BLACKETT MAGUIRE+ GOLDSMITH

BCA REPORT

Schematic Design Stage

PROJECT:
Hunter River High School

PREPARED FOR:
Schools Infrastructure

Revision: 5

Date: 4 May 2023

Project No.: N220067

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EXECUTIVE SUMMARY

The following comprises a summary of the key compliance issues identified following an assessment in this report that will be addressed prior to the BCA Certification for the project and through further design development.

MATTERS REQUIRING ADDITIONAL INFORMATION AT DD STAGE:

	BCA (DtS) Clause	Description
1.	**C1.9, C1.10 & C1.14** *Non-combustible Building and Ancillary Elements*	Architect to specify external wall schedule and internal linings and finishes in accordance with the requirements of the limitations set out in C1.9, C1.14 and Spec C1.10. Details demonstrating compliance including an external wall schedule will need to be provided along with the application for Crown Certificate
2.	**C2.2 & C2.7** *Compartmentation and Fire Separation*	Details regarding the linkway connections will need to be finalised to determine whether the maximum fire compartment sizes permitted are achieved. For the purpose of this BCA assessment, it is assumed all buildings are separate buildings. It is assumed for the purpose of this assessment that all of the linkway connection are separate structures fully ventilated and will be constructed in a manner which will allow each building to be treated as a separate building for the purpose of the BCA.
3.	**C2.12 & C2.13** *Separation of Equipment and Electrical Supply System*	Services consultants will need to review and advise of any proposed equipment within the building requiring separation. The type of equipment proposed and any required fire separation where required will need to be shown on updated architectural documentation for review and comment prior to Crown Certificate Stage.
4.	**C1.1, C3.2 & C3.4** *Fire resistant construction, separation between building and protection of openings*	Structural engineer is to confirm the existing fire rating properties of the building structure to Block R to determine any upgrade requirements and or need for the existing building to be subject to a Fire Engineering strategy this is to be finalised during the DD phase in this regard.
5.	**D1.4 & D1.5** *Exit Travel Distances*	Compliant travel distances are to be maintained from the proposed refurbished areas. Location of exits (stairways) are to be provided for review prior to Crown Certificate Stage.
6.	**D1.10** *Discharge from Exits*	Confirm any instances where building occupants are required to pass back under the covered walkways and awnings when discharging from the required exits to the road it is anticipated that this will occur in a number of locations and need to be rationalised under the Fire Engineering Strategy.
7.	**D2.19, D2.20 & D2.21** *Door construction including type, latching, and swing*	Hold open devices are to be installed to serve required exit doors that swing against the direction of egress from a building or part with a floor area of not more than 200m^2 and/or it being a sanitary compartment.
8.	**E1.4 & E1.3** *Fire Hose Reels*	Fire Hydrant and Fire Hose Reel coverage plans and locational information for outlets will need to be provided to BM+G demonstrating compliance. Hydraulic consultant will need to provide coverage mark-ups demonstrating compliant FHR coverage has been provided to the proposed Block Y (Class 9b) not being an area where there is a concession under this clause for coverage. Services consultant to confirm of any other compliance issues associated with the hydraulic design which remains the responsibility of the consultant to ensure compliance.

	BCA (DtS) Clause	Description
9.	**E2.2a** *Smoke Hazard Management*	Any ancillary uses or impermanent stage usage associated with the proposed gymnasium will need to be confirmed to determine if any additional smoke hazard management measures will be required. Based on a review of the documentation to date and as advised by the project stakeholders including fire services consultant, we note that no stage over 50m^2 or temporary stage being over 50m^2 is proposed as such no additional fire safety measures would be required. Where this is subject to change consultant team is to confirm accordingly.
10.	**F4.8 & F4.9** *Location of sanitary compartments*	The design is to demonstrate how adequate separation has been achieved between the various common areas rooms for assembly and the proposed sanitary compartments. Where it is proposed to reduce the extent of screening required this is to be addressed by way of a Performance Solution.

MATTERS REQUIRING PERFORMANCE SOLUTIONS:

	BCA (DtS) Clause	Description
1.	**C1.1, C3.2 & C3.4** *Fire resistant construction, separation between building and protection of openings*	Rationalise the exposure of buildings namely where located within 18m of the existing Block R. Consideration of rationalising protection of openings pending confirmation of the sitting of the building and proximity to the adjoining fire source features.
2.	**D1.10** *Discharge from Exits*	Where egress from the buildings via open space require passing back under covered areas such as awnings/linkways and the like before reaching the public road this is to be addressed by way of a Fire Engineered Strategy. Subject to further review during the DD phase.
3.	**D2.19, D2.20 & D2.21** *Door construction including type latching, swing*	All required exit doorways are to swing in the direction of egress. Doors currently shown to swing against the direction of egress are to be re-swung and or the arrangement is to be addressed by way of a Fire Engineered Strategy Roller shutters in the outdoor sports storeroom and any lockable/perimeter gates in the path of travel are to be addressed by way of a fire engineered solution.
4.	**E1.3** *Fire Hydrants*	Details demonstrating compliance will need to be provided along with the Detailed design stage currently insufficient information has been provided to confirm compliance.

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REPORT STATUS

DATE	REVISION	STATUS	AUTHOR	REVIEWED
29.07.2022	0	Draft – Schematic Design Report	BS	JH
10.08.2022	1	100% Schematic Design Report	BS	JH
08.11.2022	2	Revised – 100% Schematic Design Report	BS	JH
11.11.2022	3	Revised – 100% Schematic Design Report	BS	JH
21.04.2023	4	Revised – 100% Schematic Design Report	BS/LV	JH
04.05.2023	5	Revised – 100% Schematic Design Report	BS/LV	JH

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INTRODUCTION

PROPOSAL

Blackett Maguire + Goldsmith Pty Ltd have been commissioned by Schools Infrastructure C/- APP to undertake a Building Code of Australia (BCA) assessment of the Developed Design for Hunter River High School located at 36 Elkin Avenue, Heatherbrae NSW 2324 against the relevant provisions of the Building Code of Australia 2019, Volume 1 (BCA).

This report has been prepared in relation to the proposed development of Hunter River High School located at 36 Elkin Avenue, Heatherbrae. This report has been prepared to support:

+ A development application for the construction of a Construction of gymnasium (Block Y), consisting of a basketball court, equipment storage, canteen kitchen, staff room, first aid room and change room amenities, construction of hardstand civic space north of the gymnasium, construction of full-size rugby field, the construction of new carpark consisting of sixty-six (66) parking spaces (including 6 accessible parking spaces) and the construction and connection of a reticulated sewer pipe.
+ A Part 5 Activity Approval, development permitted without consent, for the construction of a new administration building, student learning hub and provision of essential services.
+ A Part 5 Activity Approval, development permitted without consent, for the construction of a new linking road and kiss and drop bay between Adelaide Street and Elkin Avenue.

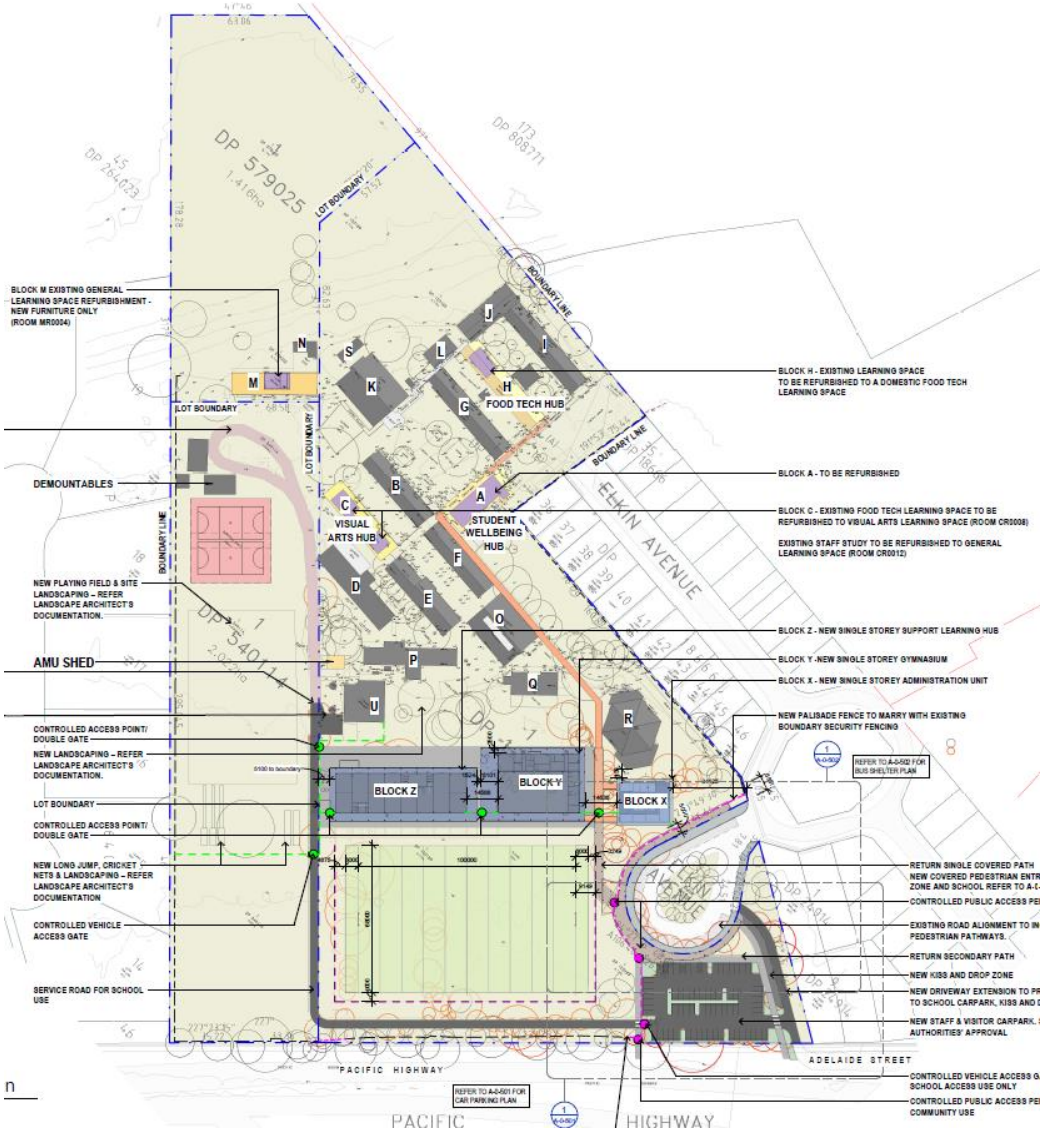


Figure 1: Existing Site

AIM

The aim of this report is to:

+ Undertake an assessment of the existing and proposed development against the deemed-to-satisfy provisions of the BCA;
+ Identify matters that require rectification works or plan amendments (as applicable) in order to achieve compliance with the BCA;
+ Identify matters that are to be required to be addressed by Performance Solutions to the degree necessary;

REFERENCED DOCUMENTATION

The following documentation has been reviewed, referenced and/or relied upon in the preparation of this report:

+ Building Code of Australia 2019, Volume 1 (BCA)
+ Guide to the Building Code of Australia 2019
+ Architectural Plans prepared by EJE Architecture:

DRAWING NO.	REVISION	DATE	DRAWING NO.	REVISION	DATE
A-0-000	J	11/04/2023	A-0-001	Q	11/04/2023
A-0-003	F	11/04/2023	A-0-500	B	11/04/2023
A-0-501	G	11/04/2023	A-0-502	D	11/04/2023
A-1-100	K	11/04/2023	A-1-120	J	11/04/2023
A-1-140	J	11/04/2023	A-1-150	G	11/04/2023
A-1-180	L	11/04/2023	A-1-200	K	11/04/2023
A-1-300	K	11/04/2023	A-1-400	E	11/04/2023
A-1-800	H	11/04/2023	A-1-801	H	11/04/2023
A-2-100	N	11/04/2023	A-2-120	K	11/04/2023
A-2-140	L	11/04/2023	A-2-150	G	11/04/2023
A-2-180	N	11/04/2023	A-2-200	L	11/04/2023
A-2-201	L	11/04/2023	A-2-300	L	11/04/2023
A-2-301	B	11/04/2023	A-2-400	F	11/04/2023
A-2-800	H	11/04/2023	A-2-801	H	11/04/2023
A-3-100	N	11/04/2023	A-3-120	K	11/04/2023
A-3-140	K	11/04/2023	A-3-150	G	11/04/2023
A-3-180	N	11/04/2023	A-3-200	K	11/04/2023
A-3-201	L	11/04/2023	A-3-300	K	11/04/2023
A-3-400	F	11/04/2023	A-3-800	H	11/04/2023
A-3-801	H	11/04/2023	A-4-100	K	11/04/2023
A-4-130	J	11/04/2023	A-4-700	D	11/04/2023
A-5-100	J	11/04/2023	A-5-130	J	11/04/2023
A-6-100	G	11/04/2023	A-6-130	G	11/04/2023
A-6-700	D	11/04/2023	A-9-100	D	11/04/2023

LIMITATIONS AND EXCLUSIONS

The limitations and exclusions of this report are as follows:

+ BM+G has not conducted an inspection of the buildings for which demolition has been confirmed, nor have we inspected buildings that we have been instructed not to. The scope of our audit focused on the area of work.
+ The Report does not address matters in relation to the following Local Government Act and Regulations:
  i. Work Health and Safety Act and Regulations.
  ii. Work Cover Authority requirements.0
  iii. Water, drainage, gas, telecommunications and electricity supply authority requirements.
  iv. Disability Discrimination Act 1992.
+ BM+G cannot guarantee acceptance of this report by Local Council, Fire & Rescue NSW or other approval authorities.
+ No part of this document may be reproduced in any form or by any means without written permission from BM+G. This report is based solely on client instructions, and therefore should not be used by any third party without prior knowledge of such instructions.

BCA FIRE SAFETY UPGRADE STRATEGY

The proposed works include alterations and additions, and refurbishment works to the existing Hunter River High School as shown in the figure below.

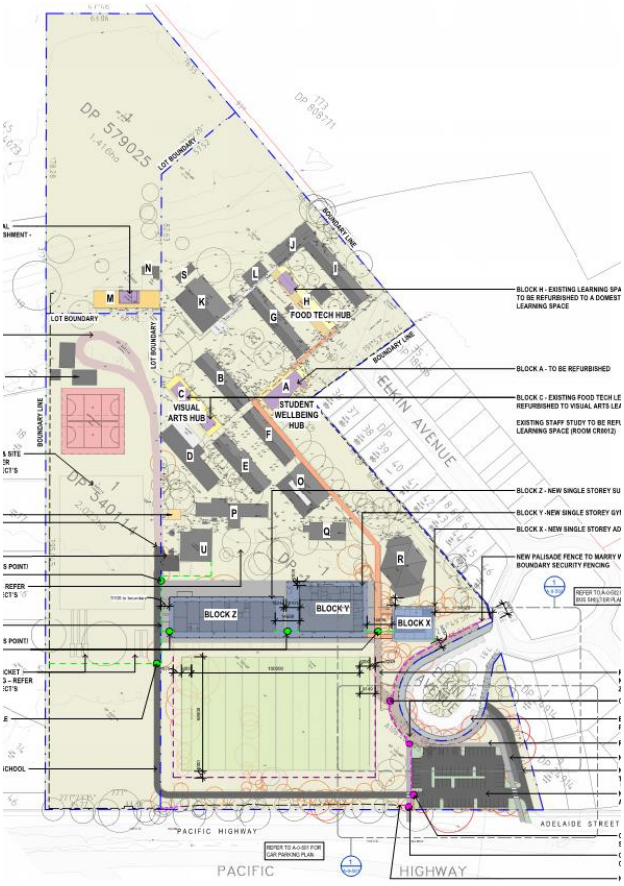


Figure 2: Proposed Site Plan

Fire safety upgrades within an existing building is generally triggered based on: -

+ Change in building classification or change of use,
+ increase in floor area (new floor area),
+ increase in any fire and life safety risk to existing (and future) occupants as a result of the new-build works,
+ Reliance on existing compartment walls as part of the new works if the existing compartment walls have compliance deficiencies,

- Reliance on existing fire services as part of the new works if the existing compartment walls have compliance deficiencies,
- Any significant non compliances in the existing building which warrant immediate upgrade. The full extent of which will may be confirmed and reviewed in subsequent design stages following further input from project consultants,
- Upgrade requirements imposed by consent authority or FRNSW,
- Client/Project requirement to address existing deficiencies,
- Any works deemed to be medium to heavy refurbishment works,

The primary compliance objective for integration of refurbishment works into any existing buildings will be to maintain effective fire separation between the new and existing parts to limit the impact on and potential upgrade triggers for any existing buildings should the need arise.

Where the proposed works don't involve medium/heavy refurbishment works and are deemed light refurb works then the following will need to be incorporated into the design;

- All new works are to comply with current BCA/AS requirements as relevant to the extent of works being proposed,
- Where existing fire services relied upon, coverage is to be achieved throughout all new areas subject to the refurbishment works,
- The proposed works not reducing the fire protection and structural capacity of the existing building

Having regards to the proposed works in particular the proposed refurbishment works the areas clouded below have initially deemed light refurb works based on these areas not comprising a change in use, works generally comprising replacement of like for like, furniture and the like.

Figure 3: Proposed Refurbishment to Existing Buildings

Important Note: *Notwithstanding the above, all services consultants are responsible of identifying and confirmnig any existing compliance issues with respect of services coverage to the existing buildings required to be considered.*

BCA Compliance Methodology

The proposed building work will be subject to compliance with the relevant requirements of BCA 2019 as required by Section 6.28 of the Environmental Planning & Assessment Act 1979, pending the date of the invitation for tenders to carry out the works being prior to 1 May 2023. It is understood that the date for tender will be prior to 1 May 2023 as such BCA 2019 will apply to the development.

Report Terminology

Building Code of Australia - Document published on behalf of the Australian Building Codes Board. The BCA is a uniform set of technical provisions for the design and construction of buildings and other structures throughout Australia and is adopted in NSW under the provisions of the Environmental Planning & Assessment Act & Regulation.

Climatic Zone – Is an area defined in BCA Figure A1.1 and in Table A1.1 for specific locations, having energy efficiency provisions based on a range of similar climatic characteristics.

Construction Certificate – Building Approval issued by the Certifying Authority pursuant to Part 4A of the EP&A Act 1979.

Construction Type – The construction type is a measure of a buildings ability to resist a fire. The minimum type of fire-resisting construction of a building must be that specified in Table C1.1 and Specification C1.1, except as allowed for—

(i) certain Class 2, 3 or 9c buildings in C1.5; and

(ii) a Class 4 part of a building located on the top storey in C1.3(b); and

(iii) open spectator stands and indoor sports stadiums in C1.7.

Note: Type A construction is the most fire-resistant and Type C the least fire-resistant of the types of construction.

Deemed-to-Satisfy (DTS) Provisions of the BCA – Means the prescriptive provisions of the BCA which are deemed to satisfy the performance requirements.

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

Exit – Any, or any combination of the following if they provide egress to a road or open space;

+ An internal or external stairway.
+ A ramp.
+ A fire-isolated passageway.
+ A doorway opening to a road or open space.

Fire Compartment – The total space of the building; or when referred to in

+ The Performance Requirements – any part of a building separated from the remainder by barriers to fire such as walls and/or floors having an appropriate resistance to the spread of fire with any openings adequately protected; or
+ The Deemed-to-Satisfy Provisions – any part of a building separated from the remainder by walls and/or floors each having an FRL not less than that required for a fire wall for that type of construction and where all openings in the separating construction are protected in accordance with the Deemed-to-Satisfy Provisions of the relevant part.

Fire Resistance Level (FRL) – The grading periods in minutes for the following criteria-

(a) structural adequacy; and

(b) integrity; and

(c) insulation,

and expressed in that order

Fire Source Feature (FSF) - The far boundary of a road adjoining the allotment; or a side or rear boundary of the allotment; or an external wall of another building on the allotment which is not a Class 10 building.

National Construction Code Series (NCC) – The NCC was introduced 01 May 2011 by the Council of Australian Governments. The BCA Volume One (Class 2 to 9 Buildings) is now referenced as the National Construction Code Series Volume One — BCA.

Occupation Certificate **(OC)** – Building Occupation Approval issued by the Principal Certifying Authority pursuant to Part 4A of the EPA Act 1979.

Open Space - Means a space on the allotment, or a roof or other part of the building suitably protected from fire, open to the sky and connected directly with a public road.

Performance Requirements of the BCA - A Building Solution will comply with the BCA if it satisfies the Performance Requirements. A Performance requirement states the level of performance that a Building Solution must meet.

Compliance with the Performance Requirements can only be achieved by-

(a) complying with the Deemed-to-Satisfy Provisions; or

(b) formulating an Alternative Solution which-

(i) complies with the Performance Requirements; or

(ii) is shown to be at least equivalent to the Deemed-to-Satisfy Provisions; or

(c) a combination of (a) and (b).

Performance Solution (Alternative Solution) – Means a method of complying with the performance requirements other than by a *Deemed-To-Satisfy Solution.*

Rise in Storeys – The greatest number of storeys calculated in accordance with C1.2.

BUILDING CHARACTERISTICS

BUILDING CLASSIFICATIONS

The following table and figure present a summary of relevant building classifications for the proposed development the below has focused on the buildings subject to works only:

BUILDING CHARACTERISTICS	Block X	Block Y	Block Z	Block M	Block C	Block A	Block H
	Admin	Gymnasium	New Support Learning	General Learning Space	Visual Arts	Staff Unit - Wellbeing Hub	Food Tech Hub
+ BCA CLASSIFICATION:	Class 5	Class 7b & 9b	Class 9b	Class 9b	Class 7b & 9b	Class 5 & 9b	Class 9b
+ RISE IN STOREYS:	One (1)			One (1) (1)			Two (2) (3)
+ STOREYS CONTAINED:	One (1)			One (1) (1)			Two (2) (3)
+ TYPE OF CONSTRUCTION:	Type C			Type C (2)			Type B
+ EFFECTIVE HEIGHT:	<12m (0m)			<12m (0m) (2)			<12m (0m) (2)
+ MAX. FLOOR AREA:	3,000m^2			3,000m^2 (2)			5,500m^2
+ MAX. VOLUME:	18,000m^3			18,000m^3 (2)			33,000m^3
+ SPRINKLER PROTECTED:	No			No (2)			No (2)
+ CLIMATE ZONE:	Climate Zone 5						

**Note:*

(1) Works within the above relate to light refurbishment works only there are no proposed change in building characteristics as part of the refurbishment works.

(2) Based on assumed details. Confirmation is to be provided by the project architect.

(3) Based on review of Google Maps street view. This is to be confirmed by the project architect.

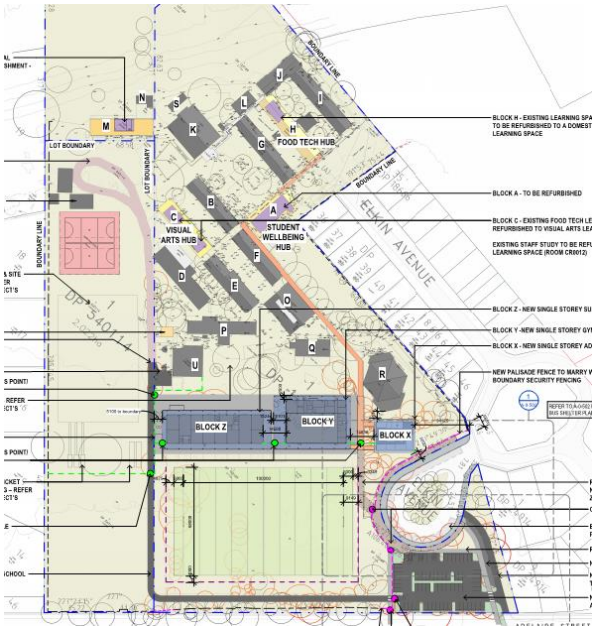


Figure 4: Proposed building layout

BCA ASSESSMENT & RECOMMENDATIONS

We note the following BCA compliance matters with relation to proposed building works. Please note that this is not a full list of BCA clauses, they are the key requirements that relate to the proposed work and the below should be read in conjunction with the BCA.

LEGEND

	General Note
	Matters Requiring Redesign / Further Information
	Performance Solution

EP&A Reg. 2000	**General Note**
	No Annual Fire Safety Statements have been produced for any buildings subject to assessment. Where not available and a building is subject to refurbishment works BM+G will prepare the fire safety schedules for the proposed buildings once the design and compliance strategy progresses to a stage at which required systems can be determined.
B1.4 ***Structure***	**General Note**
	New building works are to comply with the structural provisions of the BCA 2019 and referenced standards including AS 1170. New building works (including non-loadbearing components) to the existing building must be compliant with earthquake provisions of AS1170.4 – Earthquake Actions in Australia. The structural engineer will need to certify that the structural capacity of any existing buildings subject to the proposed works will not be reduced as a result of the new works and that the building is considered structurally adequate for its intended use. Certification is to be provided at the Crown Certificate stage in this regard. In addition to the above, the loadbearing capacity of existing balustrades (where retained) should be reviewed, particularly with respect to loadings under AS 1170 in particular where relied upon for access or egress from refurbished parts shall be brought up to compliance with the relevant structural requirements. This due to the significant risk dilapidated balustrading presents to the safety of the occupants. The Importance Level provisions of BCA (Section B) are to be acknowledged by the Structural Engineer and addressed to the degree necessary. Consideration may be given to compliance with AS 3826-1998 - Strengthening existing buildings for earthquake for any required remedial works to the existing building where appropriate. Structural engineer has noted no remedial works have been flagged.
C1.1 ***Fire Rating***	**General Note**
	Type of Construction: The type of construction for each respective block is as noted below **Block X – Type C**

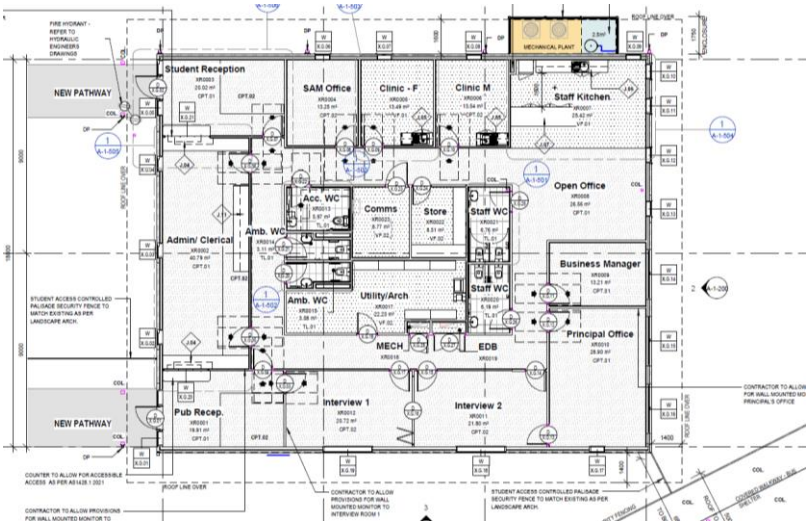


Figure 5: Block X

Block Y -Type C

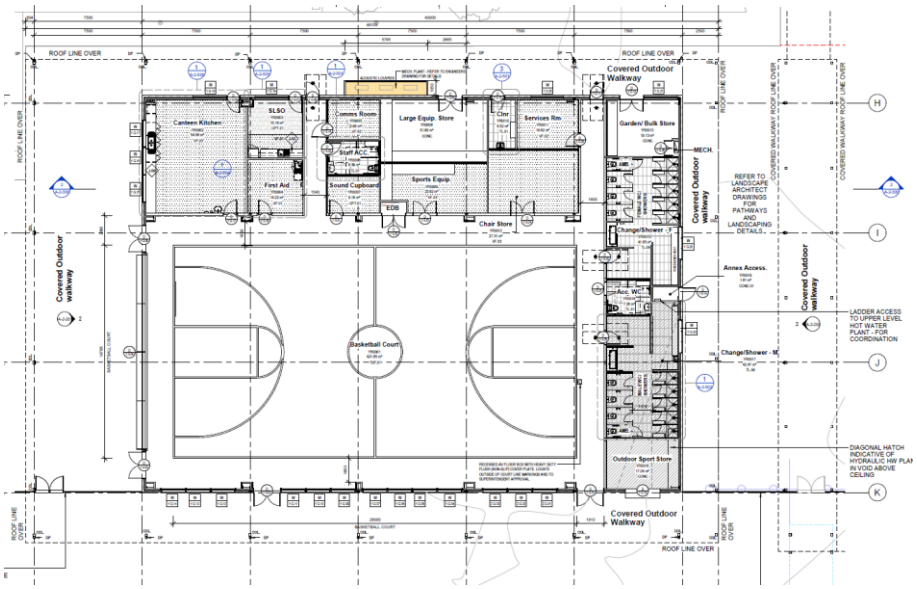


Figure 6: Block Y

Note: Type C, based on the building having a Rise In Storeys of one (1) for the purpose of C1.2 of the BCA as the first floor contains only a plant area. Architect to review and ensure compliance as the design progresses in this regard.

Block Z -Type C

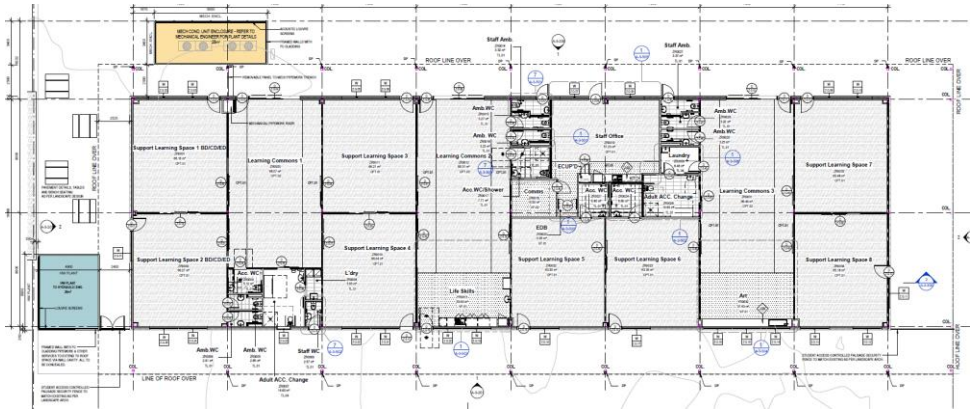


Figure 7: Block Z

Block A -Type C

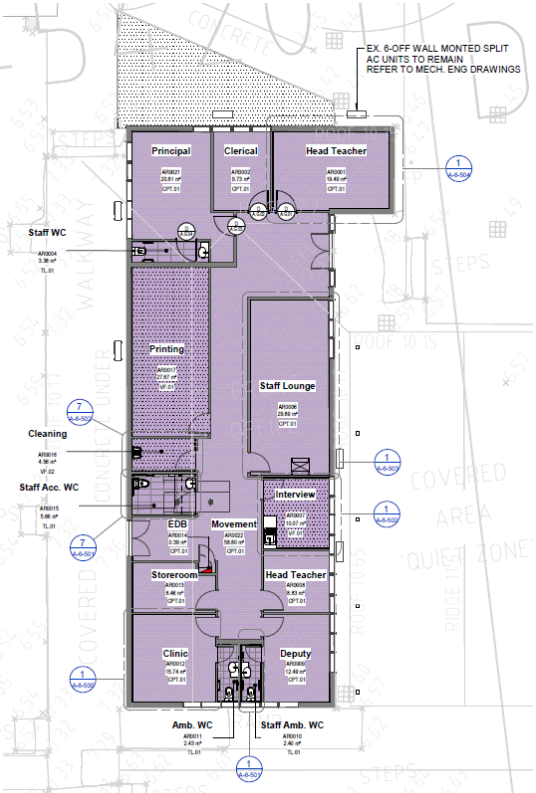


Figure 8: Block A

Block C -Type C

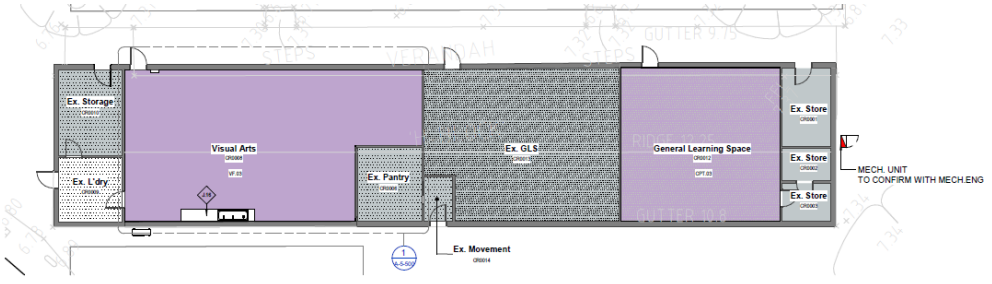


Figure 9: Block C

Block H -Type B

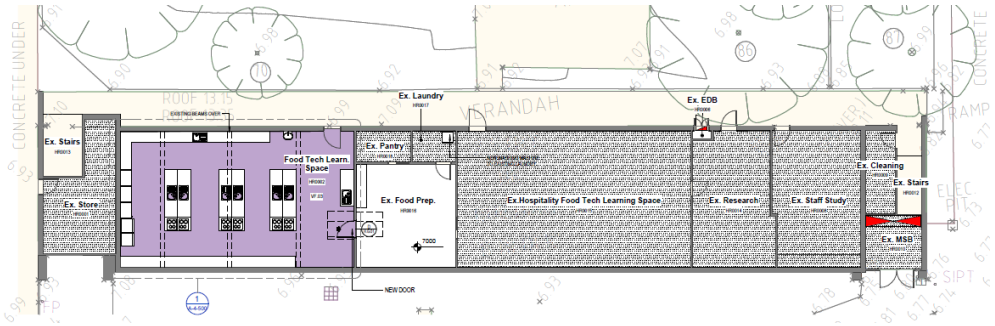


Figure 10: Block H

Block M – Type TBC

Figure 11: Block M

The relevant FRLs as listed in Table 4 and 5 of Specification C1.1 must be adhered to. Refer to **APPENDIX A.**

Further Information

Further details are to be provided with respect of the linkway connections between buildings. It is assumed for the purpose of this assessment that all of the linkway connection are separate structures fully ventilated and will be constructed in a manner which will allow each building to be treated as a separate building for the purpose of the BCA. This is to be further reviewed and workshopped during DD phase to ensure compliance in this regard.

All new works to be designed to comply with the requirements of Spec C1.1 of the BCA. Structural engineer to review and ensure compliance in this regard design certification will need to be provided along with the application for Crown Certificate.

Particular attention will need to be paid to Block Y where deemed Type B construction and having loadbearing walls as it is within 18m of adjoining fire source features. We note that the building has been deemed Type C based on the first-floor area not being deemed a storey under C1.2 of the BCA. Where a use other than a plant room is proposed the Type of construction would need to be re-assessed accordingly architect to monitor for compliance in this regard.

C1.9
Non-Combustible

Non-Combustible Building Elements: Buildings of Type A & B the following elements are required to be non-combustible:

- Any external walls including all components incorporated in them,
- Any framing or integral formwork systems i.e. timber framing, sacrificial formwork, etc.
- Any external linings or trims i.e. external UPVC window linings, timber window blades, etc.
- Any sarking or insulation contained within the wall assembly.

General Note

The requirements of this clause apply to all TYPE A and B buildings, therefore based on the documentation provided to date Block R is the only building required to be considered under this

clause however based on the current scope not including alteration of any external wall the requirements of this clause will not be applicable to the works.

Architect to confirm where new works are proposed and or existing external walls are being altered it will be subject to compliance with this clause.

New works to comply. Test Reports, Codemark Certification or other suitable evidence is to be provided to demonstrate non-combustibility requirements for the external wall construction.

This is not an exhaustive list, and any element incorporated within any external wall assembly must be identified and provided for review.

BUILDING ELEMENT	TYPE A CONSTRUCTION
External wall	Non-combustible
Common wall	Non-combustible
Floor and floor framing of lift pit	Non-combustible
All loadbearing internal walls (including those of shafts)	Concrete, masonry or fire-protected timber
Loadbearing fire walls	Concrete, masonry or fire-protected timber
Non-loadbearing internal walls required to be fire-resistant	Non-combustible
Non-loadbearing lift, ventilating, pipe, garbage and like shafts which do not discharge hot products of combustion	Non-combustible

C1.10

Fire Hazard Properties

Architect to specify internal linings and finishes in accordance with the requirements of the limitations set out in Spec C 1.10 of the BCA details demonstrating compliance will need to be provided along with the Completion Certificate. These summaries are outlined below.

General Note

Floor linings and floor coverings

CRF – not less than 2.2 kW/m2 with a maximum smoke development rate of 750 percent-minutes

Where the covering continues up a wall more than 150mm a group number must also be achieved

Wall and ceiling lining

The building is not fitted with a sprinkler system as such a wall and ceiling lining must achieve a group number in accordance with table 3 (relevant part below) and have

A smoke growth rate index not more than 100 or

An average specific extinction area less than 250m2/kg

Fire Isolated exits/Fire control rooms

- Walls: 1
- Ceilings: 1

Public corridors

- Walls 1, 2
- Ceilings 1, 2

Specific areas

- Walls: 1, 2, 3
- Ceiling: 1, 2

Other Areas

- Walls: 1, 2, 3
- Ceiling: 1, 2, 3

C1.14

External Wall Fixtures

An ancillary element must not be fixed, installed and or attached to the internal parts or external face of an external wall that is required to be non-combustible unless it is one of the following;

+ An ancillary element that is non-combustible
+ A gutter, downpipe or other plumbing fixture or fitting
+ A flashing,
+ A grate or grille not more than 2m2 in area associated with a building service,
+ An electrical switch, socket outlet, cover plate or the like,
+ A light fitting,
+ A required sign
+ A sign other than one permitted under this clause that-
    - Achieves a group number 1 or 2, and

- Does not extend beyond one storey, and
- Does not extend beyond the fire compartment, and
- Is separated vertically from other signs permitted under this clause by at least two storeys

+ An awning, sunshade, canopy, blind or shading hood other than one provided under this clause that-
  - Meets the relevant requirements of table 4 of specification as for an internal element, and
  - Serves a storey -
  - At ground level, or
  - Immediately above a storey at ground level, and
  - Does not serve an exit, where it would render the exits unusable in a fire.
+ A part of a security, intercom or announcement system
+ Wiring
+ A paint, lacquer or a similar finish
+ A gasket, caulking, sealant or adhesive directly associated with elements allowed under this clause.

General Note

New works to comply further details will need to be provided with respect of any attachments to the external wall by way of an external wall schedule.

Test Reports, Codemark Certification or other suitable evidence is to be provided to demonstrate that the ancillary elements (i.e. elements attached to the external wall but which do not form part of the external wall such as decorative panels/fins and signage) are non-combustible or comply with the concession under Clause C1.9(e).

Wall systems and external wall system makeups will be developed in the DD phase and details demonstrate compliance will need to be provided for BM+G review and comment.

C2.2 & C2.7

Compart-mentation & Fire Separation

The maximum floor area volume limitations under C2.2 of the BCA must be maintained according to the TYPE of construction.

Classification	Type B construction	Type C construction
5, 9b or 9c	Max *floor area*—5500 m^2 Max volume—33000 m^3	Max *floor area*—3000 m^2 max volume—18000 m^3
6, 7, 8 or 9a (except for *patient care areas*)	Max *floor area*—3500 m^2 Max volume—21000 m^3	Max *floor area*—2000 m^2 Max volume—12000 m^3

Where additional compartmentation is required to maintain the maximum limitations set out within this clause fire walls must achieve an FRL not less than that required under Spec C1.1 of the BCA.

Further Information

The maximum compartment limitations will need to be achieved as part of the proposed works, further details will need to be provided with respect of any linkway connections however for the purpose of this assessment it is assumed all buildings are separate buildings for the purpose of the BCA and the various connections between via linkways and the like afford the works to be considered separate buildings based on the connections being independent structures, fully ventilated, sterile areas and not sharing of services. Architect to note and ensure compliance during DD phase accordingly.

C2.12

Separation of Equipment

The following equipment is required to be separated from the remainder of the building by construction having an FRL of not less than 120min including self-closing fire doors having an FRL of not less than -/120/30

+ Lift controls and lift control panels
+ Emergency generators sustaining equipment operating in emergency mode
+ Central smoke control plant
+ Boilers
+ A battery system installed in the building having a total voltage of 12 volts or more and a storage capacity of 200kWh or more

Further Information

Services consultants will need to review and advise of any proposed equipment within the building requiring separation under this clause. We note that there are a number of comms rooms proposed

however it is not clear whether there is equipment proposed within these rooms which would require separation i.e. battery system.

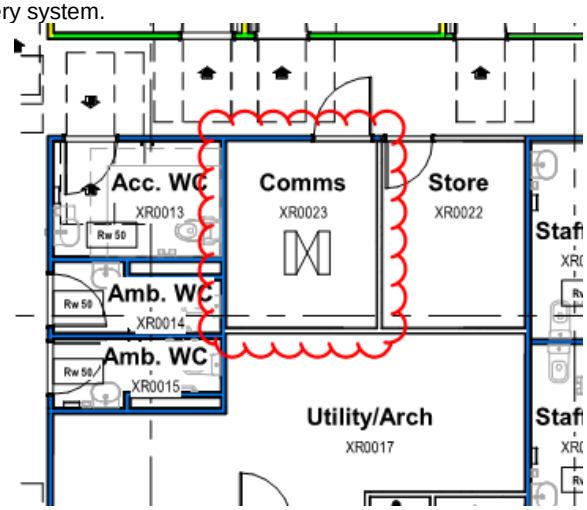


Figure 12: Typical Example of Proposed Equipment

The type of equipment proposed and any required fire separation where required will need to be shown on the DD documentation.

Note: Refer also D2.7 of the BCA with respect of additional separation requirements. Where fire separation is not required D2.7 will require enclosure of non-combustible construction with smoke sealing .

C2.13

Separation of Main Switch room

An electrical substation and an electrical main switchboard sustaining emergency equipment operating in the emergency mode must be separated off from the remainder of the building by construction having an FRL of not less than 120min including self-closing fire doors having an FRL of not less than -/120/30

General Note

Any new proposed substations and or main switch rooms will need to be shown on the architectural documentation to be provided on the architectural documentation submitted along with the DD phase.

All new works will need to comply, whilst we note that there are no new substations/main switch rooms shown on the architectural documentation any new works associated with existing switch rooms and or substations within the existing buildings will need to comply with current code requirements i.e. treatment of new services penetrations within bounding construction etc.

C3.2

Protection of openings in external wall

Openings in external walls that are required to have an FRL must be protected in accordance with C3.4 of the BCA where located as per the below. If the distance between the opening and the fire source feature to which it is exposed in less than:

- 3m from a side or rear boundary of the allotment; or
- 6m from the far boundary of a road, river, lake or the like adjoining the allotment, if not located in a storey at or near ground level;
- 6m from another building on the allotment that is not Class 10

The openings requiring protection above must not occupy more than 1/3 of the area of the external wall of the storey.

On the basis that all new buildings are of TYPE C construction and noting that not less than 3m is maintained between the buildings. There won't be any protection of openings under this clause.

Further Information / Performance Solution

As Block R is of Type B construction, structural engineer is to confirm whether the external walls are loadbearing and whether required to be fire rated under this clause. It will then be determined if any upgrade works are required. Should it be necessary there is potential scope to address the exposure between buildings under a Fire Engineered strategy.

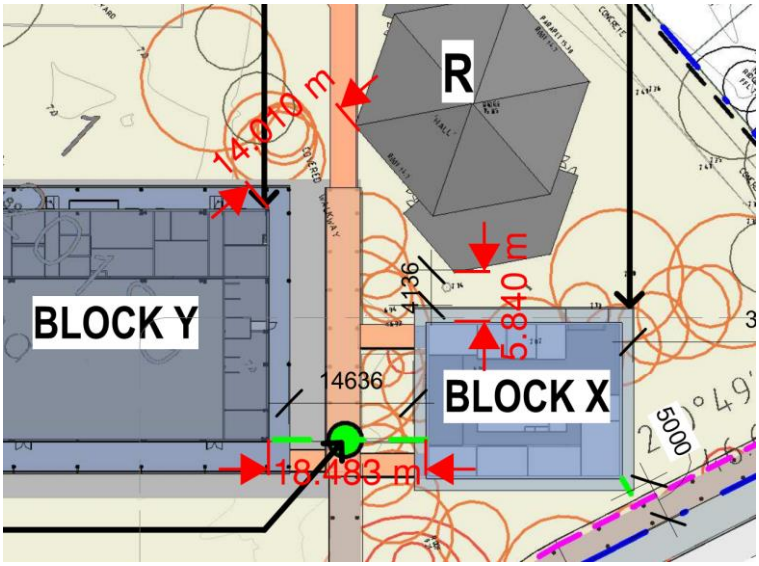


Figure 13: Block R Type of Construction

C3.3

Separation between different fire compartments

The distance between parts of external walls and any openings within them in different fire compartments separated by a fire wall must not be less than that set out in Table C3.3, unless—
(a)those parts of each wall have an FRL not less than 60/60/60; and
(b)any openings protected in accordance with C3.4.

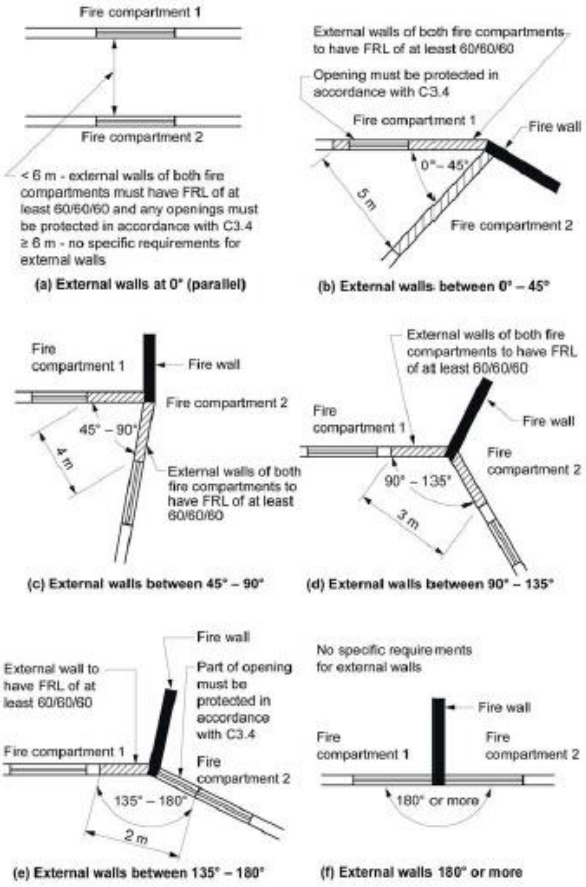


Figure 14

General Note

Currently we note that there are no locations where the requirements of this clause will apply, subject to further assessment during the DD phase to ensure compliance where additional fire compartmentation is introduced.

D1.2

Number of Exits Required

Every building is required to have access to at least one exit from each storey.

In addition to the above, in addition to any horizontal exit not less than 2 exits must be provided from the following;

- Each storey if the building has a rise of more than 6 or an effective height of more than 25m
- Each storey in a primary or secondary school with a rise in storeys of 2 or more,
- Any storey or mezzanine that accommodates more than 50 persons

We note that the minimum number of exits has been provided from the building in this regard.

General Note

Notwithstanding the above, the minimum number of exits have been provided, final number of exits required will be derived from the exit travel distances and aggregate egress width requirements.

The required exit from each building particularly where a large covered area adjoins the space will be the point at which open space is reached which is relevant having regards to travel distance calculations and location of fire services.

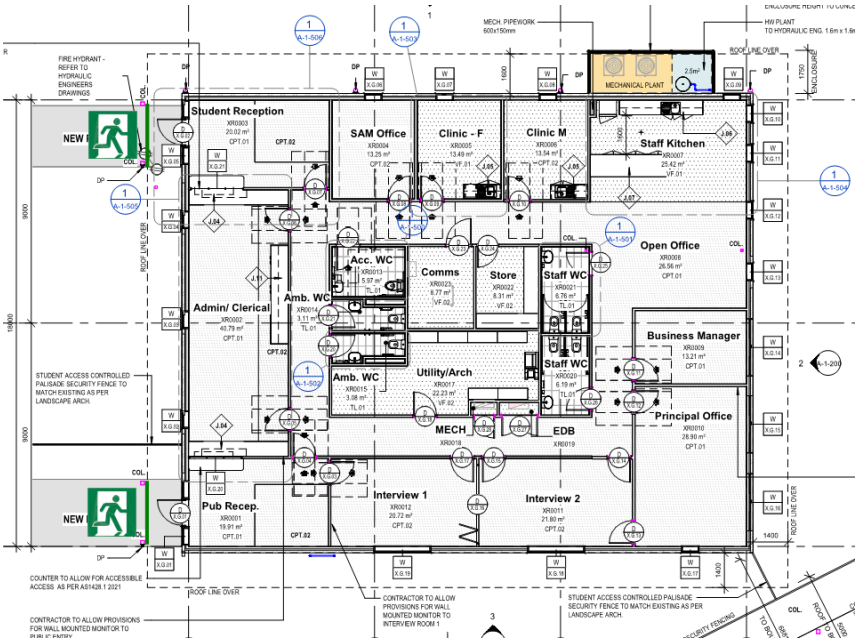


Figure 15: Block X – Admin Exits

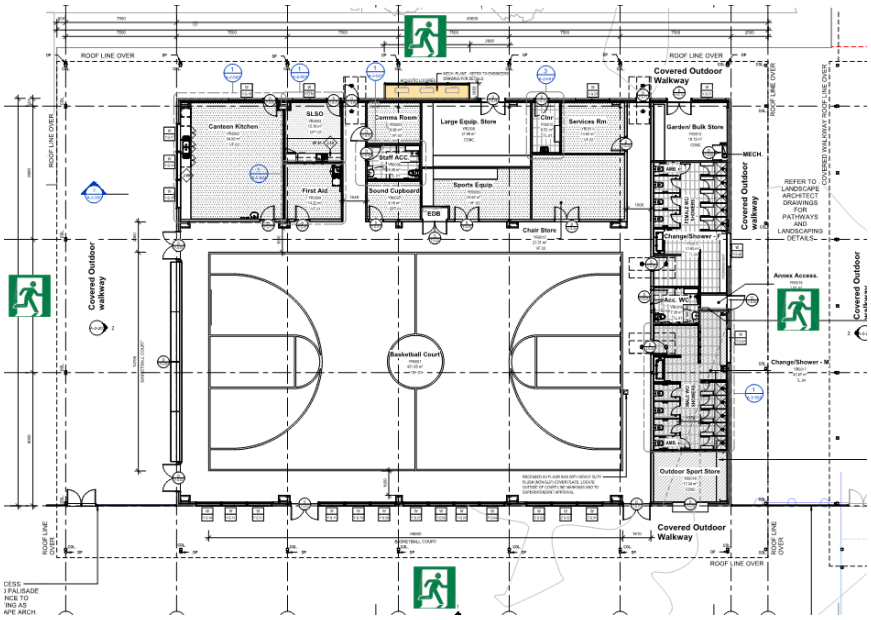


Figure 16: Block Y – Gymnasium Exits

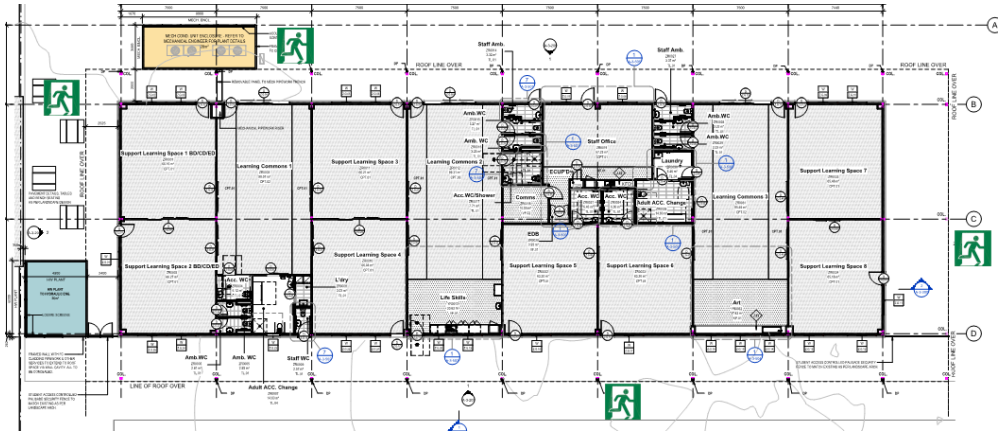


Figure 17: Block Z - Support Learning Hub Exits

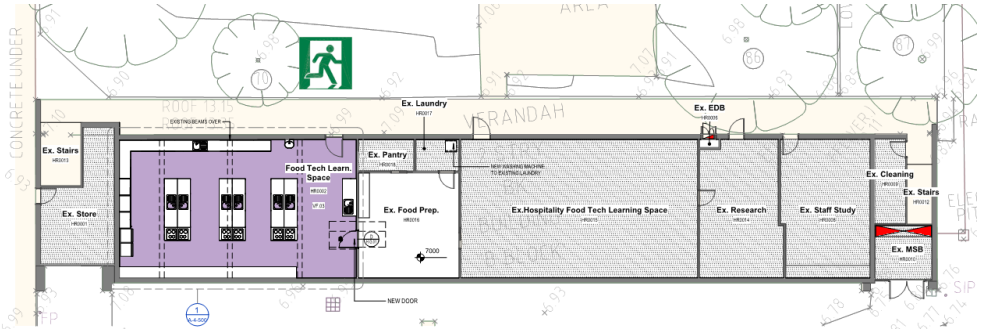


Figure 18: Block H - Food Tech Hub Exits

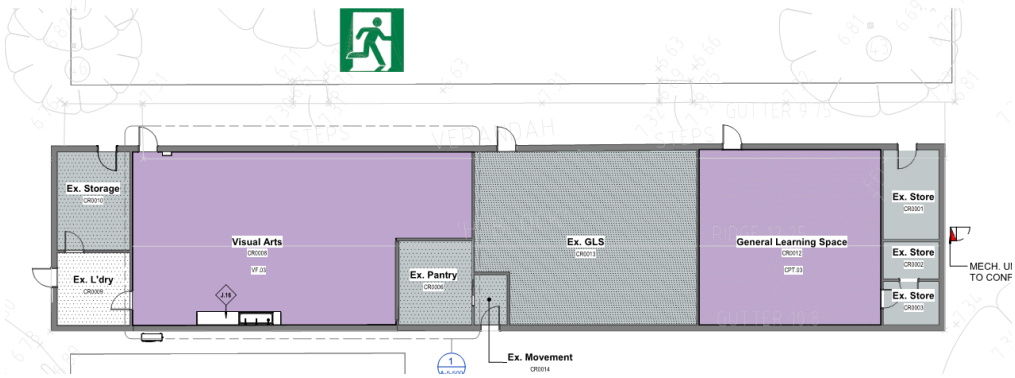


Figure 19: Block C - Visual Arts and General Learning Space Exits

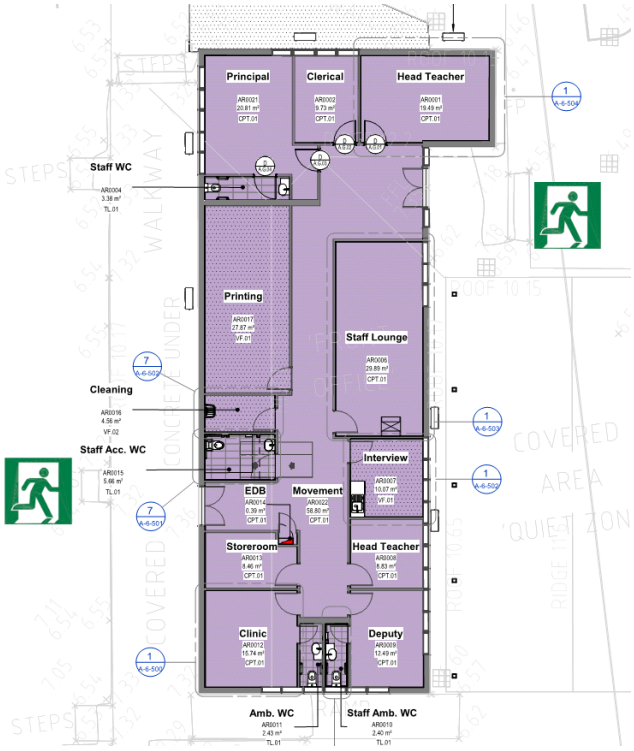


Figure 20: Block A - Wellbeing Hub Exits

Figure 21: Block M - General Learning Space Exits

Note: For the purpose of assessing travel distances under D1.4 and D1.5 of the BCA it has been assumed that open space will readily be available adjacent to the egress points noted in the figure above which needs to bne coordinated with the projects landscape architect – final locations of the external egress paths around the buildings will be reviewed during the DD phase.

D1.3

Fire Isolated Stairs

Every stairway serving as a required exit in a Class 9b building must be fire isolated where it connects passes by or through more than two (2) consecutive storeys and an additional storey may be included where a sprinkler system is installed within the building or additional separation is provided as outlined within this clause.

General Note

All buildings being of either of one (1) or two (2) storeys as such the requirements of this clause will not apply.

D1.4 & D1.5

Exit travel distances

Exit travel distances will need to comply with the following limitations

- \+ 20m to a point of choice between alternative exits
- \+ 40m to one of the two alternative exits
- \+ 60m between alternative exits

	General Note Having regards to the new works we note that compliance is readily achievable based on the current design documentation and new buildings. Egress will be subject to further assessment as part of subsequent design stages to ensure compliance . **Further Information** Compliant travel distances are to be maintained from the proposed refurbished. Location of exits are to be provided for review prior to Crown Certificate Stage. Compliance is readily achievable under the assumption that the works will not impact compliance with respect of egress from the existing building and parts.
D1.6 ***Dimensions of exits paths of travel***	A breakdown of the maximum number of occupants to each storey of the building will need to be confirmed in order to determine compliance having regards to the aggregate egress width requirements. This will include review of the maximum population numbers for each storey and any increase in the number of persons accommodated to determine whether sufficient width has been provided. Based on the number of available exits however we note that compliance is readily achievable based on the current design. A minimum 1m clear unobstructed width and a height of not less than 2m (Doorways 1980mm) is to be achieved throughout all paths of travel throughout the building. This clear space requirement is to be measured between all objects and obstructions and any projection parts. The minimum unobstructed width requirements under this clause are to be maintained from the discharge point of the required exit to the road connected. **General Note** Compliance readily achievable base don't the documentation reviewed to date. Compliance to be monitored during the DD phase.
D1.9 ***Travel via non-fire isolated stairways***	A non-fire isolated stairway must provide a continuous means of egress by its own flights and landings from each storey served to the level at which egress to road or open space is provided. The distance from any point of the floor to a road or open space by way of a stairway and ramp is not to exceed 80m. The discharge point of the stairway is to be not more than 20m from a doorway providing egress to a road or open space and/or 40m to one of two (2) such doorways or passageways if travel to each of them from a no-fire isolated stairway or ramp which may be in opposite directions. **General Note** The proposed development consists of single storey and ground floor construction works only. There are no non-fire isolated stairways proposed or affected that would require consideration under this clause.
D1.10 ***Discharge***	Required exits are to discharge to open space which is to be connected to a public road by a stairway complying with D2.13 and or a ramp having a gradient of not more than 1:8 and or 1:14 where required to be accessible under the BCA. The current egress strategy necessitates passing under linkways after discharging from buildings. This does not comply in respect to D1.10. **Further Information** The discharge from the required exits to the road is to be confirmed based on the positioning the proposed buildings and works it is likely that the occupants will need to pass back under the covered walkways and awnings. Based on the location of covered pedestrian walkways and internal fencing in the architectural site plan it is likely that a fire engineered performance solution will be required to address the proposed egress strategy.

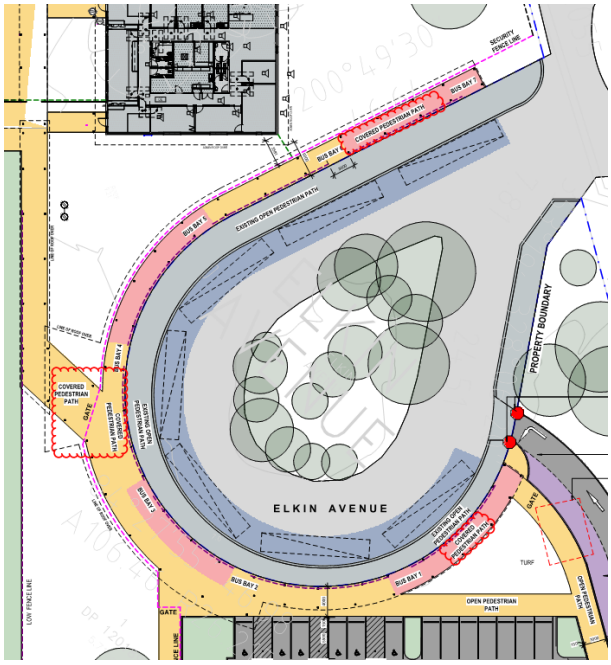


Figure 22: Covered Walkway Adjacent to Public Road Access

Performance Solution

Where egress from the buildings via open space requires passing back under covered areas such as awnings/linkways and the like before reaching the public road this is to be addressed by way of a Fire Engineered Strategy. Performance solution to be developed during the DD phase.

D1.11
Horizontal Exits

Horizontal exits must not be counted as required exits between sole occupancy units and in a Class 9b building used as an early childhood centre, primary and or secondary school.

General Note

We note that the works do not rely on any Horizontal exits.

D2.7
Equipment in Corridors

Electrical equipment both new and existing has been identified in paths of travel to exits (along corridors) throughout the development.

These must be smoke separated and bound by non-combustible construction. Compliance is readily achievable based on the current documentation architect to note and ensure enclosures are smoke sealed from the remainder of the building. Upgrade works will be required within the existing building where there are EDB cupboards located within the refurbishment zones.

General Note

Existing electrical equipment must be upgraded to achieve compliance with the aforementioned requirements. Namely, separation from the remainder of the building by non-combustible construction this includes smoke sealing existing penetrations within the bounding construction where being impacted as a result of the proposed works.

D2.8
Enclosure under stairs

This clause sets out the requirements for fire separation below stairways including fire isolated stairways and non-fire isolated stairways. For required non-fire isolated stairways the space below where enclosed to form a cupboard or other enclosed space it must be enclosed with construction having an FRL of not less than 60min.

General Note

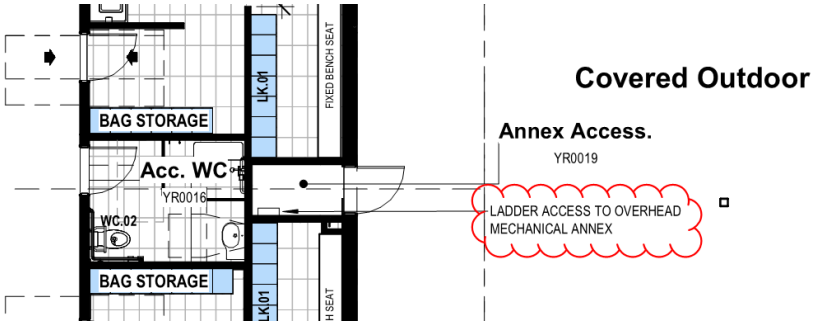
Based on updated architectural documentation the works do not include any enclosed space beneath non-fire isolated stairs.

D2.13, D2.14 & D2.17
Stair Construction & Handrails

Stairways:

+ A stairway must have no more than 18, nor less than 2, risers in each flight.
+ Landings must be not less than 750mm in length.
+ Landings must accommodate a stretcher, 2m long and 600mm wide, throughout all flights of all stairs. This includes navigating landings that may turn 90-180°.

Handrails:

	+ Handrails must be located on both sides of all stairways and ramps except for fire-isolated stairs. We note that all of the stairways within the building are used for general circulation and as such handrails will be required both sides accordingly. **General Note** Based on DD stage architectural documentation there are no stairways proposed to be constructed or altered within the buildings or landscaped areas. This is to be confirmed by the project architect/landscape architect. Where existing stairs, landings and handrails are utilised by the proposed works we recommend upgrade to achieve compliance with current requirements. Clarification with respect of the extent of upgrades will be confirmed as part of the design development. If required, stair details are to include sectional drawings showing tread and riser dimensions, handrail, nosing, tactile details etc. This also includes all stairways within landscaped areas.
D2.15 ***Thresholds***	The threshold of a door must not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf itself unless it opens to a road or open space, external landing or balcony and the sill is not located more than 190mm above the finish surface to which the doorway opens **General Note** In addition to BCA requirements summarised above particular attention is to be paid to the requirements of D3 and AS 1428.1-2009, to ensure compliance the design is to incorporate flush transitions at doorways and or a threshold ramp where permissible. Grated drains shall be allowed for in the design in accordance with AS4654 unless otherwise rationalised under FP1.4 Performance Solution report.
D2.16 ***Balustrades***	Balustrade details are to be provided for review and comment as part of the finalisation of the developed design stage. Although the plans show that balustrades have been documented sufficient details have not currently been provided to confirm compliance. <u>Balustrades:</u> + All balustrades must achieve a minimum height of 1m above finished floor level. + Balustrades (except for fire-isolated stairs) must not permit a 125mm sphere to pass through any opening. + Balustrades in fire-isolated exits must comprise no gap larger than 150mm between nosing line (or landing) and bottom rail. Other openings in the balustrade must not exceed 460mm. **General Note** It is recommended that consideration be given to increasing the height of the proposed balustrades to external balconies and internal void areas to 1.2-1.5m to avoid climbability issues and or the EFSG requirements. Further balustrade details will need to be provided for review and comment however based on the documentation to date we note that compliance is readily achievable.
D2.18 ***Fixed platforms, walkways, stairways and ladders***	A fixed platform, walkway, stairway, ladder, any going and riser, any balustrade or other barrier attached thereto may comply with AS1657 if it only serves a machinery or plant room. **General Note** Based on updated architectural documentation, ladder access is proposed to the gymnasium mechanical annex. Given the annex space serves only plant equipment, compliance is readily achievable.  *Figure 23: Ladder Access to Gymnasium Mechanical Annex*

D2.19

D2.20

D2.21

Door construction including type latching, swing

Doors and latching: All egress doorways must swing in the direction of egress and must be readily openable without a key from the side that faces a person seeking egress, by a single handed downward or pushing action on a single device which is located between 900mm and 1100mm from the floor.

General Note

Door hardware will need to be specified in accordance with the requirements of this clause architect to note and specify accordingly. This will include ensuring existing door hardware within existing buildings where located on a path of travel and or on a required exit from the building being upgraded to the degree necessary.

A door can swing against the direction of egress where it is the only required exit from a building and the building or part has a floor area of not more than 200m^2 and or it being a sanitary compartment.

Further Information

A number of the existing buildings where the final egress doors swing against the direction of egress serve areas with a floor area less than 200m^2. As such the final egress doors can swing against the direction of travel pending the inclusion of a device to hold it in the open position.

Performance Solution

Within the current design, there are several doors currently shown to swing against the direction of egress in a case where required to swing in the direction of egress. These doors are to be re-swung and or the arrangement is to be addressed by way of a Fire Engineered Strategy.

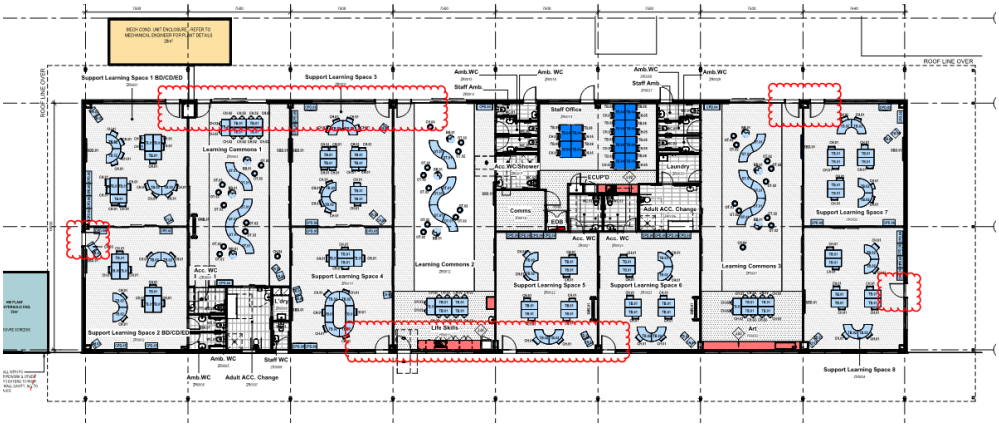


Figure 24: Doors Swing against the Direction of Egress

Any proposed lockable gates or the like located in the path of travel and or permitter gate (D1.10).

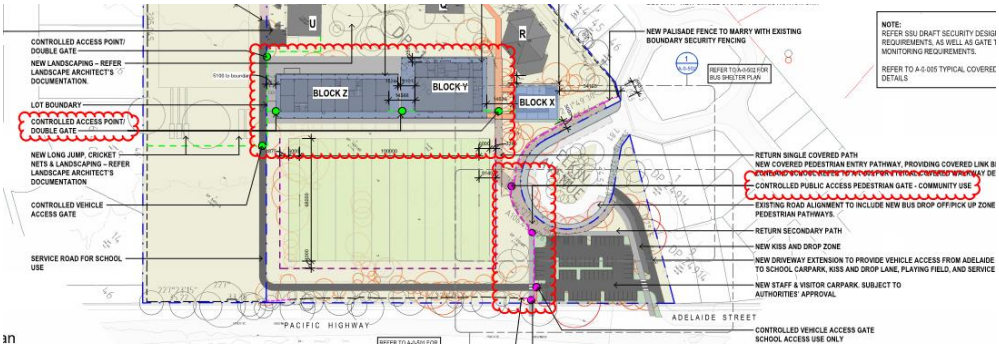


Figure 25: Proposed Internal and Boundary Gates

Roller shutters in the outdoor sports storeroom, as outlined in the figure below, are to be addressed by way of a fire engineered solution.

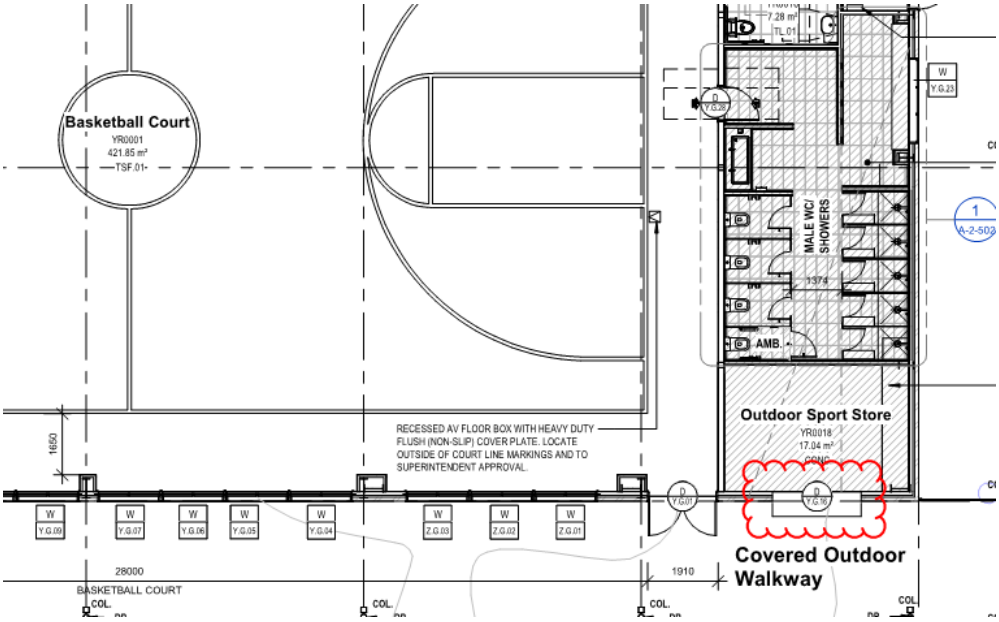
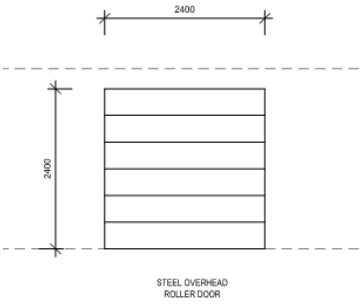


Figure 26: Gymnasium - Roller Door



GYM DOOR TYPE 7

LEVEL	ROOM NO.	ROOM NAME	DOOR NO.
GROUND FLOOR	YR0018	Outdoor Sport Store	Y.G.16

TOTAL QTY: 1

Figure 27: Door Schedule - Roller Door Type

E1.3

Fire Hydrant System

All buildings greater than 500m^2 are required to be provided with compliant Fire Hydrant coverage in accordance with AS2419.1-2005 based on BCA2019 applying to the development. Should BCA 2022 apply to the development then AS2419.1-2021 will apply.

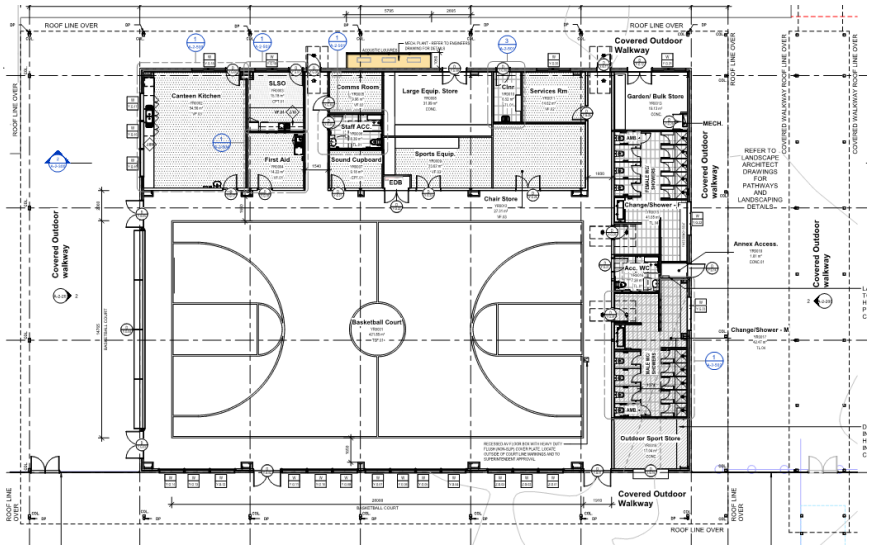
Following a site audit during masterplan a number of compliance issues where readily apparent and are noted as follows

- Existing external hydrants are not provided with Stroz couplings complying with AS 2419.3
- External hydrants are located less than 10m from the external wall of the adjacent building BLOCK Q, it is assumed that this outlet is not servicing this building as such no minimum distance applies
- No FH booster and or pump was noted at the time of the inspection
- FH outlets appear to be more than 20m from a fire brigade pumping hardstand with no booster installed,
- No service records have been provided to indicate whether the required hydraulic capacity can be achieved and sustained in the event of pressurisation by FRNSW.

The usability of the current system is not confirmed and requires further clarification by the hydraulic consultant.

General Note

As part of the proposed works a compliant FH system is to be provided to serve all new and altered parts in accordance with, the requirements of E1.3 of the BCA and AS2419.1-2005.

	Hydraulic consultant to review and confirm compliance and extent of works required in order to achieve compliance in this regard. Compliant hydrant coverage is to be achieved throughout all new areas and refurbished parts of the buildings where being of a size requiring services coverage. For the light refurbished buildings, compliant coverage is to be maintained from existing outlets. FH coverage diagrams showing the location of the proposed outlets will need to be provided for review and comment. **Performance Solution** Details demonstrating compliance will need to be provided for review and comment, currently insufficient information has been provided to confirm compliance. As applicable items will need to be addressed i.e. the location of the proposed FH booster not being within site of the main entry of the building served.
E1.4 ***Fire Hose Reel System***	Fire hose reel(s) are to be provided to achieve coverage to any Class 9b part not being a classroom i.e. a hall library or the like. FH coverage diagrams showing the location of the proposed outlets will need to be provided for review and comment. **Further Information** Hydraulic consultant will need to provide coverage mark-ups demonstrating that compliant FHR coverage has been provided to the proposed gymnasium (Block Y) in this regard.  *Figure 28: FHR Coverage Required*
E1.6 ***Portable Fire Extinguishers***	**General Note** Portable fire extinguishers are required throughout the building in accordance with Table E1.6 of the BCA. In addition to the more stringent EFSG requirements, the BCA required PFE to cover Class A fire risk in classrooms and associated corridors. PFEs are to be provided throughout the development in accordance with AS 2444-2001. The designer is to be mindful of the requirements of Clause 4.2.1 of AS 2444-2001 which specifies that fire extinguishers be located within 15m of any point within the school building. Furthermore, Whilst EFSG compliance is not required by the BCA, it is expected that compliance with EFSG will be required. Accordingly, it is recommended that the Fire Services Designer review that the requirements of EFSG Specification Guide SG573, noting that there is an opportunity when documenting extinguisher types and locations to address compliance with both EFSG and BCA.
E2.2a ***Smoke Hazard Mgmt. & Detection***	<u>Detection for shutdown:</u> The buildings on site either have a RiS of two (2) or less as such detection will only be required where the building contains a ducted air conditioning system, which under the NSW variation of E2.2, requires the provision of smoke detection to initiate shutdown in accordance with Clause 6 of Spec. E2.2a – there was no detection identified on site at the time of inspection. Notwithstanding, the benefits of providing an AS 1670.1 system are substantial, both in relation to asset protection and fire and life safety. This additional measure will also contribute positively to assessment of the proposed performance solutions. **General Note**

	It should be noted that additional fire safety measures may be required by the projects fire safety engineer as a result of any proposed performance solution. Where the basketball court /hall is proposed to be multipurpose then it must contain all of the required smoke hazard management provisions under E2.2 of the BCA. Dry fire consultant to review and ensure compliance with respect of fire safety measures to achieve compliance for proposed. **Further Information** Any ancillary uses / portable stage associated with the proposed gymnasium will need to be confirmed to determine if any additional smoke hazard management measures will be required. Client to confirm in this regard.
Part E3 ***Lifts***	In an accessible building, every passenger lift must be one of the types identified in Table E3.6a, have accessible features in accordance with Table E3.6b and not rely on a constant pressure device for its operation if the lift car is fully enclosed. In addition, the requirements of the BCA, the following EFSGs also apply: **EFSG SG 1011 - Lift Design and Install Requirements Summary** + All new installations and lift modernisations at any of NSW Department of Education campus shall provide access for persons with disabilities in compliance with AS1428.1 and A1735.12. + Where compliance with AS 1428 and/or AS 1735.12 cannot be achieved, approval from the NSW Department of Education in writing is to be provided, and the lift(s) shall still comply with at least the Building Code of Australia requirement for Facilities for People with Disabilities Clause E3.6. + All lift car control buttons shall comply with AS 1735.12 Clauses 8.3 Tactile Information and Clause 8.4 Shape of Characters. + All passenger lifts must have lift car audio (voice, not just a sound) position indication regardless of how many floors are served. + Unless prior approval from the NSW Department of Education in writing is provided the following lifts shall not be used for the access of people with disabilities: ▪ AS 1735.7 – Stairway Lifts ▪ AS 1735.15 – Low rise passenger lifts – Non automatically controlled ▪ AS 1735.16 – Lifts for persons with limited mobility – Restricted use ▪ AS 1735.17 – Lifts for persons with limited mobility – Restricted use – Water-drive ▪ AS 1735.18 – Passenger Lifts for Private Residence **EFSG SG 1011.1.5 Passenger Lifts Requirements Summary** + Passenger lift cars are to have a minimum size of 1400mm wide by 2000mm deep. Unless prior approval from the NSW Department of Education in writing, no passenger lift car shall be smaller than this size. + Car sizes may be larger than this as required to suit code requirements and lift traffic studies. **General Note** Given the proposed development works occur on the ground floor level, including the refurbishment to the two storey Block H building, no lifts are anticipated to be constructed or affected and as such compliance is readily achievable.
E4.2-E4.8 ***Emergency lighting and Exits Signs:***	Emergency lighting and exit signage to be installed in accordance with AS 2293.1-2018. **General Note** Exit/directional will need to be installed throughout the existing buildings in accordance with AS2291.1-2018. Existing signage will need to be updated throughout where impacted by the proposed works albeit through modification of the paths of travel, affecting coverage or the like.
F1.4 ***Weather-Proofing***	Thresholds were observed throughout the site incorporating various steps and ramps. Where these are amended for compliance with access requirements, they must also have regard to the design information below The design of seamless door thresholds as required between external and internal areas, is to comply with AS 4654-2012.1 & 2 and the sub-sill is recessed, the design will need to incorporate a linear grate and drain system before the sub-sill or with an integrated sub-sill to mitigate water ingress into the building.
F2.3 ***Sanitary Facilities***	Confirmation of the total student population is to verify that the proposed sanitary facilities will cater for the student population. Details demonstrating compliance will need to be provided for review and comment.

Confirmation of the total staff population and the location of existing sanitary facilities that will serve the staff population is required.

F2.3 of the BCA requires separate student and staff sanitary compartments to be provided.

We note that EFSG requirements for sanitary facilities are significantly in excess of those required under the BCA. Nevertheless, to confirm compliance with BCA Clause F2.3, we provide the below tables for your information:

Required Sanitary Facilities– Class *9b School Employees*

	Closet Pans		Urinals		Washbasins	
	Population	**Required Facilities**	**Population**	**Required Facilities**	**Population**	**Required Facilities**
Male	1 – 20	1	1 – 10	0	1 – 30	1
	>20	Add 1 per 20	11 – 20	1	>30	Add 1 per 30
			21 – 45	2		
			>45	Add 1 per 30		
Female	1 – 5	1	-	-	1 – 30	1
	>5	Add 1 per 15	-	-	>30	Add 1 per 30

Required Sanitary Facilities– Class *9b School Students*

	Closet Pans		Urinals		Washbasins	
	Population	**Required Facilities**	**Population**	**Required Facilities**	**Population**	**Required Facilities**
Male	1 – 25	1	1 – 50	1	1 – 10	1
	26 – 75	2	51 –100	2	11 – 50	2
	76-150	3	>100	Add 1 per 100	51 – 100	3
	151 – 200	4			>100	Add 1 per 75
	>200	Add 1 per 100				
Female	1 – 10	1	-	-	1 – 10	1
	11 – 25	2	-	-	11 – 50	2
	26 – 100	Add 1 per 25	-	-	51 – 100	3
	>100	Add 1 per 50	-	-	>100	Add 1 per 75

F4.1 & F4.2
Natural lighting

General Note

Natural lighting is required to be provided to all general-purpose classrooms. Details demonstrating compliance will need to be provide for review and comment.

Details are to be provided confirming Support Learning Space 1 and Learning Commons 1 of the NSL building achieved adequate natural light given the location of mechanical plant adjacent to the northern façade. Architect to review and ensure compliance details to be provided along with the DD phase in this regard.

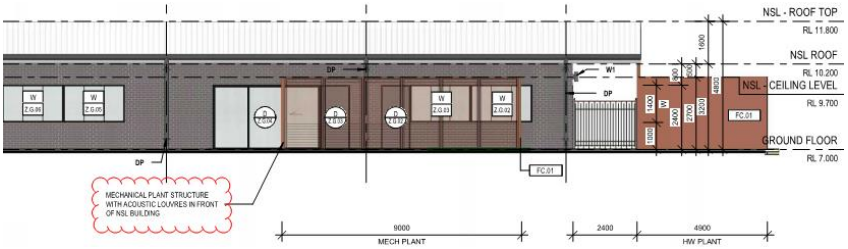


Figure 29: Mechanical Plant Proposed in front of Classroom Window

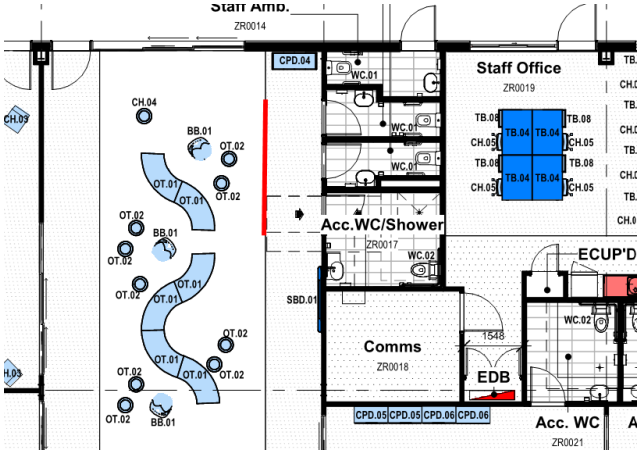
F4.8, F4.9

Restriction on location of sanitary compartment

Sanitary compartments must not open directly into a room used for public assembly in a school other than a primary school unless access is via an airlock, hallway or other area of not less than 1.1m2 and fitted with self-closing doors to all access doors or the sanitary compartment is to be provided with mechanical exhaust ventilation and the door way to the room is to be adequately screened from view.

Plan Amendment/Performance Solution

Currently the sanitary compartments open directly up into learning commons particularly areas used for assembly based on the location of the adjoining seating. In this regard, either a hallway or a screen and local exhaust is to be provided to the sanitary compartments (typical example below)



Where the space necessitates direct access of the learning space or support learning areas then the extent of separation is to be addressed by way of a Performance Solution.

NSW G5.2

Bushfire Protection

A Class 9 building located in a *designated bushfire prone area* must comply with the following:

+ AS 3959 – subject to Planning for Bush Fire Protection and Section 9 Construction for Bushfire Attack Level FZ.

A copy of the independent bushfire consultant report is to be provided and requirements incorporated into the design in this regard where required.

Part G6 *Outdoor Occupiable Areas*

Outdoor occupiable areas are subject to additional compliance requirements under the BCA including with respect of fire services coverage, egress requirements, fire hazard properties and the like.

Compliance is readily achievable having regards to the proposed works based on the DD phase. Further detail is to be provided through architectural and landscape plans demonstrating the above listed features.

Section J Energy Efficiency

Independent Section J/JV3 consultant to be engaged to provide advice with respect of compliance. Where a JV3 approach is proposed a copy of the report is to be provided to BM+G for review and comment.

CONCLUSION

This report contains an assessment of the referenced existing buildings and architectural documentation for the proposed works at the Hunter River High School, against the relevant provisions of the Building Code of Australia 2019, Volume 1 (BCA).

Arising from the assessment, key compliance issues have been identified that require further resolution, either by way of Performance Solutions or plan amendments. Subject to resolution of these matters, it is considered that the proposed development can readily achieve compliance with the BCA subject to resolution of the matters identified under Section 3 of the report and further design development.

APPENDIX 1- REQUIRED CONSTRUCTION & FRLs OF BUILDING ELEMENTS

BCA SPEC. C1.1 TABLE 4 - TYPE B CONSTRUCTION

Building element	Class of building—FRL: (in minutes) *Structural adequacy/Integrity/Insulation*			
	2, 3 or 4 part	**5, 7a or 9**	**6**	**7b or 8**
EXTERNAL WALL (including any column and other building element incorporated within it) or other external building element, where the distance from any *fire-source feature* to which it is exposed is—				
For *loadbearing* parts—				
less than 1.5 m	90/90/ 90	120/120/120	180/180/180	240/240/240
1.5 to less than 3 m	90/60/ 30	120/ 90/ 60	180/120/ 90	240/180/120
3 to less than 9 m	90/30/ 30	120/30/ 30	180/90/ 60	240/ 90/ 60
9 to less than 18 m	90/30/–	120/30/–	180/ 60/–	240/ 60/–
18 m or more	–/–/–	–/–/–	–/–/–	–/–/–
For non-*loadbearing* parts—				
less than 1.5 m	–/ 90/ 90	–/120/120	–/180/180	–/240/240
1.5 to less than 3 m	–/ 60/ 30	–/ 90/ 60	–/120/ 90	–/180/120
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN not incorporated in an *external wall*, where the distance from any *fire-source feature* to which it is exposed is—				
For *loadbearing* columns—				
less than 18 m	90/–/–	120/–/–	180/–/–	240/–/–
18 m or more	–/–/–	–/–/–	–/–/–	–/–/–
For non-*loadbearing* columns—	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS—	90/90/90	120/120/120	180/180/180	240/240/240
INTERNAL WALLS—				
Fire-resisting lift and stair *shafts*—				
Loadbearing	90/ 90/ 90	120/120/120	180/120/120	240/120/120
Fire-resisting stair *shafts*—				
Non-*loadbearing*	–/ 90/ 90	–/120/120	–/120/120	–/120/120
Bounding *public corridors*, public lobbies and the like—				
Loadbearing	60/ 60/ 60	120/–/–	180/–/–	240/–/–
Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
Between or bounding *sole-occupancy units*—				
Loadbearing	60/ 60/ 60	120/–/–	180/–/–	240/–/–
Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
OTHER LOADBEARING INTERNAL WALLS and COLUMNS—	60/–/–	120/–/–	180/–/–	240/–/–
ROOFS	–/–/–	–/–/–	–/–/–	–/–/–

Notes:

1. Any wall required to have an FRL with respect to integrity and insulation must extend to the underside of the floor next above if that floor has an FRL of at least 30/30/30; or the underside of a ceiling with a resistance to the incipient spread of fire to the space above itself of not less than 60 minutes; or the underside of a non-combustible roof covering; or 400mm above the roof covering if it is combustible.

2. A loadbearing internal wall and a loadbearing fire wall must be constructed from concrete, masonry, or a combination of the two.
3. In the storey immediately below the roof, internal columns and internal walls other than fire walls and shaft walls need not comply with Table 4.
4. External walls must be non-combustible construction. This includes all elements incorporated within such as sarking, insulation, framing, cladding, etc.
5. Refer below for tabulated requirements of structural construction in addition to the FRLs prescribed by Table 4 of Spec C1.1.

BUILDING ELEMENT	TYPE B CONSTRUCTION
External wall	Non-combustible
Common wall	Non-combustible
Floor and floor framing of lift pit	Non-combustible
All loadbearing internal walls (including those of shafts)	Concrete, masonry or fire-protected timber
Loadbearing fire walls	Concrete, masonry or fire-protected timber
Non-loadbearing internal walls required to be fire-resistant	Non-combustible
Non-loadbearing lift, ventilating, pipe, garbage and like shafts which do not discharge hot products of combustion	Non-combustible (subject to conditions outlined in **C1.9(b)**)

6. Any lightweight construction in a fire wall or an internal wall required to have an FRL is to comply with Specification C1.8.
7. External walls must be non-combustible construction. Non-loadbearing parts of an external wall that are more than 18m from a fire source feature need not be fire rated.
8. No structural elements are permitted to pass through fire-rated walls.
9. Fire rated shafts are required to be enclosed at the top and bottom by construction having an FRL of not less than what the shaft requires.

BCA Spec. C1.1 Table 5 - Type C Construction

Building element	Class of building—FRL: (in minutes) *Structural adequacy / Integrity / Insulation*			
	2, 3 or 4 part	**5, 7a or 9**	**6**	**7b or 8**
EXTERNAL WALL (including any column and other building element incorporated within it) or other external building element, where the distance from any *fire-source feature* to which it is exposed is—				
Less than 1.5 m	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	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN 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 to less than 3 m	–/–/–	60/–/–	60/–/–	60/–/–
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS—	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
INTERNAL WALLS—				
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	60/60/60	60/ 60/ 60	60/ 60/ 60
ROOFS	–/–/–	–/–/–	–/–/–	–/–/–

Notes:

1. New external walls that are located 1.5m or more from an allotment boundary / fire source feature require no FRL's.
2. An external wall required to have an FRL is only required from the outside.
3. Any lightweight construction in a fire wall or an internal wall required to have an FRL is to comply with Specification C1.8.
4. Any insulation installed in the cavity of the wall is required to be non-combustible.
5. Where a combustible material is used as a finish or lining to a wall or roof, or awning, to a building element required to have an FRL, the material must comply with the fire hazard properties prescribed under BCA Specification C1.10 and it is not located directly above an exit so as to make the exit unusable, and does not otherwise constitute an undue risk of fire spread via the façade of the building.
6. Any internal loadbearing wall or column is required to achieve an FRL of not less than 90/90/90.
7. The floor separating the two storeys is required to achieve an FRL of not less than 90/90/90 to achieve separate fire compartments.
8. No structural elements are permitted to pass through fire-rated walls.
9. Fire rated shafts are required to be enclosed at the top and bottom by construction having an FRL of not less than what the shaft requires.