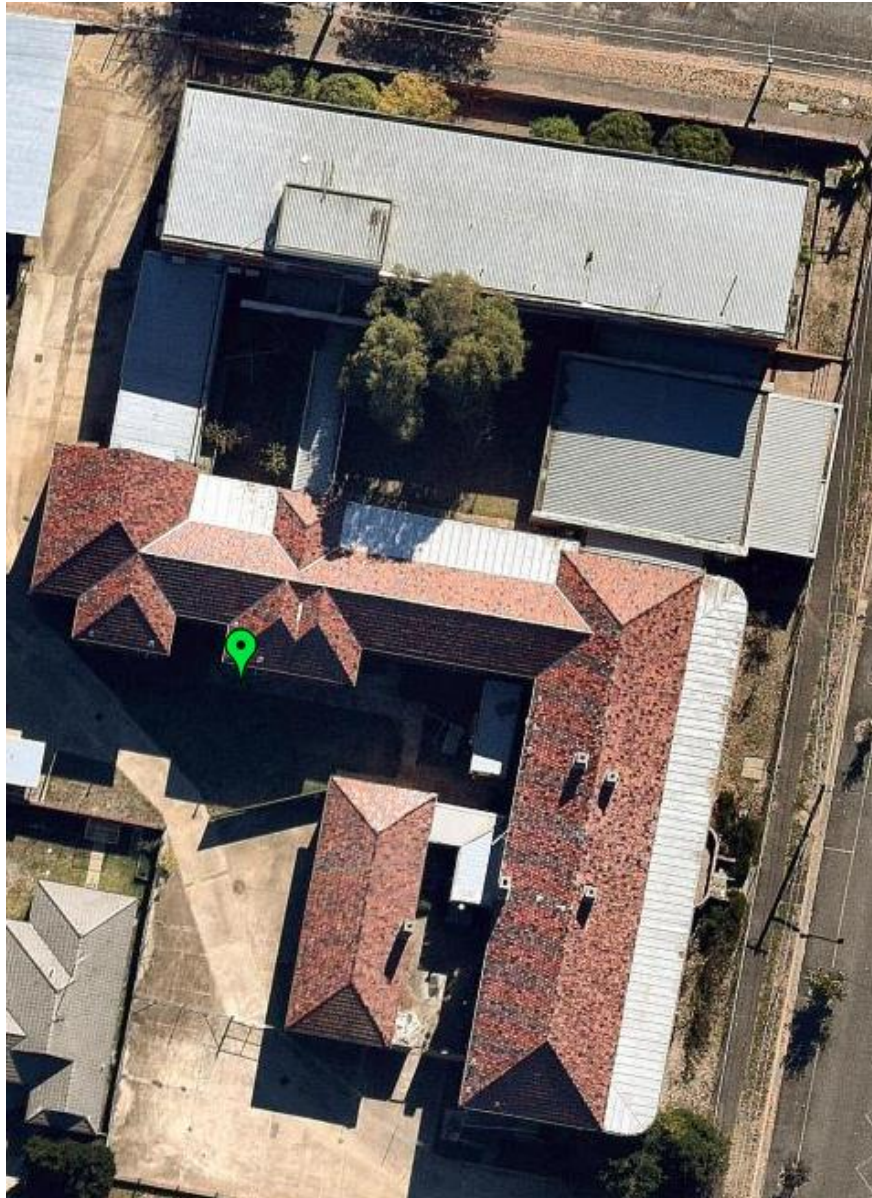
Reference/Revision	Date	Description	Access Assessment Report
10598-Audit-r1	16/05/2018	Prepared by	<b>James Deters</b> A1 Accredited Certifier BPB0089
			

## 1 Introduction

### 1.1 Building Location

The subject building is located at 125-133 Sale Street, Orange and is known as the Former Nurses Quarters & Health Care Facilities. The building consists of a two and three storey building currently unused, but assumed to be previously Class 3 and Class 5 classifications.

The building is formed by a three storey and two storey building joined by a single storey area between the buildings such that this structure is considered as a single building for the purposes of the National Construction Code.



### 1.2 Objectives

The purpose of this report is to provide a Fire Safety Audit Report addressing all Clauses of Section C, D and E of the Volume 1 of the National Construction Code (NCC) and stipulating where the building achieves compliance, non-compliance or if the provision is not applicable relative to the circumstance.

The report will provide a clear upgrading strategy to provide a suitable level of fire and life safety given the existing nature and use of the building.

### 1.3 Audit Scope and Criteria

The scope and criteria of the inspection is limited to:

1. The building as inspected on 04 May 2018;
2. Areas of the building accessed, including the external areas and a sample of internal areas. It is noted that only a sample of internal areas were accessed due to the restriction in place due to the asbestos exposure within the building;
3. The deemed-to-satisfy (DTS) provisions of Section C, D and E of the NCC as current at the time of this report;
4. A non-destructive visual inspection of the building, no inspection of any cavities has been carried out; and
5. The provision of a high level schedule of works as an upgrading strategy for approval by the Regulatory Authority. This report is not a tender specification and should not be used for tendering purposes.

### 1.4 Limitations

This report does not include, nor imply, any audit, assessment, or upgrading of:

1. The stand alone awning/carport structures on the site;
2. Sections B, F, G, H, I, J and Part D3 of the NCC;
3. The structural adequacy of the building;
4. The capacity or design of any electrical, fire, hydraulic or mechanical services; and
5. The Disability (Access to Premises – Building) Standards 2010 and the Disability Discrimination Act 1992 (Cth).

This report does not include, nor imply, any audit, or assessment of:

1. Any Development Consent conditions;
2. The Liquor Licencing Act 1997;
3. The Work Health and Safety Act 2011;
4. The Swimming Pools Act 1992; and
5. Requirements of Authorities including, but not limited to, WorkCover, RMS, Council, Telecommunications Supply Authority, Electricity Supply Authority, Water Supply Authority, Gas Supply Authority and the like.

## 2 Building Description

The building is described as follows:

Class	Use	Area
5	Office and medical suites	Part ground and upper levels
3	Residential areas	Part ground and upper levels

Note: The Class 5 usage was associated with health care suites, it will be assumed for the remainder of this report that the any future use of the building will be Class 3 only.

<b>Rise in Storeys</b>	3
<b>Effective Height</b>	Less than 12m
<b>Floor area (approximate)</b>	2,200m <sup>2</sup>
<b>Type of Construction required by Clause C2.2 of the NCC</b>	A

### 3 Storey Part

<b>Existing Construction</b>	Floors	Concrete
	External Walls	Part Masonry Part Concrete
	Internal Walls - General	Masonry & Lightweight
	Internal Walls – Residential Units	Masonry – general walls Lightweight – some walls
	Roof	Concrete roof
	Internal Stairs	Concrete
	Ceilings	Generally, plasterboard, but some drop tile ceilings

### 1 and 2 Storey Part

<b>Existing Construction</b>	Floors	Part Timber Part concrete
	External Walls	Masonry – double brick
	Internal Walls - General	Masonry & Lightweight
	Internal Walls – Residential Units	Masonry – general walls Lightweight – some walls
	Roof	Tile roof – 2 storey part Metal roof – 1 storey part
	Internal Stairs	Timber Concrete
	Ceilings	Plasterboard and other non-fire rated set ceilings

The following fire compartments have been assumed:

1. The building is a single fire compartment.

### 3 Assessment

#### 3.1 General

As an existing building Council has discretion as to the level of upgrading required under Section 93 and 94 of the Environmental Planning and Assessment Act 1979 at the Development Application Stage of a proposal, or through a Council Fire Order. Keeping in mind discretion is available and given the physical and practical constraints presented in an existing building this strategy will outline an upgrading strategy that is considered to provide an appropriate level of fire and life safety.

For the purposes of this audit, the existing building has been considered under the following headings covering NCC Sections C, D and E:

- Fire Resistance (Part C1)
- Fire Compartmentation (Part C2)
- Protection of Openings (Part C3)
- Occupant Egress (Section D)
- Fire Fighting Equipment (Part E1)
- Smoke Hazard Management (Part E2)
- Lift Installations (Part E3)
- Emergency Lighting, Exit Signs and Warning Systems (Part E4)

#### 3.2 Fire Resistance (Part C1)

Clause	Comments	Action
C1.0 DTS Provisions	Information only.	N/A
C1.1 Type of construction	<p>Type A Construction required.</p> <p>The existing construction is considered to generally comply with the requirements of Type A Construction with the exception of:</p> <p>Within the 3-storey part:</p> <ol style="list-style-type: none"> <li>1. Gaps over walls are not closed such that the internal walls will not achieve the required FRL's;</li> <li>2. Areas of glazed walls, such as to kitchen and dining rooms are off public corridors. These walls do not achieve the required FRL's.</li> </ol>	<ol style="list-style-type: none"> <li>1. The residential, and any non-residential areas, are to be smoke separated from one another using construction as permitted by BCA Specification C2.5 for smoke separation;</li> <li>2. Each level of the building is to be smoke separated from one another using construction as permitted by BCA Specification C2.5 for smoke separation;</li> <li>3. Each residential unit, or common room, is to be smoke separated from other units and common areas using construction as permitted by BCA Specification C2.5 for smoke separation;</li> </ol>

Clause	Comments	Action
	<p>Within the 2 storey part:</p> <ol style="list-style-type: none"> <li>3. The floors are a mixture of concrete and timber, where timber there is no FRL to the floor;</li> <li>4. There are areas of spalling concrete, such that the steel reinforcement is exposed reducing the possible FRL to the concrete floor;</li> <li>5. The top floor ceiling is not a fire-resistant ceiling, nor do the bounding construction walls extend to the underside of the roof covering; and</li> <li>6. The internal walls and ceiling to the Class 3 area do not meet the requirements for fire rated bounding construction.</li> </ol> <p>Given the existing nature of the building and that the works required to achieve compliance with this clause and Specification C1.1 would require significant demolition and rebuilding of the building an upgrading strategy is proposed that will provide a significant increase in the fire and life safety of the building. Discretion is recommended with the following reasoning:</p> <ol style="list-style-type: none"> <li>A. The works required to upgrade the building to achieve BCA compliant fire separation and bounding construction would require substantial demolition and reconstruction of the existing building;</li> <li>B. The use of the building is analogous to a Class 9c building where people are accommodated with no fire separation between the residential units. This upgrading strategy has the following in addition to what would be required for a Class 9c building:             <ol style="list-style-type: none"> <li>i. The occupants in the subject building will be generally more ambulant than those in a Class 9c aged care building;</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>4. All service penetrations through smoke separated construction are to be suitably smoke sealed;</li> <li>5. The doors to the residential units, and common rooms, off the residential public corridors are to be self-closing, tight fitting solid core doors with a minimum thickness of 35mm;</li> <li>6. The doors to the residential units, and common rooms, off the residential public corridors are to be provided with smoke seals to all 4 sides of the doors. The smoke seals are to be ambient and medium smoke seals in accordance with AS1530.7;</li> <li>7. Any glazed highlight windows, or filled in highlights, to residential units and/or common rooms are to be altered to be smoke separated from one another using construction as permitted by BCA Specification C2.5 for smoke separation;</li> <li>8. The entire building is to be sprinkler protected with a sprinkler system complying with AS2118.1-2017;</li> <li>9. The entire building is to be provided with an AS1670.1-2004 smoke detection and alarm system monitored back to base as per Clause 7 of BCA Specification E2.2a; and</li> <li>10. An emergency management plan compliant with AS3745-2010 is to be applied to the entire building.</li> </ol>



Clause	Comments	Action
	<ul style="list-style-type: none"> <li>ii. The upgrading strategy includes smoke separation of units from one another and common areas of the building;</li> <li>iii. The provision of sprinklers to AS2118.1 and an AS1670 monitored smoke detection and alarm system exceed what would be required for a Class 9c building of this size; and</li> <li>iv. The emergency management plan will assist in the evacuation of the building, decreasing the time take for occupant to evacuate.</li> </ul>	
C1.2 Rise in storeys	Rise in storeys of three (3).	Noted
C1.3 Multiple classifications	Type A Construction required.	Noted
C1.4 Mixed types of construction	Type A Construction required.	Noted
C1.5 Two storey Class 2, 3 and 9c	Not applicable	N/A
C1.6 Class 4 Parts	Not applicable	N/A
C1.7 Open spectator stands or indoor sports stadiums	Not applicable	N/A
C1.8 Lightweight construction	During the inspection lightweight fire rated construction was not evident. It is expected that lightweight construction will be used as a part of the upgrading works, the new areas of lightweight construction are to be identified at the completion of the upgrading.	Noted
C1.10 Fire hazard properties	The timber and drop in panel ceiling linings throughout the 3 storey part are unlikely to achieve compliance with this clause.	The timber and drop in panel ceiling linings throughout the 3 storey part are to be removed and replaced with materials complying with NCC2016 Clause C1.10.
C1.11 Performance of external walls	Not applicable	N/A
C1.12 Non-combustible materials	Information only.	N/A

### 3.3 Fire Compartmentation (Part C2)

Clause	Comments	Action
C2.0 DTS Provisions	Information only.	N/A
C2.1 Application of Part	Information only.	N/A

Clause	Comments	Action
C2.2 Floor area and volume limits	As a building required to be of Type A Construction the premises does not exceed the limits.	Generally satisfactory – no action
C2.3 Large isolated building	Not applicable	N/A
C2.4 Open spaces and vehicular access	Not applicable	N/A
C2.5 Class 9a and 9c	Not applicable	N/A
C2.6 Vertical separation	Vertical separation appears to be generally satisfactory.	Generally satisfactory – no action
C2.7 Separation by fire walls	No fire walls existing or proposed.	Noted
C2.8 Separation of classifications in the same storey	The building has been assumed in this report to be of Class 3 classifications generally.	Noted
C2.9 Separation of classifications in different storeys	The building has been assumed in this report to be of Class 3 classifications generally.	Noted
C2.10 Separation of lift shafts	No lift.	N/A
C2.11 Stairways and lifts in one shaft	No lift.	N/A
C2.12 Separation of equipment	No equipment requiring separation.	N/A
C2.13 Electricity supply system	The electricity system does not support emergency equipment operating in emergency mode.	N/A
C2.14 Public corridors in a Class 2 or 3	The corridors in the 2 storey part are longer than 40m.	The corridors in the 2 storey part of the building are to be separated into smoke compartments of not more than 40m in length using construction complying with NCC2016 Clause C2.14.

### 3.4 Protection of Openings (Part C3)

Clause	Comments	Action
C3.0 DTS Provisions	Information only.	N/A
C3.1 Application of Part	Information only.	N/A
C3.2 Protection of openings in external walls	The building is more than 3m from a FSF.	Generally satisfactory – no action
C3.3 Separation of external walls and associated openings in different fire compartments	Not applicable	N/A
C3.4 Acceptable methods of protection	Information.	Noted

Clause	Comments	Action	
C3.5	Doorways in fire walls	Not applicable	N/A
C3.6	Sliding fire doors	Not applicable	N/A
C3.7	Protection of doorways in horizontal exits	Not applicable	N/A
C3.8	Openings in fire-isolated exits	Not applicable	N/A
C3.9	Service penetrations in fire-isolated exits	Not applicable	N/A
C3.10	Openings in fire-isolated lift shafts	Not applicable	N/A
C3.11	Bounding construction	The doors off the residential corridors are not self-closing - /30/60 fire doors.  It would be reasonable to apply discretion to permit the doors to be solid core doors as detailed in Clause C1.1 above given the upgrading strategy recommended in that Clause for the reasons given in that Clause.	See Clause C1.1 for upgrading strategy
C3.12	Openings in floors and ceilings for services	Openings in smoke separated construction to be suitably smoke sealed.	Upgrading in Clause C1.1 above.
C3.13	Openings in shafts	Openings in smoke separated construction to be suitably smoke sealed.	Upgrading in Clause C1.1 above.
C3.15	Openings for service installations	Openings in smoke separated construction to be suitably smoke sealed.	Upgrading in Clause C1.1 above.
C3.16	Construction joints	Construction joints assumed to be generally satisfactory.	Noted
C3.17	Columns protected with lightweight construction	No columns protected with lightweight construction identified.	N/A

### 3.5 Occupant Egress (Section D)

Clause	Comments	Action	
<b>Part D1 – Provision for Escape</b>			
D1.0	DTS Provisions	Information only.	N/A
D1.1	Application of Part	Information only.	N/A

Clause	Comments	Action
D1.2 Number of exits	All areas of the building have access to at least one exit. Most areas have access to 2 exits.	Generally satisfactory – no action
D1.3 When fire-isolated stairways and ramps are required	Given the Class 3 classification of the building for the purposes of this assessment the connection of up to three storeys by a non-fire-isolated exit is satisfactory.	Noted
D1.4 Exit travel distances	Exit travel distances are generally satisfactory with the exception of the First Floor residential area which currently has a travel distance exceeding 25m in lieu of the required maximum of 6m. Access to the second exit on this level is proposed in Clause D1.2 above.	Upgrading proposed in Clause D1.2 above.
D1.5 Distance between alternative exits	Travel distances of up to 7.15m were measured in lieu of the maximum distance of 6m.  Given the upgrading strategy in Clause C1.1 of this report it is reasonable to apply discretion to permit the travel distances to remain as existing. It is noted that the upgrading strategy includes the provision of a sprinkler system, a monitored smoke detection and alarm system, smoke seals and an emergency management plan.	Generally satisfactory – no action
D1.6 Dimensions of exits and paths of travel	The dimensions of the exits were generally greater than 1m, some locations were measured on-site to have minor encroachments such that the paths of travel were no less than 850mm wide.  Given the provision of two exits all upper levels of the building and the use of the buildings such that the population of each level would not exceed 100 people, the exit widths are generally satisfactory. It is noted that for egress the NCC permits an exit to be as narrow as 750mm through a doorway.  In some service areas existing widths are as low as 600mm wide generally, however this is not unreasonable	Generally satisfactory – no action

Clause	Comments	Action
	give that access to and around the plant room may comply with AS1657 which would permit paths of travel to be a minimum of 600mm.	
D1.7	Travel via fire-isolated exits	Not applicable
D1.8	External stairways or ramps in lieu of fire-isolated exits	Not applicable. It is noted that there are a number of external stairways, due to the number of storeys these are not external stairways or ramps in lieu of fire-isolated exits.
D1.9	Travel by non-fire-isolated stairways or ramps	Travel via the non-fire-isolated stairways is generally satisfactory.
D1.10	Discharge from exits	Discharge from the exits is generally satisfactory, it is assumed that as a part of any usage the security fence surrounding the site will be removed.
	The external steel stairways are part of the discharge paths from exits. These stairways are external and exposed to the weather. Areas of the steel is rusting.	A structural engineer, or other suitably qualified person, is to inspect the structural adequacy of the external steel stairways and provide certification that in their opinion the stairways are structurally adequate. This may require some physical works to ensure the stairways are structurally adequate.
D1.11	Horizontal exits	Not applicable
D1.12	Non-required stairways, ramps or escalators	Not applicable
D1.13	Number of persons accommodated	Each storey in each area is considered to accommodate less than 100 people.
D1.14	Measurement of distances	Information only
D1.15	Method of measurement	Information only
D1.16	Plant rooms, lift machine rooms, electricity network substations: Concession	No plant rooms.
D1.17	Access to lift pits	No existing lifts.
<b>Part D2 – Construction of Exits</b>		
D2.0	DTS Provisions	Information only.
D2.1	Application of Part	Information only.
D2.2	Fire-isolated stairways and ramps	Not applicable

Clause	Comments	Action
D2.3 Non-fire-isolated stairways and ramps	The internal stairways are either concrete, or where timber are assumed to be suitable when considered against this Clause. It is noted that as a part of this upgrading strategy the building is to be provided with a sprinkler system which will offset any areas of stairway which are not in strict compliance with this Clause.	Generally satisfactory – no action
D2.4 Separation of rising and descending stair flights	Not applicable	N/A
D2.5 Open access ramps and balconies	Not applicable	N/A
D2.6 Smoke lobbies	Not applicable	N/A
D2.7 Installations in exits and paths of travel	Electrical cupboards on the general floor levels are to be enclosed in non-combustible construction, with a non-combustible backing to the doors and smoke seals. All penetrations through the surrounding construction are to be smoke sealed.	Electrical cupboards on the general floor levels are to be enclosed in non-combustible construction, with a non-combustible backing to the doors and smoke seals. All penetrations through the surround construction are to be smoke sealed.
D2.8 Enclosure of space under stairs and ramps	The cupboard under the non-fire-isolated stairways are not in a fire rated enclosure.	The enclosure under the stairs are to either be upgraded to be separated from the remainder of the building with construction achieving a FRL of not less than 60/60/60, including the provision of a self-closing -/60/30 fire door and frame or the door to this space is to be permanently removed so that the area under the stairway is no longer enclosed.
D2.9 Width of required stairways and ramps	The stairways are less than 2m in width.	Noted
D2.10 Pedestrian ramps	No ramps.	N/A
D2.11 Fire-isolated passageways	Not applicable	N/A
D2.12 Roof as open space	Not applicable	N/A
D2.13 Goings and risers	Generally, the goings and risers were satisfactory. Luminance contrasting nosing strips was not provided to the majority of the stairways.  It was noted that some of the nosings of the stairs were damaged. The provision of stair nosings that wrap over the nosings of the stair will rectify this issue.	Nosing strips, which wrap over the nosing of the stairs, complying with AS1428.1-2009 Clauses 11.1(f) and (g) are to be provided to all internal and external stairways. Suitable products include SC8 stair nosings from Staircare, or the like.
D2.14 Landings	Landings are generally satisfactory.	Generally satisfactory – no action

Clause	Comments	Action
D2.15 Thresholds	There are a number of threshold steps throughout the building. This is very common for buildings of this age. Threshold steps are not permitted internally. Given that this is an existing doorway it would be reasonable to apply discretion to permit it to remain as existing subject to the works listed in the Action Column.	The nosing of the threshold steps are to be treated with a non-skid finish which has a 30% luminance contrast to the general finish of the surrounding floor.
D2.16 Barriers to prevent falls	Balustrades are required to be a minimum of 1m in height at landings and balconies and 865mm on the stairways. The balustrades internally did not comply with this Clause. Balustrades are required to be a minimum of 1m in height at landings and 865mm on the stairways. The balustrades externally did not comply with this Clause.	All balustrades, internally and externally and to balconies, are to be increased in height to be a minimum of 1m in height at the landings or floor levels and 865mm on the stairways in accordance with BCA Clause D2.16. Any gaps in the balustrades are to not permit a sphere with a diameter of 125mm to pass through them.
D2.17 Handrails	Generally, the existing handrails throughout the building do not comply with this Clause as they are of the wrong geometry, have elements that break hand holds, are less than 50mm from the wall or adjacent building elements, do not extend for the full length of the stair flight, etc. There are a number of stairways that are not provided with handrails.	All stairways, internal and external, are to be provided with handrails complying with NCC2016 Clause D2.17, except that the handrail need not have extensions to the bottom and top of the stair flights as required by AS1428.1-2009 Clause 12(j).
D2.18 Fixed platforms, walkways, stairways and ladders	Not applicable	N/A
D2.19 Doorways and doors	Exits are formed by swinging doors.	Generally satisfactory – no action
D2.20 Swinging doors	The main entry doors form a major exit from the building picking up the population using the adjacent non-fire-isolated stairways as well as the ground floor. These doors swing into the building. It is noted that due to the restrictions for access throughout the building the majority of the doorways were not accessible during this inspection.	The main entry doors are to be altered to swing outwards in the direction of egress.
D2.21 Operation of latch	The majority of the latching to the doorways throughout the building were knob style latching.	Latching to all doors to exits and doors in paths of travel, with the exception of the doors to the residential units are required to be lever handles, or other complying latching, complying with NCC2016 Clause D2.21.

Clause	Comments	Action
D2.22 Re-entry from fire-isolated exits	Not applicable	N/A
D2.23 Signs on doors	Not applicable	N/A
D2.24 Protection of openable windows	All windows to the residential units and common areas are to be provided with a complying window safety device.	Where not already provided, all windows to the residential units and common areas are to be provided with a complying window safety device to satisfy the requirements of NCC2016 Clause D2.24.
<b>Part D3 – Access for People with a Disability</b>		
As a Fire and Life Safety Audit this Part has not been assessed as a part of this report.		

### 3.6 Fire Fighting Equipment (Part E1)

Clause	Comments	Action
E1.0 DTS Provisions	Information only.	N/A
E1.3 Fire hydrants	The buildings are to be provided with coverage from a complying fire hydrant system. The provision of a fire hydrant system covering the existing areas of the buildings is to be provided as a part of the new works.	A fire hydrant system complying with NCC2016 Clause E1.3 and AS2419.1-2005 is to be provided to the joined building.  The existing superseded hydrant system is to be removed from the building or decommissioned and the landing valves removed from each level.
E1.4 Fire hose reels	Fire hose reels are not required to be provided to Class 3 buildings.	The fire hose reel system is to be removed from the existing building.
E1.5 Sprinklers	The building is required by this strategy to be provided with coverage by a sprinkler system.	Noted
E1.6 PFE's	Portable fire extinguishers were not found to be present in some locations where PFEs would be required.	2.5kg ABE powder portable fire extinguishers are to be provided throughout the building in the following locations and in accordance with NCC2016 Clause E1.6: a. Adjacent to each exit; b. Where not already within 10m of the doors to each of the residential units.
E1.8 Fire control centres	Not applicable	
E1.9 Fire precautions during construction	Not applicable	N/A



Clause	Comments	Action
E1.10 Provisions for special hazards	Not applicable	N/A

### 3.7 Smoke Hazard Management (Part E2)

Clause	Comments	Action
E2.0 DTS Provisions	Information only.	N/A
E2.1 Application of Part	Information only.	N/A
E2.2 General requirements	The entire building is to be provided with an AS1670.1-2004 smoke detection and alarm system monitored back to base as per Clause 7 of BCA Specification E2.2a as per Clause C1.1 above.	See Clause C1.1.
E2.3 Provision for special hazards	Not applicable	N/A

### 3.8 Lift Installations (Part E3)

Clause	Comments	Action
E3.0 DTS Provisions	No passenger lifts provided in the building.	

### 3.9 Emergency Lighting, Exit Signs and Warning Systems (Part E4)

Clause	Comments	Action
E4.0 DTS Provisions	Information only.	N/A
E4.2 Emergency lighting requirements	Emergency lighting is to be provided throughout the building.	Emergency lighting is to be provided throughout the building. Any new or existing emergency lighting is to be certified as complying with NCC Clauses E4.2 and E4.4 and AS2293.1-2005.  The system is to be coordinated with the emergency management plan.
E4.3 Measurement of distance	Information only.	N/A
E4.4 Design and operation of emergency lighting	The emergency lighting system is to comply with AS2293.1-2005.	Noted
E4.5 Exit signs	Exit signage is to be provided throughout the building.	Exit and directional signage is to be provided throughout the building. Any new or existing emergency lighting is to be

Clause	Comments	Action
		certified as complying with NCC Clauses E4.5, E4.6 and E4.8 and AS2293.1-2005.  The system is to be coordinated with the emergency management plan.
E4.6 Direction signs	Directional exit signage is to be provided throughout the building.	Exit and directional signage is to be provided throughout the building. Any new or existing emergency lighting is to be certified as complying with NCC Clauses E4.5, E4.6 and E4.8 and AS2293.1-2005.  The system is to be coordinated with the emergency management plan.
E4.7 Class 2, 3 and 4 exemptions	The Class 3 residential rooms do not require illuminated exit signage.	Noted
E4.8 Design and operation of exit signs	The exit and directional signage system is to comply with AS2293.1-2005.	Noted
E4.9 SSISEP's	A SSISEP is not required to be provided to the building as it is assumed to not be used solely as a residential part of a school or for people with a disability.	Noted

#### 4 Essential Fire Safety Measures

The building will require the following fire safety measures, existing measures are taken from the existing fire safety schedule for the building, however where required by this report the Standard of Performance has been upgraded:

	Fire Safety Measure	Standard of Performance
1.	Automatic fire detection and alarm systems	NCC2016 Clause E2.2 and Specification E2.2a Clauses 4 and 6 AS1670.1-2015 Fire Audit Report prepared by Credwell Consulting reference 10598-Audit-r1, dated 16 May 2018
2.	Automatic fire suppression systems (sprinklers)	NCC2016 Clause E1.5 and Specification E1.5 AS2118.1-2017 Fire Audit Report prepared by Credwell Consulting reference 10598-Audit-r1, dated 16 May 2018
3.	Emergency lighting	NCC2016 Clauses E4.2 and E4.8 AS2293.1-2005
4.	Exit signs	NCC2016 Clauses E4.5, E4.6 and E4.8 AS2293.1-2005
5.	Fire hydrant systems	NCC2016 Clause E1.3 AS2419.1-2005
6.	Smoke seals protecting openings in smoke-resisting components of the building	Fire Audit Report prepared by Credwell Consulting reference 10598-Audit-r1, dated 16 May 2018
7.	Lightweight construction (fire rated) (where used)	NCC2016 Clause C1.8 and Specification C1.8 Manufacturer's Specification
8.	Portable fire extinguishers	NCC2016 Clause E1.6 AS2444-2001 Fire Audit Report prepared by Credwell Consulting reference 10598-Audit-r1, dated 16 May 2018
9.	Smoke doors	NCC2016 Clause C2.5, Specification C2.5 and Specification C3.4 Clause 3 Fire Audit Report prepared by Credwell Consulting reference 10598-Audit-r1, dated 16 May 2018
10.	Solid core doors with smoke seals	Fire Audit Report prepared by Credwell Consulting reference 10598-Audit-r1, dated 16 May 2018
11.	Paths of travel	NCC2016 Parts D1 and D2 EP&A Reg Clause 186 Fire Audit Report prepared by Credwell Consulting reference 10598-Audit-r1, dated 16 May 2018
12.	Fire alarm monitoring	NCC Clause E2.2 and Specification E2.2a Clause 7 AS1670.3-2004 Fire Audit Report prepared by Credwell Consulting reference 10598-Audit-r1, dated 16 May 2018
13.	Nosing strips with luminance contrast to stairways	Fire Audit Report prepared by Credwell Consulting reference 10598-Audit-r1, dated 16 May 2018
14.	Smoke separating construction.	Fire Audit Report prepared by Credwell Consulting reference 10598-Audit-r1, dated 16 May 2018
15.	Emergency management plan	AS3745-2010 Fire Audit Report prepared by Credwell Consulting reference 10598-Audit-r1, dated 16 May 2018

## 5 Upgrading Strategy Summary

The following outlines the upgrading strategy summarising the works from above. The works are recommended to provide an adequate level of fire and life safety to the building given the existing nature of the building

1. The residential, and any non-residential areas, are to be smoke separated from one another using construction as permitted by BCA Specification C2.5 for smoke separation;
2. Each level of the building is to be smoke separated from one another using construction as permitted by BCA Specification C2.5 for smoke separation;
3. Each residential unit, or common room, is to be smoke separated from other units and common areas using construction as permitted by BCA Specification C2.5 for smoke separation;
4. All service penetrations through smoke separated construction are to be suitably smoke sealed;
5. The doors to the residential units, and common rooms, off the residential public corridors are to be self-closing, tight fitting solid core doors with a minimum thickness of 35mm;
6. The doors to the residential units, and common rooms, off the residential public corridors are to be provided with smoke seals to all 4 sides of the doors. The smoke seals are to be ambient and medium smoke seals in accordance with AS1530.7;
7. Any glazed highlight windows, or filled in highlights, to residential units and/or common rooms are to be altered to be smoke separated from one another using construction as permitted by BCA Specification C2.5 for smoke separation;
8. The entire building is to be sprinkler protected with a sprinkler system complying with AS2118.1-2017;
9. The entire building is to be provided with an AS1670.1-2015 smoke detection and alarm system monitored back to base as per Clause 7 of BCA Specification E2.2a; and
10. An emergency management plan compliant with AS3745-2010 is to be applied to the entire building
11. The timber and drop in panel ceiling linings throughout the 3 storey part are to be removed and replaced with materials complying with NCC2016 Clause C1.10.
12. The corridors in the 2 storey part of the building are to be separated into smoke compartments of not more than 40m in length using construction complying with NCC2016 Clause C2.14.
13. A structural engineer, or other suitably qualified person, is to inspect the structural adequacy of the external steel stairways and provide certification that in their opinion the stairways are structurally adequate. This may require some physical works to ensure the stairways are structurally adequate.
14. Electrical cupboards on the general floor levels are to be enclosed in non-combustible construction, with a non-combustible backing to the doors and smoke seals. All penetrations through the surround construction are to be smoke sealed.

15. The enclosure under the stairs are to either be upgraded to be separated from the remainder of the building with construction achieving a FRL of not less than 60/60/60, including the provision of a self-closing -/60/30 fire door and frame or the door to this space is to be permanently removed so that the area under the stairway is no longer enclosed.
16. Nosing strips, which wrap over the nosing of the stairs, complying with AS1428.1-2009 Clauses 11.1(f) and (g) are to be provided to all internal and external stairways. Suitable products include SC8 stair nosings from Staircare, or the like.
17. The nosing of the threshold steps are to be treated with a non-skid finish which has a 30% luminance contrast to the general finish of the surrounding floor.
18. All balustrades, internally and externally and to balconies, are to be increased in height to be a minimum of 1m in height at the landings or floor levels and 865mm on the stairways in accordance with BCA Clause D2.16. Any gaps in the balustrades are to not permit a sphere with a diameter of 125mm to pass through them.
19. All stairways, internal and external, are to be provided with handrails complying with NCC2016 Clause D2.17, except that the handrail need not have extensions to the bottom and top of the stair flights as required by AS1428.1-2009 Clause 12(j).
20. The main entry doors are to be altered to swing outwards in the direction of egress.
21. Latching to all doors to exits and doors in paths of travel, with the exception of the doors to the residential units are required to be lever handles, or other complying latching, complying with NCC2016 Clause D2.21.
22. Where not already provided, all windows to the residential units and common areas are to be provided with a complying window safety device to satisfy the requirements of NCC2016 Clause D2.24.
23. A fire hydrant system complying with NCC2016 Clause E1.3 and AS2419.1-2005 is to be provided to the joined building.
24. The existing superseded hydrant system is to be removed from the building or decommissioned and the landing valves removed from each level.
25. The fire hose reel system is to be removed from all Class 3 areas of the existing building.
26. 2.5kg ABE powder portable fire extinguishers are to be provided throughout the building in the following locations and in accordance with NCC2016 Clause E1.6:
  - a. Adjacent to each exit;
  - b. Where not already within 10m of the doors to each of the residential units.
27. Emergency lighting is to be provided throughout the building. Any new or existing emergency lighting is to be certified as complying with NCC Clauses E4.2 and E4.4 and AS2293.1-2005. The system is to be coordinated with the emergency management plan.
28. Exit and directional signage is to be provided throughout the building. Any new or existing emergency lighting is to be certified as complying with NCC Clauses E4.5, E4.6 and E4.8 and AS2293.1-2005. The system is to be coordinated with the emergency management plan.

## 6 Conclusion

It is my opinion that a reasonable level of fire and life safety will be achieved upon completion of the works detailed above given the existing nature and use of the building.

Signed



James Deters  
A1 (Unrestricted) Accredited Certifier BPB00089  
Credwell Consulting Pty Ltd