

The National Construction Code Volume One Concord Forensic Mental Health Unit Concord Repatriation Hospital Campus Design Development Report





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CONTENTS

Α.	INTRODUCTION	4
A.1	PROJECT DESCRIPTION	4
A.2	Аім	4
A.3	PROJECT TEAM	4
A.4	DOCUMENTATION	5
A.5	REGULATORY FRAMEWORK	5
A.6	COMPLIANCE WITH THE BCA	5
A.7	LIMITATIONS & EXCLUSIONS	6
A.8	TERMINOLOGY	6
В.	BUILDING CHARACTERISTICS	10
B.1	BUILDING CLASSIFICATION	10
C.	SUMMARY OF KEY COMPLIANCE ISSUES	11
C.1	SUMMARY OF KEY COMPLIANCES ISSUES:	11
2	SUMMARY OF ITEMS REQUIRING A FIRE ENGINEERING PERFORMANCE SOLUTION:	23
C.3	SUMMARY OF ITEMS REQUIRING A PERFORMANCE SOLUTION:	24
D.	BCA ASSESSMENT	25
D.1	BCA DEEMED-TO-SATISFY COMPLIANCE ISSUES:	25
	SECTION B – STRUCTURE	25
	PART B1 – STRUCTURAL PROVISIONS	25
	SECTION C – FIRE RESISTANCE	25
	PART C2 – FIRE RESISTANCE AND STABILITY	25
	PART C3 – COMPARTMENTATION AND SEPARATION	30
	PART C4 – PROTECTION OF OPENINGS	32
	SECTION D - ACCESS & EGRESS	40
	PART D2 - PROVISION FOR ESCAPE	40
	PART $DS = CONSTRUCTION OF EATTS$ PART $DA = Access For Peorle With A Disability$	55
	Section E - Services and Folipment	02 86
	PART F1 - FIRE FIGHTING FOUIPMENT	86
	PART E2 – Smoke Hazard Management	97
	PART E3 – LIFT INSTALLATIONS	99
	PART E4 – VISIBILITY IN AN EMERGENCY, EXIT SIGNS AND WARNING SYSTEMS	100
	SECTION F – HEALTH & AMENITY	101
	PART F1 – DAMP AND WEATHERPROOFING	101

	\sim
PART F2 – WET AREAS OF AND OVERFLOW PROTECTION	102
PART F3 – ROOF AND WALL CLADDING	103
PART F4 – SANITARY AND OTHER FACILITIES	104
PART F5 – ROOM HEIGHTS	111
PART F6 – LIGHT AND VENTILATION	111
SECTION G – ANCILLARY PROVISIONS	112
SECTION J – ENERGY EFFICIENCY	113
CONCLUSION	114

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A. INTRODUCTION

A.1 **PROJECT DESCRIPTION**

The Concord Hospital, Forensic Mental Health Unit project is part of the State Wide Mental Health Infrastructure Program (SWMHIP) and forms part of the \$700m capital works component of a broader series of reforms across the state's mental health services. This project focuses on patient-centric models of care, engagement with consumers, carers and staff, and best practice service delivery with improve outcomes for consumers, carers, families, and stakeholders.

Concord Repatriation General Hospital (Concord Hospital) is a large multifaceted health facility, located in the western sector of the Sydney Local Health District (SLHD). It is located in the City of Canada Bay Local Government Area (LGA) in Sydney, NSW. Concord Hospital operates as a general hospital, building on its proud heritage of caring for the Veteran community, it now services the local communities of Concord, Strathfield, Burwood and beyond.

As a 750-bed teaching hospital for the University of Sydney, the facility offers a comprehensive range of specialty and sub-specialty services, many of which are recognized as centers of excellence worldwide. Supported by these services is the Concord Centre for Mental Health, a modern purpose-built precinct for inpatient care with additional comprehensive patient support services including admission and assessment, acute and rehabilitation adult services, services for older people and extended adolescent care 24/7.

In addition, the ANZAC Health & Medical Research Institute is located onsite, undertaking research into disorders of lifestyle and aging. The Institute recognises the contribution that the nations Veteran's and War Widows have made in establishing the society we have today.

The Concord Forensic Mental Health Unit will be located within the Concord Repatriation Hospital Campus.

The proposed project is a new purpose-built Low and Medium secure forensic mental health unit within the Sydney Local Health District. The proposal incorporates the Functional Brief and Model of care principles and is planned to have 18 Medium secure forensic beds, 24 low secure forensic beds, as well as clinical support spaces, outdoor secure courtyard spaces and amenities.

A.2 AIM

The aim of this report is to:

- + Undertake an assessment of the Schematic Architectural Design Documentation for the proposed Ambulatory Care Building against the Deemed-to-Satisfy (DtS) provisions of Part C, D, E, F, G & J of the BCA 2022.
- + Identify any BCA compliance issues that require resolution/attention for the proposed redevelopment.
- + Identify non compliances that will be required to be assessed as part of the proposed Fire Engineering Assessment to be prepared by the appointed Fire Safety Engineer.
- Identify the relevant Performance Requirements that will be required to be assessed as part of the Fire Engineering Assessment.
- + Review the design documentation against the Access to Premises Standards 2010.
- + Identify a list of essential fire safety measures that are required to be installed within the building.

A.3 PROJECT TEAM

The following BM+G Team Members have contributed to this Report:

- + Adam Durnford (Associate Director)
- + David Blackett (Director)



A.4 DOCUMENTATION

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

- + Building Code of Australia 2022
- + Guide to the Building Code of Australia 2019 Amendment No 1.
- + Access to Premises Standards 2010
- + Referenced Australian Standards as detailed throughout the Report.
- + Design Development Issue Architectural Drawings issued by NBRS dated 21 August 2023.

A.5 REGULATORY FRAMEWORK

Pursuant to Section 19 of the Environmental Planning and Assessment (Development Certification and fire Safety) Regulation 2021 all new building work must comply with the current BCA however the existing features of an existing building need not comply with the BCA unless upgrade is required by other clauses of the legislation.

The project is required to be designed in accordance with the requirements of BCA 2022 which came into force on the 1 May 2023.

A.6 COMPLIANCE WITH THE BCA

The BCA is a performance-based code which contains the 'Performance Requirements' for the construction of buildings. Being a performance-based document, the BCA provides options and flexibility, allowing practitioners to satisfy the Performance Requirements for building by:

- Developing a Performance Solution; or
- + Complying with Deemed to Satisfy Provisions (known as a DTS Solution); or
- A combination of the above two options.



This Report has been prepared based on an assessment of the proposed design against the DTS provisions of the BCA and identifies matters which are non-compliance and which BM+G are capable of being subject to a Performance Solution subject to consultation and agreement between all stakeholders.

Where a Performance Requirement is proposed to be satisfied by a Performance Solution, the following steps must be undertaken:

- + Prepare a Performance-Based Design Brief (PBDB) in consultation with the project stakeholders.
- + Undertake analysis using one or more Assessment Methods listed in Clause A2.2(2) of BCA2019[A1]
- + Evaluate the results against the acceptance criteria in the PBDB.
- + Prepare a final Performance Solution Report that:



- Identifies the applicable Performance Requirements and DtS departures identified through Clause A2.2 (3) or A2.4 (3) of BCA2019 [A1] as applicable; and
- Identifies of all Assessment Methods used; and
- Includes details of the steps taken under; and
- Confirms that the applicable BCA Performance Requirement(s) are met; and
- Stipulates any applicable conditions / limitations required as part of the Performance Solution

A.7 LIMITATIONS & EXCLUSIONS

The limitations and exclusions of this report are as follows:

- + The following assessment is based upon a review of the architectural documentation.
- The Report does not address matters in relation to the following:
 - Local Government Act and Regulations.
 - Occupational Health and Safety (OH&S) Act and Regulations.
 - WorkCover Authority requirements.
 - Water, drainage, gas, telecommunications, and electricity supply authority requirements.
- BM+G Pty Ltd do not guarantee acceptance of this report by Local Council, NSW Fire Brigades, or other approval authorities.
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A.8 TERMINOLOGY

Accessible

Means having features to enable use by people with a disability.

Accessway

Means a continuous accessible path of travel (as defined by AS 1428.1) to, into or within a building.

Carpark

Means a building that is used for the parking of motor vehicles but is neither a private garage nor used for the servicing of vehicles, other than washing, cleaning, or polishing.

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.

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.

Deemed to Satisfy Provisions (DtS)

Provisions which are deemed to satisfy the Performance Requirements.

Effective Height

Means the vertical distance between the floor of the lowest storey included 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

Means

a) Any, or any combination of the following if they provide egress to a road or open space:

- i) An internal or external stairway.
- ii) A ramp.
- iii) A fire-isolated passageway.
- iv) A doorway opening to a road or open space.
- b) A horizontal exit or a fire isolated passageway leading to a horizontal exit.

Fire Isolated Stairway

Means a stairway within a fire resisting shaft and includes the floor and roof or top enclosing structure.

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 Resisting

For the purposes of Volume One, applied to a building element, means having an FRL appropriate for that element.

Fire Source Feature (FSF)

The far boundary of a road which adjoins 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.

Flight

Means that part of a stair that has a continuous series of risers, including risers of winders, not interrupted by a landing or floor.

Health-care building

A building whose occupants or patients undergoing medical treatment generally need physical assistance to evacuate the building during an emergency and includes—

(a) a public or private hospital; or



- (b) a nursing home or similar facility for sick or disabled persons needing full-time care; or
- (c) a clinic, day surgery or procedure unit where the effects of the predominant treatment administered involve patients becoming non-ambulatory and requiring supervised medical care on the premises for some time after the treatment.

Landing

Means an area at the top or bottom of a flight or between two flights.

Loadbearing

Means intended to resist vertical forces additional to those due to its weight.

Non-combustible

Means

- a) Applied to a material not deemed combustible as determined by AS 1530.1 Combustibility Tests for Materials; and
- b) Applied to construction or part of a building constructed wholly of materials that are not deemed combustible.

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.

Open Space

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 Solution

A method of complying with the Performance Requirements other than by a Deemed-to-Satisfy Solution.

Patient care area

a part of a healthcare building normally used for the treatment, care, accommodation, recreation, dining and holding of patients including a ward area and treatment area.

Primary Building Element

For the purposes of Volume One, means a member of a building designed specifically to take part of the loads specified in B1.2 and includes roof, ceiling, floor, stairway or ramp and wall framing members including bracing members designed for the specific purpose of action as a brace to those members.

Performance Solution

A method of complying with the Performance Requirements other than by a Deemed-to-Satisfy Solution.

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 DtS 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 DtS Provisions; or

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

Self-closing

For the purpose of Volume One, applied to a door, means equipped with a device which returns the door to the fully closed position immediately after each opening.

Sole occupancy Unit (SOU)

A room or other part of a building for occupation by one or joint owner, lessee, tenant, or other occupier to the exclusion of any other owner, lessee, tenant, or other occupier and includes a dwelling.

Treatment area

An area within a patient care area such as an operating theatre and rooms used for recovery, minor procedures, resuscitation, intensive care and coronary care from which a patient may not be readily moved.

Ward area

That part of a patient care area for resident patients and may contain areas for accommodation, sleeping, associated living and nursing facilities.





BUILDING CHARACTERISTICS

B.1 BUILDING CLASSIFICATION

The following table presents a summary of relevant building classification items of the proposed new Mental Health Facility to be constructed as part of the Concord Repatriation General Hospital.

+	BCA Classification:	Class 9a (Health-care Building
+	Storeys Contained	Three (3)
+	Rise in Storeys:	Three (3)
+	Effective Height:	The effective height of the building is < 25 m
+	Type of Construction:	Type A Construction
+	Sprinkler System Installed Throughout	Yes – New building is proposed to be protected throughout with an Automatic Fire Suppression System installed in accordance with AS 2118.1 - 2017
+	Importance Level	Importance Level 2
+	Climate Zone:	Energy Efficiency Zone 6
+	Maximum Floor Area:	Max 5,000m ² compartments for Class 9a Health Care buildings.
		Note: 2,000m ² compartments applies to all Patient Care Areas within the building.
+	Maximum Volume:	Max 30,000m ³ compartments for Class 9a Health Care buildings.
+	Largest Fire Compartment	480 m ²

Table No. 1 - Summary of building classification items



C. SUMMARY OF KEY COMPLIANCE ISSUES

Based on the Design Development Architectural Drawings prepared by NBRS, the following is a summary of the key compliance issues identified associated with the proposed Forensic Mental Health Unit.

C.1 SUMMARY OF KEY COMPLIANCES ISSUES:

No.	BCA Clause	DESCRIPTION
1.	B1D3	Importance Level The new Ambulatory Care Building will be required to be designed and constructed in accordance with the requirements of Importance Level 2. The Structural Engineer together with Services Engineers are to nominate the Importance Level that has been assigned to the building i.e., Importance Level 2.
2.	C2D10	 Aluminium Panels Aluminium Panels proposed on the external façade of the building will be required to consist of a single piece of pre-finished metal sheeting having a combustible surface finish not exceeding 1mm thickness and where the Spread of Flame Index of the product is not greater than 0. The product selected will be required to have a current Certificate of Conformity or other appropriate Test Report. All components within installed within the external wall assembly will be required to comply with the requirements of Clause C2D10. <i>Timber Noggins in Fire Walls</i> In a Building of Type A Construction, non-load bearing walls where they are required to be fire-resisting, load bearing walls and load bearing fire walls are required to be constructed of non-combustible construction. Timber noggins will likely be located within the internal fire walls throughout the building in order to support services, handrails etc. The use of timber noggins within fire rated walls throughout the building is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
3.	C3D6	<i>Fire & Smoke Compartment Sizes</i> Fire and smoke compartments throughout the building as documented on the Design Development Drawings complies with Clause C2.5 with no fire compartment exceeding 2,000 m ² and no smoke compartment containing patient care areas exceeding 500 m ² .
4.	C4D3	 Protection of External Walls and Openings Based on the Design Development Architectural Drawings it appears that there are no external walls that are situated within 3 m of a fire source feature. Notwithstanding the above, a detailed Architectural Site Plan detailing the location of allotment boundary lines will be required to be reviewed in order to confirm that there



No.	BCA Clause	DESCRIPTION
		are no external walls and associated openings located within 3m of a fire source feature.
		Protection of External Walls and associated Openings in Different Fire Compartments
	C4D4	Where an internal fire wall intersects at the junction of an external wall, the external walls of the different compartments and any associated openings that are exposed to one another are required to be protected in accordance with Clause C3.3.
_		Having regard to the proposed fire compartmentation layout, exposure occurs between fire compartments on the Ground Floor and Level 1.
		Where exposure does occur between compartments, the external walls will be required to be protected in accordance with the DTS Provisions of the BCA or alternatively the exposure between compartments will be required to be assessed as part of a Fire Engineering Assessment.
		Pipes Systems Comprised of Metal
		In accordance with Clause C3.15, a tested system is not required to comply with the insultation criteria relating to the service subject to the pipe system being constructed of entirely of metal and not having any combustible building elements being located within 100mm for a distance of 2000mm from the penetration and combustible materials not being able to be located within 100mm of service for a distance of 2000mm from the penetration.
6.	C4D15	Having regard to the requirements of Clause C3.15 which are difficult to achieve in a health care environment due to the number of services especially in corridors, it is understood that is proposed to pipes constructed of metal to not comply with the requirements of Clause C3.15 in terms of the 100mm separation for a distance of 2000mm from the penetration.
		The proposed design of water filled metal pipes used for fire services, potable water etc with no insultation if proposed will be required to be assessed as part of the Fire Engineering Assessment to be undertaken by the appointed Fire Safety Engineer in order to address compliance with the nominated Performance Requirements of the BCA.
		Use of Timber Noggins in Smoke Walls
	Spec. 11	All parts of smoke walls are required to be constructed of non-combustible construction which extends to timber noggins, plywood used within fire walls.
7.		Timber noggins will likely be located within the internal fire and smoke walls throughout the building in order to support services, handrails etc.
		The use of timber noggins within smoke walls throughout the building is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.

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No.	BCA CLAUSE	DESCRIPTION
8.	Spec.12	 Swing of Fire Safety Doors There will be a small number of fire safety doors located in fire and smoke walls throughout the building that are proposed to not swing in the direction of egress i.e., in both directions, as required by Specification C3.4. It is understood that all fire and smoke doors will be required to swing in one direction only as a result of wear and tear to doors that swing in both directions. The proposed swing of the doors in one direction only or against the direction of egress will be required to assessed as part of the Fire Engineering Assessment to be undertaken by the appointed Fire Safety Engineer in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
9.	D2D5	Egress Travel Distance to a Point of Choice and to an Alternative Exit Based on the Schematic Architectural Drawings, we have undertaken an egress assessment in terms of egress travel distance to a point of choice and to an alternative exit. As a result of the review, there are a number of areas identified where travel distance currently exceeds the maximum distance permitted by the DtS provisions of the BCA to a point of choice. In this instance the excessive travel distances to a point of choice and to an alternative exit will be required to assessed as part of the Fire Engineering Assessment to be undertaken by the Fire Safety Engineer in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
10.	D2D6	Egress Travel Distance between Alternative Exits Based on the Schematic Issue Architectural Drawings, we have undertaken an egress assessment in terms of egress travel distance between alternative exits. As a result of the review, egress travel distance between alternative exits complies with the DTS Provisions of the BCA.
11.	D2D6 – D2D8	Corridor Widths The unobstructed height throughout an exit or a path of travel to an exit must not be less than 2000 mm, except for doorways which may be reduced to not less than 1980 mm. In addition, the unobstructed width of an exit or a path of travel to an exit must not be less than 1000 mm except where patients are normally transported in beds within treatment and ward areas in which case a minimum of 1800 mm corridor and passageway widths are required. Verification is required from the LHD as to whether patients within the Mental Health Facility will normally be transported in beds.
12.	D2D12	Discharge of Fire Stair 2 & 3 in Proximity to the External Walls of the Building Upon discharge of Fire Stairs 2 & 3 on the Ground Floor of the building within the Internal Courtyard, occupants are exposed to the external walls of the building

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No.	BCA Clause	DESCRIPTION
		bounding the courtyard which are less than 6 m from the path of travel from the fire isolated stairway.
		The external wall of the building bounding the internal courtyard on the Ground Floor will be required to be protected in accordance with the DTS Provisions of the BCA or alternatively assessed as part of a Fire Engineering Assessment.
		It is noted that the proposed discharge from Fire Stairs 2 & 3 is proposed to be to be assessed as part of a Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
		Egress from the Internal Courtyards on Ground Floor
		Gates are to be provided from the internal courtyards leading to open space. It is noted that Design Development Drawings indicate the provision of doors / gates from the courtyard areas.
		Verification will need to be provided as to the path of travel to the public road once occupants discharge from the internal courtyards.
		External Stairway in Lieu of Fire Isolated Exit
		It is noted that Fire Stair 1 is proposed to be designed as an external stairway in lieu of a fire isolated stairway which is permitted in accordance with Clause D2D13 due to the building having an effective height less than 25 m.
		The external stairway provided in lieu of fire isolated stairway will be required to be designed in accordance with the requirements of Clause D2D13.
		Having regard to the proposed design, the following is noted:
13.	D2D13	 The blade walls that shield the stairway from the external walls of the building are required to be achieved a minimum FRL of 60/60/60 in both directions.
		On the Ground Floor of the building, it is noted a window opening to the Waiting Room is located within 3m of the external stairway contrary to the provisions of the Clause D2D13. The window opening will be required to be blocked so that the external wall achieves a minimum FRL of 60/60/60 or alternatively the provision of the window opening within 3m of the external stairway to be assessed as part of a Fire Engineering Assessment to be prepared by Arup.
		 The window opening to the Family Interview Room which is located within 3 m – 6m away from the external stairway is required to be protected i.e., internal wall wetting drencher.
		Travel via Horizontal Exits
14.	D2D16	A horizontal exit may be counted as a required exit if the path of travel from a fire compartment leads by one or more horizontal exits directly into another fire compartment which has at least one required exit which is not a horizontal exit.
14.	02010	Having regard to the proposed design, there are instances on Level 1 whereby occupants will egress from one compartment into an adjoining compartment which will not be provided with direct access to a fire isolated stairway or exit discharging directly to open space which is a technical non-compliance with Clause D2D16 of the BCA.



No.	BCA Clause	DESCRIPTION
		Travel via the horizontal exits on Level 1 of the building is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
		Provision of Communication Equipment within the Fire Isolated Stairways
15.	D3D8	The fire isolated stairways are proposed to be provided with Wireless Access Points (WAP) or Distributed Antenna Systems (DAS) on each storey of the fire isolated stairways in order to enhance radio frequency within the stairways.
		The installation of WAPs and/or DAS within the fire isolated stairways will be required to be assessed as part of a Fire Engineering Performance Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
		Swing of Horizontal Exit Doors
		All exit doors including horizontal exit doors are required to swing in the direction of egress.
16.	D3D25	There are small number of horizontal exits doors that are proposed to not swing in the direction of egress in certain instances i.e., doors will swing in one direction only.
		The swing of the horizontal exit doors against the direction of egress will be required to be addressed as part of a Fire Engineering Assessment to be undertaken by the appointed Fire Safety Engineer in order to demonstrate compliance with nominated Performance Requirements of the BCA.
		Anti-ligature Door Hardware
		Due to the nature of the Mental Health Facility, it is noted that door hardware throughout part of the building will be required to be anti-ligature.
		The provision of anti-ligature door hardware is permitted in accordance with the DtS Provisions of the BCA Subject to the following be implemented:
		 The doors can be immediately unlocked –
17.	D3D26	 By operating a fail-safe control switch, not contained within a protective enclosure, to actuate a device to unlock the door; or
		By hand by a person or persons, specifically nominated by the owner, properly instructed as to the duties and responsibilities involved and available at all times when the building is lawfully occupies so that persons in the building or part may immediately escape if there is a fire.
		The LHD will need to confirm which option will be implemented as part of the use and operation of the facility.
		Re-entry from Fire Isolated Exits
18.	D3D27	Doors to the fire isolated exits must not be locked from inside the stair or if they are proposed to be locked, they must be fitted with a fail-safe device that automatically unlocks the door upon fire trip and comply with one of the following design options:



No.	BCA Clause	
		 On at least one of the storeys, the doors are not able to be locked and a sign is fixed on such doors stating that re-entry is available; or
		+ An intercommunication system, or an audible or visible alarm system, operated from within the enclosure is provided near the doors on <u>every level</u> and a sign is fixed adjacent to such doors explaining its purpose and method of operation.
		Access for a Person with a Disability
		Access for a person with a disability will be required to be provided from the allotment boundary along and accessible car parking spaces to and within the Forensic Mental Health building.
		The Design Development Design at present is capable of complying with the requirements pertaining to access for a person with a disability, however further detailed designs will be required to be review in order to confirm compliance.
19.	Part D4	A separate and independent Access Report will be prepared by ABE Consulting.
		Anti-ligature Door Hardware and Fixtures and Fittings
		Due to the nature of the Mental Health Facility, it is noted that door hardware and other fixtures and fittings throughout part of the facility will be required to be anti-ligature.
		The provision of anti-ligature door hardware throughout the building will be required to be required to be assessed as part of an Access Performance Solution to be prepared by the appointed Access Consultant in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
		Fire Hydrants
		Fire hydrant coverage is required to be provided to serve the building in accordance with AS 2419.1 – 2021 and AS 2118.6 - 2012.
		System Performance
		On the basis that the building contains fire compartments with a floor area less than 1000 m ² , a minimum of 1 fire hydrant is required to flow simultaneously in accordance with Table 2.2.5 (B) of AS of AS 2419.1 -2021 .
20.		If the building contains fire compartments exceeding 1000 m ² , a minimum of 2 fire hydrants are required to flow simultaneously in accordance with Table 2.2.5 (B) of AS of AS 2419.1 –2021.
	E1D2	Hydrant Locations
		Fire hydrants are required to be located within the fire isolated stairways on each storey.
		If additional internal fire hydrants are required to be installed in order for compliant coverage to be achieved (if coverage cannot be achieved from the hydrants within the fire isolated stairways), a Fire Engineering Assessment will be required to be prepared in consultation with FRNSW for the hydrants that will be required to be located within the confines of the building.
		Note: AS 2419.1 – 2021 no longer contains provisions for additional on floor hydrants as a DTS design.
		Fire Hydrant Pump Room

				/
No.	BCA Clause	DESCRIPTION		
		The external fire hydrant pump room cannot be located more than 20 m hardstand area as required by Clause 6.11.3 of AS 2419.1 - 2021. The fire consultant is to confirm that the proposed location of the Fire Pump Room of with the requirements of the Clause 6.11.3 as it appears more than 20m hardstand area.	from a service complie from a	a s a
		Furthermore, the external pump room cannot be located less than 10m from an of the following:	y of the	Э
		 Any high voltage electrical distribution equipment, such as transform- distribution boards; 	ers and	b
		+ Any stored dangerous goods (e.g., LPG, petroleum, propane); and		
		+ Any external combustible storage (e.g., palleted combustible storage item	s)	
		The fire services consultant is to confirm that the proposed location of the Fir Room complies with the requirements of the Clause 6.11.3 as it appears the p fire hydrant pump room is located less than 10 m from the existing generator Buildings 108 - 112.	e Pump roposed serving	c d g
		Fire Hydrant Booster		
		A fire hydrant booster is required to be located as follows:		
		 Within or affixed to the façade of the building containing the principal pe entrance and not more than 20 m from the principal pedestrian entrance; 	destriar	n
		 Within or affixed to the façade of the building containing the principal pe entrance and identified by a visual alarm device (VAD); or 	destriar	n
		 Remote from the building and within sight of the principal pedestrian entit the building: 	rance to	С
		 Adjacent to the site boundary and the principal vehicle access for the fire pumping appliance to the building or site; or 	brigade	Э
		Not more than 20 m from the façade of the building containing the pedestrian entrance and not more than 20 m from the main pedestrian entrance.	principa ntrance	ıl +.
		It is understood that the combined Fire Hydrant Sprinkler Booster is not prop be located within sight of the main entrance of the building with the Booster p to be located on the Eastern side of the site facing the internal roadway.	osed to	c b
		The location of the Fire Hydrant Booster is proposed to be assessed as part of Engineering Assessment to be undertaken by Arup to address compliance nominated Performance Requirements of the BCA.	the Fire with the	ə Ə
		Locked Cupboards Housing Fire Hydrants		
		Cupboard's housing fire hydrants are required to be provided with free access times.	at all	
		Based on the nature of the facility, it is noted that the cupboards housing the f hydrants in part of the facility (where installed) will be required to be locked.	ire	
		The locking of the cupboards housing the fire hydrants is proposed to be asse part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the	e BCA.	S

No.	BCA Clause	DESCRIPTION
21.	E1D3	 Fire Hose Reels Fire hose reels are required to be installed throughout the building areas in accordance with AS 2441 – 2005. Fire Hose Reels required to Each Fire & Smoke Compartment In accordance with Clause E1D3 of the BCA, fire hose reels are not permitted to pass through doorways fitted with fire or smoke doors unless the doorway services an ancillary use separated in accordance with Clause C2.5. Having regard to the above, fire hose reels are required to be located so that fire hoses are not required to pass through fire and smoke doors that separate fire and smoke compartments. In this instance fire hose reels are required to be located in each fire and smoke compartments. In this instance fire hose reels are required to be located in each fire and smoke compartment throughout the building. Fire Hose Reel Coverage to Fire Separated Rooms It is noted that there will be small percentage of rooms that are fire or smoke separated from the remainder of the building that may not be provided with compliant fire hose reel coverage i.e., fire separated Comms Rooms etc. In this instance, the omission of Fire Hose Reel coverage to isolated rooms is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA. Locked Cupboards Housing Fire Hose Reels Cupboard's housing fire hose reels are required to be provided with free access at all times. Based on the nature of the facility, it is noted that the cupboards housing the fire hose reels in part of the facility (where installed) will be required to be locked. The locking of the cupboards housing the fire hose reels is proposed to be assessed as part of the fire hose reels is proposed to be assessed as part of the fire hose reels is proposed to be assessed as part of the fire hose reels is proposed to be assessed as part of the facility, where
22.	E1D4- E1D13	 Sprinklers An Automatic Fire Suppression System will be required to be installed throughout the building in accordance with AS 2118.1 – 2017 and AS 2118.2 - 2012. Fire Sprinkler Booster A fire hydrant booster is required to be located as follows: Within or affixed to the façade of the building containing the principal pedestrian entrance and not more than 20 m from the principal pedestrian entrance; Within or affixed to the façade of the building containing the principal pedestrian entrance and identified by a visual alarm device (VAD); or Remote from the building and within sight of the principal pedestrian entrance to the building: Adjacent to the site boundary and the principal vehicle access for the fire brigade pumping appliance to the building or site; or

No.	BCA Clause	DESCRIPTION
		Not more than 20 m from the façade of the building containing the principal pedestrian entrance and not more than 20 m from the main pedestrian entrance.
		It is understood that the combined Fire Hydrant Sprinkler Booster is not proposed to be located within sight of the main entrance of the building with the Booster proposed to be located on the Eastern side of the site facing the internal roadway.
		The location of the Fire Hydrant Booster is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup to address compliance with the nominated Performance Requirements of the BCA.
		Omission of Sprinklers to Rooms provided with Low Voltage Equipment
		As detailed above, Clause 3.1.3 of AS 2118.1 – 2017 only permits sprinklers to be omitted from rooms containing high voltage equipment.
		It is proposed to omit sprinklers from Comms Rooms (Ground Floor, Level 1 and Level 2), Main Switch Room (Level 2) and EDB Cupboards, Ground Floor and Level 1).
		The omission of sprinklers from the subject rooms is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
		Location of Sprinkler Valve Sets
		Having regard to the fact that the sprinkler system is designed as part of a combined Fire Hydrant and Sprinkler System, the sprinkler control valves are required to be located within the fire isolated stairway(s) on each level with direct access being provided to the stairway from open space for FRNSW personnel.
		Verification is required to be provided from the Fire Services Consultants as to which fire isolated stairway(s) will contain the sprinkler valve sets.
		Portable Fire Extinguishers
		Portable fire extinguishers are to be installed in accordance with clause E1.6 and AS 2444.
	E1D14	Locked Cupboards Housing Portable Fire Extinguishers
23.		Cupboard's housing portable fire extinguishers are required to be provided with free access at all times unless the cupboards are provided with a frangible panel in accordance with AS 2441 – 2005.
		Based on the nature of the facility, it is noted that the cupboards housing the portable fire extinguishers in part of the facility will likely be required to be locked.
		The locking of the cupboards housing the portable fire extinguishers is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
		Automatic Fire Detection & Alarm System
24.	E2D3	An Automatic Fire Detection & Alarm System is required to be installed throughout the building in accordance with AS 1670.1 - 2018.

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No.	BCA Clause	DESCRIPTION
		Zone Smoke Control System
		The building is not required to be provided with a Zone Smoke Control System due to the fact that the building does not have an effective height exceeding 25 m.
		Mechanical Air Handling Systems
		Any air-handling system which does not form part of the Zone Smoke Control System (other than non-ducted systems with a capacity not more than 1000 litres/second, systems serving critical treatment areas and miscellaneous exhaust air system installed in accordance with Sections 5 and 6 of AS/NZS 1668.1) must shut down automatically on the activation of the Automatic Fire Detection & Alarm System and Automatic Fire Suppression System.
		Fire Isolated Stairway Pressurisation
		Each of the fire isolated stairways are required to be provided with a system of Stairway Pressurisation in accordance with AS 1668.1 – 2015. The pressurisation system is required to be extended throughout the entire fire isolated stairway system.
		Manual Call Points in Fire Hose Reel / Fire Hydrant Cupboards
	Spec. 20	In accordance with AS 1670.1 – 2018, manual call points are required to be mounted between 750 mm and 1200 mm above floor level and a clear space of 300 mm on both sides and 600 mm directly in front are required to be provided in an arc in front of the manual call points.
20.		Where manual call points are installed within fire hose reel cupboards to avoid them being visible and being subject to unintended use, the clearance requirements of AS 1670.1 – 2018 around the manual call point will be unable to be achieved.
		The clear space around the manual call points is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
		Emergency Lifts
26.	E3D5	Having regard to the fact that the building is provided with a minimum of two (2) passenger lifts, a minimum of two (2) Emergency Lifts are required to serve each level of the building that are served by passenger lifts.
		Due to the fact that the lifts are contained within the same bank, they will be required to be contained within separate fire rated shafts.
	E4D9	EWIS
27.		An Emergency Warning & Intercom System (EWIS) is required to be installed throughout the entire building in accordance with AS 1670.4 – 2018.
		Rationalisation of EWIS System
		It is noted that EWIS speakers will likely be rationalised within ward and treatment rooms including patient bedrooms and other sensitive environments where the activation of the speaker within the room may cause trauma to the patient.
		The rationalisation of EWIS system from within patient care areas will be required to be assessed as part of the Fire Engineering Assessment undertaken by the appointed

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No.	BCA Clause	DESCRIPTION
		Fire Safety Engineer in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
28.	F3D3	 Weatherproofing of External Walls and Roof In accordance with NCC 2022, compliance with the DTS Provisions of the BCA for weatherproofing of the external walls is achieved if the external walls are constructed from one of the following: Masonry, including masonry veneer, unreinforced and reinforced masonry in accordance with AS 3700 Autoclaved aerated concrete in accordance with AS 5146.3
		 Metal cladding in accordance with AS 1562.1 If the external walls are constructed of an alternative material not listed above, a Performance Solution will be required to be prepared by the Façade Engineer / Architect to demonstrate compliance with the nominated Performance Requirement of the BCA. A Performance Solution will be required to be assessed to address all new external walls associated with the redevelopment works.
29.	F4D4	 Sanitary Facilities for Staff throughout the Building It has been advised that a total staff population of fifty-two (52) would be present in the building at any one time. It is noted that the Design Development Architectural design proposes the following provision of sanitary facilities for staff throughout the building: Ground Floor - 1 x unisex accessible sanitary facility and 1 x unisex sanitary facility Level 1 – 1 x unisex sanitary facility Level 2 – 1 x unisex accessible sanitary facility and 2 x unisex sanitary facilities Based on the current provision, a total of 40 male and 60 female staff could be accommodated at any one time in the building. Having regard to the proposed provision of sanitary facilities together with the maximum number of staff within the building at any one time, the number of staff sanitary facilities is considered compliant. Provision of Unisex Sanitary Compartments containing Water Closets Sanitary compartments containing water closets are required to be provided separately for males and females. The provision of unisex sanitary compartments containing water closets in lieu of separate facilities for males and females throughout the building will be required to be assessed as part of a Performance Solution in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
30.	F4D5	Sanitary Facilities for a Person with a Disability Sanitary facilities for a person with a disability are to be provided throughout each floor of the building. Based on the current design, the following is noted:

No.	BCA CLAUSE	DESCRIPTION
		 The sanitary facility located adjacent to the unisex accessible sanitary facility on the Ground Floor is to be dedicated as an ambulant sanitary compartment.
		 There is currently no provision for an accessible sanitary facility on Level 1 of the building. An accessible sanitary facility will be required to be provided or alternatively the omission of the sanitary facility will be required to be assessed by an Access Consultant as part of a Performance Solution.
		 One of the sanitary facilities located adjacent to the unisex accessible sanitary facility on Level 2 is to be dedicated as an ambulant sanitary compartment.
		Provision of Unisex Ambulant Sanitary Compartment
		Ambulant Sanitary Compartments are required to be provided separately for males and females and unlike Unisex Accessible Sanitary Facilities receive no concession for the provision of unisex facilities.
		The provision of unisex ambulant sanitary compartments in lieu of separate facilities for males and females throughout the building will be required to be assessed as part of a Performance Solution to be prepared by the appointed Access Consultant.
		The Performance Solution Assessment is consistent with the assessment undertaken on the Stage 1 Tower.
		Energy Efficiency
		The building will be required to comply with the Energy Efficiency Provisions of BCA 2022 Section J relating to:
		+ J1: Energy Efficiency Performance Requirements
		+ J2: Energy Efficiency
		+ J4: Building Fabric
31.	Section J	+ J5: Building Sealing
		 J6: Air-Conditioning and Ventilation
		+ J7: Artificial Lighting and Power
		 + J8: Heated Water Supply and Swimming Pool and Spa Pool Plant
		+ J9: Energy Monitoring and On-Site Distributed Energy Resources
		If the proposed design will not comply with the DtS provisions of the BCA, then a J1V3 Assessment will be required to be undertaken to demonstrate compliance with the Performance Requirements of the BCA.

Table No. 2 – Summary of key compliance items



2 SUMMARY OF ITEMS REQUIRING A FIRE ENGINEERING PERFORMANCE SOLUTION:

No.	DTS CLAUSE	BCA Performance Requirement	DTS DEPARTURE
1.	C2D10	C1P1, C1P2, C1P3, C1P4	Timber noggins located within fire walls.
2.	C4D4	C1P2, C1P8	Protection of external walls and associated openings in different fire compartments
3.	C4D15	C1P2, C1P8	Insultation of water filled metal pipes.
4.	S11C2	C1P1, C1P2, C1P3, C1P4	Timber noggins located within smoke walls.
5.	S12C4	C1P3, D1P2	Swing of fire safety doors against the direction of egress.
6.	D2D5	D1P4, E2P2	Extended travel distance to a point of choice and to an alternative exit.
7.	D2D12	D1P4, D1P5, E2P2	Discharge of Fire Stair 2 & 3 within proximity to the external walls of the building
8.	D2D16	D1P4, E2P2	Travel via horizontal exits
9.	D3D8	C1P2, D1P5	Communication equipment within the fire isolated stairways.
10.	D3D25	CP3, D1P2	Swing of horizontal exit doors against the direction of egress
11.	E1D2	E1P3	Location of fire hydrant booster not within sight of the main entrance of the building
12.	E1D2	E1P3	Locked cupboards housing fire hydrants.
13.	E1D3	E1P1	Omission of fire hose reel coverage to individual rooms that are completely fire separated from the remainder of the building.
14.	E1D3	E1P1	Locked cupboards housing fire hose reels.
15.	E1D3	E1P1	Locked cupboards housing fire hose reels.



16.	E1D4	E1P4	Location of fire sprinkler booster not within sight of the main entrance of the building
17.	SC17C2	E1P4	Omission of sprinkler to rooms with low voltage equipment
18.	E1D14	E1P2	Locked cupboards housing portable fire extinguishers.
19.	E2D3	D1P4, D1P5, E2P2	Omission of a system of stairway pressurisation from fire stairs 2 & 3
20.	S20C3	E2P2	Clearance around manual call points in fire hose heel cupboards
21.	E4D9	E2P1, EP43	Rationalisation of EWIS speakers within ward and treatment rooms.

Table No. 3 - Summary of required non-compliances to be addressed via a Fire Engineering Assessment

The FER process must include input from the LHD and HI, being key stakeholders in the delivery and operation of the hospital project.

C.3 SUMMARY OF ITEMS REQUIRING A PERFORMANCE SOLUTION:

No.	DTS CLAUSE	BCA Performance Requirement	DTS DEPARTURE
1.	D4D4	D1P1	Anti-ligature fixtures and hardware for a person with a disability
2.	F3P1	F3D5	Weatherproofing of external walls.
3.	F4D4	F4P1	Males and females sharing unisex sanitary compartments containing water closets
4.	F4D5	F4P1	Non provision of an accessible sanitary facility on Level 1 (unless installed)
5.	F4D4	F4P1	Males and females sharing unisex ambulant sanitary compartments

Table No. 4 - Summary of required non-compliances to be addressed via a Performance Solution



D. BCA ASSESSMEN

D.1 BCA DEEMED-TO-SATISFY COMPLIANCE ISSUES:

The following comments have been made in relation to the relevant BCA compliance issues associated with the proposed new Forensic Mental Health Unit at Concord Hospital.

SECTION B – STRUCTURE

PART B1 – STRUCTURAL PROVISIONS

1. Clause B1D3 - Determination of Individual Actions

Structural engineering details prepared by an appropriately qualified structural engineer to be provided to demonstrate compliance with Part B1. This will include the following Australian Standards (where relevant):

- 1. AS 1170.0 2002: Structural Design Actions General Principles
- 2. AS 1170.1 2002: Structural Design Actions Permanent, Imposed and Other Actions including certification for balustrading (dead and live loads)
- 3. AS 1170.2 2021: Structural Design Actions Wind Actions
- 4. AS 1170.4 2007: Structural Design Actions Earthquake Actions in Australia
- 5. AS 3700 2018: Masonry Structures
- 6. AS 3600 2018: Concrete Structures
- 7. AS 4100 2020: Steel Structures
- 8. AS/NZS 4600 2018: Cold formed steel.
- 9. AS 2047 2014: Windows and External Glazed Doors in Buildings
- 10. AS 1288 2021: Glass in buildings.

Importance Level

The BCA outlines minimum Importance Levels which reflect the values and expectations the community place on specific types of buildings in the event of an earthquake.

It is generally accepted that the structure is expected not to collapse but substantially damaged when this condition is reached. The interpretation of the performance expectations for buildings of different Importance Level in the event of an earthquake are generally as follows:

- + Buildings of Importance Level 1: not expect to survive.
- + Buildings of Importance Level 2: expect not to collapse but substantially damaged.
- Buildings of Importance Level 3: expect to survive with some damage.
- + Buildings of Importance Level 4: expect to survive intact and continue to function.

AS1170.0-2002 Structural design Actions – General Principals categorises the Importance Levels for different building types as outlined below. Note that the BCA only identifies Importance Levels 1-4, and hence Importance Level 5 is not a mandatory requirement under the National Code.

In this regard, the building is required to be designed as **Importance Level 2**, due to the fact that the building has a capacity of less than 50 residents.

Verification will be required from the Health Infrastructure that the building is not required to be designed and constructed in accordance with Importance Level 3 or 4.

SECTION C – FIRE RESISTANCE

PART C2 – FIRE RESISTANCE AND STABILITY

2. Clause C2D2 – Type of Construction Required

The new building elements will be required to be constructed in accordance with the FRL's detailed in Table 3 of Specification C1.1 for Type A Construction (refer to table below).



TYPE A CONSTRUCTION	
BUILDING ELEMENT	Class 9a
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any fire-source feature to which it is exposed is –	
For load bearing parts-	
less than 1.5m	120/120/120
1.5m to less than 3m	120/90/90
3m or more	120/60/30
For non-load bearing parts-	
less than 1.5m	-/120/120
1.5m to less than 3m	-/90/90
3m 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 3m	120/-/-
3m or more	-/-/-
COMMON WALLS & FIRE WALLS	120/120/120
INTERNAL WALLS	
Fire Resisting lift and stair shafts –	400/400/400
Loadbearing	120/120/120
Non-loadbearing	-/120/120
Ventilating, pipe, garbage, and the like shafts not used for the	
discharge of hot products of combustion –	
Loadbearing	120/90/90
Non-loadbearing	-/90/90
OTHER LOADBEARING INTERNAL WALLS & COLUMNS	120/-/-
FLOORS	120/120/120
ROOF	120/60/30

Table No. 5 – Required FRL's for building elements.

3. Clause C2D10 – Non-Combustible Building Elements

In a building required to be constructed of Type A or B Construction, external walls including all components incorporated in them including all façade covering, framing and insulation are required to be constructed of non-combustible construction.



Ancillary Components within the External Wall Assembly

NCC 2022 permits the following building elements to be constructed within an external wall of a building of Type A or B Construction.

- + Caulking
- + Sealants
- + Termite management systems
- + Thermal breaks associated with -
 - Glazing systems, or
 - External wall systems, where the thermal breaks -
 - Are no larger than necessary to achieve thermal objectives, and
 - Do not extent beyond one storey, and
 - Do not extend beyond one fire compartment.
- + Damp proof courses
- Compressible fillers and backing materials, including those associated with articulation joints, closing gaps not wider than 50 mm.
- + Isolated-
 - construction packers and shims; or
 - blocking for fixing fixtures; or
 - fixings, including fixing accessories; or
 - acoustic mounts.
- Waterproofing materials applied to the external face, used below ground level and up to 250 mm above ground level.
- + Joint trims and joint reinforcing tape and mesh of a width not greater than 50 mm.
- + Weather sealing materials, applied to gaps not wider than 50 mm, used within and between concrete elements.
- Wall ties and other masonry components complying with AS 2699 Part 1 and Part 3 as appropriate and associated with masonry wall construction.
- + Reinforcing bars and associated minor elements that are wholly or predominately encased in concrete or grout.
- + A paint, lacquer or a similar finish or coating.
- + Adhesives, including tapes, associated with stiffeners for cladding systems.
- + Fire-protective materials and components required for the protection of penetrations.

The following materials, when entirely composed of itself, are non-combustible and may be used wherever a non-combustible material is required:

- + Concrete.
- + Steel, including metallic coated steel.
- + Masonry, including mortar.
- + Aluminium, including aluminium alloy.
- + Autoclaved aerated concrete, including mortar.
- + Iron.
- + Terracotta.
- + Porcelain.
- + Ceramic.



- Natural stone.
- + Copper.
- Zinc.
- + Lead.
- + Bronze.
- Brass.

The following materials may be used where a non-combustible material is required:

- + Plasterboard
- + Perforated gypsum lath with a normal paper finish
- + Fibrous-plaster sheet
- Fibre-reinforced cement sheeting
- Pre-finished metal sheeting having combustible surface finish not exceeding 1mm thickness and where the Spread-of-Flame Index of the product is not greater than 0.
- Sarking type materials that do not exceed 1 mm in thickness and have a Flammability Index not greater than 5.

Note: Bonded laminated materials (façade panels) are not permitted to be installed on the external façade of the building in accordance with Health Infrastructure Design Guidance Note for external wall construction.

Timber Noggins in Fire Walls

In a Building of Type A or B Construction, non-load bearing walls where they are required to be fire-resisting, load bearing walls and load bearing fire walls are required to be constructed of non-combustible construction.

Timber noggins are proposed to be located within the internal fire walls throughout the building in order to support services, handrails etc.

The use of timber noggins within fire rated walls throughout the building will be required to be assessed as part of the Fire Engineering Assessment to be undertaken by the appointed Fire Safety Engineering in order to demonstrate compliance with the nominated Performance Requirements of the BCA.

4. Clause C2D11 – Fire Hazard Properties

The fire hazard properties of all new building materials and assemblies as well as all new floor materials, floor coverings, wall and ceiling lining materials used in the development must comply with the requirements of Specification C1.10 of the BCA.

In accordance with Specification C1.10, we note the following requirements:

Critical Radiant Flux of Floor Materials and Floor Coverings

- Patient Care Areas 2.2 kW/m²
- Non-Patient Care Areas 1.2 kW/m²
- + Fire Isolated Exits 4.5 kW/m²

Wall and Ceiling Lining Materials - Group Number

- + Fire Isolated Exit Group 1
- + Public Corridor Group 1 or 2
- + Patient Care Areas Group 1, 2 or 3
- + Auditorium Group 1, 2 or 3
- + Other Areas Group 1, 2 or 3

Rigid and flexible air handling ductwork will be required to comply with fire hazard properties set out in AS 4254 Parts 1 and 2.



Material test data sheets will need to be submitted for further assessment to ensure compliance with the above.

Artistic Graphic on Walls

Any proposed artistic graphics, photographs etc installed on walls are required to comply with the abovementioned requirements. Any proposed unique wall lining should have Test Reports / Certificates sourced and verified prior to procurement to verify compliance.

The below are typical examples of wall graphics that are being installed within Health Infrastructure Projects.



Figure No. 1 - Wall Linings installed within the Stage 1 Tower

Any wall linings installed in Public Corridors that do not achieve a Group Material No. of 1 or 2 will be required to be reviewed by Arup and BM+G to determine if they can be subject of a Fire Engineering Assessment.

5. Clause C2D14 – Ancillary Elements

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

- + An ancillary element that is non-combustible.
- A gutter / downpipe / other plumbing fixture
- + A flashing.
- + A grate / grille < 2m² associated with a building service.
- + An electrical switch/GPO/cover plate, or the like.
- A light fitting.
- A required sign.
- A combustible non-required sign may be permitted if achieving a Group Number of 1 or 2 and not extending beyond one storey or fire compartment and is separated vertically from other signs permitted.
 This issue must be carefully noted in relation to any proposed signage structures.
- + A combustible awning, sunshade, canopy, blind, or shading hood may be permitted at ground storey or a storey immediately above ground storey if complying as relevant to fire hazard properties and not affecting a required exit.
- + A part of a security, intercom, or announcement system.



- + Wiring.
- + Waterproofing material installed in accordance with AS 4654.2 and applied to an adjacent floor surface, including vertical upturn, or a roof surface.
- + Collars, sleeves, and insulation associated with service installations.
- + Screens applied to vents, weepholes and gaps complying with AS 3959.
- + Wiper and brush seals associated with doors, windows, or other openings.

PART C3 – COMPARTMENTATION AND SEPARATION

6. Clause C3D3 – General Floor Area and Volume Limitations

The maximum size of any fire compartment with a Class 9a building cannot exceed 5,000m² & 30,000m³.

Note: the size of fire compartments within patient care areas is limited to a maximum of 2,000m².

The Concept Architectural Drawings indicate that compliance is achieved in this instance with no fire compartment within the Class 9a part of the building exceeding 5,000m² & 30,000m³.

7. Clause C3D6 – Class 9 Buildings

Fire & Smoke separation is to be as per BCA specifications C2.5 and C3.4.

Patient care areas are required to be separated into fire compartments with a maximum floor area of 2,000 \mbox{m}^2 with fire walls having a minimum FRL of 120/120.

The Schematic Architectural Drawings indicate that patient care areas are separated into fire compartments that do not exceed 2,000 m².

Ward and Treatment Compartment Sizes

Ward and Treatment Areas are required to be designed in accordance with the following table.

Area Use		Max. Compartment Size				
Patient Care Area (max 2,000m ²)	Ward Area	Where total floor area is <u>less</u> than 500m ² :	Where total floor area is <u>greater</u> than 500m², but <u>less</u> than 1000m² :		Where total floor area is <u>greater</u> than 1000m ² :	
		Separate from other areas with Smoke Walls	Separate with smoke walls into areas less than 500m ²		Separate with smoke walls with an FRL of not less 60/60/60 into areas less than 1000m ²	
	Treatment Area	Where total floor area is <u>less</u> than 1000m ² :		Where total floor area is <u>greater</u> than 1000m ² :		
		Separate from other areas with Smoke Walls		Separate with smoke walls into areas less than 1000m ²		
Note: Walls identified above which are required to achieve an FRL or be smoke separated must be of non- combustible construction i.e., no timber framed stud walls.						

Table No. 6 - Required fire and smoke compartmentation for patient care areas

The below table provides a summary as to the fire and smoke compartment sizes throughout each level of the building:



LEVEL	COMPARTMENT SIZE	Use		
Ground Floor	Complies	Patient Care Area (Ward) & Non-Patient Care Areas		
		Note: Smoke Compartment A is a Non- Patient Care Area		
Level 1	Complies	Patient Care Area (Ward)		
Level 2	Complies	Non – Patient Areas		

Table No. 7 - Summary of compliance of fire and smoke compartments

As a result of the above, fire and smoke compartments throughout the building as documented on the Design Development Drawings complies with Clause C2.5 with no fire compartment exceeding $2,000 \text{ m}^2$ and no smoke compartment containing patient care areas exceeding 500 m^2 .

Ancillary Areas

The construction of any ancillary use areas located within the patient care areas and containing equipment or materials that are a high potential fire hazard (such as kitchens $>30m^2$ and related food preparation areas, hyperbaric facility, storage of medical records $>10m^2$ or laundry with gas fire dryers), must be separated from the patient care area by construction achieving an FRL of not less than 60/60/60 and doors having an FRL of not less than -/60/30.

It is noted that the proposed design has the Kitchen and associated Servery on the Ground Floor located in different fire compartments with both individually having a floor area less than 30 m².

8. Clause C3D7 – Vertical separation of openings in External Walls

Spandrel separation is not required to be provided between openings located in storeys one above the other due to the fact that the building is provided with an Automatic Fire Suppression System throughout.

9. Clause C3D8 – Separation by Fire Walls

Construction of Fire Walls

Fire walls (*including fire rated walls*) required by Clause C2.5 above, must extend from the floor slab to the underside of the floor slab above or where no floor is provided above the roof sheeting, with no penetrations by building elements through the fire wall other than roof battens with a dimension of 75mm x 50mm or sarking.

All fire walls are required to achieve the required FRL of 120/120/120 in both directions. Details of the proposed fire wall construction is to be submitted for review.

Verification will be required from the Architect / Structural Engineer / Head Contractor that no proposed building elements have been designed to pass through or over the fire walls.

Note: -

No building elements penetrating fire walls includes steel brackets supporting electrical cable trays or any other structural elements supporting another building element.

Particular attention is drawn to where internal fire (smoke) walls intersect at the external wall. The internal fire (smoke) walls are required to extend to the internal face of the external wall with no internal void or space between adjoining compartments where fire or smoke could spread between compartments.

10. Clause C3D11 – Separation of Lift Shafts

The lift shafts are required to have a fire resistance level 120/120/120 (if load bearing) and -/120/120 (if non-load bearing) in accordance with Table 3 of Specification C1.1.



11. Clause C3D12 – Stairways and Lifts in One Shaft

Fire isolated stairways and lifts cannot be located within the same fire isolated shaft.

The Architectural Drawings indicate that the fire isolated stairways and lifts shafts are provided in separated fire rated shafts.

12. Clause C3D13 – Separation of Equipment

Any of the following equipment must be fire rated with a fire resistance level of 120/120/120 and any doorway to have an FRL of not less than --/120/30:

- + Lift motors and lift control panels; or
- + Emergency generators used to sustain emergency equipment operating in the emergency mode;
- + Central smoke control plant; or
- + Boilers where the water is boiled to greater than 100 degrees Celsius; or
- + Battery system installed in the building that has a total voltage of 12 volts or more and a storage capacity of 200 kWh or more.

13. Clause C3D14 – Electricity Supply System

Main Switchroom, Generator Rooms etc are to be fire separated from the remainder of the building with construction achieving an FRL of 120/120/120 with any doors to be –/120/30 self-closing fire doors.

The main switchboard sustaining emergency equipment operating in the emergency mode must be separated from the remainder of the building with construction achieving an FRL of 120/120/120 with any doors to be -/120/30 self-closing fire doors.

Note: The above requirements are the minimum requirements of the BCA and do not consider or any additional fire separation requirements from the nominated Energy Service Providers.

The electrical conductors located within a building that supply a main switchboard as detailed within (2) above must have a classification in accordance with AS/NZS 3013 of not less than WS53W (where subject to damage by motor vehicles) or WS52W otherwise. Alternatively, the conductors may be enclosed or otherwise protected with construction having an FRL of not less than 120/120/120.

Where emergency equipment is required within a building all switchboards in the electrical installation that sustain the electrical supply to the emergency equipment will be constructed so that emergency equipment switchgear is separated from non-emergency equipment switchgear by metal partitions designed to minimise the spread of fault from the non-emergency switchgear.

Emergency equipment requiring separation from non-emergency switchgear includes but it not limited to the following:

- + Fire hydrant booster pumps
- + Pumps for automatic sprinklers systems, water spray, chemical fluid suppression systems or the like
- + Pumps for fire hose reels where such pumps and fire hose reels from the sole means of fire protection in the building
- + Air handling systems designed to exhaust and control the spread of fire and smoke.
- Emergency lifts
- + Control and indicating equipment.
- + Emergency warning and intercom systems

Any plantrooms housing switchboards for smoke control equipment will be required to be fire separated from the remainder of the building by construction achieving a minimum FRL of 120 mins.

PART C4 – PROTECTION OF OPENINGS

14. Clause C4D3 – Protection of Openings in the External Walls of the Building

Based on the Schematic Architectural Drawings it appears that there are no external walls that are situated within 3 m of a fire source feature.



Notwithstanding the above, a detailed Architectural Site Plan detailing the location of allotment boundary lines will be required to be reviewed in order to confirm that there are no external walls and associated openings located within 3m of a fire source feature.

15. Clause C4D4 – Separation of External Walls and Other Openings in Different Fire Compartments

Protection of External Walls and associated Openings in Different Fire Compartments

Where an internal fire wall intersects at the junction of an external wall, the external walls of the different compartments and any associated openings that are exposed to one another are required to be protected in accordance with Clause C3.3.

Having regard to the proposed fire compartmentation layout, exposure occurs between fire compartments in the locations detailed in the figure below.

Where exposure does occur between compartments, the external walls will be required to be protected in accordance with the DTS Provisions of the BCA or alternatively the exposure between compartments will be required to be assessed as part of a Fire Engineering Assessment to be undertaken by the appointed Fire Safety Engineer in order to demonstrate compliance with the nominated Performance Requirements of the BCA.



Ground Floor



16. Clause C4D6 – Doorways in Fire Walls

Any doors located within fire walls must be fire rated to achieve the same rating as the fire wall itself i.e., 120 mins.

All fire doors are required to be self-closing or automatic closing. All automatic closing doors are required to close upon activation of the fire alarm system within the building i.e., Automatic Fire Detection & Alarm System and Automatic Fire Suppression System.

Smoke detectors must be installed within 1500 mm of the automatic closing doors (on both sides of the door).

17. Clause C4D8 – Protection of Doorways in Horizontal Exits

All horizontal exits are required to have a FRL of -/120/30.

All horizontal exit doors are required to be self-closing or automatic closing. All automatic closing doors are required to close upon activation of the fire alarm system within the building i.e., Automatic Fire Detection & Alarm System, Automatic Fire Suppression System etc.

Smoke detectors must be installed within 1500 mm of the automatic closing doors (on both sides of the door).

18. Clause C4D9 – Openings in Fire Isolated Exits

Doorways leading to the Fire Isolated Stairways

The doors providing access to the fire isolated exits are required to be protected by self-closing or automatic closing –/60/30 fire doors.

19. Clause C4D10 – Service Penetrations in Fire Isolated Exits

No service penetrations can penetrate the fire isolated stairways other than electrical wiring for lighting, security, or essential services, ducting for stair pressurisation (if adequately separated from the remainder of the building) and water supply pipes for fire services.

If a service penetrates a fire isolated stairway / passageway, and is not covered under the above list, it must be adequately fire separated from the fire isolated stairway / passageway. The service must be boxed out with lightweight construction, such that it achieves the FRL from both directions i.e., prevents fire spread from the service to the stair, and from the stair to the service.

20. Clause C4D11 – Openings in Fire Isolated Lift Shafts

The doorways to the lift shafts are required to have a minimum FRL of -/60/-, comply with AS 1735.11 and are set to remain closed except when discharging or receiving passengers, goods, or services.

21. Clause C4D14 – Openings in Shafts

An opening in a wall providing access to a ventilating, pipe, garbage, or other service shaft must be protected by one of the following:

- + If it is a sanitary compartment a door or panel which, together with its frame, is non-combustible or has an FRL of not less than -/30/30; or
- + A self-closing -/60/30 fire door or hopper; or
- An access panel having an FRL of not less than -/60/30.

22. Clause C4D15 – Openings for Service Installations

Where service installations penetrate the walls or floors required to have an FRL with respect to integrity and insulation they are to be protected by fire seals having an FRL of the building element concerned. Fire seals are required to comply with Specification C3.15. Where the mechanical ventilation system penetrates floors or walls that require an FRL the installation is to comply with AS/NZS 1668.1.

The proposed installation of pipework containing combustible liquids or gas (i.e., natural gas) is prohibited in accordance with Clause C3.15 unless it is a tested system.

Water Filled Pipes Systems Comprised of Metal – Milton Park

In accordance with Clause C3.15, a tested system is not required to comply with the insultation criteria relating to the service subject to the pipe system being constructed of entirely of metal and not having any combustible building elements being located within 100mm for a distance of 2000mm from the penetration and combustible materials not being able to be located within 100mm of service for a distance of 2000mm from the penetration.

Having regard to the requirements of Clause C3.15 which are difficult to achieve in a health care environment due to the number of services especially in corridors, it is understood that is proposed to permit water filled pipes constructed of metal to not comply with the requirements of Clause C3.15 in terms of the 100mm separation for a distance of 2000mm from the penetration.

The proposed design of water filled metal pipes used for fire services, potable water etc with no insultation if proposed will be required to be assessed as part of the Fire Engineering Assessment to be undertaken by the appointed Fire Safety Engineer in order to address compliance with the nominated Performance Requirements of the BCA.

Note 1: -

Where a wall is required to achieve both smoke and fire compartmentation, the penetrations must be protected to accommodate both i.e., combined fire and smoke dampers through all fire walls that bound or separate patient care areas throughout the building.

All fire walls double up as smoke walls when they are within or bound patient care areas and thus must be combined fire and smoke dampers.

The motorised component of the Damper is to be located no more than 600mm from the fire/smoke wall.

Note 2: -

A pipe system comprised entirely of metal that is not normally filled with liquid must not be located within 100mm, for a distance of 2000mm from the penetration of any combustible building element or a position where a combustible material may be located and must be constructed of:

- + Copper alloy or stainless steel with a wall thickness of at least 1mm; or
- + Cast iron or steel (other than stainless steel) with a wall thickness of at least 2 mm

Note 3: -

All pipes normally filled with water cannot be less than 200mm from another service penetration unless protected with a fire wrap installed in accordance with a Tested System approved by a registered Testing Authority.

Note 4: -

A Tested System approved by a registered Testing Authority may be used as an alternative to complying Specification C3.15.

23. Clause C4D16 – Construction Joints

Construction joints, spaces, and the like in and between building elements required to be fire-resisting with respect to integrity and insulation must be protected in a manner identical with a prototype tested in accordance with AS 1530.4 to achieve the required FRL.

24. Clause C4D17 – Columns Protected with Lightweight Construction to achieve an FRL

A column protected by lightweight construction to achieve an FRL which passes through a building element that is required to have an FRL or a resistance to the incipient spread of fire, is required to be installed using a method and materials identical with a protype assembly of the construction which has achieved the required FRL or resistance to the incipient spread of fire.

25. Specification 5 – Fire Resisting Construction

The building design is required to comply with the requirements of Specification C1.1 for a building of Type A Construction. The following key items of Specification C1.1 are identified:

General Requirements

The following requirements of Specification C1.1 are applicable to the proposed design:

- + Where part of a building required to have an FRL depends on direct vertical or lateral support from another part to maintain its FRL, that supporting part must:
 - + Have an FRL not less than the required by other provisions of Specification C1.1; and


- If located within the same fire compartment as the part its supports have an FRL in respect of structural adequacy the greater of that required –
 - For the supporting part itself; and
 - For the part is supports
- Be non-combustible
 - If required by other provisions of Specification C1.1; or
 - If the part is supports is required to be non-combustible
- + Shafts required to have an FRL must be enclosed at the top and bottom by construction having an FRL not less that the required for the walls of a non-loadbearing shaft in the same building except the provisions do not apply to the top of a shaft extending beyond the roof covering (other than one enclosing a fire stair or ramp) or the bottom of a shaft if it is non-combustible and laid directly on the ground.
- + All internal walls that are required to have a fire rating must extend to the underside of the slab above.
- + All loadbearing internal walls must be constructed of concrete or masonry.
- + Due to the fact that the building is required to be constructed of Type A Construction, the FRL to the load bearing elements of the external applies in both directions.
- + Any load bearing structural steel columns located within the external wall assembly of the building will require an FRL in accordance with the Table 3. This applies to Structural Steel columns located in the external wall that may be supporting the roof, link bridges above etc.
- + All internal non-loadbearing walls that are required to be fire resisting and lift, ventilating, pipe, garbage, or similar shaft that is not for the discharge of hot products of combustion is required to be constructed of non-combustible construction.
- Based on the provision of an Automatic Fire Suppression System installed throughout the building, the roof is not required to be fire rated, but rather be constructed with non-combustible materials.

Structures on Roof

- Non-combustible structures situated on the roof top of the building are not required to comply with the requirements of Specification C1.1 if the structures contain only the following:
- + Lift motor equipment; or
- One or more of the following:
 - + Hot water or other water tanks;
 - + Ventilating ductwork, ventilating fans, and their motors.
 - + Air conditioning chillers
 - + Window cleaning equipment
 - + Other service units that are non-combustible and do not contain flammable or combustible liquids or gases.

26. Specification 11 – Smoke Proof Walls in Health Care Buildings

Smoke proof walls within all patient care areas (or bounding patient care area) are required to comply with the following:

- + Be non-combustible and extend to the underside of -
 - The floor above; or
 - A non-combustible roof covering; or



- A ceiling having a resistance to the incipient spread of fire to the space above itself of not less than 60 minutes.
- + Not incorporate any glazed areas unless the glass is safety glass as defined in AS 1288.
- + Only have doorways which are fitted with smoke doors.
- + Have all openings around penetrations and the junctions of the smoke-proof wall and the remainder of the building stopped with non-combustible material to prevent the free passage of smoke.
- + Incorporate smoke dampers where air-handling ducts penetrate the wall unless the duct forms part of a smoke hazard management system required to continue air movement through the duct during a fire.

Note: -

All ducts that penetrate fire and smoke walls within patient care areas that do not form part of the zone smoke control system must be provided with smoke dampers.

Use of Timber Noggins in Smoke Walls

All parts of smoke walls are required to be constructed of non-combustible construction which extends to timber noggins, plywood used within fire walls.

Timber noggins are proposed to be located within the internal fire and smoke walls throughout the building in order to support services, handrails etc.

The use of timber noggins within smoke walls throughout the building is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.

27. Specification 12 – Fire Doors, Smoke Doors, Fire Windows and Shutters

A smoke reservoir of 400 mm must be provided above every fire safety door located within a fire/smoke wall.

The smoke reservoir must extend to the underside of:

- + A roof covering; or
- + The floor above; or
- + An imperforate false ceiling that will prevent the free passage of smoke.

Note: The smoke reservoir should extend for the full length of the corridor.

Smoke doors must be constructed so that smoke will not pass from one side of the doorway to the other and, if they are glazed, there is minimal danger of a person being injured by accidentally walking into them.

Smoke doors are required to swing: -

- + in the direction of egress, or
- + in both directions

Swing of Smoke Doors

There will likely be a small number of fire safety doors located in fire and smoke walls throughout the building that do not swing in the direction of egress i.e., in both directions, as required by Specification C3.4.

It is understood that all fire and smoke doors will be required to swing in one direction only as a result of wear and tear to doors that swing in both directions.

The proposed swing of the doors in one direction / against the direction of egress will be required to assessed as part of the Fire Engineering Assessment to be undertaken by the appointed Fire Safety Engineer in order to demonstrate compliance with the nominated Performance Requirements of the BCA.





Figure No.4: Fire safety doors that swing against the direction on the Ground Floor



Figure No. 5: Fire safety doors that swing against the direction on Level 1

SECTION D - ACCESS & EGRESS

PART D2 – PROVISION FOR ESCAPE

28. Clause D2D3 – Number of Exits Required

A minimum of two (2) exits (in addition to any horizontal exit) must be provided from each part of each storey which contains patient care areas.

The Concept Architectural Drawings indicate that a minimum of two (2) exits in addition to the horizontal exits are provided from each storey of the building.



29. Clause D2D4 – When Fire Isolated Stairs are Required.

All exit stairways serving the building will be required to be fire isolated stairways. It is noted that the Architectural Drawings indicate that Fire Stairs 2 & 3 have been designed as fire isolated stairways whilst Stair 1 has been designed as an External Stairway in lieu of a Fire Isolated Stairway as permitted by the DTS Provisions of the BCA (refer to Clause D2D13).

30. Clause D2D5 – Exit Travel Distances

Egress travel distances from all areas used by patients is required in accordance with the DTS provisions of the BCA which requires a maximum distance of 12 m to a point of choice of two alternative exits in which case a maximum travel distance of 30 m is permitted to the nearest exit.

Egress from non-patient care areas is permitted to extend to 20m to a point of choice and a maximum distance of 40 m to an alternative exit.

Based on the Schematic Issue Architectural Drawings assessed to date, we have undertaken an egress assessment in terms of egress travel distance to an exit based on the Fire Compartmentation Drawings available for review.

As a result of the review, we have identified in the below table the non-compliances (where compliance is not achieved) in relation to travel distance from each storey of the building. The table below details the most excessive travel distances from each respective area of the storey where a non-compliance has been identified (not every single travel distance non-compliance is noted if it is less than the maximum distance identified).

Legend: (PC): Patient Care Area, (PC - ST): Patient Care Area (but area only accessed by Staff), (NPC): Non-Patient Care Area

LEVEL	Area	TRAVEL DISTANCE
Ground	Medium Secure Bedrooms 3 & 7 (PC)	18 m (point of choice)
Floor	Medium Secure Bedrooms 4 & 8 (PC)	20 m (point of choice)
	Medium Secure Bedrooms 17 & 18 (PC)	20 m (point of choice)
Level 1	Medium Secure Bedrooms (PC) [Grids N-P]	22 m (point of choice)
	Medium Secure Bedrooms (PC) [Grids H-J]	14 m (point of choice)
	& Living / Dining (PC)	17 m (point of choice)
Level 2	Plant Room (NPC)	22 m (point of choice)

Table No. 8 – Summary of travel distance compliance throughout the building

Having regard to the above table, we note the following:

- Throughout the building egress travel distance to a point of choice from a patient care area exceeds the maximum distance permitted by the DTS Provisions, with the most excessive distance being up to 22 m where a patient would be located (10 m over the maximum permitted DTS distance).
- Throughout the building egress travel distance to a point of choice from a non-patient care area exceeds the maximum distance permitted by the DTS Provisions, with the most excessive distance being up to 22 m (2 m over the maximum permitted DTS distance).

In this instance the excessive travel distances to a point of choice and to a required exit is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.





Ground Level





Level 1





Figure Nos.: 6-8: Required exit doors from each level of the building.

31. Clause D2D6 – Distances Between Alternative Exits

The maximum travel distance between alternative exits from within patient areas cannot exceed 45m.

The maximum travel distance between alternative exits from non-patient care areas cannot exceed 60m.

Based on the Design Development Architectural Drawings, we have undertaken an egress assessment in terms of egress travel distance between alternative exits.

As a result of the review, egress travel distance between alternative exits complies with the DTS Provisions of the BCA.

32. Clause D2D7 – Heights of Exits, Paths of Travel to Exits and Doorways

The unobstructed height throughout an exit or a path of travel to an exit must not be less than 2000 mm, except for doorways which may be reduced to not less than 1980 mm.

33. Clause D2D8 – Widths of Exits and Paths of Travel to Exits

In addition, the unobstructed width of an exit or a path of travel to an exit must not be less than 1000 mm except where patients are normally transported in beds within treatment and ward areas in which case a minimum of 1800 mm corridor and passageway widths are required.



Verification is required from the LHD as to whether patients within the Mental Health Facility will normally be transported in beds.

The unobstructed width of new doors throughout the patient care areas where patients are normally transported in beds are as follows:

- a) Doorways leading to or from a corridor with a corridor width of <u>less</u> than 2200 mm must not be less than 1200 mm, or
- b) Doorways leading to or from a corridor with a corridor width <u>greater</u> than 2200 mm must not be less than 1070 mm.

34. Clause D2D9 – Widths of Doorways in Exits and Paths of Travel to Exits

The unobstructed width of new doors throughout the patient care areas where patients are normally transported in beds are as follows:

- c) Doorways leading to or from a corridor with a corridor width of <u>less</u> than 2200 mm must not be less than 1200 mm, or
- d) Doorways leading to or from a corridor with a corridor width <u>greater</u> than 2200 mm must not be less than 1070 mm.

Horizontal exit fire doors within patient care areas are to achieve a clear unobstructed width of 1250 mm. Where a single door is provided as a horizontal exit, it will need to achieve the clear unobstructed width of 1250 mm.

All other doorways other than the above are to achieve an unobstructed width of not less than 850mm.

All external egress paths are to achieve a minimum clear width of not less than 1000 mm. This the minimum width required by the DTS Provisions of the BCA and in this instance, it is recommended that a minimum width of 1500mm or greater be adopted for all external egress paths.

35. Clause D2D12 – Travel via Fire Isolated Exits

A doorway from a room must not open directly into a fire isolated stairway or fire isolated passageway unless it is from one of the following:

- + A public corridor, public lobby, or the like; or
- + A sole occupancy unit occupying all of a storey; or
- + A sanitary compartment, airlock, or the like

A fire isolated stairway is required to provide independent egress from each storey that it serves and discharge directly or by way of its own fire isolated passageway –

- + To a road open space; or
- + To a point
 - In a storey or space, within the confines of the building, that is used only for pedestrian movement, car parking or the like and is open for at least 2/3 of its perimeter; and
 - From which an unimpeded path of travel, not further than 20m, is available to a road or open space.
- + Into a covered area that -
 - Adjoins a road or open space; and
 - Is open for at least 1/3 of its perimeter; and
 - Has an unobstructed clear height throughout, including the perimeter openings, of not less than 3m; and
 - Provides an unimpeded path of travel from the point of discharge to the road or open space of not more than 6 m.



Where a path of travel from the point of discharge of a fire isolated exit necessitates passing within 6 m of any part of an external wall of the same building, measured horizontally at right angles to the path of travel, that part of the wall must have –

- + An FRL of not less than 60/60/60; and
- + Any openings protected internally in accordance with C3.4
- + To a point
 - For a distance of 3 m above or below, as appropriate, the level of the path of travel, or for the height
 of the wall whichever is the lesser.

If more than 2 access doorways, not from a sanitary compartment or the like, open to a required fire isolated exit in the same storey –

- + A smoke lobby in accordance with Clause D2.6 must be provided; or
- + The exit must be pressurised in accordance with AS 1668.1

Having regard to the above, the following is noted in relation to the proposed Design Development.

Discharge of Fire Stair 2 & 3 in Proximity to the External Walls of the Building

Upon discharge of Fire Stairs 2 & 3 on the Ground Floor of the building within the Internal Courtyard, occupants are exposed to the external walls of the building bounding the courtyard which are less than 6 m from the path of travel from the fire isolated stairway.

The external wall of the building bounding the internal courtyard on the Ground Floor will be required to be protected in accordance with the DTS Provisions of the BCA or alternatively assessed as part of a Fire Engineering Assessment.

It is noted that the proposed discharge from Fire Stairs 2 & 3 is proposed to be to be assessed as part of a Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.



Figure No. 9: External walls bounding the internal courtyard are positioned within 6 m of the path of travel upon discharge from Fire Stair 2

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Figure No. 10: External walls bounding the internal courtyard are positioned within 6 m of the path of travel upon discharge from Fire Stair 3

Egress from the Internal Courtyards on Ground Floor

Gates are to be provided from the internal courtyards leading to open space. It is noted that Design Development Drawings indicate the provision of doors / gates from the courtyard areas.

Verification will need to be provided as to the path of travel to the public road once occupants discharge from the internal courtyards.

36. Clause D2D13– External Stairways or Ramps in Lieu of Fire Isolated Exits

It is noted that Fire Stair 1 is proposed to be designed as an external stairway in lieu of a fire isolated stairway which is permitted in accordance with Clause D2D13 due to the building having an effective height less than 25 m.

The external stairway provided in lieu of fire isolated stairway will be required to be designed in accordance with the requirements of Clause D2D13. In this instance the following is noted:

- + The stairway is to be constructed of materials that are non-combustible throughout.
- The walls that separate the external stairway from the remainder of the building or alternatively shield it from openings in the external wall are required to have an FRL of 60/60/60 (achieved in both directions).
- + No openings are permitted to be located within 3m of the external stairway unless shielded from the stairway by a wall with a minimum FRL of 60/60/60 or it is the doorway leading to the exit in which case it is required to be protected by a self-closing or automatic closing -/60/30 fire door.
- Any openings located within 3m 6m will be required to be protected in accordance with Part C3 of the BCA unless the external stairway is shielded by a fire rated wall.

Having regard to the proposed design, the following is noted:

+ The blade walls that shield the stairway from the external walls of the building are required to be achieved a minimum FRL of 60/60/60 in both directions.



Figure No. 12: Required construction of the external stairway on Level 01



Figure No. 13: Required construction of the external stairway on Level 02

On the Ground Floor of the building, it is noted a window opening to the Waiting Room is located within 3m of the external stairway contrary to the provisions of the Clause D2D13. The window opening will be required to be blocked so that the external wall achieves a minimum FRL of 60/60/60 or alternatively the provision of the window opening within 3m of the external stairway to be assessed as part of a Fire Engineering Assessment to be prepared by Arup.



Figure No. 14: Window opening located within 3m of the external stairway on the Ground Floor which is not permitted in accordance with the DTS Provisions





+ The window opening to the Family Interview Room which is located within 3 m – 6m away from the external stairway is required to be protected i.e., internal wall wetting drencher.

Figure No. 14: Window opening located within 3m - 6m of the external stairway on the Ground Floor which is required to be protected in accordance with the DTS Provisions

+ The louvred openings to the stairway are to permit free air of not less than 50% from floor to ceiling on level of the stairway.



Figure No. 15: Louvred openings to the external stairway required to permit free air of not less than 50% on each storey level of the stairway

37. Clause D2D15 – Discharge from Exits

In accordance with the DTS provisions of the BCA, once an exit discharges to open space, the path of travel leading from the exit to the public roadway cannot incorporate any stairways or steps.

Verification will be required as to whether there are any proposed stairways connecting the exits to the public roadways that a person is required to travel via (where there is no alternative ramp) upon discharge from each of the fire isolated stairways and the exits serving the building.

Where ramps are used, the gradient cannot exceed 1:8 at any part or 1:14 where the ramp is also used for access for a person with a disability. Handrails are required to be installed to all ramps used for external egress from the building.

An exit cannot be blocked at the point of discharge and where necessary suitable barriers are to be installed to prevent vehicles blocking the exit.

Furthermore, an exit pathway with a clear unobstructed width of 1000 mm will be required to be provided from each of the exits upon discharge leading occupants to the public roadway(s).

38. Clause D2D16 – Horizontal Exits

In accordance with the BCA, a horizontal exit may be counted as a required exit if the path of travel from a fire compartment leads by one or more horizontal exits directly into another fire compartment which has at least one required exit which is not a horizontal exit.

Having regard to the proposed design, there will be instances whereby occupants will egress from one compartment into an adjoining compartment which will not be provided with direct access to a fire isolated stairway or exit discharging directly to open space which is a technical non-compliance with Clause D2D16 of the BCA.

The following figure provides an example on Level 1 of the building where occupants egressing from one fire compartment are required to travel via a secondary fire compartment prior to reaching a fire compartment that is provided with a fire isolated stairway.



Travel via the horizontal exits on Level 1 of the building is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.



Figure No. 16: Travel via horizontal exits on Level 1 of the building.

39. Clause D2D21 – Plant Rooms, Lift Machin Rooms, and Electricity Network Substations: Concession

A ladder is permitted to be used in lieu of a stairway to provide egress from -

- + A plant room with a floor area of not more than 100 m²; or
- All but one point of egress from a plant room, a lift machine room, or a Class 8 electricity network substation with a floor area of not more than 200 m^{2.}

40. Clause D2D22 – Access to Lift Pits

Access to new lift pits is required to be provided as follows:

- + Where the lift pit depth is not more than 3m, be through the lowest landing doors; or
- + Where the pit depth is more than 3m, be provided through an access doorway complying the following:
 - In lieu of D1.6, the doorway must be level with the pit floor and not be less than 600 mm wide by 1980 mm high clear opening, which may be reduced to 1500 mm where it is necessary to comply with following item.



- No part of the lift car or platform must encroach on the pit doorway entrance when the car is on a fully compressed buffer.
- Access to the doorway must be by a stairway complying with AS 1657.
- In lieu of D2.21, doors fitted to the doorway must be -
 - Of the horizontal sliding or outwards opening hinged type; and
 - Self-closing and self-locking from the outside; and
 - Marked on the landing side with the letters note less than 35 mm:
 - 'DANGER LIFTWELL ENTRY OF UNATHORISED PERSONS PROHIBITED KEEP CLEAR AT ALL TIMES'.

PART D3 – CONSTRUCTION OF EXITS

41. Clause D3D3 – Fire Isolated Stairways

The fire isolated stairways are required to be constructed of non-combustible materials and so that if there is local failure it will not cause structural damage or impair the fire resistance of the shaft.

42. Clause D3D5 – Separation of Rising and Descending Stair Flights

The current Design Development Documentation do not indicate the provision of any rising and descending stairs within the area of redevelopment works.

43. Clause D3D8 – Installations in Exit and Paths of Travel

No access is permitted to service shafts within the fire isolated stairs.

Any electrical meters, distribution boards or ducts, central communications distribution boards or equipment or electrical motors located within the corridors are to be smoke sealed and enclosed within non-combustible construction with any penetrations smoke sealed.

Note: The smoke sealing is required of any penetrations located between ceiling level.

Gas and other fuel services must not be located within a required exit.

Note that an opening to any chute that or duct that is to convey hot products or combustion from a boiler incinerator, fireplace or the like must not be located in any part of a required exit or any corridor, hallway, lobby or the like leading to a required exit.

Provision of Communication Equipment within the Fire Isolated Stairways

The fire isolated stairways are proposed to be provided with Wireless Access Points (WAP) or Distributed Antenna Systems (DAS) on each storey of the fire isolated stairways in order to enhance radio frequency within the stairways. As detailed above, the provision of communication equipment within the fire isolated stairways is not permitted in accordance with the DtS Provisions of the BCA.

The installation of WAPs and/or DAS within the fire isolated stairways will be required to be assessed as part of a Fire Engineering Performance Assessment to be undertaken by the appointed Fire Safety Engineer in order to demonstrate compliance with the nominated Performance Requirements of the BCA.

44. Clause D3D9 – Enclosure of Space under Stairs and Ramps

A space below a required fire-isolated stairway or ramp within a fire-isolated shaft cannot be enclosed to form a cupboard or other enclosed space within the fire isolated stairway shaft.





Figure No. 17: Fire separated space below stairway which is not considered part of the fire isolated shaft.

45. Clause D3D14 – Goings and Risers

In relation to the construction of all stairways we note the following:

- + Stairway must have not more than 18 and not less than 2 risers in each flight.
- + Goings and risers within the stair flights must be constant throughout.
- + Goings and risers are to be in accordance with the following dimensions.

	Riser and Going Dimensions (mm)					
	Riser (R)	Going (G)	Quantity (2R + G)			
Maximum	190	355	700			
Minimum	115	250	550			

Table No. 9 - Riser and going dimensions for stairways.



Notes:

- 1. A = larger riser of two adjacent risers.
- 2. B = smaller riser of two adjacent risers.
- 3. This figure only shows deviations in risers, however the same principle can apply for goings.



Figure D2.13(2) Deviations over a flight



Notes:

- 1. C = largest riser of the flight.
- 2. D = smallest riser of the flight.
- 3. This diagram only shows deviations in risers, however the same principle can apply for goings.

Figure No. 19: Permitted deviations over a stair flight.

- + The stair treads are required to be provided with the following:
 - Have a surface with a slip resistance classification not less than that listed in Table D2.14 when tested in accordance with AS 4586; or
 - Be provided with a nosing strip with a slip resistance classification not less than that detailed in Table D2.14 when tested in accordance with AS 4586.
- + Each stairway is to be provided with a contrast strip to the nosing in accordance with AS1428.1-2009.

46. Clause D3D15 – Landings

The stair landings to the fire isolated stairways are required to be designed in accordance with the following:

- + The area of any landing must be sufficient to move a stretcher, 2m long and 600mm wide, at a gradient not more than the gradient of the stairs, with at least one end of the stretcher on the landing while changing direction between flights; or
- + The stair must have a 180° landing, with a clear width of 1600 mm and clear length of 2700 mm.

Details will be required to be submitted detailing stretcher movement around the landings of the fire isolated stairways.

Furthermore, the stair landings must:

- A surface with a slip resistance classification not less than that listed in Table D2.14 when tested in accordance with AS 4586; or
- + A strip at the edge of the landing with a slip resistance classification not less than that listed in Table D2.14 when tested in accordance with AS 4586, where the edge leads to a flight below.

Table D2.14 Slip Resistance Classification

Application	Surface Conditions					
Application	Dry	Wet				
Ramp steeper than 1:14	P4 or R11	P5 or R12				
Ramp steeper than 1:20 but not steeper than 1:14	P3 or R10	P4 or R11				
Tread or landing surface	P3 or R10	P4 or R11				
Nosing or landing edge strip	P3	P4				

Table No. 10 – Minimum slip resistance ratings required to stairs and ramps.

47. Clause D3D16 – Thresholds

No steps can be located within the internal or external door thresholds unless the doorway is within a patient care area and the door sill is not more than 25mm above the finished level to which the doorway opens.

In areas other than patient care areas, where there are any steps within door thresholds, a threshold or step ramp is required to be installed in accordance with Clause 10 of AS 1428.1 which requires the following:

- Maximum rise of 35 mm
- Maximum length of 280 mm
- Maximum gradient of 1:8
- + Be located within 20 mm of the door leaf it serves.

Where the threshold ramp does not abut a wall, the edges of the threshold ramp are required to be tapered or splayed at a minimum of 45°.



Figure No. 22: Step Ramp at External Doorway - Front Approach

R



Figure No. 23: Step Ramp at External Doorway - Side Approach

48. Clause D3D17 - D3D21 – Balustrades or Other Barriers

General Requirements

All balustrades are required to be constructed to a minimum height of 1000 mm where the level below is greater than 1000mm to all landings, between car parking levels, walkways etc.

Where the level below exceeds 4000 mm the balustrades must not have any climbable elements between 150mm and 760mm above the floor.

All balustrades are required to comply with the structural loading requirements of AS 1170.1.

Fire Isolated Stairways and External Stairway in lieu of a Fire Isolated Stairway (bounded by louvred wall)

Within the fire isolated stairways where the fall exceeds 1000mm, the balustrading must be a minimum of 865-mm above the nosing of the tread with a rail no more than 150-mm above the nosing of the tread and no gaps between rails greater than 460-mm.

Within the fire isolated stairways, at stair landings, where the landing exceeds 500-mm in length the balustrade must be increased to 1m in height, with a rail no more than 150-mm above the landing and no gaps greater than 460-mm.

49. Clause D3D22 – Handrails

Handrails are to be provided along at least one side of all corridors in the patient care areas, which are fixed not less than 50 mm from the wall and continuous where practical.

Handrails are required be provided along at least one side of the fire isolated stairways. The handrails are required to be designed and constructed in accordance with Clause 12 of AS 1428.1.

Handrails must be provided along both sides of any external stairways. The handrails are required to be designed and constructed in accordance with Clause 11 and 12 of AS 1428.1 – 2009.

50. Clause D3D23 – Fixed Platforms, Walkways, Stairways and Ladders

A fixed platform, walkway, stairway, or ladder and any going, and riser, landing, handrail or barrier attached thereto is permitted to comply with AS 1657 in lieu of Clause D213, D2.14, D2.16 if it only serves:

+ Machinery rooms, boiler houses, lift machine rooms, plant rooms and the like.



51. Clause D3D24 – Doorways and Doors

Sliding Doors in Patient Care Areas

Doorways located in a patient care area must not incorporate a sliding door unless that door leads directly to open space and is able to be manually opened under a force of not more than 110 N and open automatically upon fire trip or power failure.

The Design Development Drawings do not indicate the provision of sliding doors within patient care areas.

52. Clause D3D25 – Swinging Doors

All exit doors or doors forming part of a required exit are required to swing in the direction of egress. This applies to all exit doors leading into fire isolated stairways along with the doorways discharging from the fire isolated stairways along with egress doors discharging direct to open space.

Swing of Horizontal Exit Doors

All exit doors including horizontal exit doors are required to swing in the direction of egress.

There are small number of horizontal exits doors that are proposed to not swing in the direction of egress in certain instances i.e., doors will swing in one direction only.



Figure No. 24: Horizontal exit door located on the Ground Floor that swings against the direction of egress.



The swing of the horizontal exit doors against the direction of egress will be required to be addressed as part of a Fire Engineering Assessment to be undertaken by the appointed Fire Safety Engineer in order to demonstrate compliance with nominated Performance Requirements of the BCA.

53. Clause D3D26 – Operation of Latch

All exit doors and doors in a path of travel are required to be provided with door hardware that is openable by a single-handed downward action without recourse to a key or locking device and meet the following criteria:

- + The door hardware is to be of a design that the hand of a person who cannot grip will not slip from the handle during the operation of the latch: and
- + Have a clearance between the handle and the back plate or door face at the centre grip section of the handle of not less than 35mm and not more than 45mm more.

The door hardware is to be positioned between 900 – 1100mm from the ground.

Doors providing re-entry to the building from balcony areas etc. must be fitted with key-operated fastenings only, the tongues of which must be locked in the retracted position whenever the building is occupied so that the door can yield to pressure.

Anti-ligature Door Hardware

Due to the nature of the Mental Health Facility, it is noted that door hardware throughout part of the building will be required to be anti-ligature.



The provision of anti-ligature door hardware throughout Mental Health is permitted in accordance with the DtS Provisions of the BCA Subject to the following be implemented:

- + The doors can be immediately unlocked -
 - By operating a fail-safe control switch, not contained within a protective enclosure, to actuate a device to unlock the door; or
 - By hand by a person or persons, specifically nominated by the owner, properly instructed as to the duties and responsibilities involved and available at all times when the building is lawfully occupies so that persons in the building or part may immediately escape if there is a fire.

The LHD will need to confirm which option will be implemented as part of the use and operation of the facility.

54. Clause D3D27 – Re-entry from Fire Isolated Exits

Doors to the fire isolated exits must not be locked from inside the stair or if they are proposed to be locked, they must be fitted with a fail-safe device that automatically unlocks the door upon fire trip and comply with one of the following design options:

- On at least one of the storeys, the doors are not able to be locked and a sign is fixed on such doors stating that re-entry is available; or
- + An intercommunication system, or an audible or visible alarm system, operated from within the enclosure is provided near the doors on <u>every level</u> and a sign is fixed adjacent to such doors explaining its purpose and method of operation.

55. Clause D3D28 – Signs on Doors

All <u>self-closing</u> fire and/or smoke doors located within fire and smoke walls throughout the building together with the fire doors providing access to the fire isolated stairways are to be provided with signage that states:

FIRE SAFETY DOOR DO NOT OBSTRUCT DO NOT KEEP OPEN

All <u>automatic closing</u> fire and/or smoke doors located within fire and smoke walls throughout the building together with automatic closing fire doors leading to the fire isolated stairways are to be provided with signage that states:

FIRE SAFETY DOOR DO NOT OBSTRUCT

The doors discharging from the fire isolated stairways are to be provided with signage as follows (on both sides of the doorways):

FIRE SAFETY DOOR DO NOT OBSTRUCT

The doors discharging into the fire isolated stairways are to be provided with the following additional signage installed on the wall on the latch side of the door.





PART D4 – ACCESS FOR PEOPLE WITH A DISABILITY

56. Clause D4D2 – General Building Access Requirements

Access for persons with disabilities must be provided, at a minimum, to and within <u>all areas normally used</u> <u>by the occupants</u> throughout the Mental Health building. This includes to and within all beds, throughout all patient care areas, staff areas and communal areas.

It is noted that dedicated Accessible Bedrooms have been provided on Level 1 of the building. A Class 9a health care building requires access to and within all bedrooms throughout the building. In this instance compliant access including circulation space is required to provided to all bedrooms and not just the rooms dedicated as accessible bedrooms.

Based on a review of the Design Development Architectural Documentation, the new Forensic Mental Health building is capable of complying with the requirements of Part D3 of the BCA.

This BCA Report contains high level comments pertaining to access for a person with a disability. A separate and more detailed Access Report will be issued by ABE Consulting.

57. Clause D4D3 – Access to Buildings

Access to the building is required as follows:

- + An accessible accessway is required to be provided as follows:
 - From the main points of a pedestrian entry at the allotment boundary, and
 - From another accessible building connected by a pedestrian link; and
 - From any required accessible carparking space on the allotment

Details will be required of the external pathways including gradients leading from the allotment boundary to the main entrance of the building.

- In a building required to be accessible, an access is required to be provided throughout the principal pedestrian entrance and –
 - Through not less than 50% of all pedestrian entrances including the principal pedestrian entrance; and
 - In a building with a total floor area of more than 500 m², a pedestrian entrance which is not accessible must not be located more than 50m from an accessible pedestrian entrance.
- + An accessible pedestrian entrance with multiple doorways is considered to be one pedestrian where -
 - All doorways serve the same part or parts of the building; and
 - The distance between each doorway is not more than the width of the widest doorway at that pedestrian entrance.

Except for pedestrian entrance serving only areas exempted from Clause D3.4 (refer to areas below under Clause D3.4)

- Where a pedestrian entrance required to be accessible has multiple doorways
 - If the pedestrian entrance consists of not more than 3 doorways, not less than 1 of those doorways is required to be accessible.



- If a pedestrian entrance consists of more than 3 doorways, not less than 50% of those doorways is required to be accessible.
- From any required accessible carparking space on the allotment
- + The minimum unobstructed height of a continuous accessible path of travel is required to be 2000 mm and 1980 mm at doorways.

Unless otherwise specified (such as at doors, curved ramps and similar), the minimum unobstructed with of a continuous accessible path of travel is required to be 1000 mm and following elements cannot intrude into the minimum width:

- Fixtures and fittings such as lights, awnings, windows that when open intrude into the circulation space, telephones, skirtings, and similar objects.
- Essential fixture and fittings such as fire hose reels, fire extinguishers and switchboards.
- Door handles less than 900 mm above the finished floor.



Figure No. 26: Minimum height and width of accessible path of travel

+ The minimum width of an accessible doorway must have a *clear opening* width of not less than 850mm in accordance with AS1428.1. Where double doors are provided, at least one leaf must have a clear unobstructed width of 850 mm.

Note: -

Please refer to Clause D1.6 above having regard to the clear width of doorways where patient transportation in beds is required.

R



Figure No. 27: Clear Unobstructed Width of Doorway

- + All new doorways shall have a minimum luminance contrast of 30% provided between-
 - (a) door leaf and door jamb;
 - (b) door leaf and adjacent wall;
 - (c) architrave and wall;
 - (d) door leaf and architrave; or
 - (e) door jamb and adjacent wall.

The minimum width of the area of luminance contrast shall be 50 mm.

Doorways providing access to rooms that are not required to be accessible, are not required to be provided with a luminance contrast i.e., clean utility rooms, dirty utility rooms, equipment stores etc.

 Circulation space is required to all doorways throughout the building that are required to be accessible in accordance with Section 13 of AS 1428.1 – 2009 (see diagrams below).

Note: Where doorways are provided with one and half leaves, the half leaf is required to permit the required latch side circulation space as required by AS 1428.1 – 2009.

	Swing Door Opens Towards User:						
Both Sides A	pproach:			Front on App	roach:		
D	L	Wн	WL	D	L	Ŵн	WL
850	1670	660	900	850	1450	110	530
900	1670	610	900	900	1450	110	530
950	1670	560	900	950	1450	110	530
1000	1670	510	900	1000	1450	110	530





Latch Side Approach: w W

D	L	VVH	VVL
850	1670	110	900
900	1670	110	900
950	1670	110	900
1000	1670	110	900

Figure No. 28: Circulation Space at Swing Doors - Door Opens Toward User



F:\Projects\2022\220437 - Concord Hospital Mental Health Facility\BCA Report\Concord Forensic Menal Health - Draft Design Development BCA Report (R2).docm Page 65 of 114

Hinge Side Approach:



900	1185	510	340	900	1210	190	660	
950	1160	460	340	950	1175	140	660	
1000	1140	410	340	1000	1155	90	660	

Figure No. 29: Circulation Space at Swing Doors - Door Opens away from User.



Figure No. 30: Circulation Space at Sliding Doors - Recessed in Wall

Sliding Doors Surface Mounted					
For any side on approach:	Add dimension <i>t</i> to W_L and W_H .				



Figure No. 31: Circulation Space at Sliding Doors - Surface Mounted



The following figures detail doorways throughout the building where circulation is to be reviewed in close detail to ensure that the minimum circulation space is achieved around the doorways.



Figure No. 33: Doorways requiring compliant circulation space within the Ground Floor



Figure No. 34: Doorways requiring compliant circulation space within Level 1



Figure No. 35: Doorways requiring compliant circulation space within Level 2

58. Clause D4D4 – Parts of Buildings to be Accessible.

In a building required to be accessible -

- Every ramp and stairway, excepts for ramps and stairways in areas exempted from Clause D3.4, are required to comply with –
 - For a ramp, except a fire isolated ramp, Clause 10 of AS 1428.1; and
 - For a stairway, except a fire isolated stairway, Clause 11 of AS 1428.1; and
 - ▲ For a fire isolated stairway, Clause 11 (f) and (g) of AS 1428.1.
 - Door handles less than 900 mm above the finished floor.
- Every passenger lift is required to be designed in accordance with Clause E3.6
- Accessways throughout the building are required to have –



- Passes spaces complying with AS 1428.1 at a maximum 20m intervals on those parts of an access where a direct line of sight is not available; and
- Turning spaces complying with AS 1428.1
 - Within 2 m of the end of accessways where it is not possible to continue travelling along the accessway, and
 - At maximum 20 m intervals along the accessway
- + All dead-end corridors where a person in a wheelchair is required to make a 90° to 180° turn is required to be not less than 2070mm in the direction of travel and not less than 1540 mm wide.



Accessible Walkways (AS1428.1 – 2009 Section 10.2):

The requirements for walkways serving the development are as follows:

- Walkways can have a gradient up to 1:20. Anything steeper is a ramp and requires kerbs or kerb rails plus handrails to both sides.
- + A walkway with a gradient less than 1 in 33 does not require landings but does require a crossfall of maximum 1 in 40 (maximum cross fall of 1 in 33 if the surface is bitumen).
- Walkways steeper than 1 in 33 do not require a crossfall to the main walkway but do require a crossfall of 1 in 40 to landings.





Figure No. 40: Requirements for Edges of Walkways


Accessible Ramps (AS1428.1-2009 Section 10.3):

Accessible ramps are required to be designed and constructed in accordance with the following:

- + The maximum gradient is to be 1:14.
- + Landings are to be provided at the top and bottom of the ramp and at intervals not exceeding 9m.

The landings to the ramps are required to have a minimum width of 1200mm.

- + Handrails are to be provided to both sides of the ramp. The handrails are required to be extended 300mm at both the top and bottom of the ramp.
 - The ramps are to be provided with kerb rails that comply with the following:
 - The minimum height above the finished floor shall be 65mm.
 - The height of the top of the kerb or kerb rail shall not be within the range of 75mm to 150mm above the finished floor.
 - There cannot be a longitudinal gap or slot greater than 20mm in the kerb or kerb rail within the range 75mm to 150mm above the finished floor.
- Where ramps are constructed with a change in direction, the angle of approach shall create a 90° angle to the line of transition between the ramp surface and the landing surface.



Figure No. 41: Ramp and Landing with Change in Direction of 180°



Figure No. 42: Ramp and Landing with Change of 90°



Figure No. 43: Handrail Extensions at Ramp Ending







Accessible Stairways:

Circulation stairways (including any fire isolated stairways dedicated as staff circulation stairways) are required to be designed in accordance with AS 1428.1 - 2009. In this instance, the following is required:

- + A handrail to each side of stairway.
- + Handrails are required to be extended at the top and bottom of the stairway. At the bottom of the stairway, the handrails are required to extend one tread width plus 300mm from the last riser. At the top of the stairway, the handrails are required to extend 300mm from the last riser.
- + Solid opaque risers.
- + Contrast nosing's to the stair treads.
- + The handrails are to have a maximum dimension of 50mm and be spaced a minimum distance of 50mm from the wall.

Note: -

Handrails within fire isolated stairways that are not used as circulation stairways are only required to comply with Clause 12 of AS 1428.1 which regulates the size of the handrails, cross section and distance from adjacent walls surfaces etc. In this instance the extensions at the top and bottom of the handrails are not required within the fire isolated stairway.

Verification is required as to whether any of the fire stairs is proposed to be used as a circulation stairway between levels for staff.



Figure No. 45: Handrails to Stairways

Access Control

Access control swipe readers are required to be installed between 900 – 1100mm above FFL and not closer than 500 mm to an internal corner.

Door release buttons are required to be located between 900 - 1100mm above FFL and closer than 500mm to an internal corner. Door release buttons will need to be large format switches (35mm x 35mm rocker style switches) or a 'mushroom' push button type.





Figure No. 46: Zones for the location of switches and power outlets

Clear Turning Space Behind Workstations

A minimum clearance of 1550 mm is required to be provided between the edge of workstations / desks and the wall behind or between workstations located back-to-back to ensure that a staff member who is wheel chairbound has sufficient space to ensure manoeuvrability.

Wheelchair Seating in Waiting Areas

Within the waiting areas at least one zone of 1300 mm x 800 mm is required to be provided for a wheelchair seating location for a person with a disability.

Accessible Counters

The reception counters associated with the entrance to the building or department entries is to include a portion of the counter that is accessible to a person with a disability. The height of the counter should be 850 mm +/- 20 mm.

The knee and foot clearances below the counter or bench are required to be provided in accordance with AS 1428.2 – 1992.





Figure No. 47: Clearances below an accessible counter or bench

Beverage Bays

Where Beverage Bays are proposed to be installed, they are required to be designed as follows:

- If the beverage bays are located within a room, the circulation space within the room will be required to comply with the provisions of AS 1428.1 – 2009 with a zone of 1500 mm x 1500 mm provided to ensure that that an occupant can make a 180° turn.
- + The distance between the beverage bay counter and any adjacent wall cannot be less than 1540mm.
- + Where the beverage bay is located adjacent to a doorway, circulation space around the doorway is required to be provided as detailed above.
- + Water zip taps cannot be located closer than 500 mm from an internal corner.
- Side reach access to the tap hardware of the beverage bay is permitted. Side reach access is required to be provided in accordance with AS 1428.2 – 1992 as detailed in the below Figure.



Figure No. 48: Side reach requirements for a wheelchair user



Carpet

The pile height or pile thickness cannot exceed 11 mm and the carpet backing thickness cannot exceed 4 mm.

Exposed edges of floor covering are required to be fastened to the floor surface and is required to have a trim along the entire length of any exposed edge.

At the leading edges, carpet trims and any soft flexible materials are required to have a vertical face no higher than 3 mm or a rounded bevelled edge no higher than 5mm or above that height a gradient of 1 in 8 up to a total maximum height of 10 mm.

Note: In accordance with Clause D3.3 (h), the dimensions of 10mm, 6mm and 4mm are to be replaced with 11 mm, 4mm and 15 mm respectively.



Recessed Matting

Matting recessed within a continuous accessible path of travel is required to comply with the following:

- Where of metal and bristle type construction or similar, its surface cannot be more than 3 mm if vertical or 5 mm if rounded or bevelled, above or below the surrounding surface; and
- + Where a mat or carpet type material, it is required to have the fully compressed surface level with or above the surrounding surface with a level difference no greater than 3 mm if vertical or 5 mm if rounded or bevelled.



Figure No. 50: Recessed matting height tolerances

Grates

Grates installed are required to comply with the following:

- + Circular openings cannot be greater than 13 mm in diameter.
- + Slotted openings cannot be greater than 13 mm wide and be orientated so that the long dimension is transverse to the dominant direction of travel.



Figure No. 51: Maximum size of openings in grates

Accessible Fixtures & Fittings:

All fixtures, fittings and door hardware are to comply with Section 13.5 & Section 14 of AS1428.1-2009.
 Door hardware to swing doors is to be in accordance with the following diagrams:





Figure No. 52: Door hardware to swing doors.

Door hardware to sliding doors is to be in accordance with the following diagram:





- + Toggle style light switches and GPO outlets etc. should be provided within all patient care areas and to all accessible sanitary facilities (unless automatic lighting is provided within the sanitary facility)
- + Braille tactile signage will be required to be installed throughout the building identifying accessible sanitary facilities, exits and lifts in accordance with the DTS Provisions of the BCA and AS 1428.1.

Signage to identify any ambulant or accessible sanitary facility is required to be located on the wall on the latch side of door or on the door itself leading to the sanitary facility.

Anti-ligature Door Hardware and Fixtures and Fittings

Due to the nature of the Mental Health Facility, it is noted that door hardware and other fixtures and fittings throughout part of the facility will be required to be anti-ligature.

The provision of anti-ligature door hardware throughout the building will be required to be required to be assessed as part of an Access Performance Solution to be prepared by the appointed Access Consultant in order to demonstrate compliance with the nominated Performance Requirements of the BCA.



59. Clause D4D5 – Exemptions

The following areas are not required to be accessible:

- + An area where access would be inappropriate because of the particular purpose for which the area is used.
- + An area that would pose a health or safety risk for people with a disability.
- + Any path of travel providing access only to an area exempted by (a) or (b).

Areas / rooms that are not required to be accessible for a person with a disability include the following:

- + Dirty Utility Rooms
- + Clean Utility Rooms
- + Equipment Storerooms
- + General Storerooms
- + Cleaners Rooms
- + Disposal Rooms
- + Back of House Area containing the Bulk Store, General Waste Room etc
- + Plant Rooms
- + Main Switch Room, Chamber Sub, UPS / EDB / Comms Rooms

The following figure details typical rooms on each level of the building that are permitted to receive a D4D5 concession:



Figure No.54: Rooms on the Ground Floor that have the ability to receive a D4D5 concession subject to confirmation from the LHD



Figure No.55: Rooms on Level 1 that have the ability to receive a D4D5 concession subject to confirmation from the LHD



Figure No.56: Rooms on Level 2 that have the ability to receive a D4D5 concession subject to confirmation from the LHD

The LHD are to provide written confirmation that access for any staff members with a disability is not required to be provided to the abovementioned rooms.

60. Clause D4D6 – Accessible Carparking

Verification is required as to whether any car parking spaces are proposed to be provided as part of the proposed development.

61. Clause D4D7 – Signage

Braille and tactile signage complying the requirements of Specification D3.6 is required to:

- Incorporate the international symbol of access or deafness, as appropriate, in accordance with AS 1428.1 and identify each -
- Sanitary facility; and
- + A space with a hearing augmentation system; and
- Identify each door required by E4.5 (door to be provided with exit signs) to be provided with an exit sign and state
 - a. "Exit"; and
 - b. "Level" followed by the floor number.



- + Signage including the international symbol for deafness in accordance with AS 1428.1 must be provided within a room containing a hearing augmentation system identifying
 - The type of hearing augmentation; and
 - The are covered within the room; and
 - If receivers are being used and where the receivers can be obtained
- + Signage in accordance with AS 1428.1 must be provided for accessible unisex sanitary facilities to identify the facility is suitable for left or right-handed use.
- + Signage to identify an ambulant accessible sanitary facility in accordance with AS 1428.1 must be located on the door of the facility.
- Where a pedestrian entrance is not accessible, directional signage incorporating the international symbol of access, in accordance with AS 1428.1 must be provided to the location of the nearest accessible pedestrian entrance.
- + Where a bank of sanitary facilities is not provided with an accessible unisex sanitary facility, directional signage incorporating the international symbol of access in accordance with AS 1428.1 must be placed at the location of the sanitary facilities that are not accessible, to direct a person to the location of the nearest accessible unisex sanitary facility.
- + Signs identifying a door required by E4.5 to be provided with an exit sign must be located:
 - i. On the side that faces a person seeking egress; and
 - ii. On the wall on the latch side of the door with the leading edge of the sign located between 50mm and 300mm from the architrave; and
 - iii. Where (ii) is not possible, the sign may be placed on the door itself.

The provision of Braille and tactile exit signage with the message, for example. "Exit - Level 1" assists people with vision impairment to orientate themselves in case of an emergency situation and to find an exit and evacuate the area in a safe and equitable manner.

62. Clause D4D8 – Hearing Augmentation

Hearing Augmentation

A hearing augmentation system will be required to be installed to all rooms / areas where a built-in amplification system is installed.

A built-in amplification system is a system where either speaker are installed within a room or a wall mounted monitor has built in speakers. Such installations are typically found in meeting rooms, training rooms, and waiting areas.

Where the wall mounted screen is not capable of broadcasting sound and any audio is provided way of speakers attached to a laptop or that are portable, the hearing augmentation provisions will not need to be applied.

If a hearing augmentation system is:

 An induction loop, it must be provided to not less than 80% of the floor area of the room or space served by the inbuilt amplification system; or



- A system requiring the use of receivers or the like, it must be available to not less than 95% of the floor area of the room or space served by the inbuilt amplification system, and the number of receivers must not be less than -
 - If the room or space accommodates up to 500 persons, 1 receiver for every 25 persons or part thereof, or 2 receivers, whichever is the greater; and
 - If the room or space accommodates more than 500 persons but not more than 1000 persons, 20 receivers plus 1 receiver for every 33 persons or part thereof in excess of 500 persons.

63. Clause D4D9 – Tactile Indicators

The DTS Provisions of the BCA grant a concession for the provision of tactile ground surface indicators to stairways and ramps within the building.

In this instance tactile ground surface indicators are not required to be installed to internal stairways, however any external stairways and ramps providing access to and from the building will be required to be provided with tactile ground surface indicators.

64. Clause D4D12 – Ramps

On an accessway -

- + A series of connected ramps must not have a combined vertical rise of more than 3.6 m; and
- A landing for a step ramp must not overlap a landing for another step ramp or ramp.

It is noted that the Architectural Design does not include any ramps with a vertical rise more than 3.6 m.

65. Clause D4D13 – Glazing on an Accessway

On an accessway where there is no chair rail, handrail or transom provided to all frameless or fully glazed doors, sidelights, and any glazing capable of being mistaken for a doorway or opening, must be clearly line marked in accordance with the following:

- + Must be clearly marked for the full width of the glazed element,
- Must be a solid and non-transparent contrasting line,
- The contrasting line must have a minimum of 30% luminance contrast when viewed against the floor surface or surfaces within 2m of the glazing of the opposite side.
- + Must be not less than 75mm in width,
- + The lower edge of the contrasting line must be located between 900mm and 1000mm above the finished floor level.





Figure No. 57: Warning Strips to Full Height Glazing

SECTION E – SERVICES AND EQUIPMENT

PART E1 – FIRE FIGHTING EQUIPMENT

66. Part E1 – E4 – Essential Fire Safety Measures

The following essential fire safety measures are required to be installed within the Forensic Mental Health Building based on the Design Development Documentation reviewed to date.

Essential Fire and Other Safety Measures	Standard of Performance
Access Panels, Doors & Hoppers	BCA Clause C3.13
	AS 1530.4 - 2005
Alarm Signalling Equipment	AS1670.3 – 2004
Automatic Fail-Safe Devices	BCA Clause D2.21
Automatic Fire Detection & Alarm System	BCA Spec. E2.2a
	AS 1670.1 - 2018.
Automatic Fire Suppression System	BCA Spec. E1.5
	AS2118.1 – 2017
	AS 2118.6 - 2012
Emergency Lighting	BCA Clause E4.4
	AS/NZS 2293.1 - 2018
Emergency Lifts	BCA Clause E3.4
	AS 1735.2 - 2001
Emergency Evacuation Plan	AS 3745 - 2002



Essential Fire and Other Safety Measures	Standard of Performance
Emergency Warning & Intercommunication System	BCA Clause E4.9
	AS 1670.1 - 2018
Exit Signs	BCA Clauses E4.5, E4.6 & E4.8
	AS/NZS 2293.1 – 2018
Fire Dampers	BCA Clause C3.15
	AS/NZS 1668.1 - 2015
	AS 1682.1 & 2 – 2015
Fire Doors	BCA Clause C2.12, C2.13, C3.5, C3.7, C3.8
	AS 1905.1 – 2015
Fire Hose Reels	BCA Clause E1.4
	AS 2441 – 2005
Fire Hydrant Systems	Clause E1.3
	AS 2419.1 – 2021
	AS 2118.6 - 2012
Fire Seals	BCA Clause C3.15
	AS 1530.4 – 2014
	AS 4072.1 – 2005
Fire Walls	BCA Spec. C1.1
Lightweight Construction	BCA Clause C1.8 &
	AS 1530.4 – 2014
Manual Call Points	BCA Section E
Mechanical Air Handling Systems (automatic	BCA Clause E2.2
shutdown)	AS/NZS 1668.1 - 2015
	AS 1668.2 – 2012
Paths of Travel	EP & A Regulation Clause 186
Portable Fire Extinguishers	BCA Clause E1.6 &
	AS 2444 – 2001
Pressurisation Systems (Fire Isolated Stairways)	BCA Clause E2.2
	AS/NZS 1668.1 - 2015
	AS 1668.2 – 2012
Required Exit Doors (power operated)	BCA Clause D2.19(d)
Smoke Dampers	AS/NZS 1668.1 – 2015
	AS 1682.1 & 2 – 2015



Essential Fire and Other Safety Measures	Standard of Performance
Smoke Doors	BCA Spec. C3.4 & C2.5
Smoke Seals	BCA Spec C3.4
Smoke Walls	BCA Spec. C2.5
Wall-Wetting Sprinklers	BCA Clause C3.4 AS 2118.2 – 2010
Warning & Operational signs	Section 183 of the EP & A Regulations 2000 BCA Clause D2.23, E3.3 AS 1905.1 – 2015

Table No. 11 - Required essential fire safety measures.

67. Clause E1D2 – Fire Hydrants

A fire hydrant service is required to be provided to serve the entire building. The system will be required to be designed in accordance with AS 2419.1 – 2021.

Verification will be required from the Fire Services Consultant that fire hydrant system is capable of complying with AS 2419.1 – 2021.

System Performance

On the basis that the building contains fire compartments with a floor area less than 1000 m², a minimum of 1 fire hydrant is required to flow simultaneously in accordance with Table 2.2.5 (B) of AS of AS 2419.1 – 2021.

If the building contains fire compartments exceeding 1000 m², a minimum of 2 fire hydrants are required to flow simultaneously in accordance with Table 2.2.5 (B) of AS of AS 2419.1 –2021.

Hydrant Locations

Fire hydrants are required to be located within the fire isolated stairways on each storey together with the external stairway provided in lieu of a fire isolated stairway.

If additional internal fire hydrants are required to be installed in order for compliant coverage to be achieved (if coverage cannot be achieved from the hydrants within the fire isolated stairways), a Fire Engineering Assessment will be required to be prepared in consultation with FRNSW for the hydrants that will be required to be located within the confines of the building.

Note: AS 2419.1 – 2021 no longer contains provisions for additional on floor hydrants as a DTS design.

Fire Compartments

Each fire compartment within the building is required to be provided with an internal fire hydrant unless coverage is achieved by an external fire hydrant or a fire hydrant within a fire isolated exit.

Orientation of Internal Fire Hydrants in Fire Isolated Exits

Where an internal fire hydrant is located within a fire isolated exit, the internal fire hydrant is required to -

- + Face the descending stair to facilitate the laying of firefighting hose within that area, where the landing on which the internal fire hydrant is located provides direct access to both an ascending and descending stair.
- + Face the stair to facilitate the laying of firefighting hose within the that area, where the landing on which the internal fire hydrant is located provides access to only an ascending or descending stair.



Fire Hydrant Pump Room

The fire hydrant pump room is required to be installed within a weatherproof room that:

- + Only contains firefighting pumpsets and associated equipment.
- + Is secured to prevent the entry of unauthorised persons.
- + Is ventilated with fresh air to maintain the aspiration and cooling of the pump drivers for the required duration of pump orientation.
- + Is designed with an internal clearance of not less than 2.1 m.
- + Is sized to allow for pump maintenance and replacement to occur.

It is noted that the Architectural Drawings indicate the provision of an external fire pump room as detailed in the figure below. Due to the fact that the building is sprinkler protected, there is no minimum setback requirement of the pump room in proximity to the building.



Figure No. 58: Location of fire pump room in relation to the building

The external fire hydrant pump room cannot be located more than 20 m from a hardstand area as required by Clause 6.11.3 of AS 2419.1 - 2021. The fire services consultant is to confirm that the proposed location of the Fire Pump Room complies with the requirements of the Clause 6.11.3 as it appears more than 20m from a hardstand area.



Figure No. 59: Location of fire pump room in relation to the hardstand area

Furthermore, the external pump room cannot be located less than 10m from any of the of the following:

- + Any high voltage electrical distribution equipment, such as transformers and distribution boards;
- + Any stored dangerous goods (e.g., LPG, petroleum, propane) ; and
- + Any external combustible storage (e.g., palleted combustible storage items)

The fire services consultant is to confirm that the proposed location of the Fire Pump Room complies with the requirements of the Clause 6.11.3 as it appears the proposed fire hydrant pump room is located less than 10 m from the existing generator serving Buildings 108 - 112.



Figure No. 60: Location of fire pump room in proximity to the existing generator



Fire Hydrant Booster

A fire hydrant booster is required to be located as follows:

- Within or affixed to the façade of the building containing the principal pedestrian entrance and not more than 20 m from the principal pedestrian entrance;
- Within or affixed to the façade of the building containing the principal pedestrian entrance and identified by a visual alarm device (VAD); or
- + Remote from the building and within sight of the principal pedestrian entrance to the building:
 - + Adjacent to the site boundary and the principal vehicle access for the fire brigade pumping appliance to the building or site; or
 - + Not more than 20 m from the façade of the building containing the principal pedestrian entrance and not more than 20 m from the main pedestrian entrance.

It is understood that the Fire Hydrant Booster is not proposed to be located within sight of the main entrance of the building with the Booster proposed to be located on the Eastern side of the site facing the internal roadway.

The location of the Fire Hydrant Booster is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup to address compliance with the nominated Performance Requirements of the BCA.



Figure No. 61: Proposed location of the combined fire hydrant sprinkler booster remote from the main building entry

Locked Cupboards Housing Fire Hydrants

Cupboard's housing fire hydrants are required to be provided with free access at all times.

Based on the nature of the facility, it is noted that the cupboards housing the fire hydrants in part of the facility (where installed) will be required to be locked.



The locking of the cupboards housing the fire hydrants is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.

68. Clause E1D3 – Fire Hose Reels

Fire hose reels are required to be installed throughout the building in accordance with AS 2441 - 2005.

Location

Fire hose reels are required to be located within 4m of an exit (including a horizontal exit) or adjacent to an internal fire hydrant (other than hydrants within a fire isolated stairway).

Fire Hose Reels required to Each Fire & Smoke Compartment

In accordance with Clause E1D3 of the BCA, fire hose reels are not permitted to pass through doorways fitted with fire or smoke doors unless the doorway services an ancillary use separated in accordance with Clause C2.5 such as:

- + A kitchen and related food preparation areas having a combined floor area of more than 30 m².
- + A room containing a hyperbaric facility (pressure chamber).
- + A room used predominantly for the storage of medical records having a floor area of more than 10 m².
- + A laundry where items of equipment are the type that are potential fire sources (e.g., gas fire dryers).
- Within or affixed to the façade of the building containing the principal pedestrian entrance and identified by a visual alarm device (VAD); or

Having regard to the above, fire hose reels are required to be located so that fire hoses are not required to pass through fire and smoke doors that separate fire and smoke compartments. In this instance fire hose reels are required to be located in each fire and smoke compartment throughout the building.

Fire Hose Reel Coverage to Fire Separated Rooms

It is noted that there may be small percentage of rooms that are fire or smoke separated from the remainder of the building that may not be provided with compliant fire hose reel coverage i.e., fire separated Comms Rooms etc.

In this instance, the omission of Fire Hose Reel coverage to isolated rooms is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.

Services within cupboards Housing FHRs

In accordance with AS 2441 – 2005, the cupboards housing fire hose reels are not permitted to contain nonfire equipment services.

Locked Cupboards Housing Fire Hose Reels

Cupboard's housing fire hose reels are required to be provided with free access at all times unless the cupboards are provided with a frangible panel in accordance with AS 2441 – 2005.

Based on the nature of the facility, it is noted that the cupboards housing the fire hydrants in part of the facility (where installed) will be required to be locked.

The locking of the cupboards housing the fire hose reels is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.

69. Clause E1D4-E1D13 – Sprinklers

An Automatic Fire Suppression System will be required to be installed throughout the building based on the fact that the building has a rise in storey exceeding two (2). It is understood that the Automatic Fire Suppression System will be designed in accordance with AS 2118.1 - 2017 and AS 2118.6 - 2012.



Fire Sprinkler Booster

A fire sprinkler booster is required to be located as follows:

- Within or affixed to the façade of the building containing the principal pedestrian entrance and not more than 20 m from the principal pedestrian entrance;
- Within or affixed to the façade of the building containing the principal pedestrian entrance and identified by a visual alarm device (VAD); or
- + Remote from the building and within sight of the principal pedestrian entrance to the building:
 - + Adjacent to the site boundary and the principal vehicle access for the fire brigade pumping appliance to the building or site; or
 - Not more than 20 m from the façade of the building containing the principal pedestrian entrance and not more than 20 m from the main pedestrian entrance.



Figure No. 62: Proposed location of the combined fire hydrant sprinkler booster remote from the main building entry

Having regard to the proposed design, it is understood that the combined Fire Hydrant Sprinkler Booster is not proposed to be located within sight of the main entrance of the building with the Booster proposed to be located on the Eastern side of the site facing the internal roadway.

The location of the Fire Hydrant Booster is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup to address compliance with the nominated Performance Requirements of the BCA.

Sprinkler Floor Isolating Valves

Each storey of the building is required to be provided with a monitored isolating valve so that it can be separately isolated for maintenance.



Location of Sprinklers

The sprinkler system will be required to all external canopies, covered walkways, balconies etc. in accordance with AS 2118.1 - 2017.

The sprinkler system is required to be installed to all lift shafts and riser shafts throughout the building in accordance with AS 2118.1 - 2017.

The sprinkler system will be required to be installed to all EDB cupboards, Fire Services cupboards, Services cupboards etc throughout the building in accordance with AS 2118.1 – 2017.

The sprinkler system is required to be installed to any void spaces/under croft areas where access to the space is provided.

Where full height curtains are proposed to be installed within treatment areas, ward areas etc, they will be required to be reviewed by the Fire Services Consultant to determine the impact on Sprinkler coverage. If sprinkler coverage is proposed to be impeded, the curtains will be required to contain an open mesh for at least 500mm from the top of the curtain.

In accordance with AS 2118.1 – 2017, sprinklers are required to be installed in any roof void unless the following criteria achieved:

- + The roof void is to be constructed entirely of non-combustible materials and contains only.
- + Fire resistant cables to AS/NZS 3000.
 - Non-bundled electrical wiring and lighting installed in accordance with AS/NZS 3000;
 - Piping; and
 - Metal ducting with flexible connections and insulation complying with AS 4254.
- + The roof void cannot have readily permanent access or be capable of being used either intermittently or permanently as a storage area.

The sprinkler system is required to be installed to all Comms Rooms, DAS Rooms etc. throughout the building. In order to alleviate potential water damage to Comms and DAS Rooms etc by sprinkler heads being knocked, these rooms are permitted to be provided with Pre-Action Systems in accordance with Clause 2.3.1.5 of AS 2118.1 – 2017 whereby the subject room is provided with a combination of sprinkler system and independent smoke detector which when activated allows the pre-action valve to open and water to flow into the sprinkler piping.

Note: Pre-action systems are required to be designed so that the water transit times from valve trip to discharge of water at the most remote sprinkler (when only it is operating), cannot exceed 60 s.

Omission of Sprinklers to Rooms provided with High Voltage Equipment

In accordance with Clause 3.1.3 of AS 2118.1 – 2017, sprinklers are permitted to be omitted from high voltage, normally unoccupied areas such as rooms used for no purposes other than to contain transformers, electrical switch, or control gear (non-oil filled), which are bounded by walls which achieved a minimum FRL of 120/120/120 and are provided with a smoke detection and alarm system installed within the room in accordance with AS 1670.1 - 2018.

Omission of Sprinklers to Rooms provided with Low Voltage Equipment

As detailed above, Clause 3.1.3 of AS 2118.1 – 2017 only permits sprinklers to be omitted from rooms containing high voltage equipment.

It is proposed to omit sprinklers from Comms Rooms (Ground Floor, Level 1 and Level 2), Main Switch Room (Level 2) and EDB Cupboards, Ground Floor and Level 1).

The omission of sprinklers from the subject rooms is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.



Figure No. 63: Rooms on the Ground Floor that are proposed to have sprinklers omitted



Figure No. 64: Rooms on Level 1 that are proposed to have sprinklers omitted



Figure No. 65: Rooms on Level 2 that are proposed to have sprinklers omitted

Location of Sprinkler Valve Sets

Having regard to the fact that the sprinkler system is designed as part of a combined Fire Hydrant and Sprinkler System, the sprinkler control valves are required to be located within the fire isolated stairway(s) on each level with direct access being provided to the stairway from open space for FRNSW personnel.

Verification is required to be provided from the Fire Services Consultants as to which fire isolated stairway(s) will contain the sprinkler valve sets.

Sprinklers in Lift Shafts

Sprinklers installed at the top of the lift shafts are required to be designed as follows:

- Have heads protected from accidental damage by way of a guard that will not impair the performance of the head; and
- + Be capable of being isolated and drained, either separately or collectively without isolating any other sprinklers in the building.

Valves provided to control the sprinklers are required to be fitted with anti-tamper monitoring devices connected to a monitoring panel.

Sprinkler Coverage to Cupboards

Sprinklers are not required to be installed within built in service cupboards, cupboards and wardrobes, or shower and toilet cubicles in protected bathrooms for Light Hazard and Ordinary Hazard occupancies, provided: -

The floor area of the cupboard does not exceed 2.5 m²;



- + The walls and ceilings are lined or backed with non-combustible materials;
- + The cupboard is not used for the storage of flammable liquids; and
- Sprinklers in the adjoining room are positioned so they shall cover the unprotected area (obstructions caused by lintels or bulkheads are not considered in this case)

Sprinkler Coverage in Plant Rooms obstructed by Mechanical Ducts

Design co-ordination needs to take place between the Mechanical Design Consultant and Fire Services Consultant to ensure that all mechanical ducts that have a width of 800 mm greater are provided with a sprinkler head below the duct and where there are ducts that are less than 800 mm in width but are located in close proximity to one another, that sprinkler coverage below the ducts is reviewed to ensure that compliant coverage is achieved.

70. Clause E1D14 – Portable Fire Extinguishers

Portable fire extinguishers are to be installed in accordance with clause E1.6 and AS 2444.

The provision of Class Type A & E Class Portable Fire Extinguishers will be required throughout each floor of the building. In accordance with Clause E1.6, Type E Extinguishers are permitted to be installed nurse and staff stations.

Powder fire extinguishers are not permitted to be installed in areas containing patient care areas throughout the building.

Locked Cupboards Housing Portable Fire Extinguishers

Cupboard's housing portable fire extinguishers are required to be provided with free access at all times unless the cupboards are provided with a frangible panel in accordance with AS 2441 – 2005.

Based on the nature of the facility, it is noted that the cupboards housing the portable fire extinguishers in part of the facility will likely be required to be locked.

The locking of the cupboards housing the portable fire extinguishers is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.

PART E2 – SMOKE HAZARD MANAGEMENT

71. Clause E2D3 – General Requirements

In terms of the requirements for smoke hazard management throughout the building, the following key items are noted:

Automatic Fire Detection & Alarm System

An Automatic Fire Detection & Alarm System is required to be installed throughout the building in accordance with AS 1670.1 - 2018. Photoelectric type smoke detectors are required to be installed in patient care areas and in paths of travel to exits from patient care areas.

Key elements of Specification E2.2a and AS 1670.1 - 2018 which require close attention are as follows:

- Photoelectric type smoke detectors are required to be installed in all patient care areas in paths of travel to exits from patient care areas.
- In rooms where there is the likelihood of spurious alarms i.e., Dirty Utilities, Cleaners Rooms etc smoke detectors may be replaced with thermal detectors.
- Smoke detectors required to activate the stair pressurisation system for the fire isolated stairways and zone pressurisation system are required to –
 - Be installed in accordance with AS 1670.1 2018; and
 - Have additional smoke detectors installed adjacent to each back of lift landings doors set back horizontally from the door openings by a distance of not more than 3m.



- + Where a sole occupancy unit i.e., bedroom consists of one main room and water closet/shower/bathroom (which is not used for other purposes i.e., laundry), it may be protected by one smoke detector located in the main room provided that the total area of the whole unit is less than 50m² i.e., when less than 50m², the water closet/shower/bathroom is not required to be protected.
- + Where an area is divided into sections by walls, partitions, or storage racks reaching within 300mm of the ceiling (or the soffits of the joists where there is no ceiling) each section is to be treated as a room and is required to be protected.
- + Where full height curtains are proposed to be installed within treatment areas, ward areas etc, they must be of open mesh material for at least 300mm to permit smoke to pass through, otherwise the curtains will be considered a wall and smoke detectors will have to be installed either side of the curtains.
- + A clear space of at least 300mm radius, to a depth of 600mm is required to be maintained from the smoke detector.
- + Detectors are required to be located a minimum distance of 900mm from supply air fans or ceiling fans.
- + Detectors are required in all sanitary facilities with a floor area greater than 3.5m².
- + Any cupboard with a floor area >3m³ is required to be protected.
- + All electrical cupboards, comms cupboards etc. irrespective of the size are required to be protected.
- Detectors are to be installed to the lift shafts, service shafts etc as required by AS 1670.1 2018.

Manual Call Points

Manual call points are required to be installed in evacuation routes so that no point on a floor is more than 30m from a manual call point. All Manual Call Points that activate the buildings Fire Alarm System are required to be red.

Manual Call Points in Fire Hose Reel / Fire Hydrant Cupboards

In accordance with AS 1670.1 – 2018, manual call points are required to be mounted between 750 mm and 1200 mm above floor level and a clear space of 300 mm on both sides and 600 mm directly in front are required to be provided in an arc in front of the manual call points.

Where manual call points are installed within fire hose reel cupboards to avoid them being visible and being subject to unintended use, the clearance requirements of AS 1670.1 – 2018 around the manual call point will be unable to be achieved.

The clear space around the manual call points is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.

Zone Smoke Control System

The building is not required to be provided with a Zone Smoke Control System due to the fact that the building does not have an effective height exceeding 25 m.

Mechanical Air Handling Systems

Any air-handling system which does not form part of the Zone Smoke Control System (other than non-ducted systems with a capacity not more than 1000 litres/second, systems serving critical treatment areas and miscellaneous exhaust air system installed in accordance with Sections 5 and 6 of AS/NZS 1668.1) must shut down automatically on the activation of the Automatic Fire Detection & Alarm System and Automatic Fire Suppression System.

Fire Isolated Stairway Pressurisation

Fire isolated stairways 2 & 3 are required to be provided with a system of Stairway Pressurisation in accordance with AS 1668.1 - 2015 due to the building have a rise in storeys exceeding two (2). The pressurisation system is required to be extended throughout the entire fire isolated stairway system.



The proposed design seeks to omit stair pressurisation from fire stairs 2 & 3 on the basis that fire stair 2 while connecting three (3) storeys, only the lower two (2) levels serve patient care areas with Level 2 containing staff administration areas and plant room whilst fire stair 3 only connects a maximum of two (2) storeys.

The proposed omission of stairway pressurisation from fire stairs 2 & 3 is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.

PART E3 – LIFT INSTALLATIONS

72. Clause E3D3 – Stretcher Facility in Lifts

A stretcher facility is required to be provided in at least one of the Emergency Lifts serving the floors.

A stretcher facility must accommodate a raised stretcher with a patient lying on it horizontally by providing a clear space of not less than 600 mm x 2000mm long x 1400mm high above floor level.

73. Clause E3D4 – Warning Against Use of Lifts in Fire

Signage stating "DO NOT USE LIFT IF THERE IS A FIRE" is to be provided near the lift call buttons in letters not less than 10-mm in height.

74. Clause E3D5 – Emergency Lifts

Having regard to the fact that the building is provided with a minimum of two (2) passenger lifts, a minimum of two (2) Emergency Lifts are required to serve each level of the building that are served by passenger lifts.

Due to the fact that the lifts are contained within the same bank, they will be required to be contained within separate fire rated shafts.



Figure No. 66: Required provision of Emergency Lifts



75. Clause E3D7 – Passenger Lifts

The passenger lifts are required to be designed and installed in accordance with the requirements of Clause E3.6 and specifically Table E3.6b.

76. Clause E3D9 – Fire Service Controls

In terms of the Fire Service Controls the following is required to be provided:

- + A fire service recall control switch complying with Clause E3.9 for:
 - A group of lifts; or
 - A single lift not in a group that serves the storey.
- + A lift care fire service drive control switch complying with Clause E3.10 for every lift.

77. Clause E3D11 – Fire Services Recall Operation Switch

Each group of lifts must be provided with one fire service recall control switch required by Clause E3.7 that activates the fire service recall operation in accordance with Clause E3.9.

PART E4 – VISIBILITY IN AN EMERGENCY, EXIT SIGNS AND WARNING SYSTEMS

78. Clause E4D2 – Emergency Lighting

Emergency Lighting is required throughout the building in accordance with AS/NZS 2293.1 -2018 in the following locations:

- + All fire isolated stairways and passageways;
- + In every passageway, corridor, hallway or the like that is part of the path of travel to an exit;
- + In every passageway, corridor, hallway or the like serving a treatment area or a ward area;
- In every room having a floor area of more than 120m² in a patient care area, corridors, passageways, hallways or the like leading to required exits; and
- + All covered balconies, walkways etc. that a person is required to egress under.

79. Clause E4D5 – Exit Signs

Exit signs are to be installed throughout the building in accordance with AS/NZS 2293.1 -2018 in the following locations:

- + Doors providing direct egress from a storey to a fire isolated stairway or passageway;
- + Doors providing egress from a fire isolated stairway or passageway to open space;
- + Horizontal exit doors;
- + Fire Safety Doors (i.e., fire/smoke doors) separating compartments;
- + Doors leading directly to open space;
- + Doors leading from balcony areas, courtyards etc. back into the building; and
- + Above doorways in a path of travel where the location of the exit is not clear.



80. Clause E4D6 – Directional Exit Signs

Directional exit signs are to be installed throughout the building where the exits are not readily apparent to occupants in accordance with AS/NZS 2293.1 -2018.

81. Clause E4D9 – Emergency Warning & Intercom Systems

An Emergency Warning & Intercom System (EWIS) is required to be installed throughout the entire building in accordance with AS 1670.4 – 2018.

It is noted that all external areas from which an occupant is required to re-enter the building (e.g., courtyards, balconies, terraces etc.) are also required to be provided with compliant EWIS speakers to ensure that occupants in external areas are aware of the activation of the fire alarm system.

It is noted that EWIS speakers will likely be rationalised within ward and treatment rooms including patient bedrooms and other sensitive environments where the activation of the speaker within the room may cause trauma to the patient.

The rationalisation of EWIS system from within patient care areas is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.

SECTION F – HEALTH & AMENITY

PART F1 – DAMP AND WEATHERPROOFING

82. Clause F1D3 - Stormwater Drainage

All new Stormwater Drainage serving the development is required to be designed and construction in accordance with AS/NZS 3500.3 – 2021.

83. Clause F1D4 – Exposed Joints

Exposed joints in the drainage surface on a roof, balcony, podium or similar horizontal surface part of a building must –

- + Be protected in accordance with Section 2.9 of AS 4654.2; and
- + Not be located beneath or run through a planter box, water feature or similar part of the building.

84. Clause F1D5 – External above Ground Membranes

A roof, balcony, podium or similar horizontal surface part of a building must be provided with a waterproofing membrane –

- + Consisting of materials complying with AS 4654.1; and
- + Designed and installed in accordance with AS 4654.2

85. Clause F1D6 – Damp-Proofing

Moisture from the ground must be prevented from reaching -

- + The walls above the damp-proof course; and
- The underside of a suspended floor construction of a material other than timber, and the supporting beams or girders.

Where a damp-proof course is provided, it is required to consist of:

- A material that complies with AS/NZS 2904; or
- + Impervious sheet material in accordance with AS 3660.1.



86. Clause F1D7 – Damp-Proofing of Floors on the Ground

If a floor of a room is laid on the ground or on fill, moisture from the ground is required to be prevented from reaching the upper surface of the floor and adjacent walls by the insertion of a vapour barrier in accordance with AS 2870.

The requirements above do not apply where -

- + Weatherproofing is not required; or
- + The floor is the base of a stair, lift or similar shaft which is adequately drained by gravitation or mechanical means.

PART F2 – WET AREAS OF AND OVERFLOW PROTECTION

87. Clause F2D2 & F2D3 – Waterproofing of Wet Areas

Wet Area Construction

Building elements in the bathroom or shower room, a slop hopper or sink compartment, a laundry or sanitary compartment is required:

- Be water resistant or waterproof in accordance with Specification 26 (Specification 26 of NCC 2022); and
- + Be constructed in accordance with AS 3740

Floor Wastes

Where a floor waste is installed-

- + The minimum continuous fall of a floor plane to the waste must be 1:80; and
- + The maximum continuous fall of a floor plane to the waste must be 1:50

Urinal Construction

Where a slab or stall type urinal is installed -

- + The floor surface of the room containing the urinal must be an impervious material; and
 - Where no step is installed, must -
 - Be graded to the urinal for a distance of 1.5 m from the urinal channel; and
 - Have the remainder of the floor graded to a floor waste; and
 - Where a step is installed
 - The step must have an impervious surface and be graded to the urinal channel; and
 - The floor behind the step must be graded toa floor waste; and
- The junction between the floor surface and the urinal channel must be impervious.

Where a wall hung urinal is installed -

- The wall must be surfaced with impervious material extending from the floor to the top of the urinal and not less than 225 mm on each side of the urinal; and
- + The floor must be surfaced with an impervious material and be graded to a floor waste.

In a room with timber or steel-framed walls and containing a urinal -

- The wall must be surfaced with an impervious material extending from the floor to not less than 100
 mm above the floor surface; and
- + The junction of the floor surface and the wall surface must be impervious.



PART F3 – ROOF AND WALL CLADDING

88. Clause F3D2 – Roof Coverings

A roof is required to covered with the following in accordance with NCC 2022 -

- + Roof tiles complying with AS 2049 and fixed in accordance with AS 2050; or
- + Metal sheet roofing complying with AS 1562.1; or
- + Plastic sheet roofing designed and installed in accordance with AS 1562.3; or
- Terracotta, fibre-cement and timber slates and shingles designed and installed in accordance with AS 4597.
- An external waterproofing membrane consisting of materials complying with AS 4654.1 and designed and installed in accordance with AS 4654.2

89. Clause F3D3 – Sarking

Sarking-type material used for weatherproofing of roofs and walls is required to comply with AS/NZS 4200.1 and AS 4200.2.

90. Clause F3D4 – Glazed Assemblies

The following glazed assemblies in an external wall are required to comply with AS 2047 requirements for resistance to water penetration:

- + Windows.
- Sliding and swinging glazed doors with a frame, including French and bi-fold doors with a frame.
- + Adjustable louvres.
- + Shopfronts.
- Window walls with one piece framing.

The following glazed assemblies need not comply with the above:

- All glazed assemblies not in an external wall.
- + Revolving doors.
- + Fixed louvres.
- + Skylights, roof lights and windows in other than the vertical plane.
- + Sliding and swinging glazed doors without a frame.
- Windows constructed on site and architectural one-off windows, which are not design tested in accordance with AS 2047.
- + Second-hand windows, re-used windows and recycled windows.
- + Heritage windows.

91. Clause F3D5 – Wall Cladding

In accordance with NCC 2022, compliance with the DTS Provisions of the BCA for weatherproofing of the external walls is achieved if the external walls are constructed from one of the following:

- + Masonry, including masonry veneer, unreinforced and reinforced masonry in accordance with AS 3700
- Autoclaved aerated concrete in accordance with AS 5146.3
- Metal cladding in accordance with AS 1562.1

If the external walls are constructed of an alternative material not listed above, a Performance Solution will be required to be prepared by the Façade Engineer / Architect to demonstrate compliance with the nominated Performance Requirement of the BCA.

A Performance Solution will be required to be assessed to address all new external walls associated with the redevelopment works.



PART F4 – SANITARY AND OTHER FACILITIES

92. Clause F4D4 – Facilities in Class 3 to 9 Buildings

The Class 9a facility is required to have:

- + Kitchen facilities
- + Laundry facilities
- + A shower for each 8 patients or part thereof
- + One island-type plunge bath in each storey containing Ward Areas

Required Sanitary Facilities

- + BCA2019 Part F requires sanitary facilities with the Class 9a facilities as follows: -
 - (a) Facilities for Staff: -

Toilet facilities for staff are to be provided in accordance with the following: -

	Closet Pans		Urinals		Washbasins	
User Group	Design Occupancy	Number	Design Occupancy	Number	Design Occupancy	Number
Male	1 - 20	1	1 11 - 25	0	1-30	1
Employees	Employees >20 Add 1 per 20	26 - 50 >50	2 Add 1 per 50	>30	Add 1 per 30	
Female	1 - 15	1		/ •	1-30	1
Employees	> 15	Add 1 per 15	IN/A	> 30	Add 1 per 30	

Table No. 12 - Sanitary facilities required for staff members.

(b) Facilities for Patients:

	Closet Pans		Urinals		Washbasins	
User Group	Design Occupancy	Number	Design Occupancy	Number	Design Occupancy	Number
Male Patients	1 - 16	2			1 - 8	1
	> 16	Add 1 per 8			> 8	Add 1 per 8
Female	1 - 16	2			1 - 8	1
Patients	> 16	Add 1 per 8			> 8	Add 1 per 8

Table No. 13 - Sanitary facilities required for patients.

Sanitary Facilities for Staff throughout the Building

It has been advised that a total staff population of fifty-two (52) would be present in the building at any one time.

It is noted that the Design Development Architectural design proposes the following provision of sanitary facilities for staff throughout the building:



- + Ground Floor 1 x unisex accessible sanitary facility and 1 x unisex sanitary facility
- + Level 1 1 x unisex sanitary facility
- + Level 2 1 x unisex accessible sanitary facility and 2 x unisex sanitary facilities

Based on the current provision, a total of 40 male and 60 female staff could be accommodated at any one time in the building. Having regard to the proposed provision of sanitary facilities together with the maximum number of staff within the building at any one time, the number of staff sanitary facilities is considered compliant.

Sanitary Facilities for Patients

The provision of sanitary facilities including showers and toilets for patients throughout the building is compliant with Clause F4D4.

Provision of Unisex Sanitary Compartments containing Water Closets

Sanitary compartments containing water closets are required to be provided separately for males and females.

The provision of unisex sanitary compartments containing water closets in lieu of separate facilities for males and females throughout the building will be required to be assessed as part of a Performance Solution in order to demonstrate compliance with the nominated Performance Requirements of the BCA.

93. Clause F4D5 – Accessible Sanitary Facilities

Facilities for a person with a disability must be provided in accordance with the following:

- + Accessible sanitary facilities for use by a person with a disability are required to be provided on each floor where sanitary facilities are provided.
- Where more than 1 bank of sanitary compartments containing male and female sanitary compartments is provided on a level, an accessible unisex facility must be provided at not less than 50% of those banks.

Note: -

Ensuites associated with beds in Ward Areas are not required to be accessible wc's in accordance with AS 1428.1.

+ Within each bank of male and female sanitary facilities, an ambulant sanitary compartment must be provided for each sex for use by a person with an ambulant disability.

Based on the Design Development Drawings issued to date, the following provides a summary as to the required provision of sanitary facilities for a person with a disability.

Building Level	Current Provision of Sanitary Facilities for a Person with a Disability
Ground Floor	Adequate provision of a unisex accessible sanitary facility.
	The sanitary facility located adjacent to the accessible sanitary facility is to be dedicated as a unisex ambulant sanitary compartment.
Level 1	A unisex accessible sanitary facility is technically required to be provided for staff on Level 1 of the building due to the provision of a sanitary facility on this floor.
	An accessible sanitary facility will be required to be provided or alternatively the omission of the sanitary facility will be required to be assessed by an Access Consultant as part of a Performance Solution.
Level 2	Adequate provision of a unisex accessible sanitary facility.
	One of unisex sanitary facilities located adjacent to the accessible sanitary facility is to be dedicated as a unisex ambulant sanitary compartment.



Table No. 13 – Summary of required accessible sanitary facilities throughout each level of the building.

Provision of Unisex Ambulant Sanitary Compartment

Ambulant Sanitary Compartments are required to be provided separately for males and females and unlike Unisex Accessible Sanitary Facilities receive no concession for the provision of unisex facilities.

The provision of unisex ambulant sanitary compartments in lieu of separate facilities for males and females throughout the building will be required to be assessed as part of a Performance Solution to be prepared by the appointed Access Consultant.

Accessible Sanitary Facilities

The unisex accessible sanitary facility to be provided is required to be designed spatially in accordance with the following figures:



Figure No. 67: Circulation space required within the accessible sanitary facility.

Clearances around the water closet are to be in accordance with the figure below:

R



a) Side view

Figure No. 68: Required clearances around the water closet.

Basins are permitted to encroach within the circulation space of doorways as detailed within the following Figure:



Figure No. 69: Allowable encroachment of a washbasin into the hinged door circulation space

The following specific items are required to be installed within the unisex accessible sanitary facility:

- Rocker action and toggle switches are required to be installed which have a minimum dimension of 30 mm x 30 mm. Push-pad switches are to have a minimum dimension of 25mm in diameter.
- General purpose outlets are to be located between 600 mm to 1100 mm above FFL and not less than 500 mm from any internal corner.
- + The outlet for the toilet paper dispenser is to be located in accordance with the following figure. The toilet paper cannot encroach upon the clearance space required around the grabrail.



Figure No. 70: Required zone for toilet paper dispenser.

Shelf space is required to be provided adjacent to the washbasin in accordance with the one of the following:

- + As a vanity top at a height of 800 mm to 830 mm and a minimum width of 120 mm and a depth of 300 mm to 400 mm without encroaching into any circulation space.
- + As a separate fixture -
 - Within any circulation space at a height of 900 mm to 1000mm with a width of 120 mm to 150 mm and length of 300 mm to 400 mmm; and
 - External to all circulation spaces at a height of 790 mm to 1000 mm with a minimum width of 120 mm and a minimum length of 400 mm.
 - Where provided, Soap dispensers, towel dispensers, hand dryers and similar fittings are required to be operable by one hand and are to be installed with the height of their operative component or outlet not less than 900 mm and not more than 1100 mm above FFL and no closer than 500 mm from an internal corner.
 - A coat hook is to be provided at a height between 1200 mm to 1350 mm above FFL and not less than 500 mm from an internal corner.

Ambulant Sanitary Compartments

The ambulant sanitary compartments are required to be designed spatially in accordance with the following Figures:








Figure No. 72: Options for doorways leading to ambulant sanitary compartments.

94. Clause F4D8 – Construction of Sanitary Compartments

The door to a fully enclosed sanitary compartment is required to: -

- + Open outwards; or
- + Slide; or
- + Be readily removable from the outside of the sanitary compartment i.e., removable hinges.

Unless there is a clear space of at least 1200 mm measured in accordance with the below figure, between the closet pan within the sanitary compartment and the doorway.



Figure No. 73: Minimum distance required between doorway and pan in a fully enclosed sanitary compartment.

95. Clause F24D11- Waste Management

In class 9a areas at least one slop hopper or other device must be provided on any storey containing ward areas or bedrooms and must have a flushing apparatus, tap and grating.

PART F5 – ROOM HEIGHTS

96. Clause F5D2 – Height of Rooms

The floor to ceiling heights throughout are required to comply with the following:

- + In a patient care area, treatment room, clinic, waiting room, dining room, activity room, passageway, corridor, or the like 2400mm; and
- + Bathroom, shower room, sanitary compartment, airlock, tea preparation room, pantry, storeroom, or the like must achieve a minimum height of 2100 mm.
- + Exits 2000 mm;
- Staff Office & Meeting Rooms 2400 mm;
- Consultation Rooms 2400 mm; and
- Main Switch Room and Plant Rooms 2100 mm

PART F6 – LIGHT AND VENTILATION

97. Clause F6D2 – Provision of Natural Light

Natural lighting must be provided to all rooms used for sleeping purposes within ward areas in accordance with Clause F6D2.

Required natural light must be provided by:

- windows, excluding roof lights, that—
 - have an aggregate light transmitting area measured exclusive of framing members, glazing bars or other obstructions of not less than 10% of the floor area of the room; and
 - are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like; or
- roof lights, that—
 - have an aggregate light transmitting area measured exclusive of framing members, glazing bars or other obstructions of not less than 3% of the floor area of the room; and
 - are open to the sky; or
- + proportional combination of windows and roof lights required by (a) and (b).



98. Clause F4.4 – Artificial Lighting

Artificial lighting is required to be provided in accordance with AS 1680.0 - 2009.

Artificial lighting is required to be provided to all stairways, passageways, and ramps.

If natural light of a standard equivalent to that required by Clause F4.2 is not available, and the periods of occupant or use of the room or space will create undue hazard to occupants seeking egress in an emergency then artificial lighting is required to be provided to all rooms that are frequently occupied, all spaces required to be accessible, all corridors, lobbies, internal stairways, other circulation spaces and paths of egress.

99. Clause F6D6 – Ventilation of Rooms

The building is required to be ventilated by either natural or mechanical ventilation in accordance with the DTS Provisions of the BCA and AS 1668.2.

SECTION G – ANCILLARY PROVISIONS

100. Clause G1D5 (NSW) – Provision for Cleaning of Windows

A building must provide a safe manner of cleaning windows located 3 or more storeys above ground level. In this regard, the windows must be able to be cleaned from within the building, or provisions made for cleaning of windows by a method complying with the OH&S Act 2000 and regulations made under the Act.

101. Part G6 – Occupiable Outdoor Areas

The external terraces on Level 1 meet the definition of an occupiable outdoor area and thus the relevant provisions of Part G6 of the BCA are required to be complied with.



Figure No. 74: Occupiable outdoors areas on Level 1

102. Clause G6D2 – Fire Hazard Properties

Any lining, material or assembly in an occupiable outdoor area is required to comply with the requirements of Specification C1.10 as if it were an internal lining.



Note: The following fire hazard properties of a lining, material or assembly in an occupiable outdoor area are not required to comply with Specification C1.10:

- + Average specific extinction area
- + Smoke Developed Index
- + Smoke Development rate
- + Smoke Growth Rate Index

103. Clause G6D6 – Fire Fighting Equipment

Fire hydrant and fire hose reel coverage will be required to be provided to all occupiable outdoor areas.

104. Clause G6D8 – Visibility in an Emergency, Exit Signs and Warning Systems

The outdoor occupiable areas are required to be provided with Exit Signage above the doors leading from the external areas back into the building.

As noted under Clause E4.9 above, the EWIS speakers are required to be extended to all outdoor areas.

SECTION J – ENERGY EFFICIENCY

105. Parts J4 - J9

The building will be required to comply with the Energy Efficiency Provisions of BCA 2022 Section J relating to:

- + J1: Energy Efficiency Performance Requirements
- + J2: Energy Efficiency
- + J4: Building Fabric
- + J5: Building Sealing
- J6: Air-Conditioning and Ventilation
- + J7: Artificial Lighting and Power
- + J8: Heated Water Supply and Swimming Pool and Spa Pool Plant
- + J9: Energy Monitoring and On-Site Distributed Energy Resources

If the proposed design will not comply with the DtS provisions of the BCA, then a J1V3 Assessment will be required to be undertaken to demonstrate compliance with the Performance Requirements of the BCA.



E. CONCLUSION

This report contains a BCA2022 and Access to Premises Standards 2010 assessment of the Design Development Issue Architectural Documentation for the proposed new Forensic Mental Health Unit to be constructed within the Concord Repatriation Hospital Campus.

Further reviews will be undertaken by Blackett Maguire + Goldsmith as the Architectural Design progresses to Construction Documentation to ensure that the development continues to be capable of complying with the requirements of the Building Code of Australia.

Arising from our assessment we are satisfied that the project design can satisfy the requirements of the BCA2022 if the works are designed and constructed in accordance with the requirements of this BCA Report and subsequent Fire Engineering Report prepared by Arup and Access Report and Performance Solutions prepared by the Access Consultant.