Concept Fire Engineering Strategy

St Luke's Grammar School

800 Pittwater Road

Dee Why NSW 2099

Revision: CFES 1.1 | Date: 14 November 2019 | Ref: S19163.00

Prepared for: Midson Group

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Document Control

Document Control and Verification					
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		Signature:			
		Comment:	Issue 1.0 - Concept Fire Engineering Strategy / Feasibility Incorp: - New additional solution on increased fire compartment area size; - Extended travel of up to 33 m from Level 3 Roof Terrace		

Executive Summary

Midson Group have appointed MCD Fire Engineering Pty Ltd to carry out an initial review of the findings of concept drawings of the subject works from a BCA Assessment viewpoint. The intention of this report is to provide some preliminary fire engineering advice and conceptual fire engineering feasibilities for the proposed development including alterations and additions to an existing building to create a new Senior School and carpark for St Luke's Grammar School, located at 800 Pittwater Road, Dee Why NSW 2099.

Note there is a separate building also forming part of the proposed works, at the address 224 Hedland Road. This building is excluded from this Report.

The building required to be of Type A construction, having a Rise in Storey (RIS) of 4 and has been classified as Class 7a (Carpark) and Class 9b (School).

The matters detailed in the BCA Assessment relate to a high-level fire and life safety review and the following matters have been identified as having a scope to rectify that does not have to strictly comply with the deemed-to-satisfy (DtS) provisions of the BCA. As such Performance Solutions are sought from a C10 Accredited Fire Safety Engineer to provide an alternative scope of works to address the variations to the DtS Provisions of the BCA/NCC.

The intent of this conceptual report is to provide a high-level fire engineering input for the project in order to document the likely fire safety measures for the building in order to achieve compliance with the relevant Performance Requirements of the BCA. The following is the currently agreed high level scope for fire engineering, the performance requirements listed in the tables below are the minimum Performance Requirements that must be considered, should the fire engineer identify more relevant Performance Requirements these are to be also considered.

Table 1: Summary of Performance Solution

No	DtS Clause	Description of non-compliance	Performance Requirement (A2.2(3) & A2.4)	Method of meeting Performance Requirements (A2.1)	Assessment Method (A2.2(2))
1	C2.2	To review and permit an increased fire compartment area of approx. 8,515 m^2 instead of 8,000 m^2 in a Type A building	CP1, CP2	A2.1(1) Refer Table 2	A2.2(2)(b)(ii) Refer Table 2
	C2.11	To review and permit the Stairs 6 and Lift 2 to be contained within the same fire isolated shaft.	CP2	A2.1(1) Refer Table 2	A2.2(2)(b)(ii) Refer Table 2
2	D1.4, D1.5	To review and permit the following extended travel distances: **Level 0 (Carpark) - Stage 1 and Stage 2** – Distance to Point of Choice 24m – Distance to a Single Exit 44m – Distance between Alternative Exits 86m **Level 1 - Stage 1** – Distance to Point of Choice 25m **Level 2 - Stage 1** – Distance to Point of Choice 27m – Distance to a Single Exit 44m – Distance between Alternative Exits 62m **Level 2 - Stage 2** – Distance to Point of Choice 27m – Distance to a Single Exit 44m – Distance between Alternative Exits 62m **Level 3 - Stage 1** – Distance to Point of Choice 22m – Distance to Point of Choice 33m (Roof Terrace) **Level 3 - Stage 2** – Distance to Point of Choice 27m – Distance to Point of Choice 33m (Roof Terrace)	DP4, EP2.2	A2.1(1) Refer Table 2	A2.2(2)(b)(ii) Refer Table 2
3	D1.11	To review and permit the use of a horizontal exit serving a Class 9b School part.	DP4	A2.1(1) Refer Table 2	A2.2(2)(d) Refer Table 2
4	C3.2, C3.3	To review and permit openings within 3 m of the boundaries or within 6 m of another building on the same allotment, and performance-based protection measures where applicable.	CP2	A2.1(1) Refer Table 2	A2.2(2)(b)(ii) Refer Table 2
5	C3.2, C3.4	To review and permit openings within external walls within 4-6 of another fire compartment.	CP2	A2.1(1) Refer Table 2	A2.2(2)(b)(ii) Refer Table 2

Contents

1 Introduction

1.1 Objective

Midson Group have appointed MCD Fire Engineering Pty Ltd to carry out an initial review of the findings of concept drawings of the subject works from a BCA Assessment viewpoint. The intention of this report is to provide some preliminary fire engineering advice and conceptual fire engineering feasibilities for the proposed development including alterations and additions to an existing building to create a new Senior School and carpark for St Luke's Grammar School, located at 800 Pittwater Road, Dee Why NSW 2099.

Note there is a separate building also forming part of the proposed works, at the address 224 Hedland Road. This building is excluded from this Report.

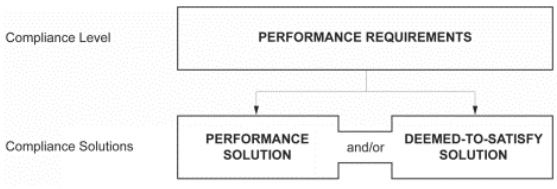
1.2 Applicable Legislation

The primary legislation applicable to the development is the National Construction Code (NCC), Volume One aka as the BCA 2019: Building Code of Australia. The BCA provides a set of prescriptive requirements, *Deemed-to-Satisfy* (DtS) Provisions that if meet, are deemed an acceptable level of safety and achieve compliance with the Performance Requirements of the BCA. Deviations from the BCA DtS Provisions must be shown and be addressed as a Performance Solutions to demonstrate they comply with the BCA Performance Requirements.

This Report is not a Performance Solution Report, but rather a Conceptual Fire Engineering Strategy that sets down the intentions or proposed fire safety strategy and likely fire engineering Performance Solution requirements.

The assessment of a Performance Solution can be undertaken using a variety of methods. These are defined in BCA Clause A2.2(3) and A2.4. One or more, or a combination of these methods can be adopted to determine whether the proposed Performance Solution complies with the BCA Performance Requirements. The relevant BCA Performance Requirements are determined in accordance with BCA Clause A2.2(3) and A2.4. Compliance with BCA Performance Requirements is undertaken in accordance with BCA Clause A2.1. BCA Clause A2.1 and A2.2(2) are presented below in Table 2.

Table 2: Methods of Meeting the Performance Requirements and Assessment Method for Performance Solution

BCA Clause A2.1	BCA Clause A2.2(2)
Performance Requirements are satisfied by one of the following— (1) A Performance Solution; or (2) A Deemed-to-Satisfy Solution; or (3) A combination of (1) and (2) as shown below:  	A Performance Solution must be shown to comply with the relevant Performance Requirements through one or a combination of the following Assessment Methods: (a) Evidence of suitability in accordance with Part A5 that shows the use of a material or product, plumbing and drainage product, form of construction or design meets a Performance Requirement. (b) Verification Methods including the following: (i) the Verification Methods in the NCC; or (ii) Other Verification Methods, accepted by the appropriate authority that show compliance with the relevant Performance Requirements (c) Expert Judgement (d) Comparison with the Deemed-to-Satisfy Provisions

The following New South Wales Legislation is applicable:

- NSW Environmental Planning and Assessment Act, 1979 and subsequent amendments
- NSW Environmental Planning and Assessment Regulation, 2000 and subsequent amendments

1.3 Stakeholders and Documentation

The relevant stakeholders in the design of this development are listed in Table 3 below.

Table 3: Relevant Stakeholders

Name	Organisation	Role
Toby James	Midson Group	Project Manager / Client Representative
-	Tonkin Zulaikha Greer Architects	Architect
Gemma McKenna	Group DLA	BCA Consultant
Brett Clabburn	Group DLA	Principal Certifying Authority
Mark McDaid, Lei Wang, Lin Li	MCD Fire Engineering Pty Ltd	Fire Engineering

1.3.1 Use and Location

The subject building, located at 800 Pittwater Road, consists of a Class 7a(Carpark) and a Class 9b (School). The Fire Service can access the school from Pittwater Road as shown in Figure 1.

The pedestrian and vehicular entry points are shown in Figure 2.

Figure 1: Site plan

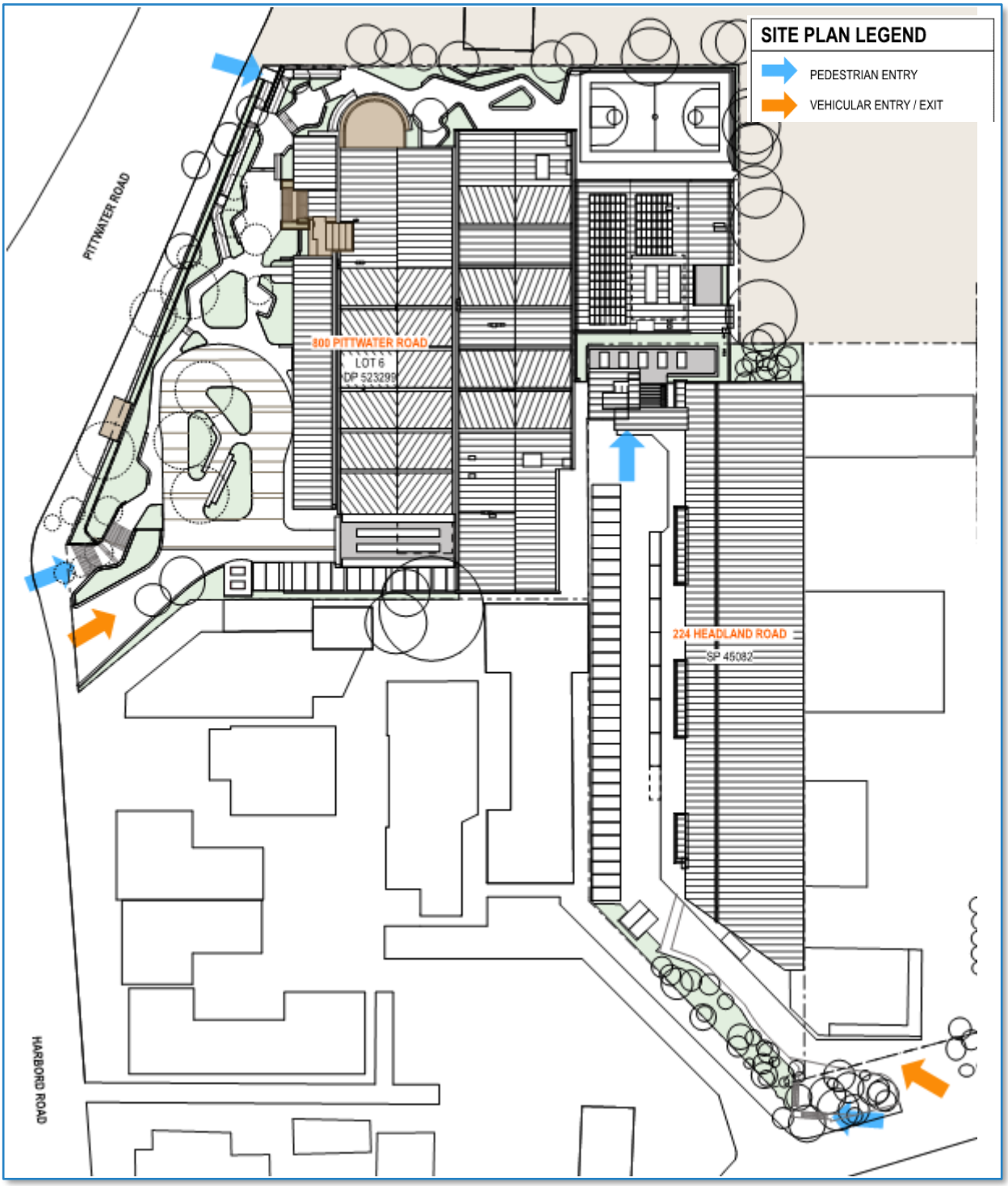


Figure 2: Pedestrian and vehicular entry points

1.3.2 Size and shape

The building comprises 5 storeys from Level 0 to Level 5. The rise in storey is 4 and the effective height is not more than 25m (approx. 15.5m). Refer to Appendix A for more details.

1.4 Occupant Characteristics

Building occupants can generally be classified into separate distinctive groups: staff, students and visitors. All occupants are assumed to be representative of the general population with no specific or unusual distributions in respect to gender, age and physical or mental attributes. A detailed description is contained in Table 4 below:

Table 4: Occupancy Characteristics

Characteristic	Description
Familiarity	Staff: Staff are expected to be familiar with the layout of the building and the location of exits. Students: Students are expected to be familiar with the layout of the building and the location of exits. Visitors: Visitors will generally be aware of the route they entered the building and are more likely to evacuate the building via this route even if other exits are closer. Most occupants, however, are expected to be mostly transient and it cannot be guaranteed that all occupants would be familiar with the building, its layout and the exit points. However due to the simple layout of the building they are expected to be able to make their way to exits, or be guided by their staff.
Awareness	Staff: Staff are expected to be alert and sober. Students are expected to be awake and alert to a potential emergency event such as a fire in the building. Visitors: Visitors may be under the influence of alcohol or other mild narcotics at some times.
Mobility	Staff: Any hearing, visual or mobility impaired staff are assumed to be able to self-evacuate or be assisted by other staff members. Students: Students are considered to be representative of the general population with some members having hearing, visual or mobility impairment and assumed to be assisted by staff. Visitors: Visitors are considered to be representative of the general population including a limited proportion of mobility impaired occupants. These occupants may require crutches, a wheelchair or similar to evacuate on their own or need assistance from other occupants and / or staff.
Training	Staff: Some staff are expected to have received some form of emergency / first aid training but for the purposes of the assessment, all occupants are assumed to be untrained. Students: Students are expected to have received some form of emergency but for the purposes of the assessment, all occupants are assumed to be untrained. Visitors: Visitors are expected to have no form of emergency / first aid training and for the purposes of the report, are assumed to be untrained.
Age	Staff: Staff are considered to be representative of the general population with no specific or unusual distributions in respect to gender or age. Students: Students are considered to be representative of the general population with a school age distribution but no specific or unusual distributions in respect to gender.
Culture / language	Staff: Staff are considered to be representative of the general population with some members having hearing, visual or mobility impairment and assumed to be assisted by staff. Students: Students are considered to be representative of the general population with some members having varying cultural backgrounds and languages. Visitors: Visitors are considered to be representative of the general population with some members having varying cultural backgrounds and languages. Although occupants may have English as their second language, they are expected to understand signs or verbal instructions in English to the degree necessary to not adversely impact upon evacuation.
Occupancy Loading	Occupancy levels and distribution throughout the building is assumed to be in accordance with the occupancy loadings of Table D1.13 of the BCA for the respective area usage.

1.5 BCA Building Information Characteristics

The initial review has identified the building information listed in Table 5.

Table 5: Relevant Building Information

BCA Clause		Description
Schedule 3	Effective Height	Less than 25 m (approx. 15.5m)
A6	Occupancy Classification	BCA Class 7a (Carpark) BCA Class 9b (School)
C1.1	Minimum Type of Construction	Type A
C1.2	Rise in Storeys	4
C2.2	Fire Compartment Floor Area and Volume	BCA Class 7a – No limit (sprinkler protected) BCA Class 9b < 8,000 m^2, 48,000 m^3
E1.5	**Sprinkler Protected?**	**Yes** (throughout, non-required except in carpark with more than 40 vehicles**)**

2 Conceptual Fire Safety Measures

The following high level fire safety measures should be read in conjunction with a BCA review for the building. These measures aim to act as a base point of any further and more detailed fire engineering assessment and reports as part of the Certification / Approvals processes.

It is outlined herein that, subject to the preliminary fire safety measures being incorporated into the design as detailed in Table 6 below as part of the concept fire safety design, and in conjunction with DtS fire safety measures as listed in a BCA Assessment Report, the future fire engineering assessments undertaken should be able to demonstrate that the identified deviations from the Deemed-to-Satisfy (DtS) Provisions meet the relevant Performance Requirements of the BCA. All other aspects of the proposed works are understood to be in accordance with the BCA DtS Provisions or as accepted by the PCA/Council.

Table 6: Required Fire Safety Features

Fire Safety Measure	Description
Construction Requirements	The building shall be of Type A construction. All building elements are required to have a fire resistance level (FRL) as listed in Table 3 of Specification C1.1 of BCA, except where addressed in the proposed Fire Engineering Report as a Performance Solution. All penetrations in fire rated construction shall be fire stopped in accordance with the BCA DtS requirements.
Fire safety doors and exit doors – statutory signage	**General requirement - BCA D2.23** Fire doors and smoke doors must be provided with a sign in 20 mm capital lettering on both sides of the doors as required in BCA D2.23. The signs are required to be as follows: ▪ to fire or smoke doors held open with automatic closing hold-open devices: **FIRE SAFETY DOOR – DO NOT OBSTRUCT** ▪ to self-closing fire or smoke doors: **FIRE SAFETY DOOR** **DO NOT OBSTRUCT** **DO NOT KEEP OPEN** ▪ to a door discharging from a fire-isolated exit: **FIRE SAFETY DOOR – DO NOT OBSTRUCT** **General requirement – EP&A Clause 183** Fire safety notices shall be provided entry (not within) any fire-isolated stairway, passageway or ramp as required in EP&A Clause 183. The notice shall contain the wording as follows. The words "OFFENCE RELATING TO FIRE EXITS" in the notice must be in letters at least 8 millimetres high, and the remaining words must be in letters at least 2.5 millimetres high: ***"OFFENCE RELATING TO FIRE EXITS*** *It is an offence under the Environmental Planning and Assessment Act 1979:* *(a) to place anything in or near this fire exit that may obstruct persons moving to and from the exit, or* *(b) to interfere with or obstruct the operation of any fire doors, or* *(c) to remove, damage or otherwise interfere with this notice."*
Electrical/Comms rooms/cupboard along path of travel	According to BCA D2.7, any Electrical/Comms rooms/cupboard located along path of travel shall be smoke sealed/separated from the remaining area: ▪ Any penetration through the Electrical/Comms rooms/cupboard shall be smoke sealed. ▪ The doors to the Electrical/Comms rooms/cupboard shall be fitted with ambient and medium smoke seals (refer to below separate section for detailed requirements for smoke seals). ▪ The doors to the Electrical/Comms rooms/cupboard, if not fire doors, shall be fitted with non-combustible backing such as metal sheeting, FC sheeting, plasterboard etc.

Fire Safety Measure	Description
Shared fire-isolated shaft for both Stairs 6 and Lift 2	As part of a proposed Performance Solution, the Stairs 6 and Lift 2, both being required to be fire-isolated, can have a shared fire-isolated shaft, as shown in Figure 3, provided that: ▪ The shared fire-isolated shaft shall be constructed by 120/120/120 fire rated walls (loadbearing) or -/120/120 fire rated walls (non-loadbearing), as shown in Figure 3. ▪ The entry door into the shared fire-isolated shaft on each level shall be a self-closing or auto-closing -/120/30 fire door and fitted with ambient and medium smoke seals (refer to below separate section for detailed requirements for smoke seals). ▪ The Stairs 6 shall be provided with sprinkler protection as part of the overall building wide AS 2118.1-2017 sprinkler system. Note this is in addition to the DtS requirement of AS 1670.1 smoke detection inside a fire-isolated stair. ▪ The lift shaft shall be provided with sprinkler protection in accordance with BCA Spec E1.5 Clause 13, and AS 2118.1-2017 Clause 5.9.2. ▪ Management in Use system shall be put in place to ensure lift pit is regularly (at least every three months) checked for rubbish build up, and if any, be removed. This requirement shall be included in the Essential Fire Safety Measures.
Smoke seals	The smoke seals required in this Report to doorways shall be ambient and medium smoke seal systems that have a smoke leakage rate of < 40 m^3/h (at medium temperature conditions with a pressure differential of 25 Pa after exposure at 200 °C for at least 30 minutes) when tested to AS 1530.7. ▪ Considerations shall be made when selecting smoke seals products such that they shall be compatible with the fire doors, such as the gaps around the perimeters of the doors and if the seals are suitable for the floor covering (if applicable). Products designed for retrofit/upgrading fire doors shall be considered. ▪ The installation of smoke seals shall be the same as that for the tested specimen and the provisions of AS 6905-2007. The clearances, seal contacts and other critical design attributes for fire doors shall be within the range established by test to AS 1530.7 and any variations permitted by AS 6905-2007. ▪ Recommended smoke seals products are Lorient LAS1212 & LAS1515 Batwing Perimeter Seals door frame perimeters and LAS8001si, LAS8002si, LAS8003si, LAS8005si, LAS8008si and LAS8009si threshold drop seals. Test Report EWFA Report No: 33937100.1 by Exova Warringtonfire for the above mentioned Lorient smoke seals have been reviewed, which demonstrates a smoke sealing performance that meets the set criteria above.
Extended travel distance	The following extended travel distances in the building are permitted as part of a proposed Performance Solution: **Class 7a carpark areas (Level 0)** ▪ Up to 24 m to a point of choice instead of maximum 20 m ▪ Up to 44 m to a point of choice instead of maximum 20 m ▪ Up to 86 m between alternative exits instead of maximum 60 m **Class 9b school areas (Levels 1-3) *(Note the below has allowed for fit-out)*** ▪ Up to 30 m to a point of choice instead of maximum 20 m, or in the case of the Level 3 Roof Terrace, up to 33 m. ▪ Up to 50 m to a point of choice instead of maximum 20 m ▪ Up to 70 m between alternative exits instead of maximum 60 m
Use of horizontal exits	The use of horizontal exits between different fire compartments in the building is permitted as part of a proposed Performance Solution, based on the benefits of ▪ Reduced spacing of smoke detectors to the AS 1670.1-2018 smoke detection system. ▪ Provision of non-required fire sprinkler system to the Class 9b school levels.
Fire Compartment Size (Area)	It shall be demonstrated in the FER at Construction Certificate Stage that it is permitted, based on the fire safety measures within the FER, to have an increased fire compartment area of approx. 8,515 m^2 instead of 8,000 m^2 in a Type A building. This will be based, amongst other things; the installation of a non-required fire sprinkler system throughout the building, as further detailed below.

Fire Safety Measure	Description
Openings within external walls within 4-6 of another fire compartment	▪ As the building is divided into different fire compartments, there are openings within external walls within 4-6 of another fire compartment. ▪ Further detailed radiation calculations are to be undertaken in the FER stage to assess the risk of fire spread via those openings. ▪ However it is expected that no protection is proposed to those openings based on the benefit of a fire sprinkler system throughout the building. For a robustness, the first (closest) row of sprinklers shall be placed within 500 mm (measured horizontally) to the subject unprotected openings.
Openings within 3 m of the boundaries or within 6 m of another building on the same allotment	There are openings within external walls that are located within 3 m of the boundaries or within 6 m of another building on the same allotment. Further detailed radiation calculations are to be undertaken in the FER stage to assess the risk of fire spread via those openings. The expected fire safety measures (where applicable) are (one or a combination): ▪ Windows being fixed shut. ▪ Windows with restricted opening mechanism (awning or side hung – pending on configuration and angle to boundary or another building). ▪ Windows fitted with standard glass or 1 layer of 6 mm toughened glass. ▪ Windows fitted with external fire attenuation screens.
Automatic fire detection and alarm system	The building shall be provided with a smoke detection and alarm system for Class 9b school levels in accordance with BCA Spec E2.2a Clause 4 and AS 1670.1. ▪ The smoke detectors shall have a reduced spacing of maximum 7 m × 7 m grid. The distance from smoke detectors to any end wall or deep beams/bulkhead shall be no more than 3.5 m. ▪ Where heat detectors are used in lieu of smoke detectors for areas prone to have false alarms, e.g., kitchens, the spacing of the heat detectors shall be maximum 5 m × 5 m grid. The distance from heat detectors to any end wall, smoke curtain or deep beams/bulkhead shall be no more than 2.5 m. ▪ Refer to Clause 5.1.4 of AS 1670.1-2015 for detailed requirements for location of detectors on level surfaces with deep beams/bulkhead. ▪ The Class 7a carpark areas (Level 0) does not require smoke detection as it is provided with sprinkler protection.
Emergency Warning and Intercom System (EWIS)	An Emergency Warning and Intercom System (EWIS) shall be provided throughout the building in accordance with BCA Spec E4.9 and AS 1670.4-2018. This shall include speakers/sounders in the external terraces such as Level 3 Roof Terrace that are subject to extended travel distances. ▪ The EWIS shall include voice annunciation instead of alert tones in accordance with Clause 4.8 of AS 1670.4-2018. The evacuation messages shall include the following verbal announcements: "**EMERGENCY, EMERGENCY, EVACUATE NOW**".
Fire hydrant system	A fire hydrant system shall be provided to the building in accordance with BCA Clause E1.3 and AS 2419.1-2005. ▪ The fire hydrant booster assembly connections and all fire hydrant valves must be fitted with Storz aluminium alloy delivery couplings manufactured and installed in accordance with clauses 7.1 and 8.5.11.1 of AS 2419.1-2005. Blank caps must be fitted to the couplings via a screw thread. Refer to guide sheet no. 4 'Fire brigade hose couplings' prepared by Fire and Rescue NSW for more information. This document is available at www.fire.nsw.gov.au.
Fire sprinkler system	A fire sprinkler system shall be provided throughout the building in accordance with BCA Clause E1.5 and AS 2118.1-2017. ▪ All ceiling mounted sprinkler heads are to be fast response with an RTI of 50 $(m \cdot s)^{1/2}$ or less in accordance with the requirements of AS 2118.1-2017. ▪ Activation temperature of 68°C except where otherwise required by AS 2118.1-2017 (such as under glazed skylights and roof areas). ▪ Activation of the sprinkler system must activate the Emergency Warning and Intercom System (EWIS).

Fire Safety Measure	Description
	▪ The sprinkler system must be permanently connected with a direct data link or other approved monitoring system to a fire station or fire station dispatch centre in accordance with AS 2118.1. ▪ All signage and block plans to be provided in in accordance with AS 2118.1. ▪ System component fault monitoring must be provided in accordance with AS 2118.1. ▪ Attention is drawn to the specific requirements of AS 2118.1 with regard to height of storage / racking and clearances below sprinkler heads, generally required to be at least 500 mm.
Fire hose reels	Fire hose reels shall be provided in accordance with BCA Clause E1.4 and AS 2441-2005 to Class 7a carpark and Class 9b areas that are not “classrooms and associated corridors”.
Portable fire extinguishers	Portable fire extinguishers shall be provided in accordance with BCA Clause E1.6 and AS 2444.
Emergency lighting and exit signs	Emergency lighting and exit signage shall be provided in accordance with BCA Clause E4.2 and E4.5 respectively, and AS 2293.1.
Management in use	An emergency management and evacuation plan shall be developed and implemented prior to Occupation Certificate. The plan should satisfy the requirements of AS 3745.
Maintenance	A maintenance program shall be developed with all essential safety measures (active, passive and management) maintained in accordance with AS 1851 and AS 2293.2, and is to incorporate system interface testing, where relevant.

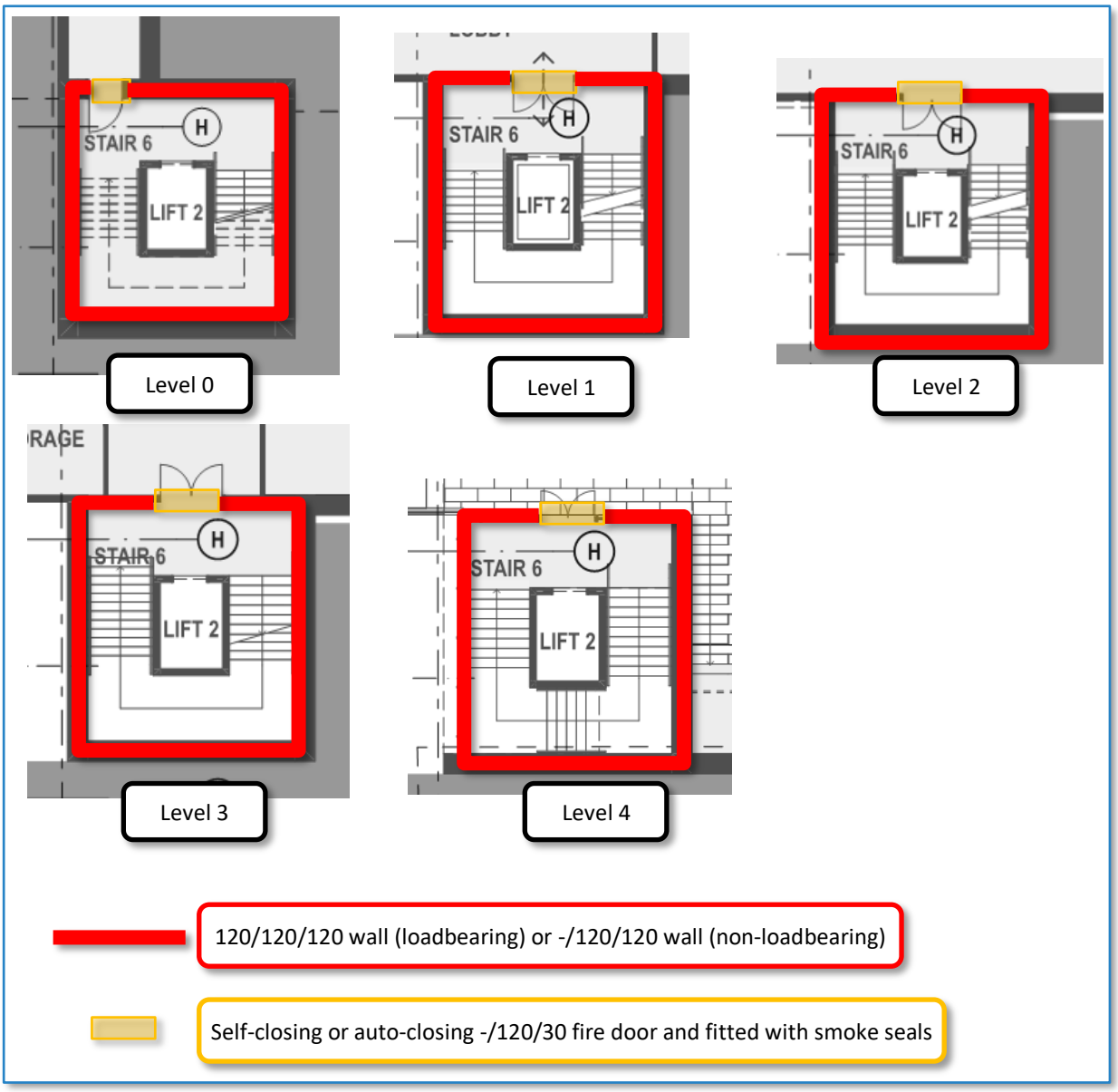


Figure 3: Shared fire-isolated shaft for both Stairs 6 and Lift 2 and proposed fire safety requirements

3 Key Assumptions and Limitations

- This report is consistent with the fire safety provisions, objectives and limitations of the NCC 2016 - Building Code of Australia (BCA) Volume One:
    - All new works associated with the works comply with the current DtS provisions of the BCA except for any specific Performance Solution report carried out in addressing DtS non-compliances.
    - This report excludes the assessment and design against fires that include incendiary ones involving accelerants, explosives, multiple ignition sources, or acts of terrorism.
    - The concepts outlined in this report assume a complete and operational building, and do not address protection of the building during construction, renovation or demolition.
    - All of the fire safety systems are assumed to be designed, installed and operate in accordance with the appropriate Australian standards, other design codes, legislation and regulations relevant to the project unless specifically stated otherwise. All essential services equipment will be maintained, to the operational capacity to which they were designed, installed, commissioned and certified, in accordance with the manufacturer's instructions. As such, all essential services equipment and management plans, etc discussed within this report are assumed to function correctly during a fire situation.
    - Access and Egress provisions for persons with disabilities including compliance with the Disability Discrimination Act (DDA) are considered to the same degree as the BCA.
    - Unless stated otherwise, protection of property (other than within the subject property), business continuity, interruption or losses, environmental impacts, personal or moral obligations of the owner/occupier, reputation, amenity or non-fire related matters in the building such as health, security, energy efficiency, and occupational health & safety or the costs associated with any fire damages are specifically excluded from this analysis.

- **This report is not a Performance Solution Report.**
- This report is not a compliance or conformance audit for any fire safety system. For example, operational checks of fire safety equipment, verification of construction techniques, fire resistance levels or the witnessing of fire drills or exercises are specifically excluded from the scope of this report.
- The findings and outcomes of this report apply only to the subject building / works and must not be utilised for any other purpose. Any modifications, extensions, change of use, etc. to the building, fire safety measures or essential services equipment, from that described in this report may invalidate the findings, necessitating a re-assessment.

Appendix A Proposed Drawings