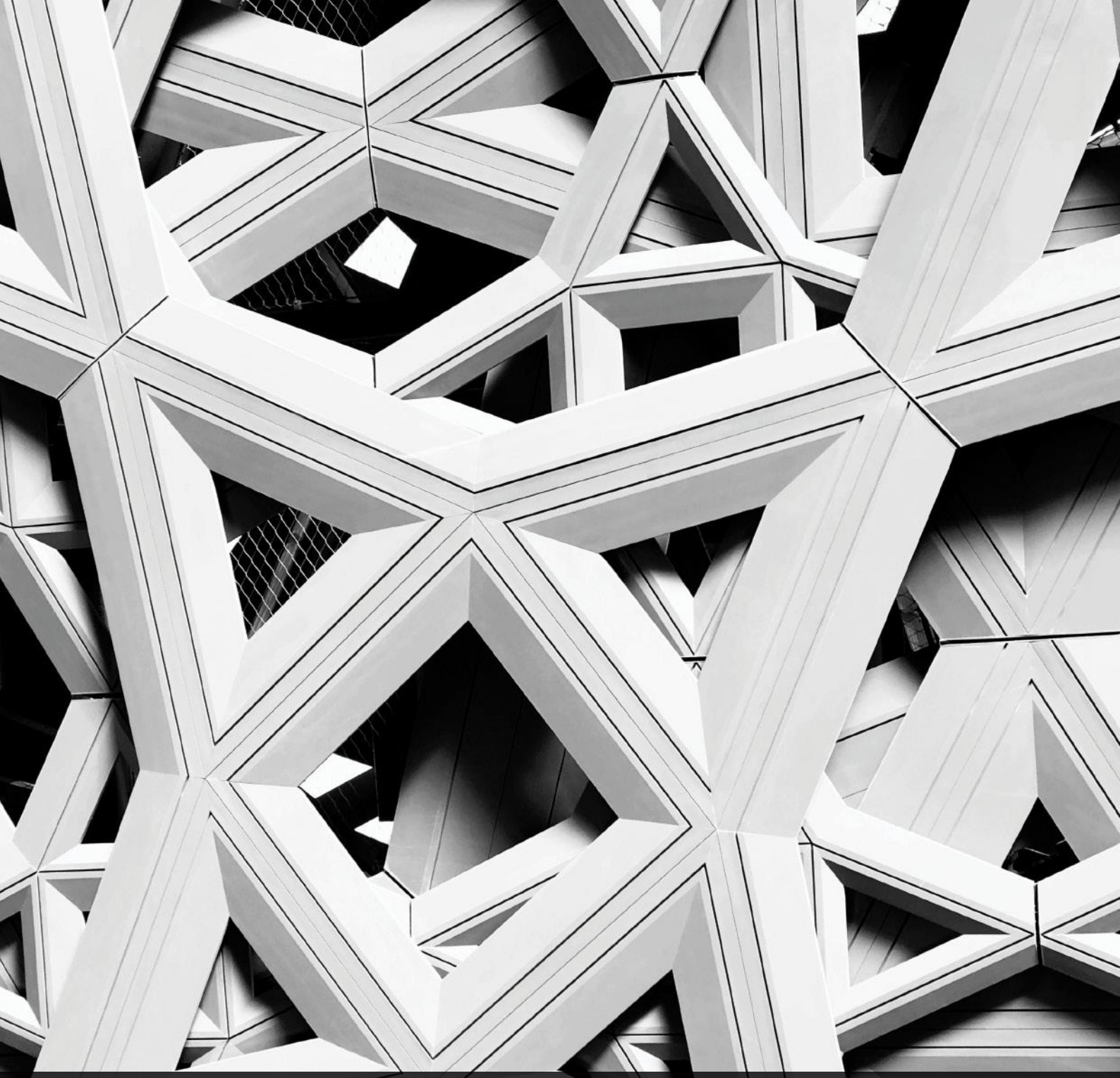

BCA Assessment Report

Schematic Design Phase

Temora Hospital Redevelopment

Prepared for:
Health Infrastructure

Revision 1
01 February 2024
Reference: 230267

bmplusg.com.au

Executive Summary

The following comprises a summary of the key compliance items identified under the clause-by-clause assessment in Section 3.0 and 4.0 that will be addressed prior to the issue of the BCA Crown Certificate for the project.

A. Key Compliance Items:

+	+ BCA (DTS) Clause	+ Description
1.	B1D3	*Importance Level* The new works will be required to be designed and constructed in accordance with the requirements of Importance Level 4. The Structural Engineer together with Services Engineers are to nominate the Importance Level that has been assigned to the building in accordance with Table B1D3a i.e., Importance Level 4.
2.	C2D10	*Non-Combustible External Walls* All materials and or components incorporated in an external wall or fire-rated wall must be non-combustible. This includes but not limited to: + Any external wall claddings. + Any framing or integral formwork systems i.e., timber framing, sacrificial formwork, etc. + Any external linings or trims i.e., external UPVC window linings, timber window blades, etc. + Any sarking or insulation contained within the wall assembly. This is not an exhaustive list, and any element incorporated within any external wall assembly must be identified and approved prior to the issue of a Crown Certificate. Refer to Table 1 in Appendix 1 for the elements required to be non-combustible. Note that these works are subject to NSW HI DGN 32 and as such bonded laminate cladding is not permitted.
3.	C4D4	*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 C4D4. There are several locations throughout the building where exposure occurs between external walls and their associated openings of difference fire compartments. The external walls and associated openings will be required to be protected in accordance with the DTS Provisions of the BCA or alternatively the protection of the openings will be required to be subject of a Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
4.	C4D14	*Water Filled 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. 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 Arup in order to address compliance with the nominated Performance Requirements of the BCA.
5.	**Spec.11**	*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.
6.	**Spec.12**	*Swing of Smoke Doors* There will be numerous 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 12. 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 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.
7.	**D2D5**	*Exit Travel Distances* Based on the Schematic Architectural Documentation 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. Upon review we provide the following comments: + Egress travel distance to a point of choice from the Operating Theatre is up to 19 m (7 m over the maximum permitted DTS distance). The excessive travel distance to a point of choice will be required to be reviewed by Arup to determine that the distance can be assessed as part of Performance Solution in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
8.	**D2D5**	*Distance Between Alternative Exits* Based on the Schematic Architectural Documentation assessed to date, we have undertaken an egress assessment in terms of egress travel distance between alternative exits on the Fire Compartmentation Drawings available for review. Upon review we provide the following comments: + Egress travel distance between alternative exits serving the IPU is up to 47 m (2 m over the maximum permitted DTS distance).

		The excessive travel distance between alternative exits will be required as part of a Performance Solution to be prepared by Arup to demonstrate compliance with the nominated Performance Requirements of the BCA.
9.	**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 a small number of instances whereby occupants will egress from one compartment into an adjoining compartment which will not be provided with direct access to an exit discharging directly to open space which is a technical non-compliance with Clause D2D16 of the BCA. In this instance occupants travelling from Fire Compartment 3 to Fire Compartment 2 and Fire Compartment 4 to Fire Compartment 2 are not provided with direct access to an exit leading to open space once they have travel through the horizontal exits. Travel via the horizontal exits is proposed to be assessed as part of a Fire Engineering Performance Assessment to be undertaken by Arup to demonstrate compliance with the nominated Performance Requirements of the BCA.
10.	**D3D25**	*Swing of Horizontal Exit Doors* All exit doors including horizontal exit doors are required to swing in the direction of egress. There are several fire doors used as horizontal exits that are proposed to not swing in the direction of egress. The swing of the horizontal exit door against the direction of egress will be required to be addressed as part of a Fire Engineering Assessment to be undertaken by Arup to demonstrate compliance with nominated Performance Requirements of the BCA.
11.	**Part D4**	*Access for a Person with a Disability from the Property Boundary* Access to the building is required 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 *Access to the Building from the Allotment Boundary* As detailed above, access for a person with a disability is required to be provided from the allotment boundaries of the greater Hospital site along with accessible car parking spaces associated with the new development. Due to nature of the existing hospital site whereby the existing and proposed hospital are set back a significant distance from the public roadway, access will not be able to be provided from the allotment boundary of the Hospital Site in accordance with the provisions of Part D4 of the BCA and AS 1428.1 – 2009 because of existing grades of pathways etc. Compliant access will be provided from the accessible car parking spaces to the main entrance of the building. Access to the main pedestrian entrance from the allotment boundary will be required to be assessed as part of a Performance Solution to be prepared by an independent Access Consultant.

		Given the nature of the development being a reginal hospital, it is considered that a Performance Solution is permissible to justify access not being provided from the allotment boundaries of the hospital site to the main pedestrian entrance.
12.	E1D2	*Fire Hydrants* Fire hydrant coverage is required to be provided to the new hospital building accordance with AS2419.1–2021. *Fire Brigade Booster Assemblies:* A fire brigade booster assembly shall be located (including but not limited to) - + within or affixed to the facade of the building containing the principal pedestrian entrance and not more than 20 m from the principal pedestrian entrance; + within or affixed to the facade of the building containing the principal pedestrian entrance and identified by a visual alarm device (VAD) in accordance with Clause 7.3.2; 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 facade of the building containing the principal pedestrian entrance and not more than 20 m from the main pedestrian entrance. Having regard to the proposed design which considers the existing site circumstances and the setback of the building from the street frontage, the fire hydrant booster assembly is not proposed to be located in accordance with the requirements of AS 2419.1 – 2021. The location of the fire hydrant booster is indicated in the figure below. The location of the fire hydrant booster will be required to be assessed as part of a Fire Engineering Performance Solution to be prepared by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA. *Internal Hydrants* All internal Hydrants are to be located within 4m of an exit leading directly to open space. 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.*
13.	E1D2	*Fire Hose Reels* Fire hose reels are required to be provided 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. *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 will not be provided with compliant fire hose reel coverage i.e., fire separated Comms Rooms. In this instance, the omission of Fire Hose Reel coverage to the fire separated isolated room will be required to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup to demonstrate compliance with the nominated Performance Requirements of the BCA.
14.	E1D4	*Sprinklers* An Automatic Fire Suppression System is required to be installed throughout the building in accordance with AS 2118.1 – 2017 having regard to the requirements of the Health Infrastructures Engineering Services Guidelines which require the installation of an Automatic Fire Suppression System in all new hospital buildings, irrespective of the requirements of the Building Code of Australia. *Fire Brigade Booster Assemblies:* A fire brigade booster assembly shall be located (including but not limited to) - + within or affixed to the facade of the building containing the principal pedestrian entrance and not more than 20 m from the principal pedestrian entrance; + within or affixed to the facade of the building containing the principal pedestrian entrance and identified by a visual alarm device (VAD) in accordance with Clause 7.3.2; 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 facade of the building containing the principal pedestrian entrance and not more than 20 m from the main pedestrian entrance. Having regard to the proposed design which considers the existing site circumstances and the setback of the building from the street frontage, the fire hydrant booster assembly is not proposed to be located in accordance with the requirements of AS 2419.1 – 2021. The location of the fire hydrant booster is indicated in the figure below. The location of the fire sprinkler booster will be required to be assessed as part of a Fire Engineering Performance Solution to be prepared by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA. *Omission of Sprinklers to Rooms provided with Low Voltage Equipment* Clause 3.1.3 of AS 2118.1 – 2017 only permits sprinklers to be omitted from rooms containing high voltage equipment. It is noted that at the request of HI / LHD sprinklers may be proposed to be omitted from rooms containing low voltage electrical equipment including Comms Rooms etc. Any omission of sprinklers from rooms containing low voltage equipment would be required to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup to demonstrate compliance with the nominated Performance Requirements of the BCA.
15.	E2D3 – E2D21	*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. *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 (if installed within fire services cupboards) will be required 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. *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.
16.	E4D9	*Emergency Warning & Intercom Systems (EWIS)* An Emergency Warning & Intercom System (EWIS) is required to be provided within a Class 9a Hospital Building with a floor area of more than 1000 m^2. In this instance an EWIS will be required to be installed throughout the entire building. It is noted that EWIS speakers will likely be rationalised within 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 to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
17.	F4D4	*Island-Type Plunge Bath in Storeys Containing Ward Areas* The DTS Provisions of the BCA require that within ward areas of a hospital, one (1) island type plunge bath is required to be provided. If an island-type plunge bath is not proposed to be provided with ward areas due to the clinical requirements of the LHD, then omission of the island type plunge bath will be required to be assessed as part of a Performance Solution to be prepared by the Architect or independent BCA Consultant. Any proposed Performance Solution will require written consent from the LHD. *Ratio of Showers in Treatment Areas* A ratio of 1:8 showers is required to be provided for patients within patient care areas.

		Verification is required that a minimum ratio of showers has been provided for patients within ED / MI / PERIOP. *Wc's for Staff* Anticipated total staffing numbers within the building at any one time is required to be confirmed to ensure that the sanitary facilities documented for staff are sufficient to cater for the expected staff numbers within the building at any one time. *Wc's for Patients* The Schematic Design Architectural Documentation indicates that an adequate ratio of water closets has been provided for patients throughout the patient care areas of the building. *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 Performance Solution to be prepared by the Architect or independent BCA Consultant. Any proposed Performance Solution will require written consent from the LHD.
18.	F4D5	*Accessible Sanitary Facilities* Sanitary facilities for a person with a disability are required to be provided as follows: + A unisex accessible sanitary facility for a person with a disability is required to be provided for patients. + A unisex accessible sanitary facility for a person with a disability is required to be provided for staff. + A unisex ambulant sanitary compartment is required to be provided for patients. + A unisex ambulant sanitary compartment is required to be provided for staff. This Report details the required provision of sanitary facilities including a markup of sanitary facilities to be dedicated for a person with a disability. *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 an independent Access Consultant.

B. Summary of Items Requiring a Fire Engineering Performance Solution:

+ BCA DTS Clause		+ BCA Performance Requirement	+ Description
1.	**C4D4**	C1P2, C1P8	Protection of external walls and associated openings in different fire compartments
2.	**C4D15**	C1P2, C1P8	Insultation of water filled metal pipes.

3.	**S11C2**	C1P1, C1P2, C1P3, C1P4	Timber noggins located within smoke walls.
4.	**S12C4**	C1P3, D1P2	Swing of fire safety doors against the direction of egress.
5.	**D2D5**	D1P4, E2P2	Extended travel distance to a point of choice and alternative exit.
6.	**D2D5**	D1P4, E2P2	Extended travel distance between alternative exits
7.	**D2D16**	D1P4	Travel via horizontal exits.
8.	**D3D25**	CP3, D1P2	Swing of horizontal exit door against the direction of egress
9.	**E1D2**	E1P3	Location of fire hydrant booster in relation to the main entry of the building and vehicular entry.
10.	**E1D3**	E1P1	Omission of fire hose reel coverage to individual rooms that are completely fire separated from the remainder of the building i.e., Comms Room
11.	**E1D4**	E1P4	Location of fire sprinkler booster in relation to the main entry of the building and vehicular entry.
12.	**E1D4**	E1P4	Omission of sprinklers from rooms containing low voltage equipment.
13.	**E1D4**	E1P4	Concealed sprinkler heads within Operating Theatres and associated Sterile Rooms.
14.	**S20C3**	E2P2	Clearance around manual call points in fire hose heel cupboards
15.	**E4D9**	E2P1, EP43	Rationalization of EWIS speakers within ward areas

C. Summary of Items Requiring a Performance Solution:

+ BCA (DTS) Clause		+ BCA Performance Requirement	+ Description
1.	**D4D2**	D1P1	Access for a person with a disability not provided from the allotment boundary to the main entrance of the building.
2.	**F4D4**	F4P1	Males and females sharing unisex sanitary compartments containing water closets
3.	**F4D4**	F4P1	Males and females sharing unisex ambulant sanitary compartments

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+ Report Status

+ Date	1 February 2024
+ Revision	1
+ Status	Issued for Schematic Design Phase
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+ Revision History

+ Revision	0	**+ Date**	10.10.2023
+ Status	Concept Design Phase		

+ Revision	1	**+ Date**	01.02.2024
+ Status	Schematic Design Phase		

1.0 Description of Project

1.1 Proposal

BM+G Pty Ltd have been commissioned by Health Infrastructure C/- Capital Insight Pty Ltd to undertake an assessment of the Schematic Design Phase Architectural Documentation for the proposed redevelopment of Temora Hospital against the relevant provisions of the Building Code of Australia 2022 (BCA).

The NSW Government has committed $80 million to the Temora Health Service redevelopment, which will provide a high-quality contemporary health facility and ensure health care services are carefully planned to meet community needs now and into the future.

Currently the Temora Health Service provides 28 inpatient beds (22 general and six maternity), an emergency department, maternity, palliative care, an operating theatre community health services, clinical/ non-clinical support services, and staff accommodation. Temora on average has a higher proportion of 65+ years than most other LGAs in MLHD and changing population demographics will have a significant impact on the future demand for primary health/ health education services, chronic disease management.

The hospitals recent upgrade in 2018 included refurbishment of the theatre including new equipment, and improved workflows for transferring patients in and out of theatre.

The proposed works consist of the staged demolition of the existing hospital building and the construction of a new single storey hospital.

An assessment of BCA compliance with respect to the new works is included within Section 3.0.

Figure No. 1: Proposed site plan of the concept design

1.2 Aim

The aim of this report is to:

- Undertake an assessment of the proposed Schematic Design Architectural development against the deemed-to-satisfy provisions of the BCA.
- Identify matters that require plan amendments in order to achieve compliance with the BCA.
- Identify potential matters that are to be required to be addressed by Performance Solutions.
- Enable the Public Authority to satisfy its statutory obligations under Section 6.28 of the Environmental Planning and Assessment Act, 1979.
- Identify matters relating to the existing building that are required to be addressed as an upgrade strategy to accommodate the new works and / or to deal with significant fire safety issues within the building.

1.3 Project Team

The following BM+G team members have contributed to this Report:

- **Adam Durnford** – Report Preparation (Director) | Building Surveyor-Unrestricted
- **David Blackett** – Peer Review (Director) | Building Surveyor-Unrestricted

1.4 Referenced Documentation

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

- Building Code of Australia 2022 (BCA)
- NSW Health Infrastructure Design Guidance Note 32.
- NSW Heath Engineering Services Guide dated 12 December 2022.
- Schematic Design Drawings prepared by HDR as follows.

Drawing No.	Rev	Date
130908-HDR-AR-DWG-1201	2	21.12.23
130908-HDR-AR-DWG-1302	4	18.01.24
130908-HDR-AR-DWG-2101	10	18.01.24
130908-HDR-AR-DWG-2103	3	21.12.23
130908-HDR-AR-DWG-3010	1	21.12.23
130908-HDR-AR-DWG-3111	3	21.12.23
130908-HDR-AR-DWG-3111	3	21.12.23
SK006	0	21.12.23

1.5 Regulatory Framework

- Pursuant to S6.28 of the Environmental Planning and Assessment Act 1979, the proposed building is subject to compliance with the relevant requirements of the BCA as in force at the time of the date of invitation for tenders to carry out the Crown building work.

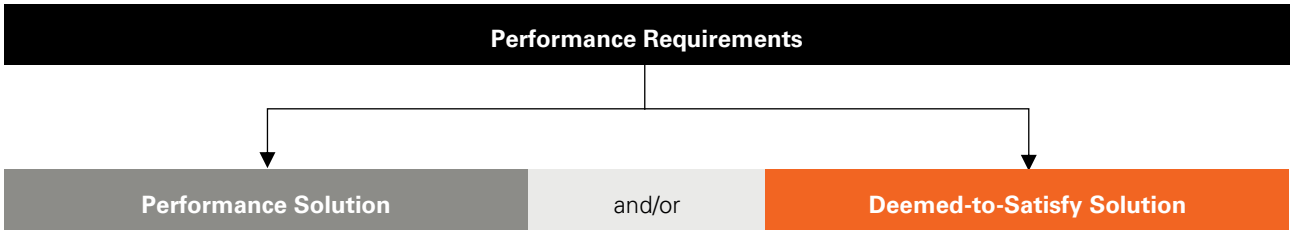
1.6 Relevant Version of the NCC Building Code of Australia

Pursuant to Section 6.28 of the Environmental Planning and Assessment Act 1979, the proposed building is subject to compliance with the relevant requirements of the BCA as in force at the time of the date of invitation for tenders to carry out the Crown building work. The current BCA that is in force is BCA 2022, with BCA 2025 coming in to force 1 May 2025. As the invitation to tender is likely to be / has been lodged after 1 May 2023, this report assesses the design against compliance with the requirements of BCA 2022.

The following parts of the BCA are subject to transitional provisions:

+ NCC 2022 Energy Efficiency provisions – 1 October 2023.
+ NCC 2022 Condensation Management provisions under BCA Part F8 – 1 October 2023.

1.7 Compliance with the National Construction Code



Compliance with the NCC is achieved by complying with:

+ the Governing Requirements of the NCC; and
+ the Performance Requirements.

Performance Requirements are satisfied by one of the following, as shown in the Figure below:

+ A Performance Solution.
+ A Deemed-to-Satisfy Solution.
+ A combination of the above two options.

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 in consultation with relevant stakeholders.
+ Carry out analysis, using one or more of the Assessment Methods listed in A2G2(2), as proposed by the performance-based design brief.
+ Evaluation the results against the acceptance criteria in the performance-based design brief.
+ Prepare a final report that includes:
  - All Performance Requirements and/or Deemed-to-Satisfy provisions identified through A2.2(3) or A2G4(3) as applicable; and
  - Identification of all Assessment Methods used; and
  - Details of steps (a) to (c); and
  - Confirmation that the Performance Requirement has been met; and
  - Details of conditions or limitations, if any exist, regarding the Performance Solution."

1.8 Limitations and Exclusions

The limitations and exclusions of this report are as follows:

+ No assessment has been undertaken with respect to the Disability Discrimination Act 1992 (DDA). The building owner needs be satisfied that their obligations under the DDA have been addressed.
+ Please note that whilst the BCA specifies a minimum standard of compliance with AS1428 (Parts 1-3) and Part D4 of the BCA for access and facilities for people with disabilities, compliance with such requirements may not necessarily preclude the possibility of a future complaint made under the DDA 1992. The DDA is a complaint based legislation and is presently not identified by the State Building Codes and Regulations. In this regard the building owner should be satisfied that their obligations under the DDA have been addressed.
+ No assessment has been undertaken with respect to the following areas of the NCC:
    - Structural
    - Weatherproofing
    - Waterproofing
    - Acoustic
    - Passive Fire Protection
    - DDA / Accessibility
    - Section J / ESD
    - Fire Safety Engineering
+ No assessment has been undertaken with respect to SEPP (Housing) 2021. It is understood that suitably qualified consultants will be engaged to determine the relevance of any Council planning requirements or SEPP requirements and provided detailed assessment reports where applicable.

  Where relevant to this development, it is assumed that these assessments will be undertaken by others.
+ This report does not consider BCA Part G5 (Volume 1) which makes provision for construction of buildings in bushfire-prone areas, therefore no assessment has been undertaken in consideration of RFS, Planning for Bushfire Protection and AS 3959. Where Part G is applicable to the site, then it is required that assessment / due diligence is undertaken by a specialist consultant to verify compliance.
+ This report does not constitute a detailed assessment of the architectural documentation against the requirements of Section J. It is understood that a suitably qualified consultant will be engaged to determine compliance in this regard.
+ BM+G has not undertaken an assessment of any Performance Solution Reports at the time of the preparation of this report.
+ The Report does not address matters in relation to the following Local Government Act and Regulations:
    - Work Health and Safety Act and Regulations.
    - Work Cover Authority requirements.
    - Water, drainage, gas, telecommunications and electricity supply authority requirements.
    - Disability Discrimination Act 1992.
+ BM+G cannot guarantee acceptance of this report by Local Council, Fire & Rescue NSW or other approval authorities.
+ This report may not be relied upon under the provisions of the Design and Building Practitioners Act & Regulation for the purposes of issuing a Design Compliance Declaration.
+ No part of this document may be reproduced in any form or by any means without written permission from BM+G. This report is based solely on client instructions, and therefore should not be used by any third party without prior knowledge of such instructions.

1.9 Report Terminology

BCA Completion Certificate – A certificate issued at the completion of works which confirms the building is suitable for occupation in accordance with its classification under the BCA.

BCA Crown Certificate – A certificate issued against building works carried out by or on behalf of the Crown which verifies that the works comply with the requirements of the BCA prior to works commencing, subject to S6.28 of the Environmental Planning and Assessment Act 1979.

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

Climatic Zone – Means an area defined in Figure 2 and in Table 2 (of BCA Schedule 3) for specific locations, having energy efficiency provisions based on a range of similar climatic characteristics.

Construction Certificate – Building Approval issued by the Certifying Authority pursuant to Part 6 of the EP&A Act 1979.

Construction Type – The construction type is a measure of a buildings ability to resist a fire. The minimum type of fire-resisting construction of a building must be that specified in Table C2D2 and Specification 5, except as allowed for:

+ certain Class 2, 3 or 9c buildings in C2D6; and
+ a Class 4 part of a building located on the top storey in C2D4(2); and
+ open spectator stands and indoor sports stadiums in C2D8.

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

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

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

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

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

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

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

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

+ structural adequacy; and
+ integrity; and
+ insulation.

and expressed in that order.

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

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 public or private hospital; or
+ a nursing home or similar facility for sick or disabled persons needing full-time care; or
+ 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.

Horizontal exit: A required doorway between 2 parts of a building separated from each other by a fire wall.

National Construction Code Series (NCC) – The NCC was introduced 1 May 2011 by the Council of Australian Governments (COAG). The BCA Volume One (Class 2 to 9 Buildings) is now referenced as the National Construction Code Series Volume One — BCA.

Occupiable outdoor area means a space on a roof, balcony or similar part of a building:

+ that is open to the sky; and
+ to which access is provided, other than access only for maintenance; and
+ that is not open space or directly connected with open space.

Occupation Certificate (OC) – Building Occupation Approval issued by the Principal Certifying Authority pursuant to Part 6 of the EPA Act 1979.

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

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.

Performance-based Design Brief – Means the process and the associated report that defines the scope of work for the performance-based analysis, the technical basis for analysis, and the criteria for acceptance of any relevant Performance Solution as agreed by stakeholders.

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.

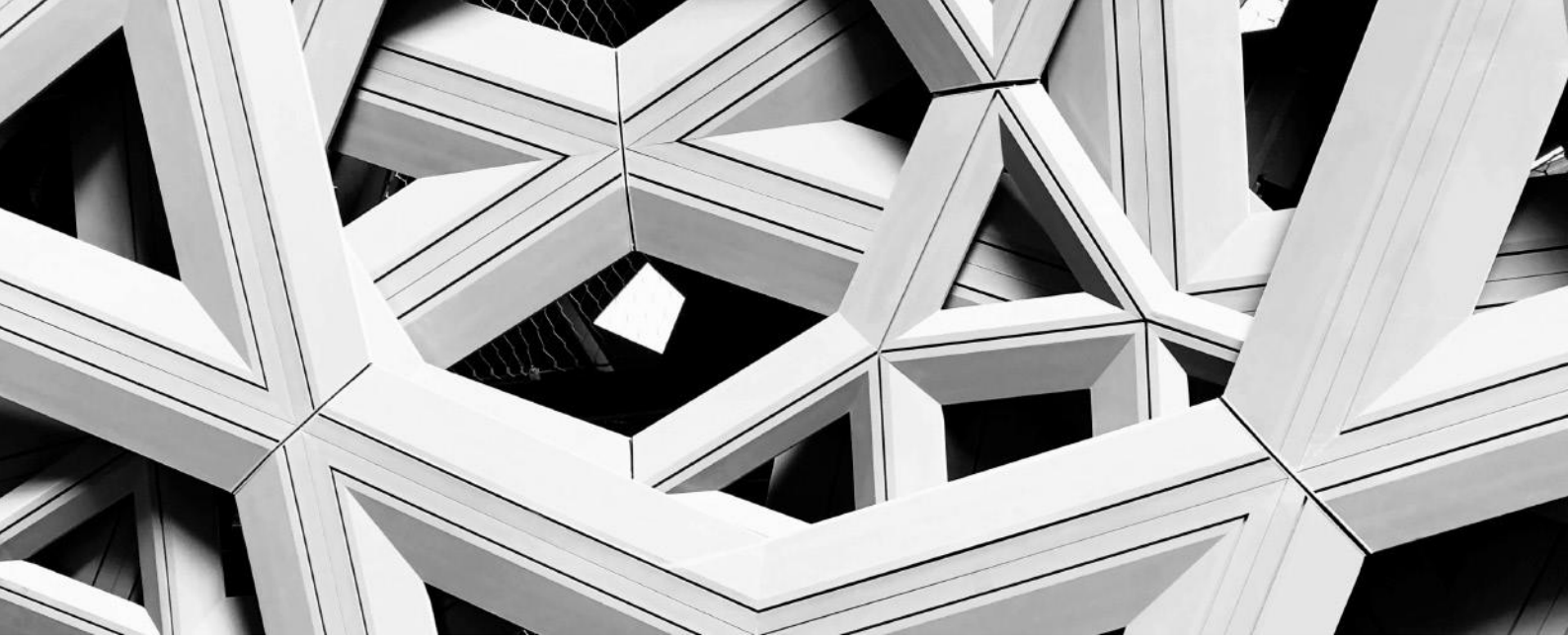
Compliance with the Performance Requirements can only be achieved by-

+ complying with the Deemed-to-Satisfy Provisions; or
+ formulating an Alternative Solution which-
  - complies with the Performance Requirements; or
  - is shown to be at least equivalent to the Deemed-to-Satisfy Provisions; or
+ a combination of the above.

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

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.



2.0 Building Characteristics

2.1 Proposed Development

The existing building is classified as follows:

BCA Classifications:	Class 9a
Rise in Storeys:	One (1)
Storeys Contained:	One (1)
Type of Construction:	Type C Construction
Importance Level (Structural)	Importance Level 4.
Sprinkler Protected Throughout	Yes
Effective Height	< 12 m
Floor Area	TBC
Largest Fire Compartment	1,219 m^2
Climate Zone	Zone 4

2.2 Fire Compartment Floor Area Limitations

Maximum size of fire compartment/atria is:

+ Classification		+ Type A	+ Type B	+ Type C
6, 7, 8 or 9a	Max. floor area	5,000m^2	3,500m^2	2,000m^2
	Max. volume	30,000m^3	21,000m^3	21,000m^3
5, 9b or 9c	Max. floor area	8,000m^2	5,500m^2	3,000m^2
	Max. volume	48,000m^3	33,000m^3	18,000m^3

2.3 Distance to Fire Source Features

Based upon a review of the plans, it is noted that each elevation of the building is located within the following distances from fire source features on the site.

+ Elevation	+ Fire Source Feature	+ Distance
North	Side or rear boundary	> 3m
East	Side or rear boundary	> 3m
West	Side or rear boundary	> 3m
South	Far boundary of road	> 3m

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

3.0 BCA Assessment

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

3.1 Section B – Structure

Part B1	**Structural Provisions:** + New building works are to comply with the structural provisions of the BCA 2022 and referenced standards including AS 1170. + The Importance Level provisions of BCA (Section B) are to be acknowledged by the Structural Engineer and addressed to the degree necessary. The building is required to be designed and constructed in accordance with Importance Level 4. + New building works to the existing building must be compliant with earthquake provisions of AS1170.4 – Earthquake Actions in Australia.

3.2 Section C – Fire Resistance

Part C2	**Fire Resistance and Stability**
C2D2 / Spec 5	**Type of Construction Required:** The building is required to comply with the requirements of Type C Construction as stated within Specification 5. The table below provides an overview of the requirements of each. Refer to Table 6 of Appendix 1 for the FRL requirements of Type C Construction. **+ Type C Construction:** + External walls (and columns incorporated within) need not achieve an FRL if >3m from a boundary or separate building. Where required, external walls of Type C Construction only require an FRL from the outside and not in both directions. + Roofs need not achieve an FRL. + Internal columns need not achieve an FRL. All new works will be required to be constructed in accordance with the requirements of the Type C Construction as applicable.

C2D10 / C2D14

Non-Combustible Building Elements:

All materials and or components incorporated in an external wall or fire-rated wall must be non-combustible. This includes but not limited to:

- Any external wall claddings.
- Any framing or integral formwork systems i.e., timber framing, sacrificial formwork, etc.
- Any external linings or trims i.e., external UPVC window linings, timber window blades, etc.
- Any sarking or insulation contained within the wall assembly.

This is not an exhaustive list, and any element incorporated within any external wall assembly must be identified and approved prior to the issue of a Crown Certificate.

Refer to Table 1 in Appendix 1 for the elements required to be non-combustible.

Note that these works are subject to NSW HI DGN 32 and as such bonded laminate cladding is not permitted.

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 (or a building subject to HI DGN 32).

- 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 32 for external wall construction.

C2D11 & Spec. 7

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

Wall and Ceiling Lining Materials – Group Number

- Public Corridor – Group 1 or 2
- Patient Care Areas – 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. 2 – Wall Linings installed to walls of Public Corridors in HI projects.

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

Part C3 Compartmentation and Separation

C3D3

General Floor Area and Volume Limitations:

The maximum size of any fire compartment with a Class 9a building cannot exceed 2,000m² & 12,000m³.

Note: the size of fire compartments within patient care areas is also limited to a maximum of 2,000m² as detailed in Clause C3D6 below.

The Schematic Architectural Drawings indicate that compliance is achieved in this instance with no fire compartment within the Class 9a part of the building exceeding 2,000m² & 12,000m³.

C3D6

Class 9a Buildings:

The following fire and smoke compartmentation requirements apply to Class 9a patient care areas.

Area Use		Max. Compartment Size	
Patient Care Area (max 2,000m²)	Ward Area	Where total floor area is less than 500m² :	Where total floor area is greater than 500m², but less than 1000m² :
		Separate from other areas with Smoke Walls	Separate with smoke walls into areas less than 500m²
	Treatment Area	Where total floor area is less than 1000m² :	
		Separate from other areas with Smoke Walls	

- Fire and smoke compartmentation of ward and treatment areas will be required to be provided in accordance with the above table. The maternity inpatient unit will be required to be separated from the treatment areas.
- The Ambulatory Care Area and Admin Area (Non-Patient Care) will be required to be adequately fire and smoke separated from the Patient Care Areas.

The current Schematic Archtiectural Draiwngs indicate the provision of four (4) separate fire compartments, each of which are less than 2,000m² in floor area as indidcate in the figure below.

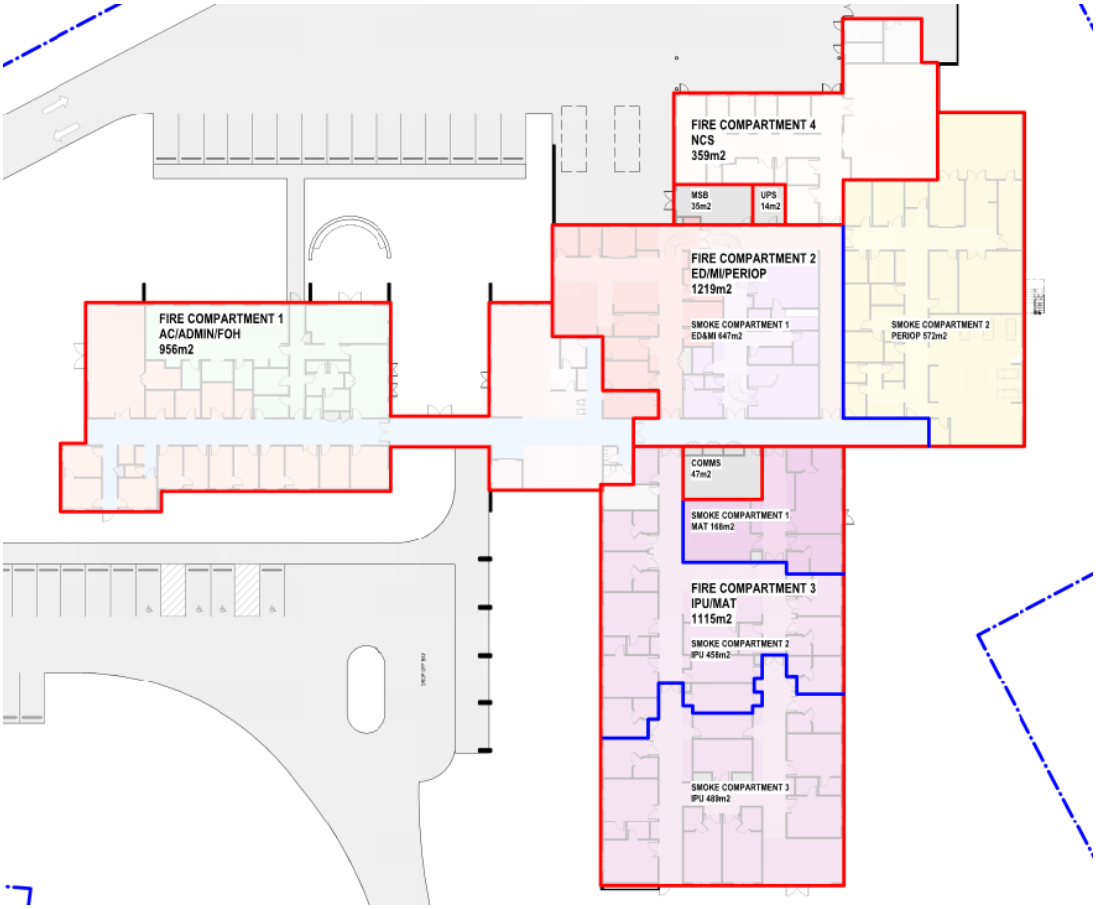


Figure No. 3: Required fire compartmentation of patient care areas.

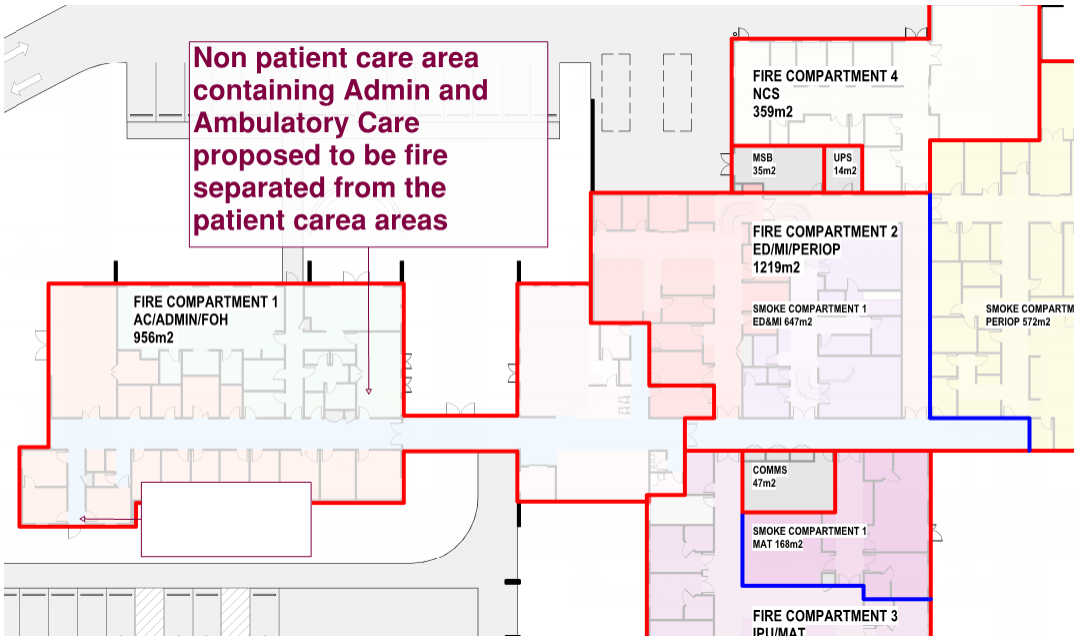


Figure No. 4: Required fire and smoke separation of non-patient care areas from patient care areas.

- Ancillary use spaces are required to be 1-hour fire separated from patient care areas. Ancillary use spaces in a Class 9a comprise:
  - A kitchen and related food preparation areas having a combined floor area of more than 30m^2.
  - A room containing a hyperbaric facility.
  - A room used predominately for the storage of medical records having a floor area of more than 10m^2.
  - A laundry, where items of equipment are the type that are potential fire sources (e.g., gas fire dryers).

C3D8

Separation by Fire Walls:

Fire walls (including fire rated walls) required by Clause C3D6 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 backpan of the curtain wall with no internal void or space between adjoining compartments where fire or smoke could spread between compartments.

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:

+ Internal Fire hydrant booster pumps
+ Internal Pump Rooms 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.
+ 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

C4D3 & C4D5

Protection of Openings in External Walls:

From a review of the Schematic Architectural Drawings, there are no new openings in the external wall of the building that are exposed to a fire source feature.

C4D4

Separation of external walls and associated openings in different fire compartments:

External walls and openings of adjacent fire compartments must be protected in accordance with this clause where exposed to one another. The extent of fire-rating is driven by the angle of exposure, refer to the below table for the applicable distances.

+ Angle between walls	+ Min. Distance
0^0 (walls opposite)	6m
More than 0^0 to 45^0	5m
More than 45^0 to 90^0	4m
More than 90^0 to 135^0	3m
More than 135^0 to 180^0	2m

0^0 or more	Nil

Having regard to the proposed design, the following figure details where exposure occurs between different fire compartments.

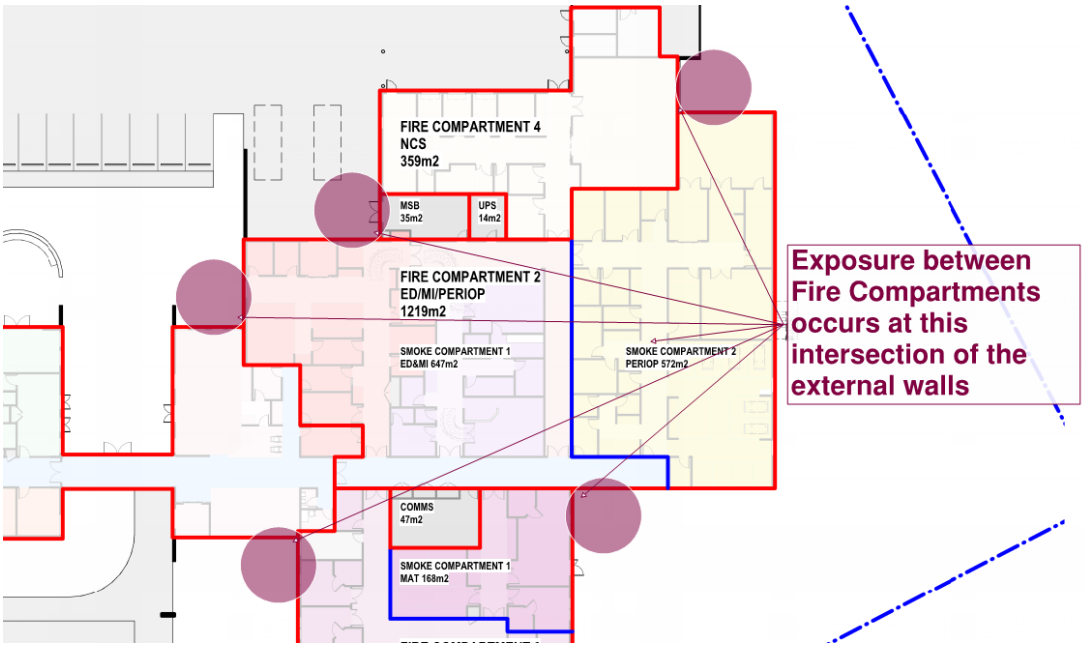


Figure No. 5 – Locations of exposure of external walls of different fire compartments

The external walls and associated openings will be required to be protected in accordance with the DTS Provisions of the BCA or alternatively the protection of the openings will be required to be subject of a Fire Engineering Assessment to be undertaken by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.

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., 90 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).

C4D8

Protection of Doorways in Horizontal Exits:

All horizontal exits are required to have a FRL of -/90/30.

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).

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 13. 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 C4D15 unless it is a tested system.

Pipes Systems Comprised of Metal

In accordance with Clause C4D15, 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 C4D15 which are difficult to achieve in a hospital 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 C4D15 in terms of the 100 mm separation for a distance of 2000 mm from the penetration.

The proposed design will consist of metal pipes filled with water that will not be provided with an insultation rating.

The proposed design of the subject metal pipes filled with water etc with no insulation will be required 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.

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 13.

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.

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.

Spec. 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. + All required smoke doors are required to be provided with a smoke reservoir which extends for a minimum of 400 mm above the smoke door and extends to the underside of the following: ▲ A roof covering; or ▲ The floor above; or ▲ An imperforate false ceiling that will prevent the free passage of smoke. *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 (both existing and new) throughout the building is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by LCI in order to demonstrate compliance with the nominated Performance Requirements of the BCA.
Spec. 12	**Fire Doors, Smoke Doors, Fire Windows and Shutters:** A required fire door is required to comply with AS 1905.1 and not fail by radiation through any glazed part during the period specified for integrity in the required FRL. 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 be numerous 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 12.

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 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.

The below figure details the locations throughout the building of fire safety doors that are proposed not to swing in the direction of egress.

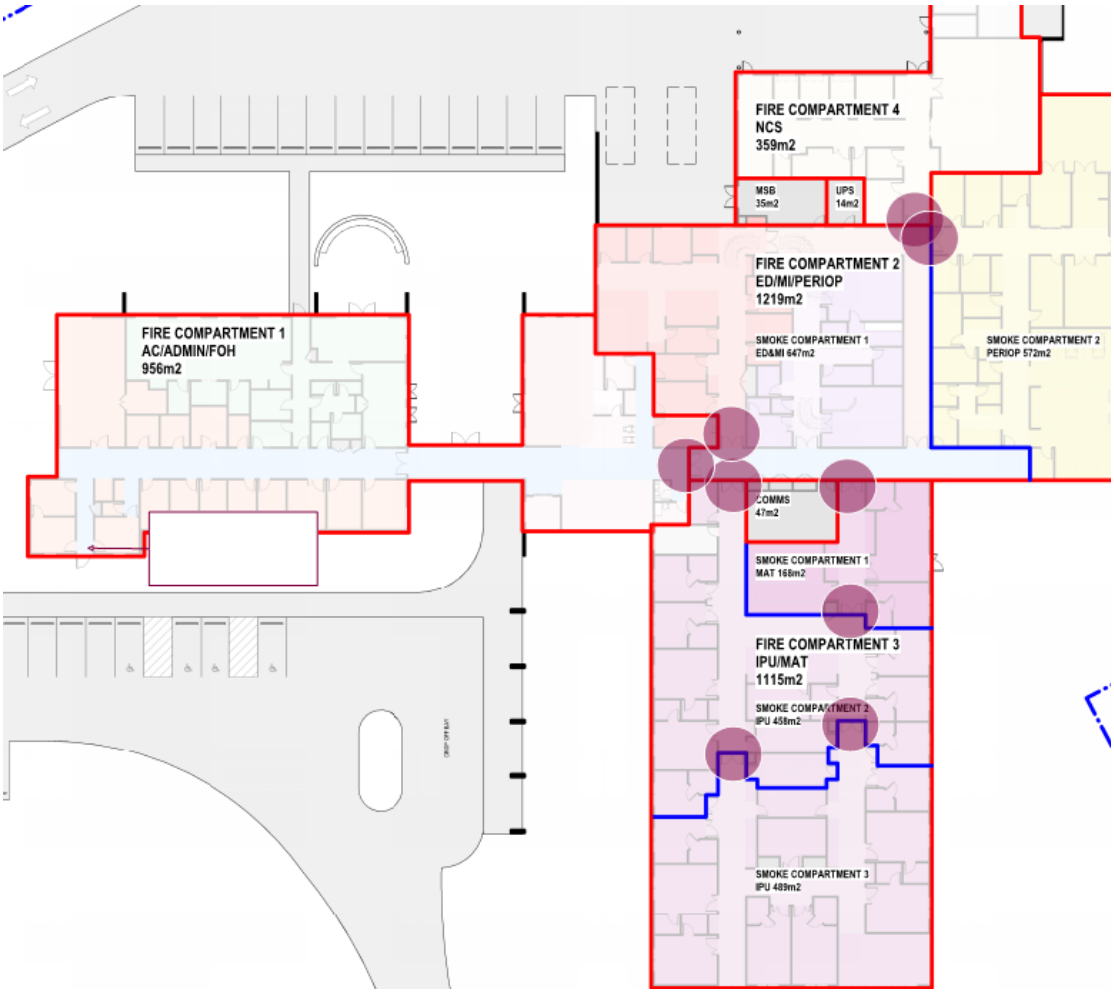


Figure No. 6 – Fire safety doors that swing against the direction of egress

3.3 Parts D – Provision for Escape and Construction of Exits

Part D2	Provision for Escape
D2D3	**Number of Exits Required:** The building is required to be provided with a minimum number of 2 exits. The proposed Schematic Design provides the minimum number of exits from the Ground Floor of the building.
D2D5	**Exit Travel Distances:** The following is noted in relation to egress travel distance: + Travel distances are permitted to extend to 20m to a point of choice and 40m to a single exit in non-patient care areas. + Travel distances in patient care areas are permitted to extend to 12m to a point of choice and 30m to a single exit. Based on the Schematic Architectural Documentation 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. Upon review we provide the following comments: + Egress travel distance to a point of choice from the Operating Theatre is up to 19 m (7 m over the maximum permitted DTS distance). The excessive travel distance to a point of choice will be required to be reviewed by Arup to determine that the distance can be assessed as part of Performance Solution to demonstrate compliance with the nominated Performance Requirements of the BCA.

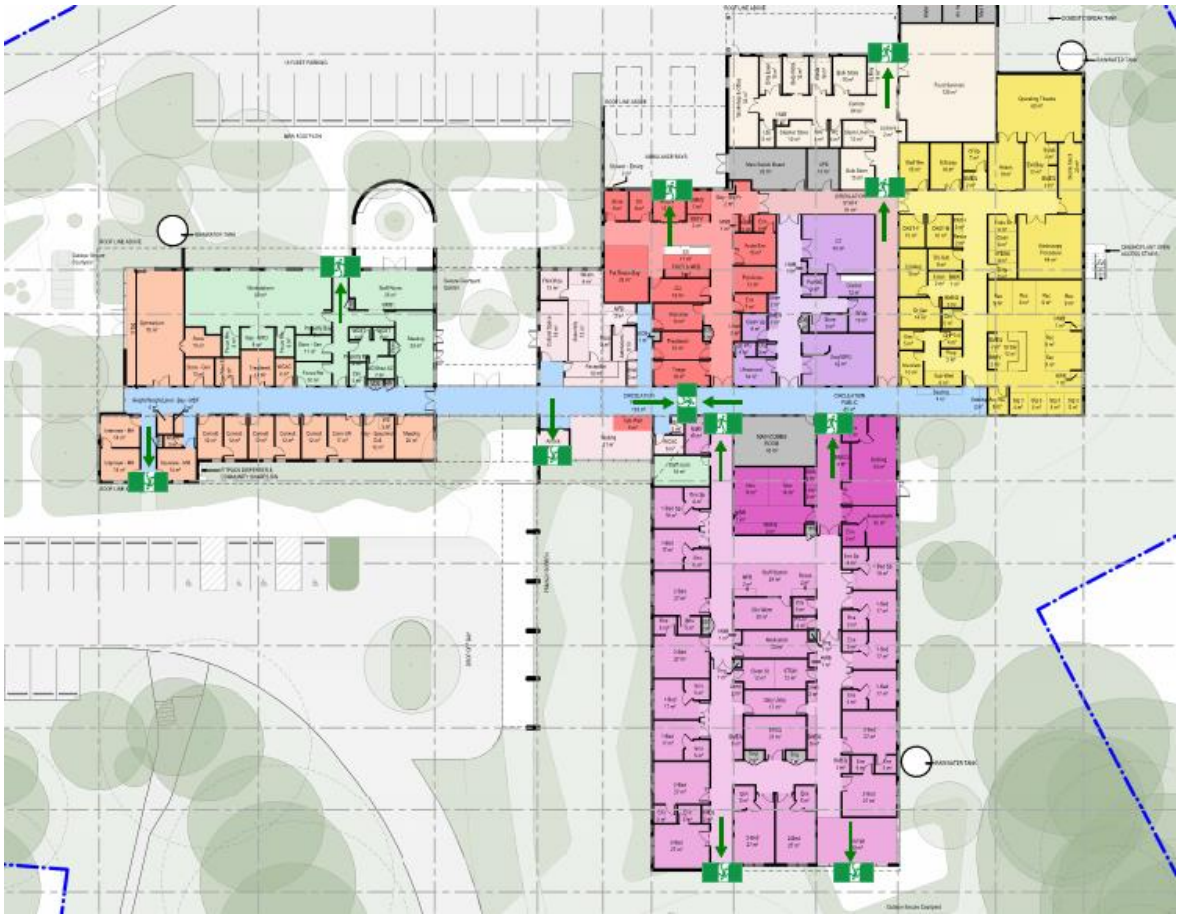


Figure No. 7 – Location of required exits from the building

D2D5

Distance Between Alternative Exits:

The maximum distance permitted between alternative exits from patient care areas is 45m, whereas from non-patient care areas, the travel distance is 60 m.

The distance between alternative exits is required to be measured back through the point of choice. Alternative egress paths are not permitted to converge to less than 6m, and alternative exits must be located more than 9m apart.

Based on the Schematic Architectural Documentation assessed to date, we have undertaken an egress assessment in terms of egress travel distance between alternative exits on the Fire Compartmentation Drawings available for review.

Upon review we provide the following comments:

+ Egress travel distance between alternative exits serving the IPU is up to 47 m (2 m over the maximum permitted DTS distance).

The excessive travel distance between alternative exits will be required as part of a Performance Solution to be prepared by Arup to demonstrate compliance with the nominated Performance Requirements of the BCA.

D2D7/ D2D8/ D2D9/

Dimensions of Paths of Travel to an Exit:

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.

D2D10/ D2D11

In addition, the unobstructed width of any new 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.

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

+ Doorways leading to or from a corridor with a corridor width of less than 2200 mm must not be less than 1200 mm, or
+ Doorways leading to or from a corridor with a corridor width greater than 2200 mm must not be less than 1070 mm.

Horizontal exit fire doors 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.

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. In this instance, bollards will need to be installed in front of the exit discharging from ED through the Ambulance Bay to ensure that motor vehicles do not block the external egress paths.

A 1000 mm clear pathway will be required to be provided through the Ambulance Bay.

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).

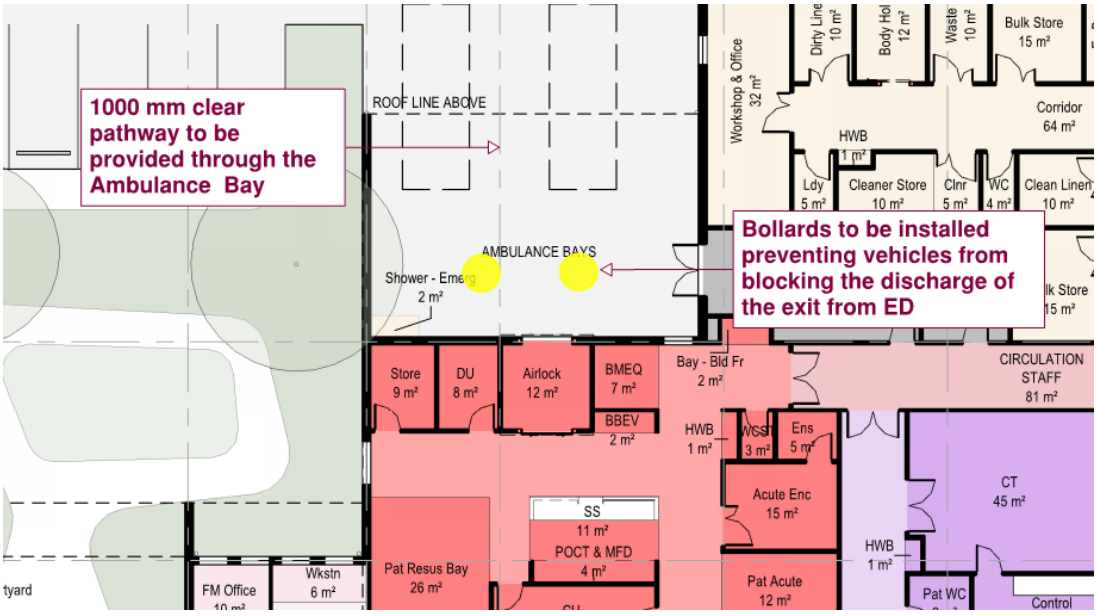


Figure No. 8 – Egress through the Ambulance Bay from the exit serving ED

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 a small number of instances whereby occupants will egress from one compartment into an adjoining compartment which will not be provided with direct access to an exit discharging directly to open space which is a technical non-compliance with Clause D2D16 of the BCA.

In this instance occupants travelling from Fire Compartment 3 to Fire Compartment 2 and Fire Compartment 4 to Fire Compartment 2 are not provided with direct access to an exit leading to open space once they have travel through the horizontal exits.

Travel via the horizontal exits is proposed 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.

D2D21

Plant Rooms, Lift Machine Rooms and Electricity Network Substations:

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 m^2; 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

Part D3 Construction of Exits

D3D8

Installations in Exits and Paths of Travel:

Any electrical meters, distribution boards or ducts, central communications distribution boards or equipment or electrical motors are permitted to be located within corridors, hallways etc. leading to exits subject to the enclosures being suitably sealed against smoke spreading from the enclosure and be constructed of non-combustible construction or a fire protected covering.

Note: *The smoke sealing is required around the entire enclosure and not simply up to ceiling level*

D3D14

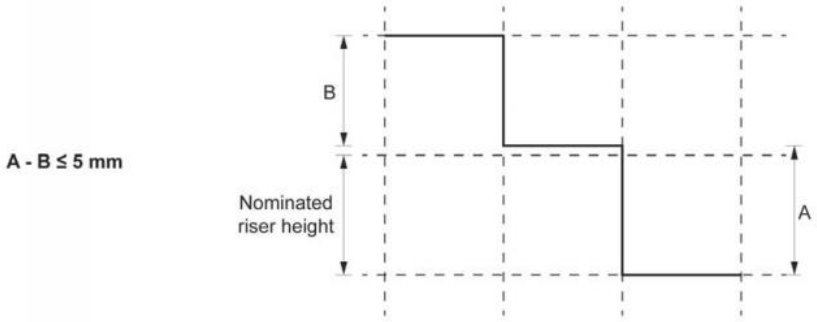
Goings and Risers:

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. 11 – Riser and going dimensions for stairways.

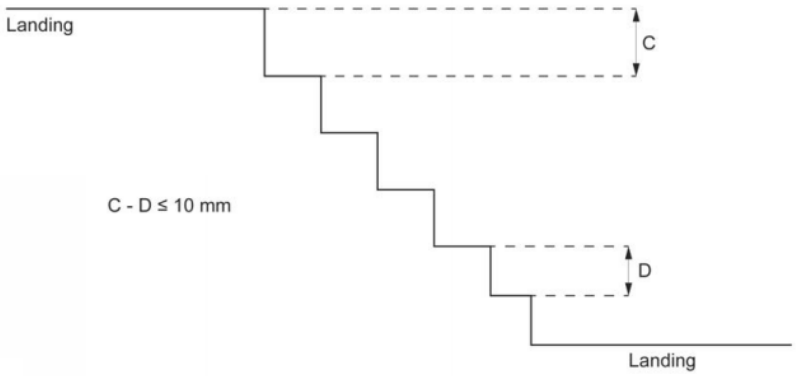


Notes:

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 No. 9: Permitted deviations in adjacent stair risers.

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. 10: 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 D3D15 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 D3D15 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.

D3D15 **Landings:**

Stair landings must:

- A surface with a slip resistance classification not less than that listed in Table D3D15 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 D3D15 when tested in accordance with AS 4586, where the edge leads to a flight below.

Table D3D15 Slip Resistance Classification

Application	Surface Conditions	
	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. 12 – Minimum slip resistance ratings required to stairs and ramps.

In addition to the slip resistance ratings detailed within the table, the following slip resistance ratings are required throughout the building:

Location	Minimum Slip Resistance
External Parking Areas / Drop Off Areas	P4 or R11
Loading Dock	P5 or R12
External walkways etc.	P4 or R11
Bathrooms and ensuites	P3 or R10
Wards and corridors *Note: Where handwash basins are contained within a corridor, a minimum Slip Rating of P3 or R10 should be maintained for a radius of 2m from the basin.*	P2 or R9
Consultation Areas	P2 or R9
Building Entry (wet area)	P3 or R10
Building Entry (transitional area)	P3 or R10
Building Entry (dry area)	P2 or R9

Table No. 13 – Minimum slip resistance ratings required to specific areas throughout the hospital.

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°.

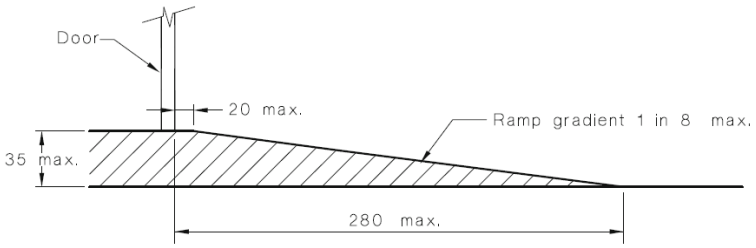


Figure No. 11: Threshold ramp dimensions

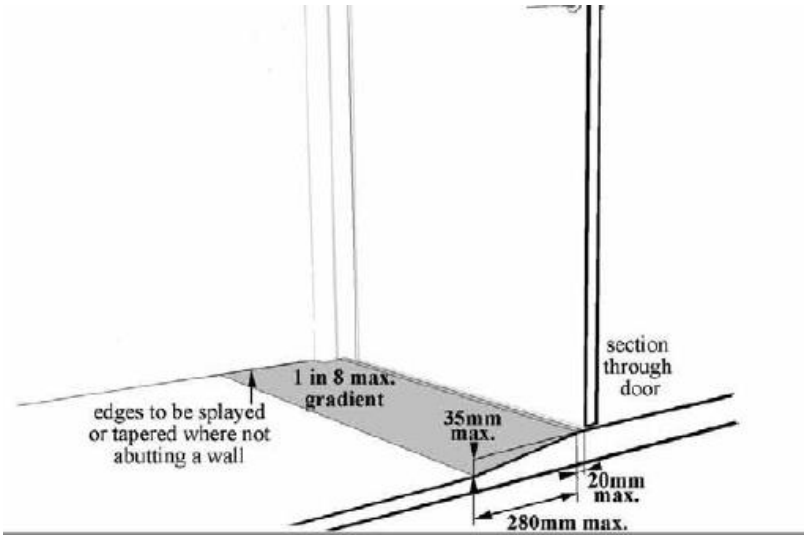


Figure No. 12: Threshold Ramp

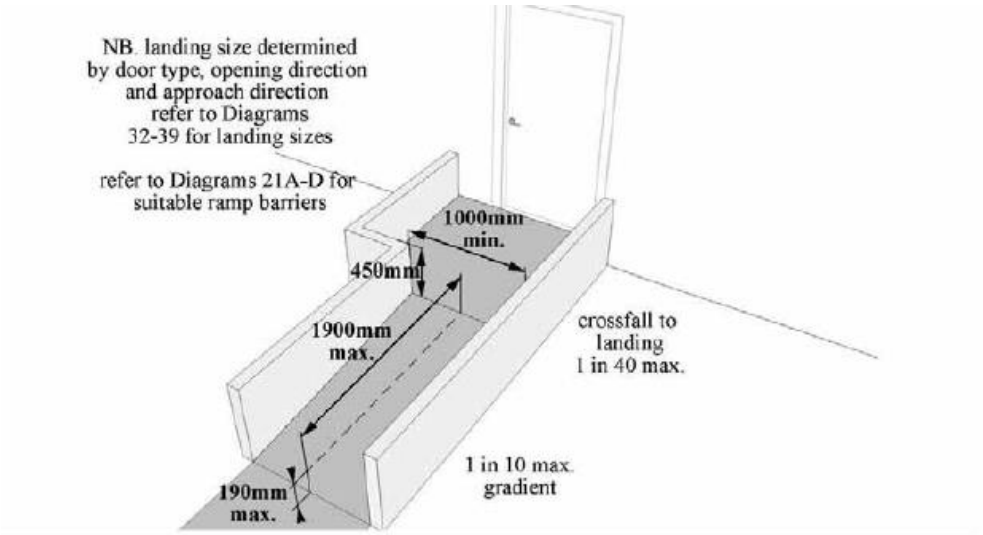


Figure No. 13: Step Ramp at External Doorway – Front Approach

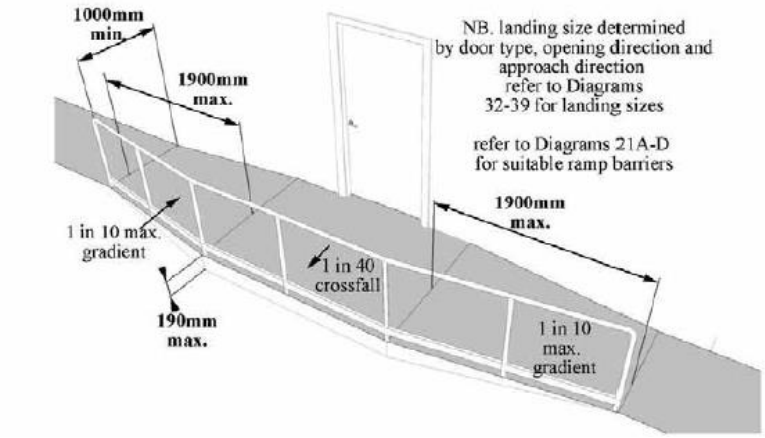


Figure No. 14: Step Ramp at External Doorway – Side Approach

D3D17 – D3D21

Barriers to Prevent Falls:

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 4000mm 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.

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 must be provided along both sides of any external stairways that are used by a person to access the building. The handrails are required to be designed and constructed in accordance with Clause 11 and 12 of AS 1428.1 – 2009.

Handrails must be provided along at least one side of any external ramps that are used by occupants in egressing from the building to the public roadway. If the ramp has a width exceeding 2000 mm,

	handrails are required to be provided to both sides of the ramp. Handrails are to be installed to a minimum height of 865 mm.
D3D22	**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 D3D14, D3D15, D3D17, D3D21 if it only serves: + Machinery rooms, boiler houses, lift machine rooms, plant rooms and the like.
D3D24	**Doorways and Doors:** 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. Doors in the path of travel in patient care areas are not permitted to be sliding doors. The provision of sliding doors within patient care areas is a common occurrence and if installed will be assessed as part of a Fire Engineering Assessment to be undertaken by the appointed Fire Safety Engineer. The Schematic Design Drawings do not indicate the provision of any sliding doors within patient care areas within the proposed refurbishment area at this point in time.
D3D25	**Swinging Doors:** All exit doors or doors forming part of a required exit are required to swing in the direction of egress. The Schematic Architectural Drawings indicate that all swing doors discharging to open space swing in the direction of egress. *Swing of Horizontal Exit Doors* All exit doors including horizontal exit doors are required to swing in the direction of egress. There are several fire doors used as horizontal exits that are proposed to not swing in the direction of egress in certain instances i.e., doors will swing in one direction only as detailed in the figure below.

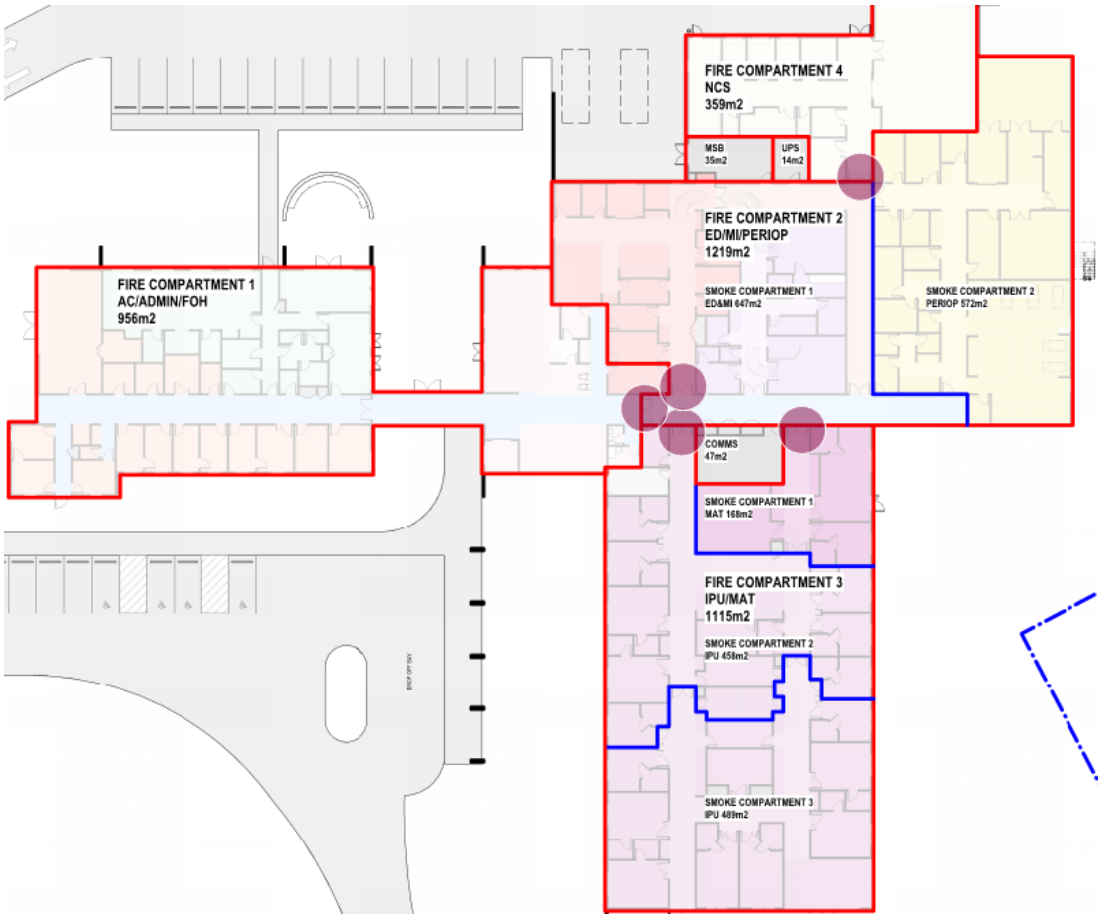


Figure No. 15: Horizontal exit doors that do not swing in the direction of egress.

The swing of the horizontal exit doors will be required to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup to demonstrate compliance with the nominated Performance Requirements of the BCA

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 35 mm and not more than 45 mm more.

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

D3D28

Signs on Doors:

All self-closing fire and/or smoke doors located within fire and smoke walls throughout the building are to be provided with signage that states:

FIRE SAFETY DOOR

DO NOT OBSTRUCT

DO NOT KEEP OPEN

All automatic closing fire and/or smoke doors located within fire and smoke walls throughout the building are to be provided with signage that states:

FIRE SAFETY DOOR

DO NOT OBSTRUCT

Part D4 Access for People with a Disability

D4D2

General Building Access Requirements:

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

This Report contains high level comments pertaining to access for a person with a disability. A separate and more detailed Report has been issued by ABE Consulting who are Access Consultant for the project.

Based on a review of the Schematic Design Documentation, the proposed development works can comply with the requirements of Part D4 of the BCA.

D4D3

Access to Buildings:

Accessways must be provided to accessible buildings from the main points of pedestrian entry at the allotment boundary and any accessible car parking space or accessible associated buildings connected by a pedestrian link.

An accessway must be provided to a building required to be accessible-

+ 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 car parking space on the allotment.

Access to the Building from the Allotment Boundary

As detailed above, access for a person with a disability is required to be provided from the allotment boundaries of the greater Hospital site along with accessible car parking spaces associated with the new development.

Due to nature of the existing hospital site whereby the existing and proposed hospital are set back a significant distance from the public roadway, access will not be able to be provided from the allotment boundary of the Hospital Site in accordance with the provisions of Part D4 of the BCA and AS 1428.1 – 2009 because of existing grades of pathways etc.

Compliant access will be provided from the accessible car parking spaces to the main entrance of the building.

Access to the main pedestrian entrance from the allotment boundary will be required to be assessed as part of a Performance Solution to be prepared by an independent Access Consultant.

Given the nature of the development being a reginal hospital, it is considered that a Performance Solution is permissible to justify access not being provided from the allotment boundaries of the hospital site to the main pedestrian entrance.

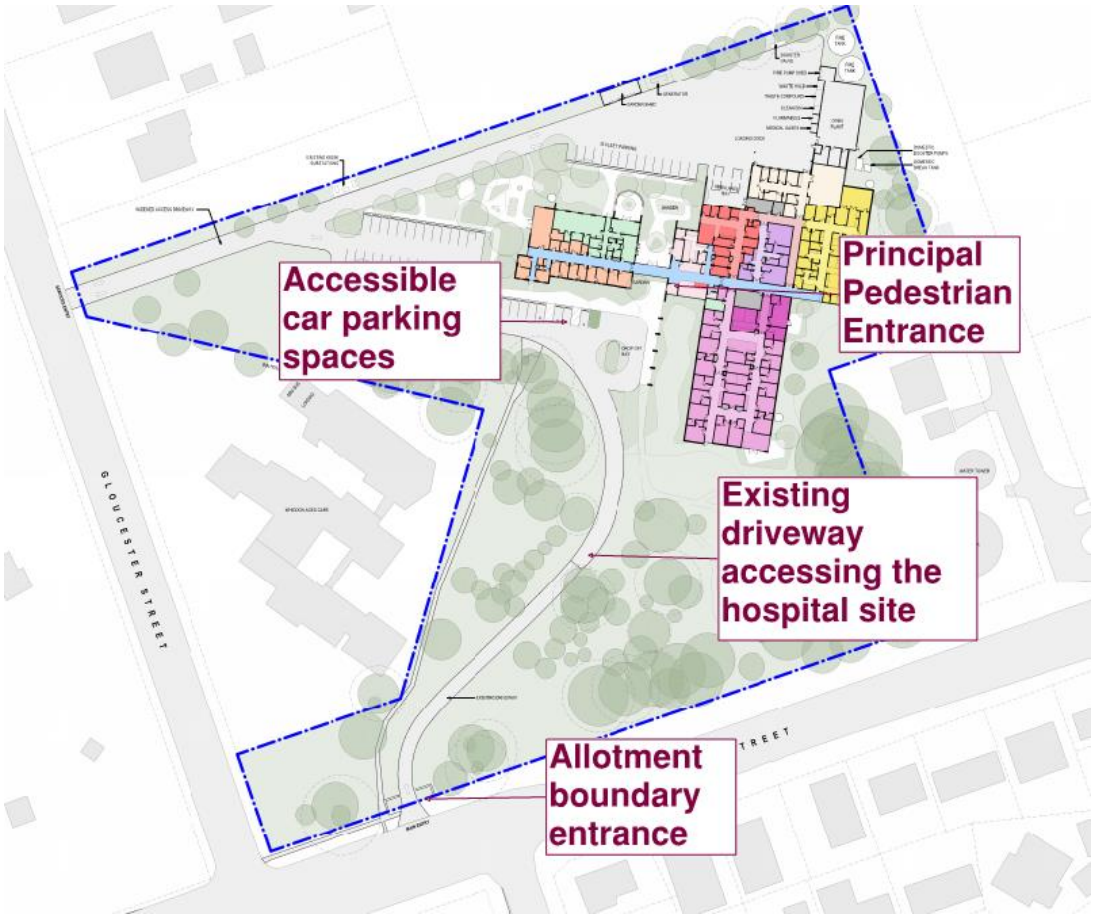


Figure No. 16: Location of principal pedestrian entrance relative to the allotment boundary entrance and accessible car parking spaces

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 50 m 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 D4D5 (refer to areas below under Clause D4D5)

- 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.

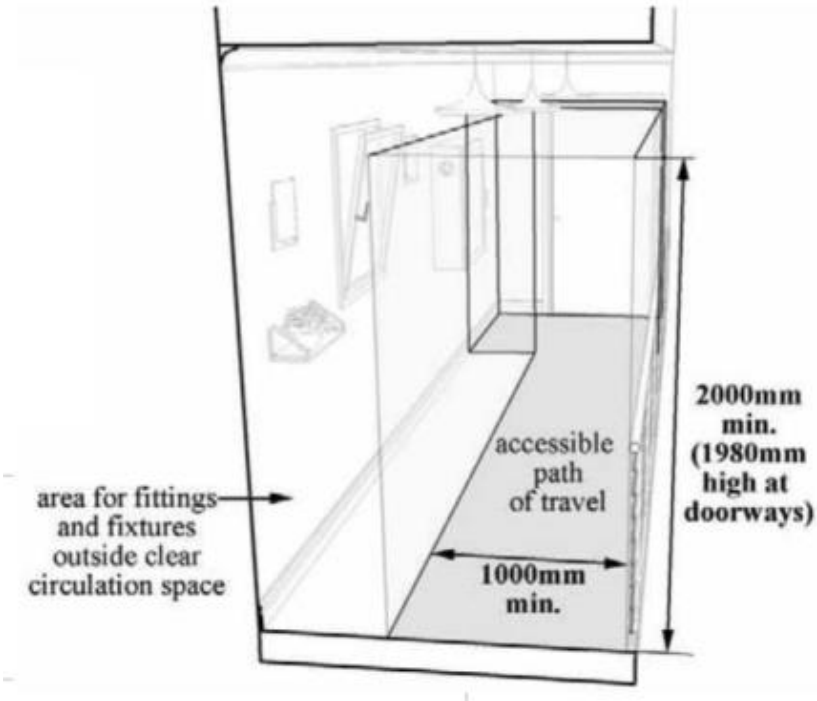


Figure No. 17: Minimum height and width of accessible path of travel

+ 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 850mm.

Note: -

Please refer to Clause D2D7 - D2D11 above having regard to the clear width of doorways where patient transportation in beds is required.

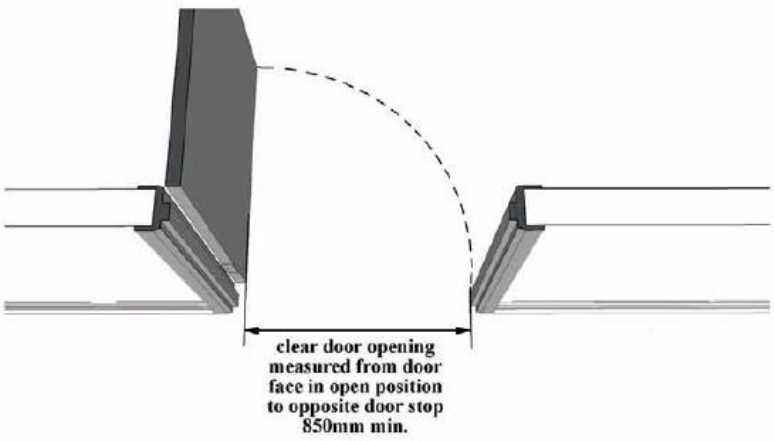


Figure No. 18: Clear Unobstructed Width of Doorway

+ All new doorways shall have a minimum luminance contrast of 30% provided between -

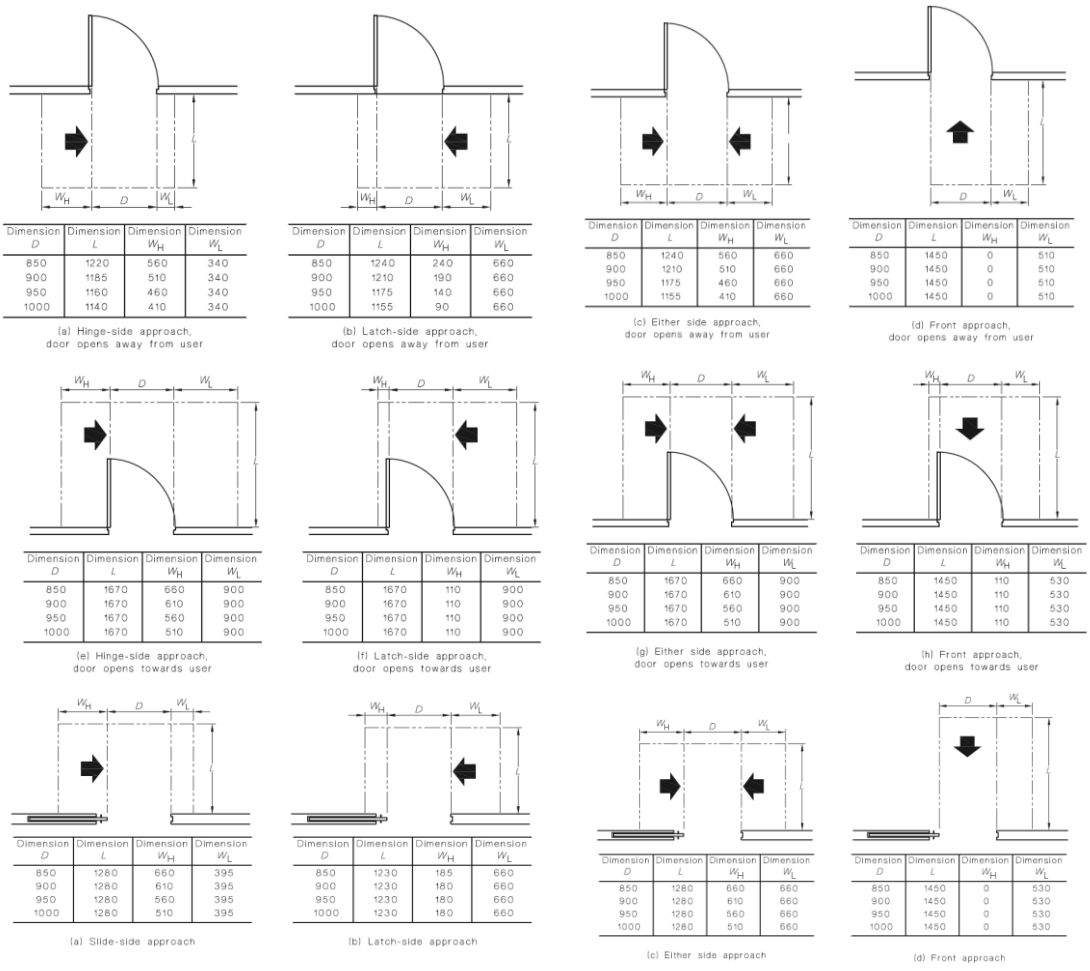
  - (a) door leaf and door jamb;
  - (b) door leaf and adjacent wall;
  - (c) architrave and wall;
  - (d) door leaf and architrave; or
  - (e) door jamb and adjacent wall.

  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 Circulation space is not required to be provided to rooms where access for a person with a disability is not required i.e. dirty utility / clean utility rooms, plant rooms, comms rooms etc. See below required doorway circulation space for swinging and sliding doors.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.



Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1220	560	340
900	1185	510	340
950	1160	460	340
1000	1140	410	340

(a) Hinge-side approach, door opens away from user

Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1240	240	660
900	1210	190	660
950	1175	140	660
1000	1155	90	660

(b) Latch-side approach, door opens away from user

Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1240	560	660
900	1210	510	660
950	1175	460	660
1000	1155	410	660

(c) Either side approach, door opens away from user

Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1450	0	510
900	1450	0	510
950	1450	0	510
1000	1450	0	510

(d) Front approach, door opens away from user

Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1670	660	900
900	1670	610	900
950	1670	560	900
1000	1670	510	900

(e) Hinge-side approach, door opens towards user

Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1670	110	900
900	1670	110	900
950	1670	110	900
1000	1670	110	900

(f) Latch-side approach, door opens towards user

Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1670	660	900
900	1670	610	900
950	1670	560	900
1000	1670	510	900

(g) Either side approach, door opens towards user

Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1450	110	530
900	1450	110	530
950	1450	110	530
1000	1450	110	530

(h) Front approach, door opens towards user

Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1280	660	395
900	1280	610	395
950	1280	560	395
1000	1280	510	395

(a) Slide-side approach

Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1230	185	660
900	1230	180	660
950	1230	180	660
1000	1230	180	660

(b) Latch-side approach

Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1280	660	660
900	1280	610	660
950	1280	560	660
1000	1280	510	660

(c) Either side approach

Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1450	0	530
900	1450	0	530
950	1450	0	530
1000	1450	0	530

(d) Front approach

Figure No. 19: Circulation Space at Swing Doors

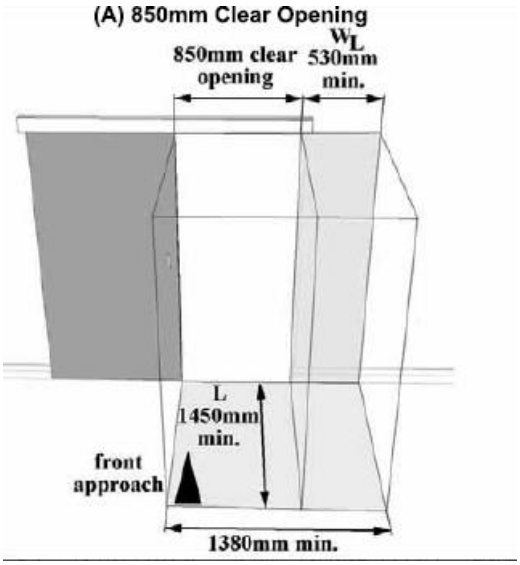


Figure No. 20: Circulation Space dimensions at swing doors

The following figure detail's locations throughout the building where latch side clearance and turning circles at the end of corridors requires attention to ensure compliance.

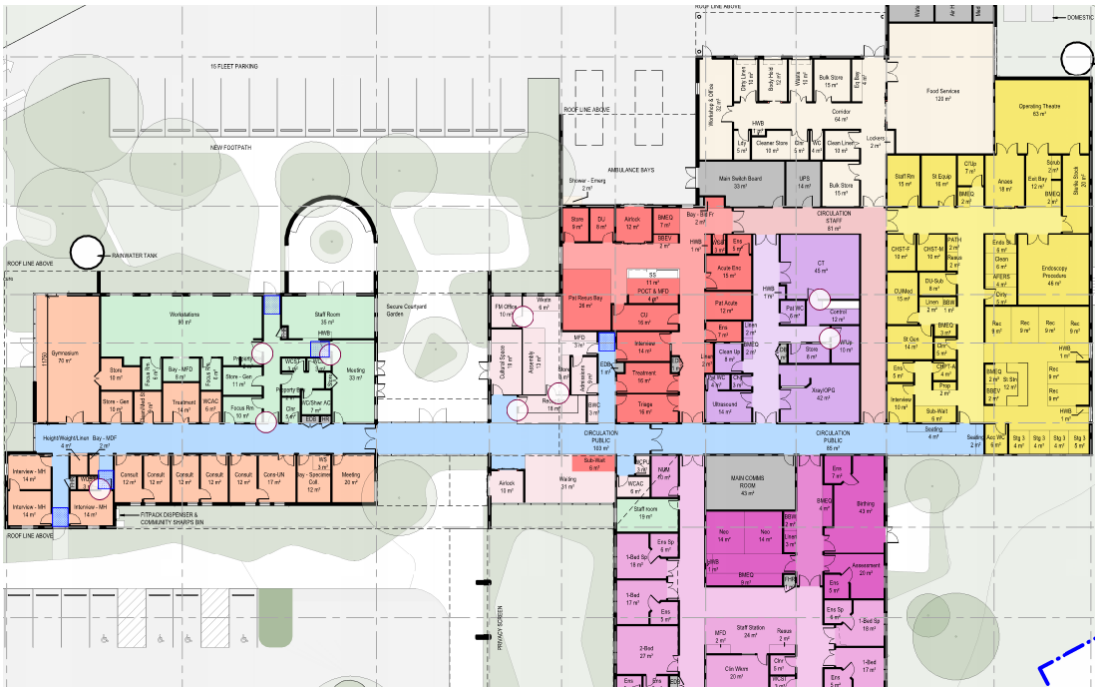
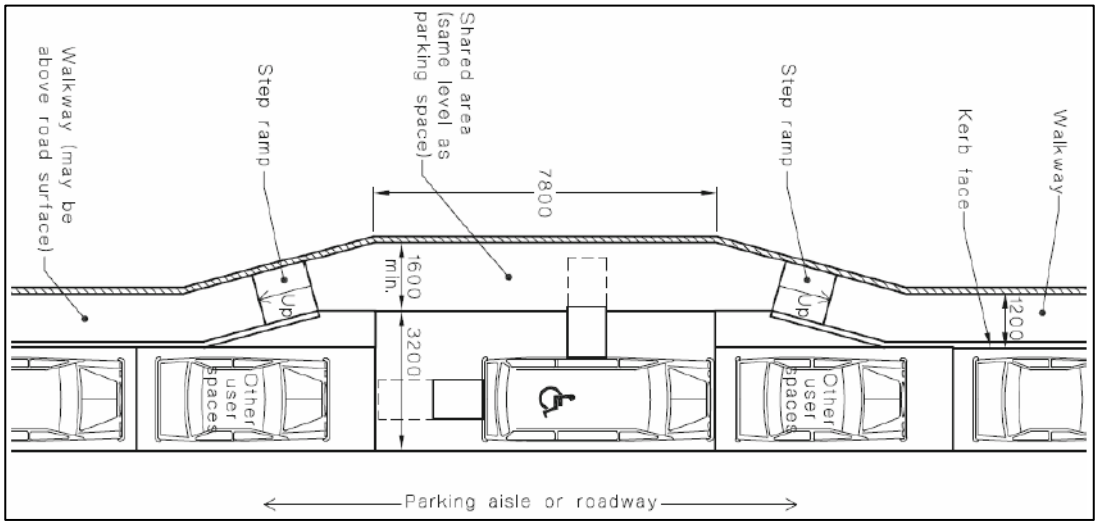


Figure No. 21: Doorways and corridors that require review to ensure that compliant circulation space and turning circles is provided.

Set Down Areas:

For public drop off / set down areas, if a kerb is provided separating the drop-off area from the pavement, a compliant kerb ramp will need to be provided. The detailing of the parallel set down will need to satisfy the provisions of AS 2890.6 – 2006.

Where the pedestrian pathway and the driveway is at the same grade it will be necessary to achieve a 30% luminous contrast between the walkway and the driveway. Details of the materials, colour and texture will need to be provided as part of the detailed Design Development / Construction Issue Architectural Documentation.



Requirements for parallel parking

Figure No. 22: Requirements for set down areas.

If the set down area is level with the pavement, tactile indicators and bollards are required to be provided as required by AS 1428.4.1 – 2009.

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 D4D5, 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
  - Door handles less than 900 mm above the finished floor.
+ 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 90o to 180o turn is required to be not less than 2070mm in the direction of travel and not less than 1540 mm wide.

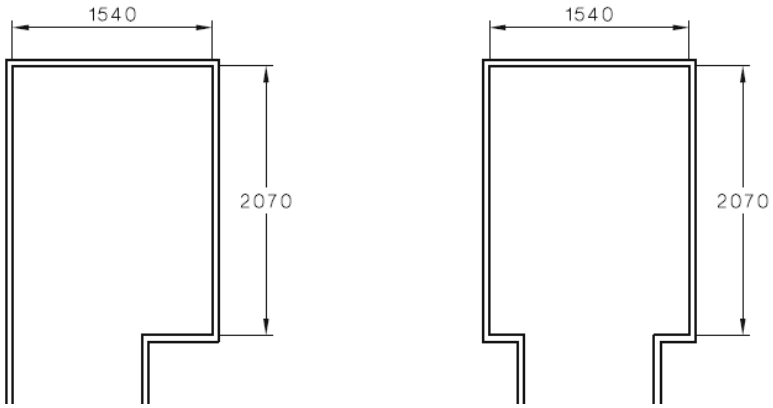


Figure No. 23: Minimum space required for >90o to 180o turn.

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.

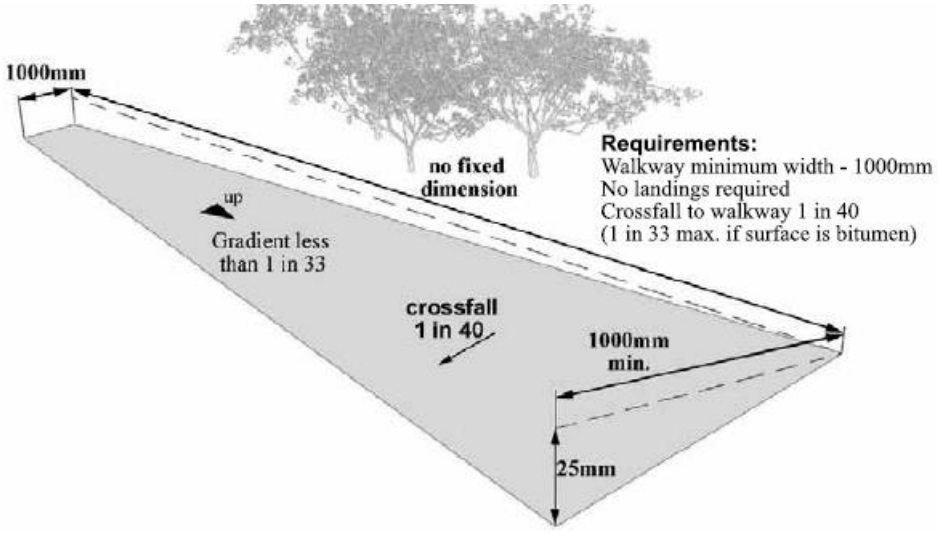


Figure No.24: Requirements for a Walkway with a Gradient Less Than 1 in 33

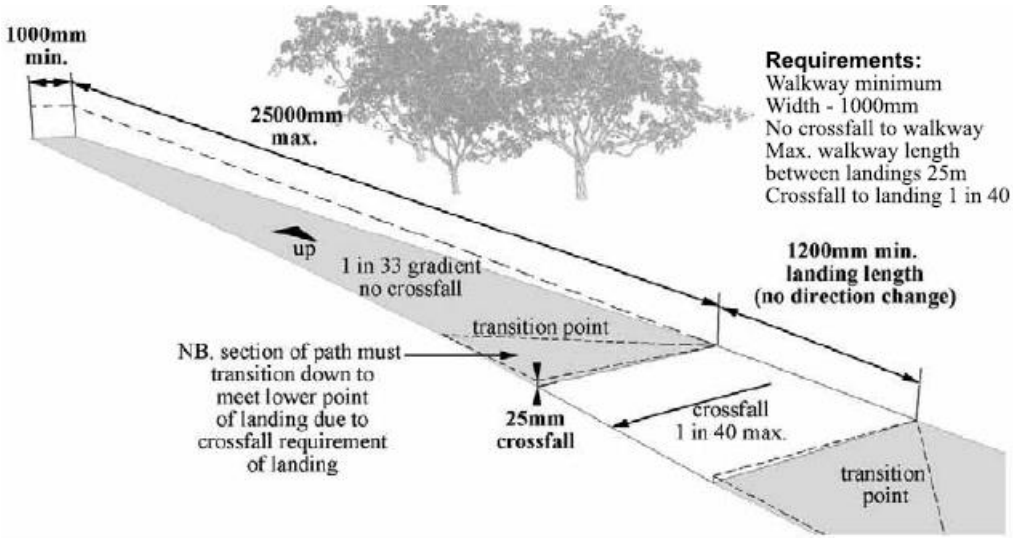


Figure No. 25: Requirements for a Walkway with a 1 in 33 Gradient

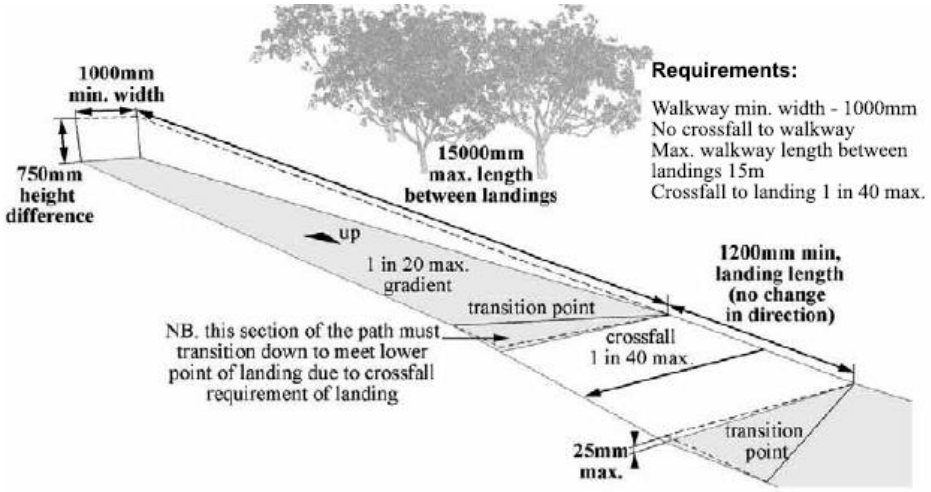


Figure No. 26: Requirements for a Walkway with a 1 in 20 Gradient

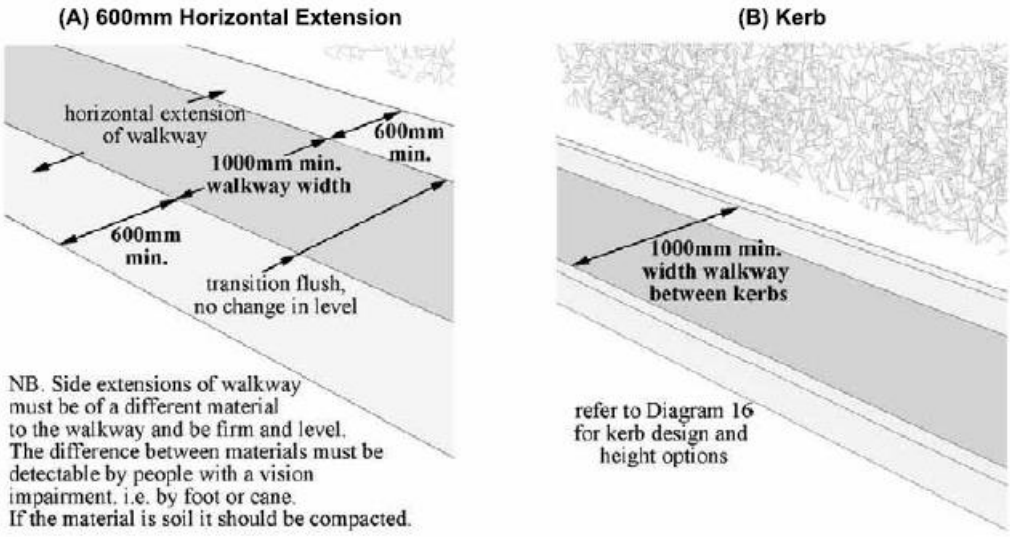


Figure No. 27: Requirements for Edges of Walkways

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 65 mm.
  - 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.

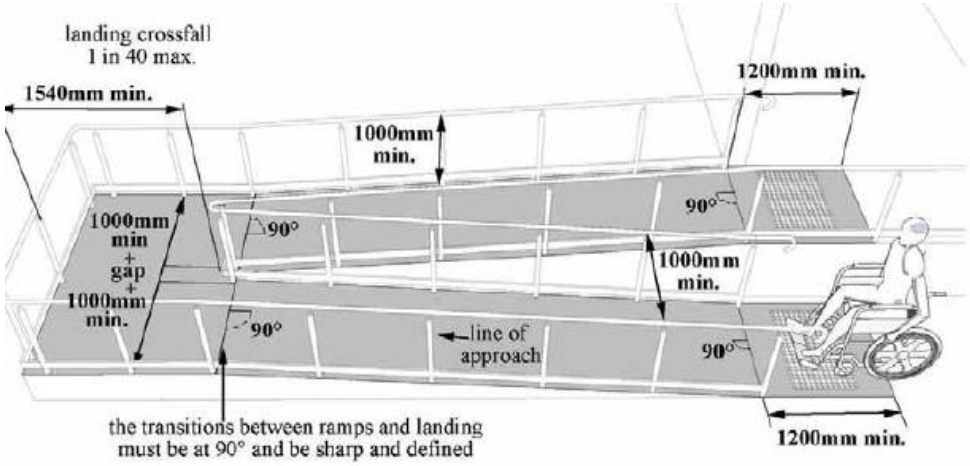


Figure No. 28: Ramp and Landing with Change in Direction of 180°

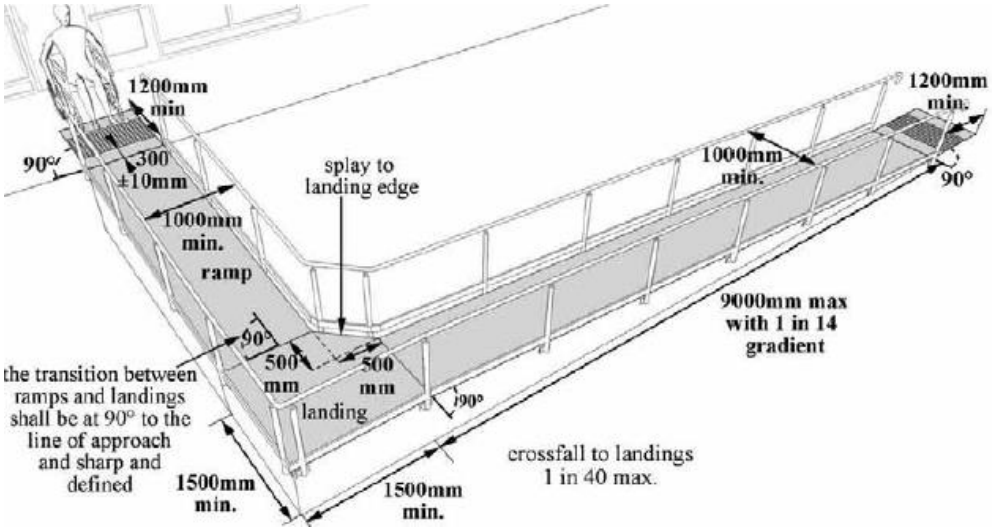


Figure No. 29: Ramp and Landing with Change of 90°

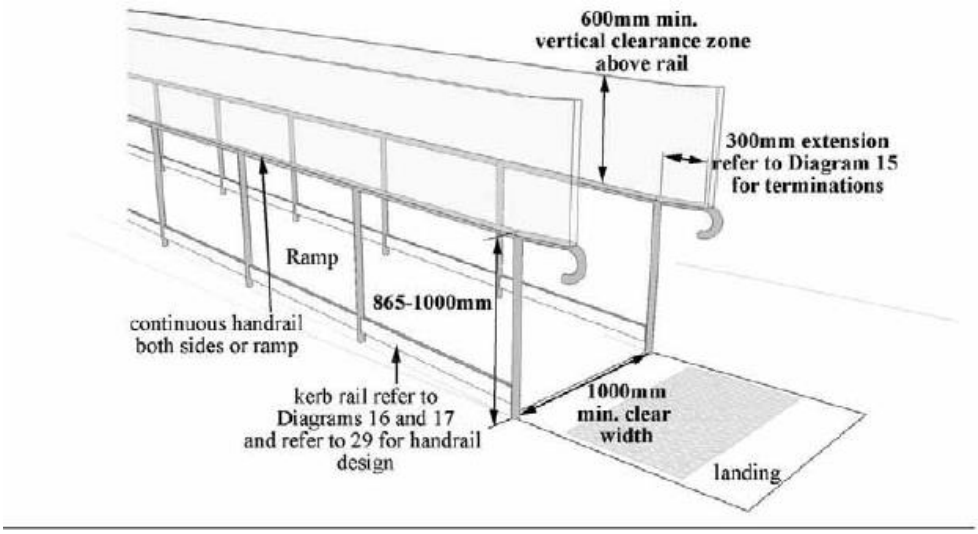


Figure No. 30: Handrail Extensions at Ramp Ending

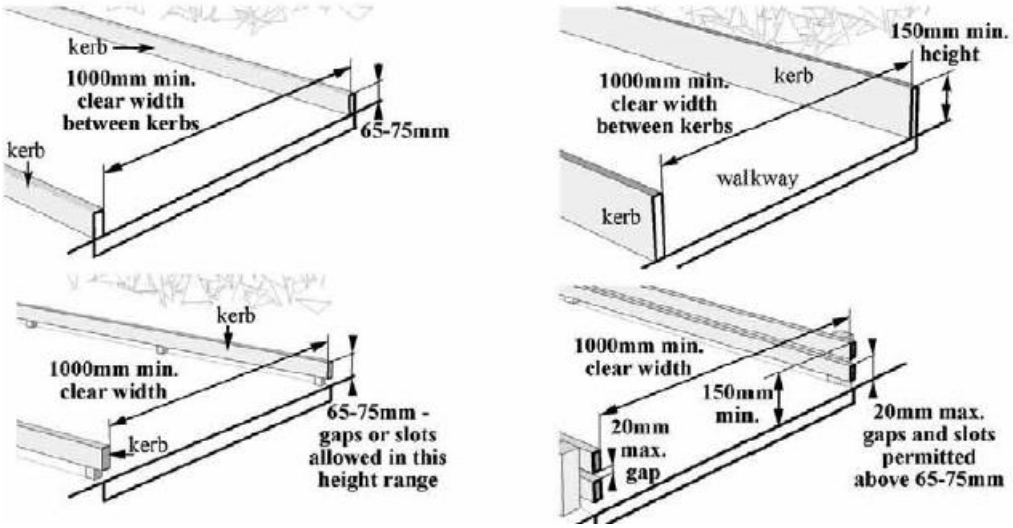


Figure No. 31: Kerb and Kerb Rail Design Options

Accessible Stairways:

Any external 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.

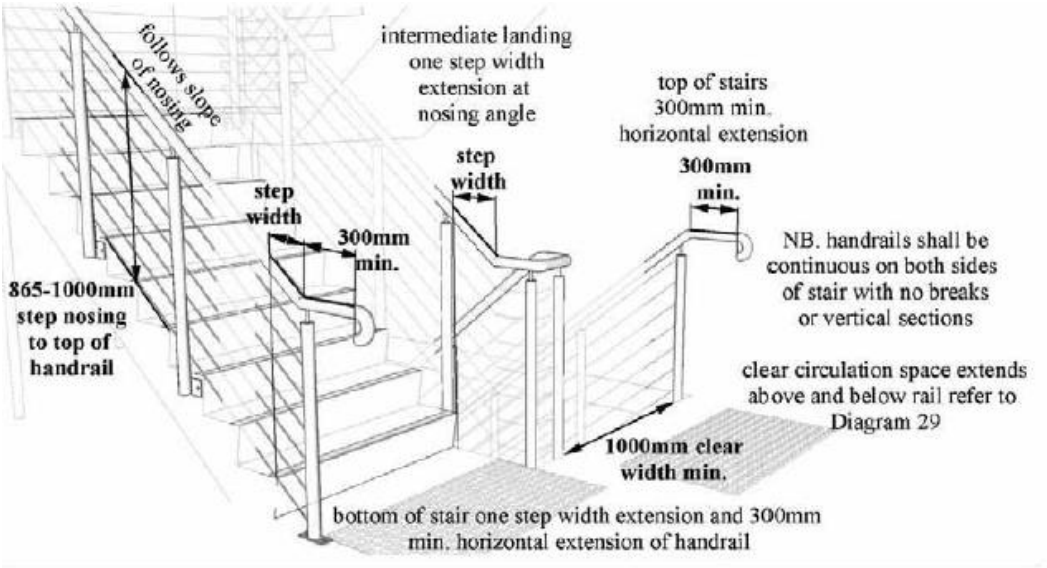


Figure No. 32: Handrails to Stairways

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.

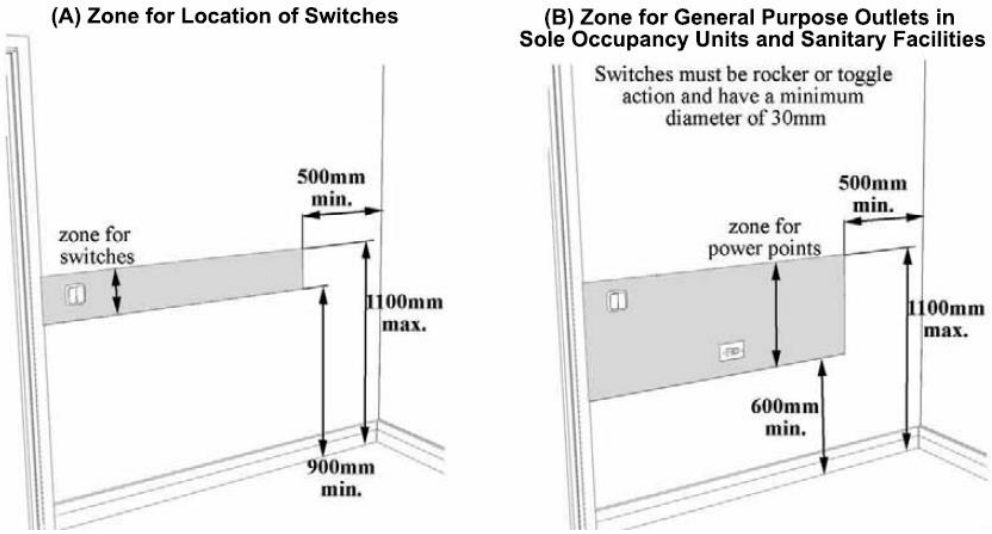


Figure No. 33: Zones for the location of switches and power outlets

Clear Turning Space Behind Workstations

A minimum clearance of 1550mm 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 1300mm x 800mm 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 850mm +/- 20mm.

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

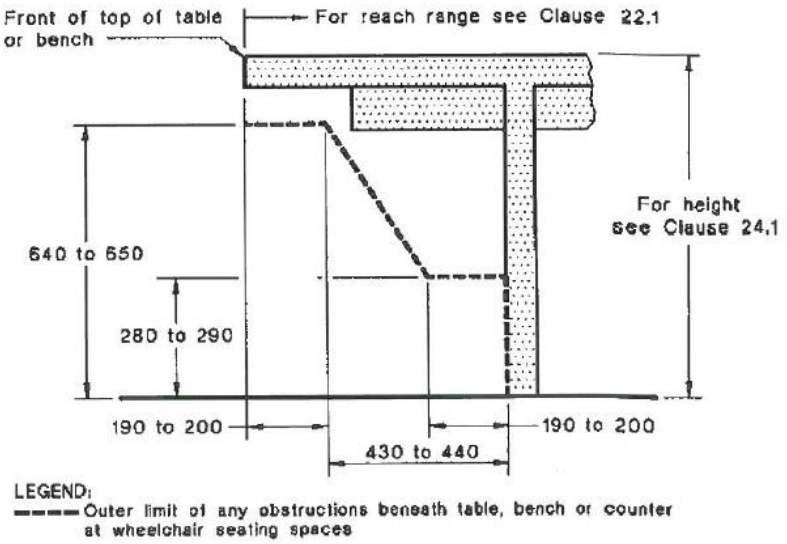


Figure No. 34: Clearances below an accessible counter or bench

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 1500mm x 1500mm provided to ensure that that an occupant can make a 180o 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 500mm 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.

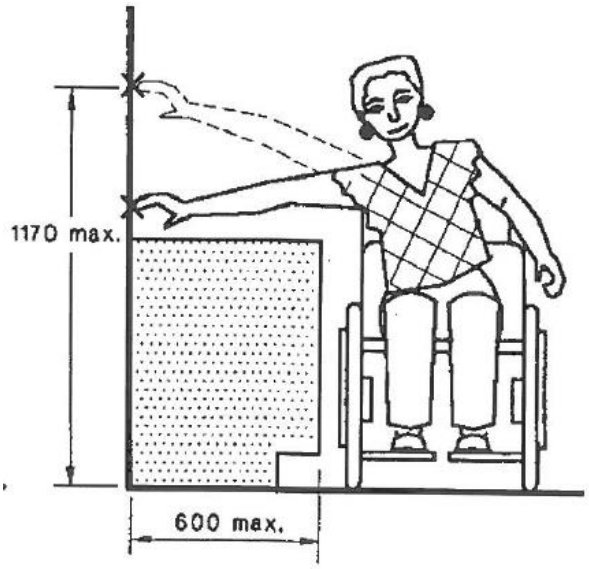


Figure No. 35: Side reach requirements for a wheelchair user

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 D4D4 (h), the dimensions of 10mm, 6mm and 4mm are to be replaced with 11 mm, 4mm and 15 mm respectively.

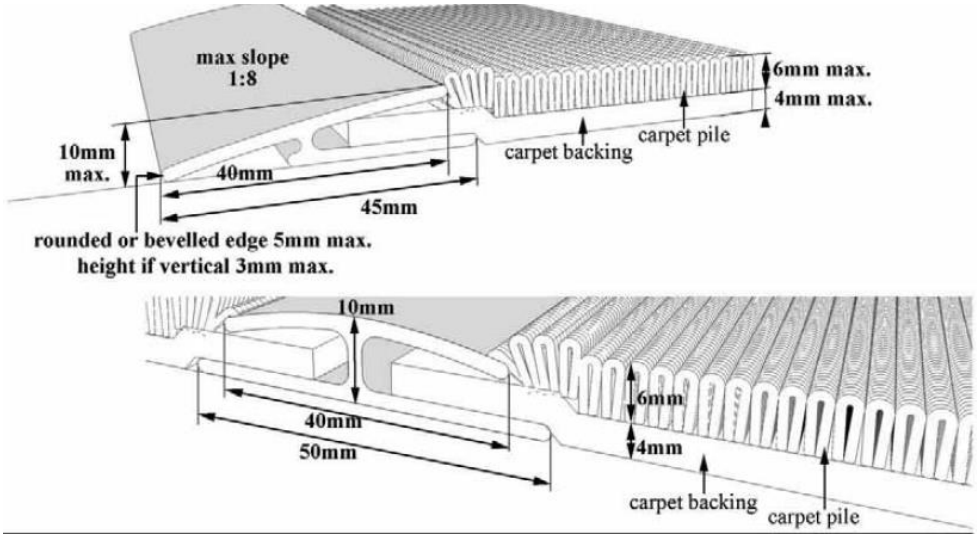


Figure No. 36: Carpet joints on an accessible path of travel

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.

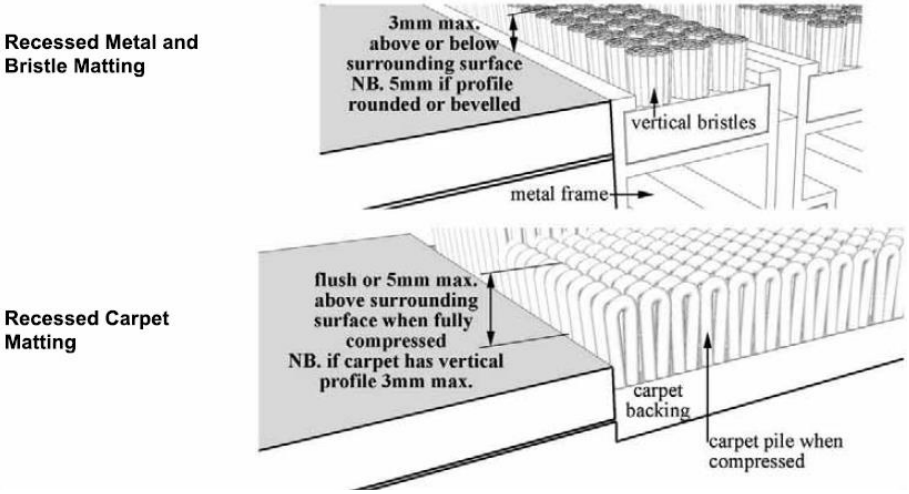


Figure No. 37: Recessed matting height tolerances

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.

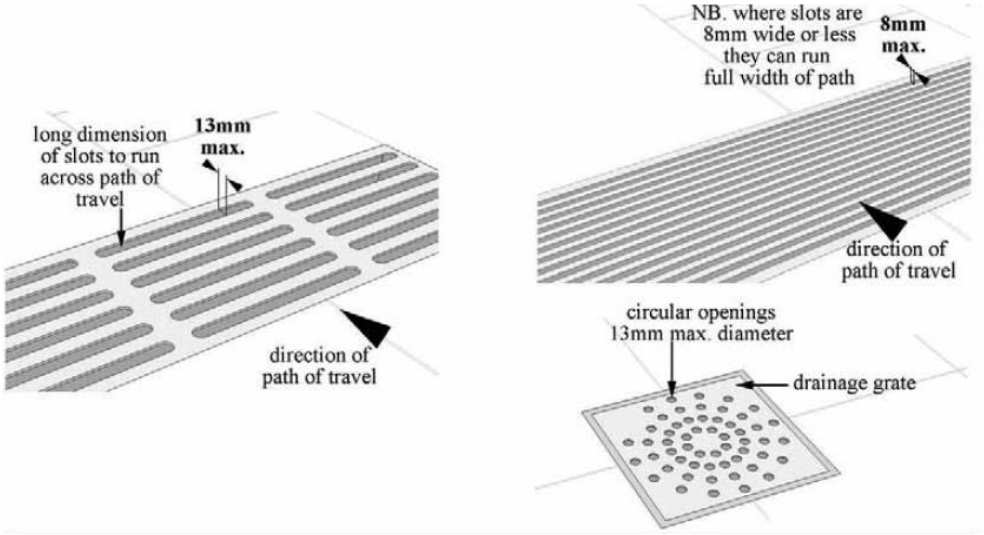


Figure No. 38: Maximum size of openings in grates

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:

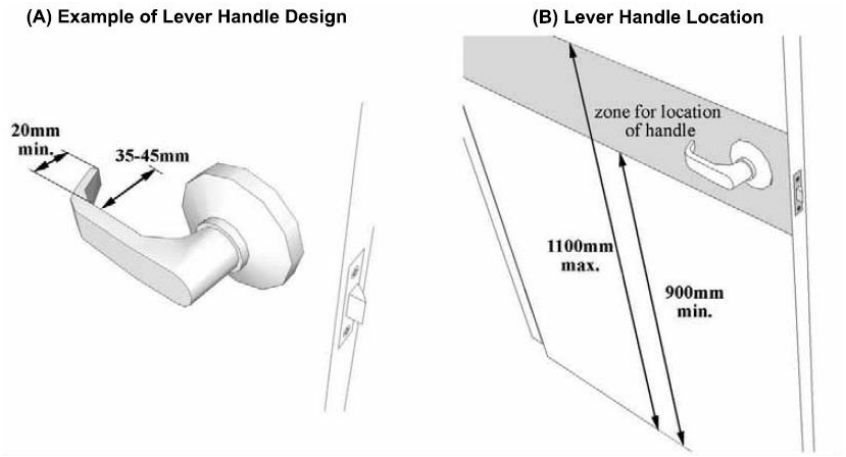


Figure No. 39: Door hardware to swing doors.

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

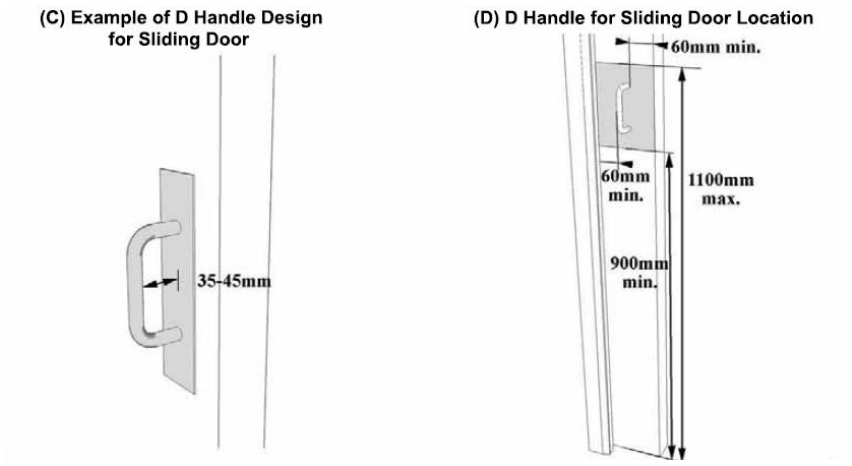


Figure No. 40: Door hardware to sliding doors.

- 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.

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 may not be 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
- Pump Rooms
- Main Switch Room, Chamber Sub, UPS / EDB / Comms Rooms

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.

D4D6

Accessible Car Parking:

It is noted that a total of eighty (80) car parking spaces are proposed to be provided as part of the redevelopment works with four (4) dedicated accessible car parking spaces provided as detailed in the figure below.

Figure No. 41: Provision of accessible car parking spaces within the main car parking area

The ratio of accessible car parking spaces provided is compliant with the requirements of Clause D4D6.

The accessible carparking spaces are required to be designed and constructed in accordance with AS 2890.6.

D4D7

Signage:

Braille and tactile signage complying the requirements of Specification 15 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 E4D5 (door to be provided with exit signs) to be provided with an exit sign and state –
- "Exit"; and
- "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 E4D5 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.

Location of Braille and Tactile Signs

Braille tactile signage including symbols, numbering and lettering is required to be designed in accordance with the following: -

- Braille and tactile components of the sign must be located not less than 1200 - 1600mm above the ground or floor surface.
- Signs with single lines of characters are to have the line of the tactile characters not less than 1250 mm and not more than 1350 mm above the floor or ground surface.
- Signs identifying rooms containing features or facilities listed in D4D7 are required to be located –
  - On the wall on the latch side of the door with the leading edge of the sign located between 50 mm and 300 mm from the architrave; and
  - Where the above is not possible, the sign is permitted to be located on the door itself.
- Signs identifying a door required to by Clause E4D5 to be provided with an exit must be located –
  - On the side that faces a person seeking egress; and
  - On the wall on the latch side of the door with the leading edge of the sign located between 50 mm and 300 mm from the architrave; and

The Braille & tactile egress signage is to be located adjacent or on (see above) each door that: -

- Provides direct egress into a fire isolated stairway.
- Provides direct discharge from the storey into a passageway or lobby (airlock) associated with the fire isolated stairway.
- Provide direct discharge from a fire isolated stairway to open space (discharge door)
- Horizontal exit doors providing egress into an adjoining fire compartment.
- Provides direct egress to a roadway or open space.

The below signage is an example of what will be required: -

Signage Specification: -

- Tactile characters must be raised or embossed to a height of not less than 1 mm and not more than 1.5 mm.
- Title case must be used for all tactile characters, and
  - Upper case tactile characters must have a height of not less than 15 mm and not more than 55 mm, except that the upper-case tactile characters on a sign identifying a door required by Clause E4D5 to be provided with an exit sign must have of not less 20 mm and not more than 55 mm; and
  - Lower case tactile characters must have a minimum height of 50% of the related uppercase characters.
- Tactile characters, symbols, and the like, must have rounded edges.
- The entire sign, including any frame, must have all edges rounded.
- The background, negative space or fill of signs must be of matt or low sheen finish.
- The characters, symbols, logos and other features on signs must be matt or low sheen finish.
- The minimum letter spacing of tactile characters on signs must be 2 mm.
- The minimum word spacing of tactile characters on sigs must 10 mm.
- The thickness of letter strokes must not be less than 2 mm and not more than 7mm.
- Tactile text must be left justified, except that single words may be centre justified.
- Tactile text must be Aerial typeface.

D4D8

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.

D4D9

Tactile Indicators:

Any external stairways and ramps providing access to and from the building will be required to be provided with tactile ground surface indicators.

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.

3.4 Section E – Services and Equipment

Part E1 Fire Fighting Equipment

E1D1	**Fire Hydrants:** A fire hydrant system is required to be provided to serve the building in accordance with the provisions of AS2419.1–2021. Note: The below comprises a limited summary of requirements under AS 2419.1 – 2021. Refer to the full standard for all applicable requirements. *Fire Brigade Booster Assemblies:* A fire brigade booster assembly shall be located (including but not limited to) - + within or affixed to the facade of the building containing the principal pedestrian entrance and not more than 20 m from the principal pedestrian entrance; + within or affixed to the facade of the building containing the principal pedestrian entrance and identified by a visual alarm device (VAD) in accordance with Clause 7.3.2; 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 facade of the building containing the principal pedestrian entrance and not more than 20 m from the main pedestrian entrance. In addition, a fire brigade booster assembly shall be (including but not limited to): + Not more than 10m from a hardstand + Not less than 10m from: ▲ Any high voltage electrical distribution equipment such as transformers and distribution boards ▲ Any electric vehicle charging station regardless of voltage. ▲ Any stored quantity of dangerous goods ▲ Any external combustible storage

+ Not less than 3m from the vent terminal of any gas assembly or gas measurement systems
+ Not less than 3m from the discharge outlet of any building exhaust system when operating in fire mode.

Having regard to the proposed design which considers the existing site circumstances and the setback of the building from the street frontage, the fire hydrant booster assembly is not proposed to be located in accordance with the requirements of AS 2419.1 – 2021. The location of the fire hydrant booster is indicated in the figure below.

The location of the fire hydrant booster will be required to be assessed as part of a Fire Engineering Performance Solution to be prepared by Arup in order to demonstrate compliance with the nominated Performance Requirements of the BCA.

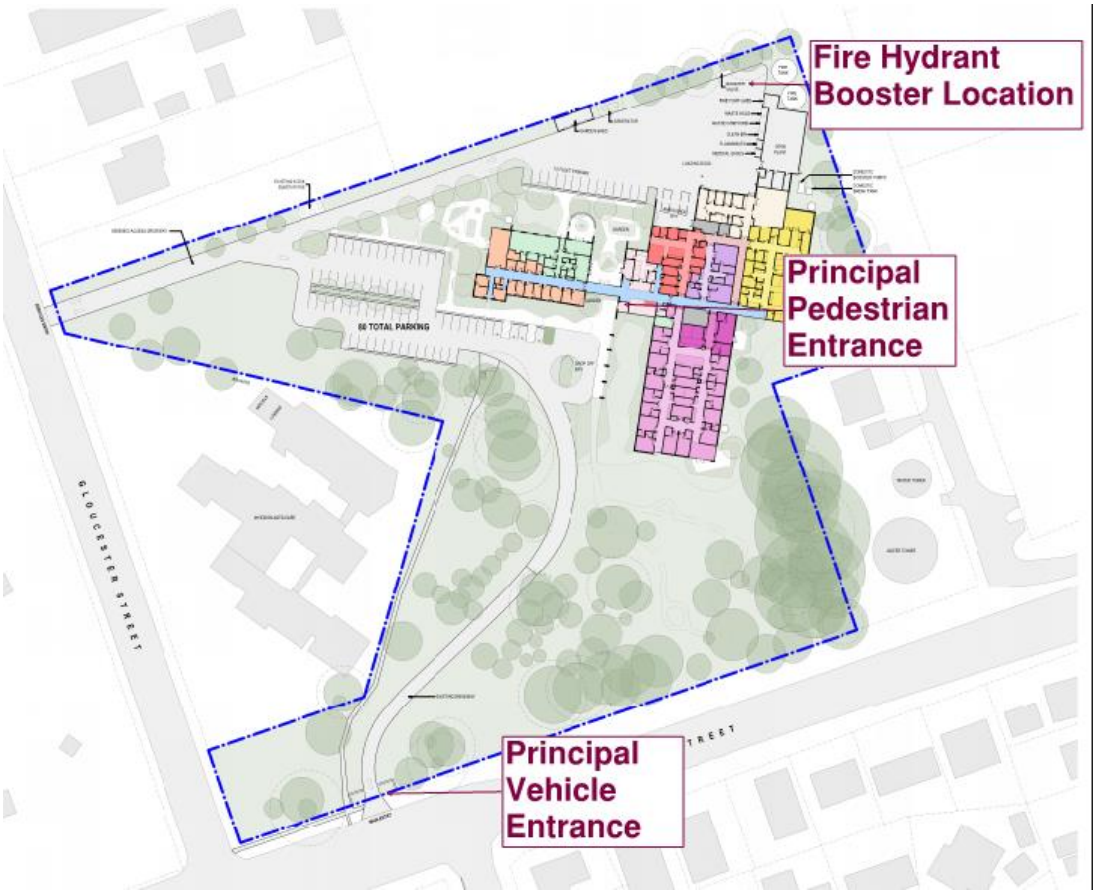


Figure No. 42: Proposed location of the fire hydrant booster relative to the principal pedestrian entrance and vehicle entrance

External Hydrants

External hydrants are required to be located:

+ Not less than 10m from:
  - Any high voltage electrical distribution equipment such as transformers and distribution boards
  - Any electric vehicle charging station regardless of voltage.
  - Any stored quantity of dangerous goods
  - Any external combustible storage
+ Not less than 3m from the vent terminal of any gas assembly or gas measurement systems

+ Not less than 3m from the discharge outlet of any building exhaust system when operating in fire mode.

Internal Hydrants

All internal Hydrants are to be located within 4m of an exit leading directly to open space.

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.

Hydrant Pump Rooms

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. In this instance a minimum of 1000 mm clearance must be provided around all sides of each pump set. For additional requirements refer to Cl. 6.11 of AS 2419.1 – 2021.

Water Storage Tanks

The Water Storage Tanks will be required to be designed and constructed in accordance with Section 5 of AS 2419.1 – 2021.

The Fire Brigade Suction Connections to the Water Storage Tanks will be required to be designed and construction in accordance with the requirements of Section 5.3 of AS 2419.1 – 2021.

E1D3

Fire Hose Reels:

Fire hose reels are required to be installed throughout the building within 4m of exits or adjacent to an internal fire hydrant in accordance with Clause E1D3 and AS 2441 – 2005.

Note: -

1. *A fire hose reel need not be located adjacent to every exit or internal fire hydrant provided system coverage can be achieved.*
2. *Where coverage cannot be achieved by locating a hose reel in accordance with the above, additional fire hose reels may be located in paths of travel to an exit in order to achieve coverage.*
3. *Fire hose reels are not permitted to pass through fire and smoke doors separating compartments.*
4. *Fire hose reels are permitted to pass through fire doors serving shafts or doors serving equipment or electrical supply systems i.e., main switchboard, electrical conductors etc.*

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 will not be provided with compliant fire hose reel coverage i.e., fire separated Comms Rooms.

In this instance, the omission of Fire Hose Reel coverage to the fire separated isolated room will be required to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup to demonstrate compliance with the nominated Performance Requirements of the BCA.

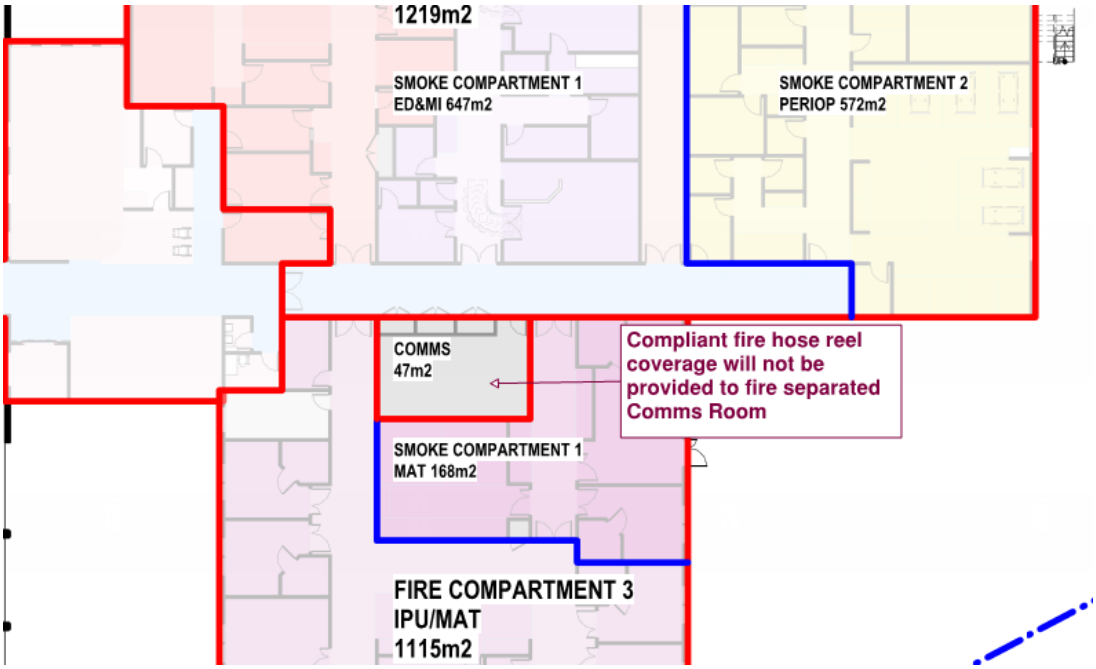


Figure No. 43: Fire separated Comms Rooms will not be provided with compliant fire hose reel coverage.

Services within cupboards Housing FHRs

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

Doors to Cupboards Housing FHR's

Doors to cupboards housing fire hose reels and fire hydrants are to be designed in such a manner that when they are open, they do not impede on the path of travel leading to an exit. In this instance, doors to cupboards will be required to swing 180o open against the wall face or in some instances, two smaller doors may need to be provided to cupboards so as not to impede the width of exits. Special attention is required to cupboards located directly adjacent to fire safety doors throughout the building.

E1D4 – E1D13

Sprinklers:

An Automatic Fire Suppression System is required to be installed throughout the building in accordance with AS 2118.1 – 2017 having regard to the requirements of the Health Infrastructures Engineering Services Guidelines which require the installation of an Automatic Fire Suppression System in all new hospital buildings, irrespective of the requirements of the Building Code of Australia.

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 noted that at the request of HI / LHD sprinklers may be proposed to be omitted from rooms containing low voltage electrical equipment including Comms Rooms etc.

Any omission of sprinklers from rooms containing low voltage equipment would be required to be assessed as part of the Fire Engineering Assessment to be undertaken by Arup to demonstrate compliance with the nominated Performance Requirements of the BCA.

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).

Fire Brigade Booster Assemblies:

A fire brigade booster assembly shall be located (including but not limited to) -

- within or affixed to the facade of the building containing the principal pedestrian entrance and not more than 20 m from the principal pedestrian entrance;
- within or affixed to the facade of the building containing the principal pedestrian entrance and identified by a visual alarm device (VAD) in accordance with Clause 7.3.2; 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 facade of the building containing the principal pedestrian entrance and not more than 20 m from the main pedestrian entrance.

In addition, a fire brigade booster assembly shall be (including but not limited to):

- Not more than 10m from a hardstand
- Not less than 10m from:
  - Any high voltage electrical distribution equipment such as transformers and distribution boards
  - Any electric vehicle charging station regardless of voltage.
  - Any stored quantity of dangerous goods
  - Any external combustible storage
- Not less than 3m from the vent terminal of any gas assembly or gas measurement systems
- Not less than 3m from the discharge outlet of any building exhaust system when operating in fire mode.

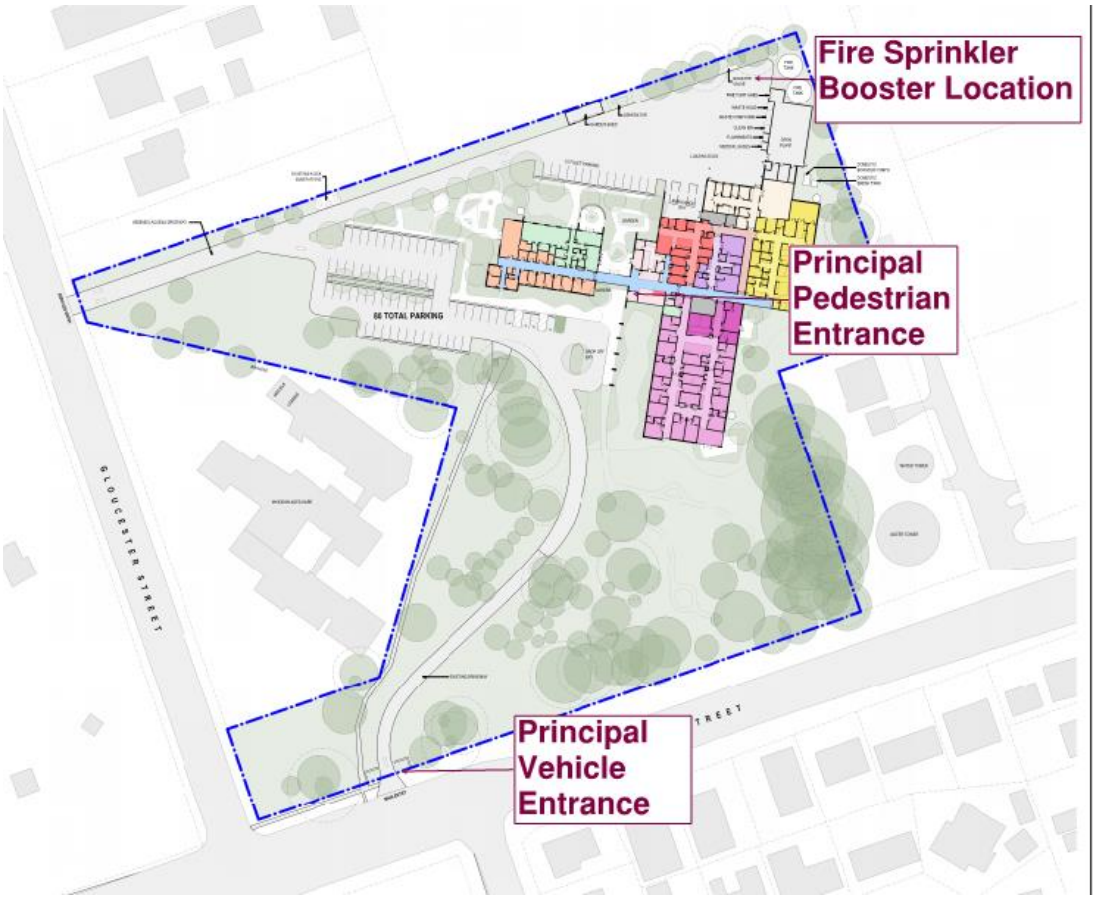


Figure No. 43: Proposed location of the fire sprinkler booster relative to the principal pedestrian entrance and vehicle entrance

Sprinkler Pump Rooms

The fire sprinkler 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. In this instance a minimum of 1000 mm clearance must be provided around all sides of each pump set. For additional requirements refer to Cl. 6.11 of AS 2419.1 – 2021.

In addition to the above, the sprinkler pump room is required to be designed and constructed in accordance with the requirements of Section 4.9 of AS 2118.1 – 2017.

Water Storage Tanks

The Water Storage Tanks will be required to be designed and constructed in accordance with Section 4.5 of AS 2118.1 – 2017.

E1D14

Fire Extinguishers:

Portable fire extinguishers are to be provided and designed in accordance with AS 2444-2001. Powder Type fire extinguishers are not permitted to be provided within any patient care areas.

E2D4/ E2D9/ E2D11/ E2D12/ E2D13

Smoke Hazard Management:

The following smoke hazard management systems are to be installed in the proposed hospital building.

- An Automatic Fire Detection and Alarm System complying with AS 1670.1 – 2018 and S20C4 throughout the entire building.
- Automatic shut-down of mechanical air handling systems upon fire trip in accordance with Section 5 and 6 of AS 1668.1 throughout the entire building.

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 20 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.
- 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 30 m 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 (if installed within fire services cupboards) will be required 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.

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.

Part E4 Visibility in Emergency, Exit Signs and Warning Systems

E4D2 & E4D4

Emergency Lighting:

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

+ 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 120 m^2 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.

E4D5, E4D6 & E4D8

Exits Signs:

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

+ 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.

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.

E4D9

Emergency Warning & Intercom Systems (EWIS):

An Emergency Warning & Intercom System (EWIS) is required to be provided within a Class 9a Hospital Building with a floor area of more than 1000 m^2. In this instance an EWIS will be required to be installed throughout the entire building.

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.

Rationalisation of EWIS Speakers

It is noted that EWIS speakers will likely be rationalised within ward and treatment rooms including patient bedrooms, Operating Theatres, ICU etc 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 Arup to demonstrate compliance with the nominated Performance Requirements of the BCA.

Location of Warden Intercom Points (WIP)

Warden Intercom Points (WIP) are required to be located in the following areas:

+ On each floor as determined by the emergency control organisation defined in AS 3745;
+ At the designated building entry point (in accordance with AS 1670.1), if remote from the Emergency Intercom Control and Indicating Equipment (EICIE);
+ In each emergency zone as determined by the emergency control organisation defined in AS 3745;
+ If required by FRNSW, in or adjacent to the pump rooms, sprinkler valve rooms and hydrant relay booster pumps; and
+ Adjacent to the Fire Detection Control Indicating Equipment (FDCIE) (if remote from the EICIE).

3.5 Section F – Health and Amenity

Part F1	Surface Water Management, Rising Damp & External Waterproofing
F1D3	**Stormwater Drainage:** Stormwater Drainage serving the development is required to be designed and construction in accordance with AS/NZS 3500.3 – 2021.
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.
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
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.
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 and Overflow Protection

F2D2 & F2D3	*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

F3D2	**Roof Coverings:** A roof covering is required to comply with one of the following in accordance with NCC 2022 as part of a DTS Solution: + 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 If the proposed roof covering is not designed in accordance with one of the above, then a Performance Solution will be required to be prepared to demonstrate compliance with Performance Requirement F3P1 with regards to adequate weatherproofing.
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.
F3D5	**Wall Cladding:** Wall cladding is required to comply with one of the following in accordance with NCC 2022 as part of a DTS Solution: + 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 proposed wall cladding is not designed in accordance with one of the above, then a Performance Solution will be required to be prepared to demonstrate compliance with Performance Requirement F3P1 with regards to adequate weatherproofing.

Part F4 Sanitary and Other Facilities

F4D4	**Sanitary Facilities in Class 3 to 9 Buildings:** The proposed hospital is required to be provided with the following: + One kitchen or other adequate facility for the preparation and cooking or reheating of food including a kitchen sink and washbasin; and + Laundry facilities for the cleansing and drying of linen and clothing or adequate facilities for holding and dispatch or treatment of soiled linen and clothing, sanitary products and the like and the receipt and storage of clean linen; and + One shower for each 8 patients or part thereof; and + One island-type plunge bath in each storey containing a ward area.

Island-Type Plunge Bath in Storeys Containing Ward Areas

The DTS Provisions of the BCA require that within ward areas of a hospital, one (1) island type plunge bath is required to be provided.

If an island-type plunge bath is not proposed to be provided with ward areas due to the clinical requirements of the LHD, then omission of the island type plunge bath will be required to be assessed as part of a Performance Solution to be prepared by the Architect or independent BCA Consultant.

Any proposed Performance Solution will require written consent from the LHD.

Ratio of Showers in Treatment Areas

A ratio of 1:8 showers is required to be provided for patients within patient care areas.

Verification is required that a minimum ratio of showers has been provided for patients within ED / MI / PERIOP.

Required Sanitary Facilities:

+ Required Sanitary Facilities for Staff

Occupancy Class as per F4D4

	Closet Pans		Urinals		Washbasins	
	Design Occupancy	Number	Design Occupancy	Number	Design Occupancy	Number
Male Staff	1 – 20 > 20	1 Add 1 per 20	1 11 – 25 26 – 50 > 50	0 1 2 Add 1 per 50	1 – 30 > 30	1 Add 1 per 30
Female Staff	1 – 15 > 15	1 Add 1 per 15	-	-	1 – 30 > 30	1 Add 1 per 30

Anticipated total staffing numbers within the building at any one time is required to be confirmed to ensure that the sanitary facilities documented for staff are sufficient to cater for the expected staff numbers within the building at any one time.

+ Required Sanitary Facilities for Patients

Occupancy Class as per F4D4

	Closet Pans		Urinals		Washbasins	
	Design Occupancy	Number	Design Occupancy	Number	Design Occupancy	Number
Male Patients	1 – 16 > 16	2 Add 1 per 8			1 –8 > 8	1 Add 1 per 30
Female Patients	1 – 16 > 16	2 Add 1 per 16	-	-	1 – 8 >8	1 Add 1 per 8

The Schematic Design Architectural Documentation indicates that an adequate ratio of water closets has been provided for patients throughout the patient care areas of the building.

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 Performance Solution to be prepared by the Architect or independent BCA Consultant.

Any proposed Performance Solution will require written consent from the LHD.

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 adjacent to a bank of male and female sanitary facilities.
- 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.
- The design should allow for the following for patients / members of the public on each level of the building having regard to the size and layout of each floor:
  - A suitable number of unisex accessible sanitary facilities distributed throughout the floor so that all patients / members of the public have access to
  - A suitable number of unisex ambulant sanitary compartments distributed throughout the floor.
- The design is to allow adequate provision of accessible sanitary facilities for members of staff on each level of the building have regard to the size and layout of each floor:
  - A suitable number of unisex accessible sanitary facilities distributed throughout the floor.
  - A suitable number of unisex ambulant sanitary compartment available for staff use.

The below figures indicate the required provision of accessible sanitary facilities for a person with a disability:

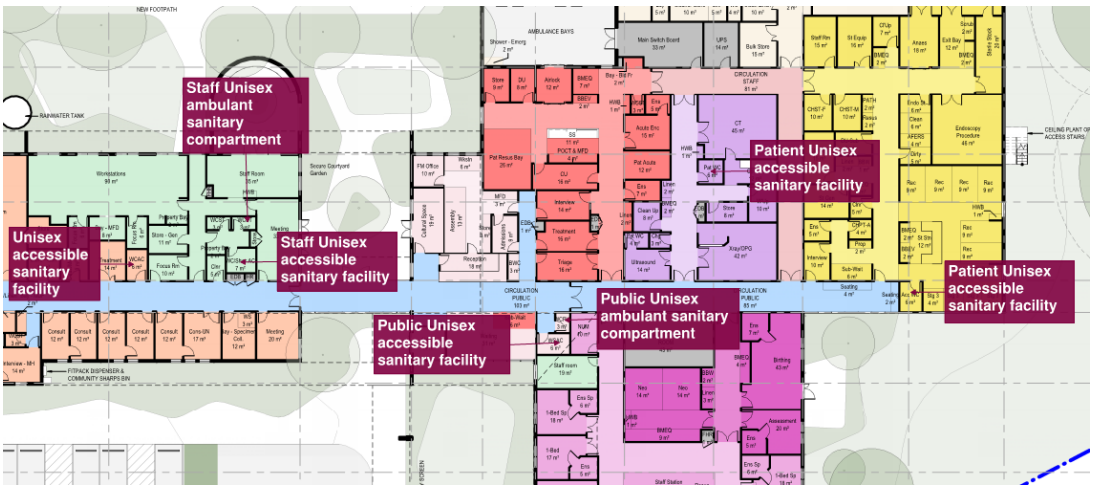


Figure No. 54: Required provision of sanitary facilities for a person with a disability

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 an independent 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:

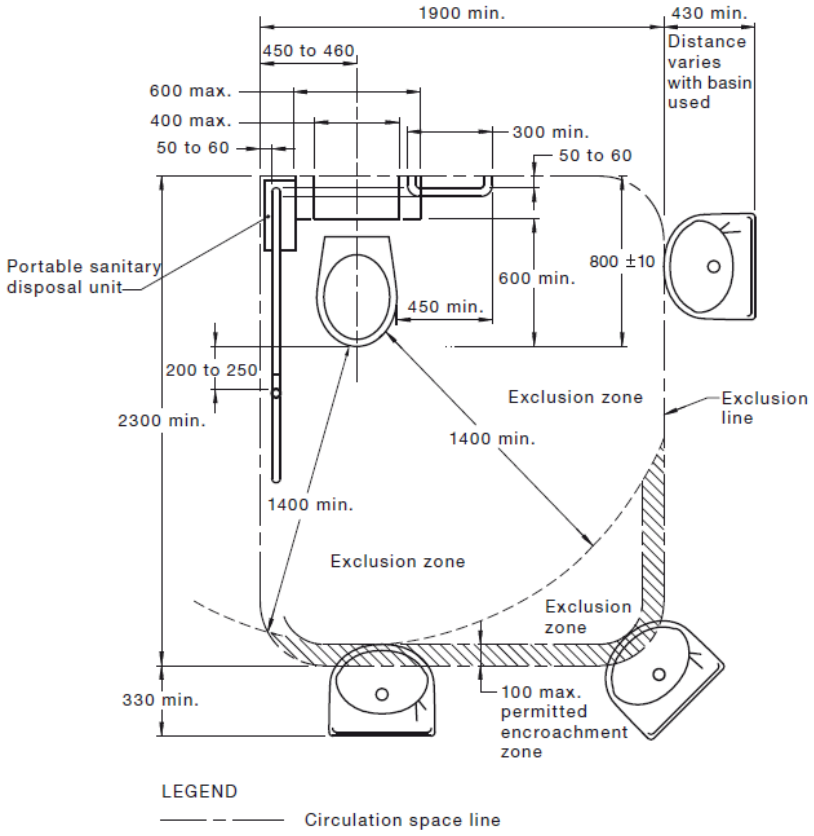


Figure No. 65: Circulation space required within the accessible sanitary facility.

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

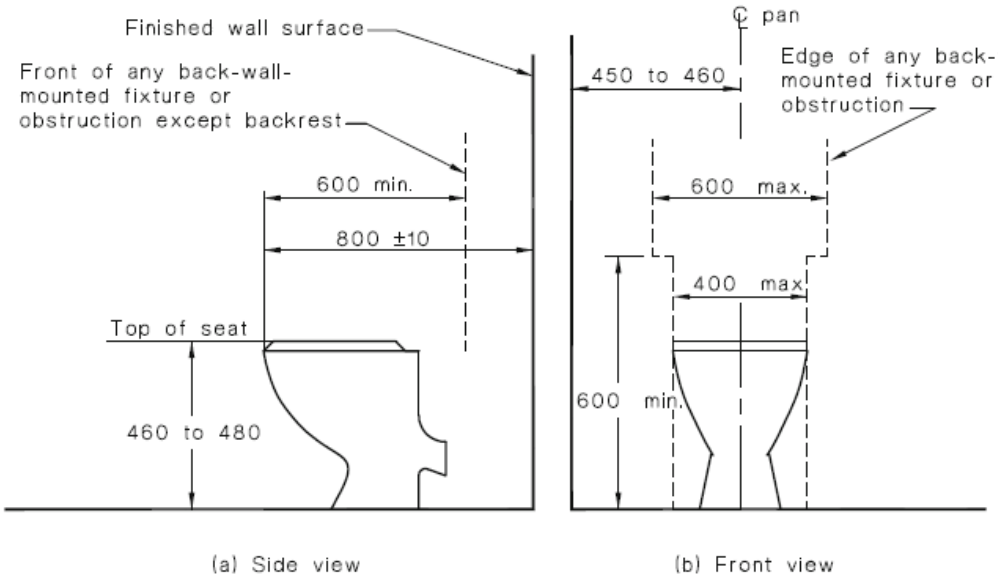


Figure No. 76: Required clearances around the water closet.

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

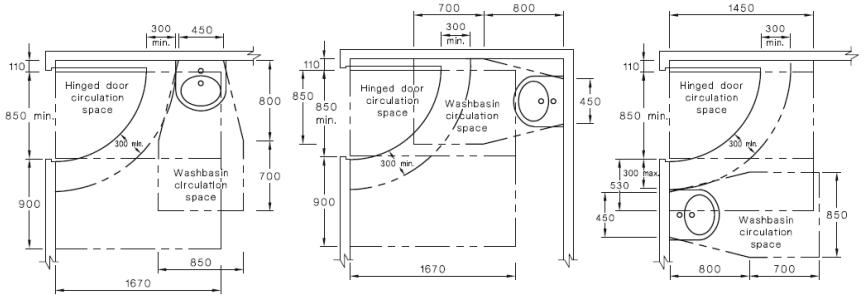


Figure No. 87: Allowable encroachment of a washbasin into the hinged door circulation space

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.

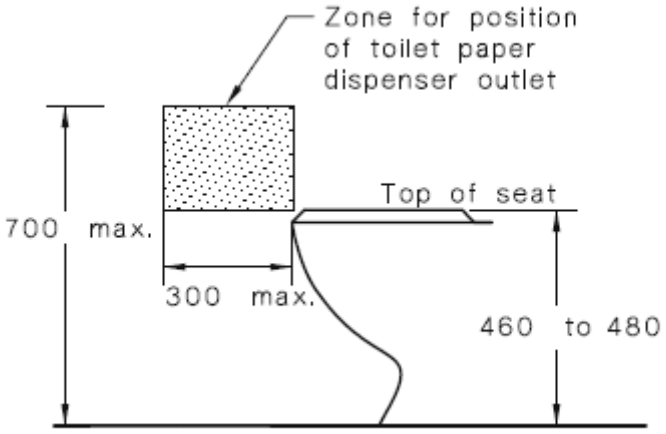


Figure No. 49: Required zone for toilet paper dispenser.

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:

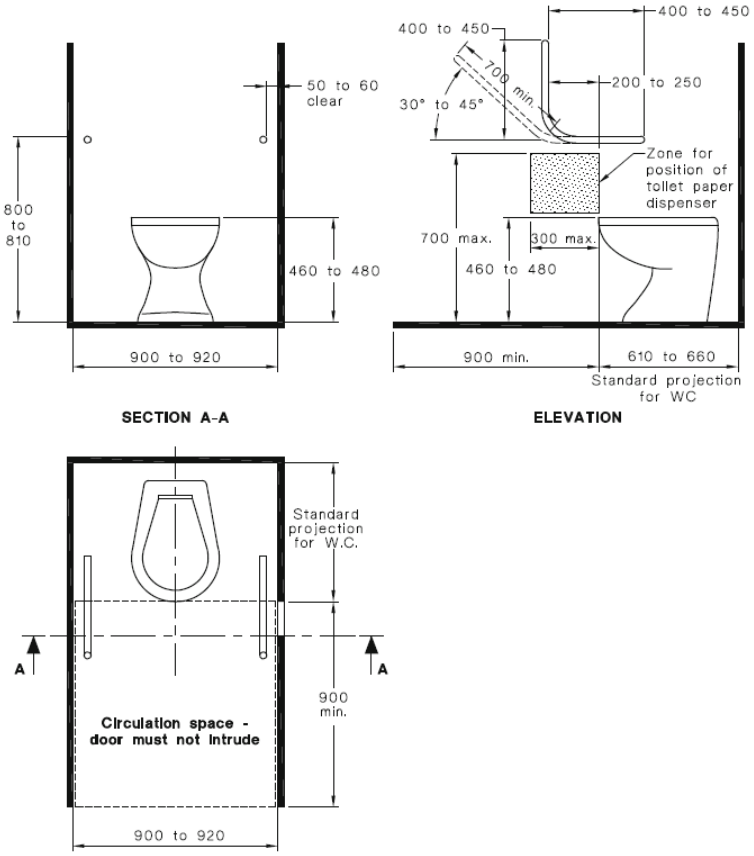


Figure No. 50: Layout requirements for ambulant sanitary compartments

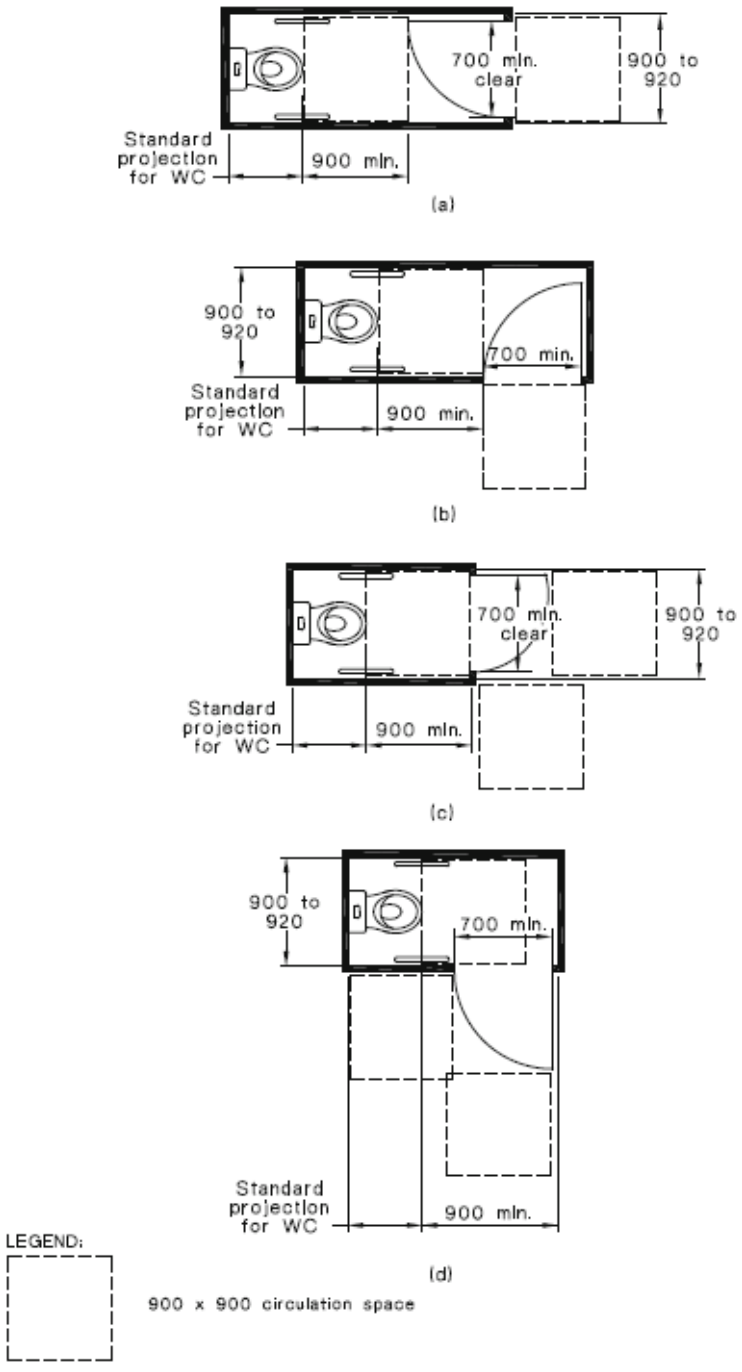


Figure No. 51: Options for doorways leading to ambulant sanitary compartments.

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.

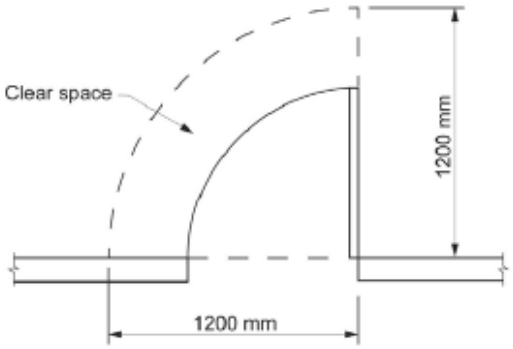


Figure No. 52: Minimum distance required between doorway and pan in a fully enclosed sanitary compartment.

F4D11

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 Ceiling Heights

Part F5

Ceiling Heights:

The minimum ceiling heights in a Class 9a building are as follows –

- a patient care area – 2400 mm;
- an operating theatre or delivery room – 3000 mm; and
- a treatment room, clinic, waiting room, passageway, corridor, or the like – 2400 mm.
- Bathrooms, sanitary compartments, tea preparations rooms, pantries, storerooms or the like – 2100 mmm,
- A commercial kitchen – 2400 mm,
- Above a stairway, ramp, landing or the like – 2000 mm.

Reflected Ceiling Plans will be required to be submitted as the design develops to verify that the required ceiling heights have been provided throughout.

Part F6 Light and Ventilation

F6D2

Light and Ventilation:

Natural Lighting

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 + a proportional combination of windows and roof lights required by (a) and (b). The Schematic Architectural Drawings indicate that the bedrooms provided for sleeping purposes can comply with the above requirements. *Artificial Lighting* Artificial lighting is required to be provided— + in required passageways and ramps; and + if natural light of a standard equivalent to that required by F6D3 is not available, and the periods of occupation or use of the room or space will create undue hazard to occupants seeking egress in an emergency, artificial lighting must 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. Artificial lighting system is required to be designed in accordance with AS/NZS 1680.0.
F6D5	**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 F6D3 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.
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.

3.6 Section G – Ancillary Provisions

Part G6	**Occupiable Outdoor Areas**
Part G6	The external courtyards are occupiable outdoor areas and thus the relevant provisions of Part G6 of the BCA are required to be complied with. The below figures detail typical occupiable outdoor spaces throughout the building.

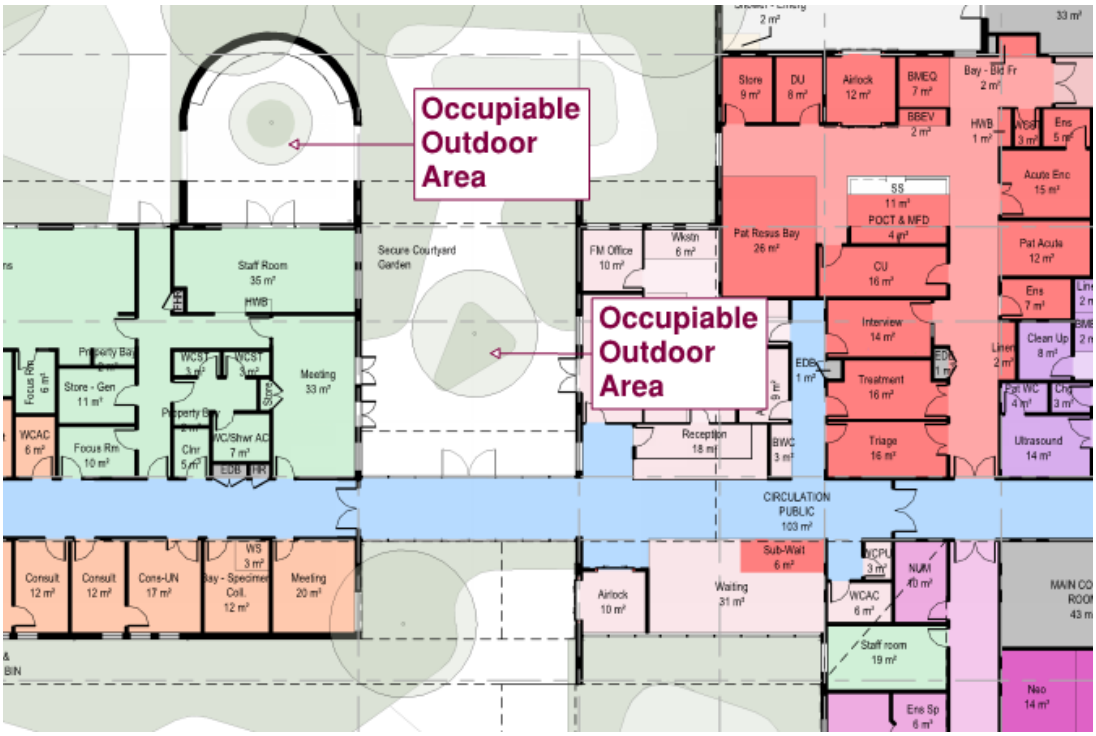


Figure No. 53: Occupiable outdoor areas

G6D2

Fire Hazard Properties:

Any lining, material or assembly in an occupiable outdoor area is required to comply with the requirements of Specification 7 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 7:

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

G6D6

Fire Fighting Equipment:

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

G6D8

Visibility in an Emergency, Exit Signs and Warning Signs

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 E4D9 above, the EWIS speakers are required to be extended to all outdoor areas.

3.7 Section J – Energy Efficiency

Part J	**Energy Efficiency:** The new 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.

4.0 Temporary Fire Safety Strategy – Demolition and Decanting

It is proposed to deliver the redevelopment over 2 stages. Stage 1 consists of demolition of the eastern wing of the existing hospital and construction of the new IPU, Perioperative, Imaging, Emergency, Front-of-House and Backof-House, including new central plant areas. Stage 2 consists of demolition of remainder of the hospital and extending the new hospital to include Ambulatory care and Administration areas. To undertake Stage 1, the existing IPU will need to decant to the western wing of the building. Level 1 in the western wing is substantially fitted out to accommodate IPU patients. Level 2 will require some modifications prior to decanting in readiness for inpatient occupation.

As part of the Stage 1 works, the existing Eastern exit serving the hospital will be demolished leaving the remaining part of the hospital that will not be demolished (until the Stage 2 works commence) with only the Western external stairway and the central stairway which is not fire or smoke separated from the remaining parts of the building.

As a result of the above and having regard to the fact that the existing hospital will remain operational during the Stage 1 of the works, a Temporary Fire Safety Strategy will be required to be prepared by the appointed Fire Safety Engineer in consultation with BM+G, the appointed Head Contractor and the LHD to ensure that during the Stage 1 works, egress can still be provided from the occupied parts of the building to an acceptable level using the requirements of the Building Code of Australia as a benchmark.

5.0 Conclusion

This report contains an assessment of the referenced Schematic Design Documentation for the proposed redevelopment of Temora Hospital against the deemed-to-satisfy provisions of the Building Code of Australia 2022.

Further reviews will be undertaken by BM+G as the design progresses to Design Development and beyond to ensure that the development can comply with the requirements of the Building Code of Australia.

Appendices

+ Appendix 1 – References Tables

Table 1: Non-Combustibility Requirements

+ Building Element	+ Type A Construction
External wall	Non-combustible
Common wall	Non-combustible
Floor and floor framing of lift pit	Non-combustible
All loadbearing internal walls (including those of shafts)	Concrete, masonry or fire-protected timber
Loadbearing fire walls	Concrete, masonry or fire-protected timber
Non-loadbearing internal walls required to be fire-resistant	Non-combustible
Non-loadbearing lift, ventilating, pipe, garbage and the like shafts which do not discharge hot products of combustion.	Non-combustible (subject to conditions outlined in C2D10)

Table 6: Fire-Resisting Construction – Type C Construction

TYPE C CONSTRUCTION: FRL OF BUILDING ELEMENTS				
+ Building Element	+ Class of Building - FRL: (in minutes) Structural adequacy/integrity/insulation			
	2, 3 or 4 part	**5, 7a or 9**	**6**	**7b or 8**
EXTERNAL WALL – (Including any column and other building element incorporated within it) or other external building element, where the distance from any fire-source feature to which it is exposed is:				
For loadbearing parts:				
Less than 1.5m	90/90/90	90/90/90	90/90/90	90/90/90
1.5 to less than 3m	–/–/–	60/60/60	60/60/60	60/60/60
3m or more	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN - Not incorporated in an external wall				
Less than 1.5m	90/–/–	90/–/–	90/–/–	90/–/–
1.5 to less than 3m	–/–/–	60/–/–	60/–/–	60/–/–
3m or more	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS	90/90/90	90/90/90	90/90/90	90/90/90
INTERNAL WALLS				
Bounding public corridors, public lobbies and the like:	60/60/60	–/–/–	–/–/–	–/–/–
Between or bounding sole-occupancy units:	60/60/60	–/–/–	–/–/–	–/–/–

Bounding a stair if required to be rated:	60/60/60	60/60/60	60/60/60	60/60/60
ROOFS	–/–/–	–/–/–	–/–/–	–/–/–

Notes:

1. New external walls that are located 1.5m or more from an allotment boundary / fire source feature require no FRL's.
2. Where a part of a building required to have an FRL depends upon direct vertical or lateral support from another part to maintain its FRL, that supporting part must typically achieve the same FRL. Where that part is also required to be non-combustible, the supporting part must also be non-combustible.
3. An external wall required to have an FRL is only required from the outside.
4. Any lightweight construction in a fire wall or an internal wall required to have an FRL is to comply with Specification 6.
5. The method of attaching or installing a finish, lining, ancillary element, or service installation to a building must not reduce the fire-resistance of that element to below that required.
6. No structural elements are permitted to pass through fire-rated walls.