

# BCA Assessment Report

Schematic Design – REF Submission  
World Class End of Life Program  
Westmead Hospital

**Prepared for:**  
Health Infrastructure

**Revision 3**  
21 August 2024  
Reference: 230221



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# Executive Summary

The following comprises a summary of the key compliance issues 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	<p><i>Importance Level</i></p> <p>The Importance Level provisions of BCA (Section B) are to be acknowledged by the Structural Engineer and addressed to the degree necessary.</p> <p>The building is required to comply with Importance Level 4 and thus the new refurbishment works are required to be designed and constructed in accordance with Importance Level 4.</p>
2. C2D2	<p><i>Type of Construction Required</i></p> <p>The building is required to comply with the requirements of Type A 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 a Construction.</p> <p><i>Roof Lights</i></p> <p>Where a roof is required to have an FRL or its covering is required to be non-combustible (proposed extension required to have a non-combustible roof), roof lights / sky lights or the like installed in the roof are required to comply with the following:</p> <ul style="list-style-type: none"> <li>+ Have an aggregate area of not more than 20% of the roof surface; and</li> <li>+ Be not less than 3 m from:</li> <li>+ Any boundary of the allotment other than the boundary within a road or public place; and</li> <li>+ Any part of the building which projects above the roof unless that part has the FRL required of a fire wall and any openings in that part of the wall for 6 m vertically above the roof light or the like are protected in accordance with Clause C4D5</li> <li>+ Any roof light or the like in an adjoining fire separated section of the building.</li> </ul> <p>Having regard to the proposed design, the triangular skylight to the Palliative Care extension is located within 3m of the external wall of the CASB which extends vertically above the proposed skylight. The existing external wall of the CASB is not fire rated nor are window openings protected as required by Specification 7 of the BCA.</p> <p>Having regard to the above, the skylight will need to be relocated so that it is a minimum of 3m from the external wall of the CASB or alternatively the proposed design will be required to be assessed by the Fire Safety Engineer to determine if the non compliance with Specification 7 can be assessed as part of the Fire Engineering Assessment.</p>
3. C2D10	<p><i>Non-Combustible External Walls</i></p> <p>All materials and or components incorporated in an external wall or fire-rated wall must be non-combustible. This includes but not limited to:</p>



		<ul style="list-style-type: none"> <li>+ Any external wall claddings.</li> <li>+ Any framing or integral formwork systems i.e., timber framing, sacrificial formwork, etc.</li> <li>+ Any external linings or trims i.e., external UPVC window linings, timber window blades, etc.</li> <li>+ Any sarking or insulation contained within the wall assembly.</li> </ul> <p>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.</p> <p>Refer to Table 1 in Appendix 1 for the elements required to be non-combustible.</p> <p>Note that these works are subject to NSW HI DGN 32 and as such <u>bonded laminate cladding is not permitted</u>.</p> <p><i>Timber Noggins in Fire Walls</i></p> <p>In a Building of Type A or B Construction, non-load bearing walls where they are required to be fire-resisting, load bearing walls and load bearing fire walls are required to be constructed of non-combustible construction.</p> <p>Timber noggins are proposed to be located within the internal fire walls throughout the extension to support services, handrails etc.</p> <p>The use of timber noggins within fire rated walls will be required to be assessed as part of the Fire Engineering Assessment to be undertaken by the Fire Safety Engineer to demonstrate compliance with the nominated Performance Requirements of the BCA.</p>
4.	C3D6	<p><i>Fire Separation</i></p> <p>The proposed extension will be required to be fire separated from the existing hospital by a fire wall with an FRL of 120/120/120. Refer to Clause C3D8.</p> <p>The proposed fire compartment size of the extension does not exceed 2000 m<sup>2</sup> with the total fire compartment size being approximately 1205 m<sup>2</sup>.</p> <p><i>Smoke Separation</i></p> <p>The proposed design contains two (2) smoke compartments that will have a floor area that exceeds 500 m<sup>2</sup> with approximate floor areas of 634 m<sup>2</sup> and 571 m<sup>2</sup>.</p> <p>The smoke compartment sizes are proposed to be addressed as part of the Fire Engineering Assessment to be undertaken by the Fire Safety Engineer to demonstrate compliance with the nominated Performance Requirements of the BCA.</p>
5.	C4D4	<p><i>Exposure between Fire Compartments</i></p> <p>As a result of the proposed extension be designed and constructed as a separate fire compartment to the existing fire compartments on Level 05, there will be locations where exposure between different fire compartments at the junction of external walls as detailed in the figure below.</p> <p>Where exposure occurs, the external walls and any associated openings are required to be protected in accordance with the DtS Provisions.</p> <p>In this instance it is noted that the proposed protection of the subject external walls and openings is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by the Fire Safety Engineer in order to demonstrate compliance with the nominated Performance Requirements of BCA.</p>
6.	Spec.11	<p><i>Use of Timber Noggins in Smoke Walls</i></p>

		<p>All parts of smoke walls are required to be constructed of non-combustible construction which extends to timber noggins, plywood used within fire walls.</p> <p>Timber noggins are proposed to be located within the internal smoke walls throughout the extension in order to support services, handrails etc.</p> <p>The use of timber noggins within smoke walls throughout the extension will be required to be assessed as part of the Fire Engineering Assessment to be undertaken by the Fire Safety Engineer in order to demonstrate compliance with the nominated Performance Requirements of the BCA.</p>
7.	Spec.12	<p><i>Swing of Smoke Doors</i></p> <p>All required smoke doors are required to swing in the direction of egress.</p> <p>The fire safety doors located within the Palliative Care Unit along with the required fire safety doors separating the extension from the existing hospital will be required to swing the direction of egress.</p> <p>It is noted that all of fire safety doors are proposed to swing in one direction only as detailed in the figure below.</p> <p>The swing of the doors will be required to be addressed as part of the Fire Engineering Assessment to be undertaken by the Fire Safety Engineer in order to demonstrate compliance with the nominated Performance Requirements of the BCA.</p>
8.	D2D4	<p><i>Access to Fire Isolated Stairway on Level 04 from the Northern Terrace</i></p> <p>Every stairway or ramp serving as a required exit from a Class 9a patient care area must be a fire isolated exit.</p> <p>As part of the proposed design and as part of the egress strategy to ensure that egress travel distance remains within acceptable fire engineering limitations, access from the Northern external terrace will be provided down to the fire isolated stairway in the Northern Elevation between Grids S12 – S13 to ensure that occupants have access to an alternative exit from the terrace area.</p> <p>Due to the fact that access to the fire isolated stairway will be provide via an non fire isolated stairway down to Level 04, a technical non compliance exists by virtue of the fact that egress from the storey containing patient care areas is not provided via a fire isolated stairway.</p> <p>The provision of the external non fire isolated stairway providing access down to the fire isolated stairway will be required to be assessed as par to the Fire Engineering Assessment to be undertaken by the Fire Safety Engineer to demonstrate compliance with the nominated Performance Requirements of the BCA.</p>
9.	D2D5	<p><i>Exit Travel Distances</i></p> <p>Based on a review of Schematic Design Drawings, the following is noted in relation to egress travel distance:</p> <ul style="list-style-type: none"> <li>+ Egress travel distance from the ensuite of 1BR-SP 01.01.069 is 31m to an alternative exit (1 m over the maximum permitted distance of the DTS Provisions of the BCA).</li> </ul> <p>The travel distance non-compliance is within the acceptable limitations for a fire engineering assessment.</p> <ul style="list-style-type: none"> <li>+ Egress travel distance from the Eastern Terrace is up to 37 m to a point of choice back through the common doorway leading to the corridor (25 m over the maximum permitted distance of the DTS Provisions of the BCA).</li> </ul>



		<p>This assessment to date has been undertaken without a review of the proposed landscaping design which may affect the travel distance identified above.</p> <p>The extended travel distance to a point of choice back through the communal door will be required to be assessed further by BM+G and the Fire Safety Engineer to determine if there is a viable pathway for a Fire Engineering Assessment to be undertaken.</p> <p>+ Egress travel distance from the Southern Terrace is up to 25 m to a point of choice back through the common doorway leading to the corridor (13 m over the maximum permitted distance of the DTS Provisions of the BCA).</p> <p>This assessment to date has been undertaken without a review of the proposed landscaping design which may affect the travel distance identified above.</p> <p>The travel distance non-compliance to a point of choice is within the acceptable limitations for a fire engineering assessment from an external area.</p> <p>+ Egress travel distance from the Northern Terrace is up to 23 m to a point of choice back through the common doorway leading to the corridor (11 m over the maximum permitted distance of the DTS Provisions of the BCA).</p> <p>This assessment to date has been undertaken without a review of the proposed landscaping design which may affect the travel distance identified above.</p> <p>The travel distance non-compliance to a point of choice is within the acceptable limitations for a fire engineering assessment from an external area.</p> <p>+ Egress travel distance from parts of the Northern Terrace is up to 41 m and 46 m to an alternative exit (16 m over the maximum permitted distance of the DTS Provisions of the BCA).</p> <p>This assessment to date has been undertaken without a review of the proposed landscaping design and the detailing of the external stairway leading down to the existing fire isolated stairway which may affect the travel distance identified above.</p> <p>The travel distance non-compliance to an alternative exit is within the acceptable limitations for a fire engineering assessment from an external area.</p> <p>Each of the above egress travel distance non compliances will be required to be reviewed in detail by the Fire Safety Engineer to verify that a Fire Engineering Assessment can be undertaken to demonstrate compliance with the nominated Performance Requirements of the BCA.</p>
10.	D2D6	<p><i>Distance between Alternative Exits</i></p> <p>Based on a review of Schematic Design Drawings, the following is noted in relation to egress travel distance between alternative exits:</p> <p>+ Egress travel distance between alternative exits from the Northern Terrace is up to 80 m (35 m over the maximum permitted distance of the DTS Provisions of the BCA)</p> <p>This assessment to date has been undertaken without a review of the proposed landscaping design and the detailing of the external stairway leading down to the existing fire isolated stairway which may affect the travel distance identified above.</p> <p>The above egress travel distance non compliance between alternative exits will be required to be reviewed in detail by the Fire Safety Engineer to verify that a Fire Engineering Assessment can be undertaken in order to demonstrate compliance with the nominated Performance Requirements of the BCA.</p>
11.	D2D16	<p><i>Horizontal Exits</i></p> <p>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</p>

		<p>directly into another fire compartment which has at least one required exit which is not a horizontal exit.</p> <p>Having regard to the proposed design, there will be instances whereby occupants will egress from one compartment into an adjoining compartment which will not be provided with direct access to a fire isolated stairway or exit discharging directly to open space which is a technical non-compliance with Clause D2D16 of the BCA.</p> <p>Travel via the horizontal exits serving the palliative care unit will be required to be assessed as part of the Fire Engineering Assessment to be undertaken by the Fire Safety Engineering to demonstrate compliance with the nominated Performance Requirements of the BCA.</p>
12.	D3D24	<p><i>Provision of Sliding Doors in Patient Care Areas</i></p> <p>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.</p> <p>Doors in the path of travel in patient care areas are not permitted to be sliding doors.</p> <p>The provision of sliding doors within patient care areas as identified on the drawings will be required to be assessed as part of a Fire Engineering Assessment to be undertaken by Arup to demonstrate compliance with the nominated Performance Requirements of the BCA.</p>
13.	D3D25	<p><i>Swing of Horizontal Exit Doors</i></p> <p>All required horizontal exit doors are required to swing in the direction of egress.</p> <p>The horizontal exit doors serving the palliative care unit are proposed not to swing in the direction of egress (or only swing in one direction).</p> <p>The swing of the horizontal exit doors serving the Palliative Care Unit will be required to be addressed as part of a Fire Engineering Performance Assessment to be undertaken by the Fire Safety Engineer in order to demonstrate compliance with the nominated Performance Requirements of the BCA.</p>
14.	Part D4	<p><i>Access for a Person with a Disability from the Main Building Entry</i></p> <p>Access for persons with disabilities must be provided, at a minimum, to and within all areas normally used by the occupants throughout the refurbishment. This includes too and within all beds, throughout all patient care areas, staff areas, communal areas and patient balconies.</p> <p>Based on a review of the Schematic Design Documentation, the proposed development works can comply with the requirements of Part D4 of the BCA.</p> <p>Refer to the body of the Report for details pertaining to compliance for a person with a disability.</p>
15.	E1D2	<p><i>Fire Hydrants</i></p> <p>Fire hydrant coverage is required to be provided to the refurbishment area and patient balconies in accordance with AS2419.1–2021.</p> <p><i>Internal Hydrants</i></p> <p>Internal fire hydrants located within the existing fire isolated stairways can be relied upon to provide coverage, however additional fire hydrants will likely be required to provide compliant coverage to each of the occupiable outdoor areas.</p>



		<p>The provision of additional on-floor hydrants will be required to be assessed as part of a Fire Engineering Performance Solution to be prepared by the appointed Fire Safety Engineer having regard to the requirements of AS 2419.1 – 2021 which no longer permit on floor hydrants as a DTS solution.</p>
16.	E1D2	<p><i>Fire Hose Reels</i></p> <p>Fire hose reels are required to be installed throughout the extension within 4 m of exits or adjacent to an internal fire hydrant in accordance with Clause E1D3 and AS 2441 – 2005.</p> <p>Compliant fire hose reel coverage will be required to be provided to the terrace (occupiable outdoor areas). All fire hose reels installed to provide coverage to the terrace will be required to be installed to an internal fire hydrant.</p> <p><i>Fire Hose Reel Coverage to Fire Separated Rooms</i></p> <p>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.</p> <p>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.</p>
17.	E1D4	<p><i>Sprinklers</i></p> <p>An Automatic Fire Suppression System is required to be installed throughout the proposed palliative care unit in accordance with AS 2118.1 – 2017 and AS 2118.6 – 2012 consistent with the base building design. Sprinklers will also be required to be extended to all covered patient balcony areas.</p>
18.	E2D3 – E2D21	<p><i>Automatic Fire Detection &amp; Alarm System</i></p> <p>An Automatic Fire Detection &amp; Alarm System is required to be installed throughout the palliative care unit 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.</p> <p><i>Zone Smoke Control System</i></p> <p>The existing CASB is provided with a Zone Pressurization System installed in accordance with the requirements of BCA 2016 and AS 16668.1 – 2015.</p> <p>In this instance, the Zone Smoke Control System serving the proposed Palliative Care Unit will be required to comply with the provisions of BCA 2022 which requires a 20 kPa between vertical fire compartments (Level 04 below and Level 05) along with maintaining compliance with the base building design which has been designed to achieve a pressure differential of 20 kPa between horizontal fire compartments on Level 05.</p> <p>Having regard to the numerous sliding doors opening on the patient balconies on Level 05, there may be an impact on the required pressure differentials being achieved between vertical and horizontal fire compartments.</p> <p>This is to be reviewed in detail by the Mechanical Design Consultant as part of the Design Development process.</p> <p><i>Manual Call Points</i></p>

		<p>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.</p> <p><i>Manual Call Points in Fire Hose Reel / Fire Hydrant Cupboards</i></p> <p>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.</p> <p>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.</p> <p>Verification is required as to whether any manual call points are proposed to be installed within fire hose reel cupboards.</p> <p>If they are proposed to be installed in cupboards, then the clear space around the manual call points will be required is proposed 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.</p> <p><i>Mechanical Air Handling Systems</i></p> <p>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 &amp; Alarm System and Automatic Fire Suppression System.</p>
19.	E4D9	<p><i>Emergency Warning &amp; Intercom Systems (EWIS)</i></p> <p>An Emergency Warning and Intercom System is required to be installed throughout the palliative care unit and to all external terrace areas in accordance with AS 1670.4 – 2018.</p> <p><i>Rationalisation of EWIS Speakers</i></p> <p>It is understood that EWIS speakers are likely to be rationalized from patient bedrooms where the activation of the speaker within the room may cause trauma to the patient.</p> <p>The rationalization of EWIS speakers from within patient bedrooms will be required to be assessed as part of the Fire Engineering Assessment to be undertaken by the Fire Safety Engineering to demonstrate compliance with the nominated Performance Requirements of the BCA.</p>
20.	F3D2	<p><i>Roof Coverings</i></p> <p>A roof covering is required to comply with one of the following in accordance with NCC 2022 as part of a DTS Solution:</p> <ul style="list-style-type: none"> <li>+ Roof tiles complying with AS 2049 and fixed in accordance with AS 2050; or</li> <li>+ Metal sheet roofing complying with AS 1562.1; or</li> </ul>



		<ul style="list-style-type: none"> <li>+ Plastic sheet roofing designed and installed in accordance with AS 1562.3; or</li> <li>+ Terracotta, fibre-cement and timber slates and shingles designed and installed in accordance with AS 4597.</li> <li>+ An external waterproofing membrane consisting of materials complying with AS 4654.1 and designed and installed in accordance with AS 4654.2</li> </ul> <p>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.</p>
21.	F3D5	<p><i>Wall Cladding</i></p> <p>Wall cladding is required to comply with one of the following in accordance with NCC 2022 as part of a DTS Solution:</p> <ul style="list-style-type: none"> <li>+ Masonry, including masonry veneer, unreinforced and reinforced masonry in accordance with AS 3700</li> <li>+ Autoclaved aerated concrete in accordance with AS 5146.3</li> <li>+ Metal cladding in accordance with AS 1562.1</li> </ul> <p>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.</p>
22.	F4D4	<p><i>Island-Type Plunge Bath in Storeys Containing Ward Areas</i></p> <p>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.</p> <p>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.</p> <p>Any proposed Performance Solution will require written consent from the LHD.</p> <p><i>Wc's for Staff</i></p> <p>Having regard to the proposed design, the following requires verification:</p> <ul style="list-style-type: none"> <li>+ Total staff numbers within the proposed palliative care unit at any one time</li> <li>+ Is the proposed accessible sanitary facility available for use by both staff and patients / public.</li> <li>+ Verification is required that staff within the palliative care unit have access to the sanitary facilities provided within the CASB along with their location.</li> </ul> <p><i>Wc's for Patients</i></p> <p>The Schematic Design Architectural Documentation indicates that an adequate ratio of water closets has been provided for patients throughout the patient care area.</p> <p><i>Provision of Unisex Sanitary Compartments containing Water Closets</i></p>

		<p>Sanitary compartments containing water closets are required to be provided separately for males and females.</p> <p>The provision of unisex sanitary compartments containing water closets in lieu of separate facilities for males and females will be required to be assessed as part of Performance Solution to be prepared by the Architect or independent BCA Consultant.</p> <p>Any proposed Performance Solution will require written consent from the LHD.</p>
23.	F4D5	<p><i>Accessible Sanitary Facilities</i></p> <p>A unisex accessible sanitary facility is required to be provided on the storey for a person with a disability.</p> <p>The Schematic Design Architectural Drawings indicate the provision of a unisex accessible sanitary facility for a person with a disability. Verification is required from the LHD as to whether this facility can shared by staff and members of the public.</p> <p><i>Ambulant Sanitary Compartment</i></p> <p>The sanitary facility located adjacent to the unisex accessible sanitary facility will be required to be designed to facility an Ambulant Sanitary Compartment in accordance with A 1428.1 – 2009.</p> <p><i>Provision of Unisex Ambulant Sanitary Compartment</i></p> <p>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.</p> <p>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.</p>
24.	Section J	<p><i>Energy Efficiency</i></p> <p>The new building works will be subject to compliance with the Energy Efficiency Provisions of BCA 2022 Section J relating to (as applicable):</p> <ul style="list-style-type: none"> <li>+ J1: Energy Efficiency Performance Requirements</li> <li>+ J2: Energy Efficiency</li> <li>+ J4: Building Fabric</li> <li>+ J5: Building Sealing</li> <li>+ J6: Air-Conditioning and Ventilation</li> <li>+ J7: Artificial Lighting and Power</li> <li>+ J8: Heated Water Supply and Swimming Pool and Spa Pool Plant</li> <li>+ J9: Energy Monitoring and On-Site Distributed Energy Resources</li> </ul>

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

+ BCA DTS Clause	+ BCA Performance Requirement	+ Description
1. C2D10	C1P1, C1P2, C1P3, C1P4	Timber noggins located within fire walls.



2.	<b>C4D4</b>	C1P2, C1P8	Protection of external walls and associated openings in different fire compartments
3.	<b>S11C2</b>	C1P1, C1P2, C1P3, C1P4	Timber noggins located within smoke walls.
4.	<b>S12C4</b>	C1P3, D1P2	Swing of fire safety doors against the direction of egress.
5.	<b>D2D4</b>	DP5, E2P2	Travel via a non-fire isolated external stairway prior to reaching the fire isolated stairway on Level 04 from the Northern Terrace.
6.	<b>D2D5</b>	D1P4, E2P2	Extended travel distance to a point of choice and alternative exit.
7.	<b>D2D6</b>	D1P4, E2P2	Extended travel distance between alternative exits
8.	<b>D2D16</b>	D1P4	Travel via horizontal exits.
9.	<b>D3D25</b>	CP3, D1P2	Swing of horizontal exit door against the direction of egress
10.	<b>E1D3</b>	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.	<b>S20C3</b>	E2P2	Clearance around manual call points in fire hose reel cupboards
12.	<b>E4D9</b>	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.	F4D4	F4P1	Omission of island-type plunge bath
2.	F4D4	F4P1	Males and females sharing unisex sanitary compartments containing water closets
3.	F4D4	F4P1	Males and females sharing unisex ambulant sanitary compartments

## + Contents

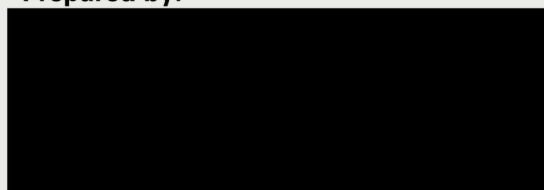
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## + Report Status

+ Date	21 August 2024
+ Revision	3
+ Status	Issued for Schematic Design Phase – REF Submission
+ Author	
+ Reviewed	

### Prepared by:



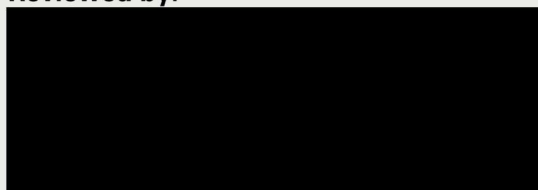
Director

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Building Surveyor-Unrestricted (NSW)

**BDC No.:** 1821

### Reviewed by:



Director

**BM+G**

Building Surveyor-Unrestricted (NSW)

**BDC No.:** 0032

## + Revision History

+ Revision	0	+ Date	04.09.2023
+ Status	Masterplan Report Phase		

+ Revision	1	+ Date	26.10.2023
+ Status	Concept Design Report Phase		

+ Revision	2	+ Date	12.07.2024
+ Status	Schematic Design Report Phase		

+ Revision	3	+ Date	21.08.2024
+ Status	Schematic Design Report Phase – REF Submission		

## 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 for the REF Submission comprising delivery 15 Palliative & Supportive Care beds for Westmead Hospital in a new build facility constructed on the rooftop of the existing Clinical Acute Services Building (linking the Palliative Care & Supportive beds) against the relevant provisions of the Building Code of Australia 2022 (BCA).

During schematic design a series of workshops took place to provide deeper understanding of the following:

- + Existing structure and services
- + Changes required to building envelope
- + Bedroom configurations
- + View and access to outdoor space
- + Detailed function of each space
- + Clear understanding of staff and patient flow
- + Public interaction with the space
- + Materiality and interior design
- + Furniture and joinery arrangement
- + Maintenance and security of the unit

During this process BVN continued to develop the design with the principles agreed during previous phases of the design:

- + Rooms should have large windows for patient outlook and maximise Daylight within the room. Rooms, where possible, should have direct Access to outdoor space to enable the patient to be taken by bed or by Chair to the balcony area.
- + Facade design studies to suit the new layout and provide openings for every bedroom and communal space has been undertaken.
- + Rooflights provided where possible at key communal, staff and entry spaces
- + Landscape areas, bedroom external spaces, communal courtyard and staff courtyard spaces to be maximised where possible.
- + Schematic design developed the clinical planning, facade, landscape and interior design over a series of workshops. The three Workshops focused on:
  - ▲ Finalising the 1:100 Plan
  - ▲ Facade design to suit the internal planning
  - ▲ Landscape design for a World Class Palliative Care Unit
  - ▲ Interior Design for special areas



The clinical planning of the unit was developed over the three workshops. Following additional LHD comments in Workshop 3, the layout was updated for Option 2.

The landscape and façade design were also updated to align with updated internal planning. An assessment of BCA compliance with respect to the new works is included within Section 3.0.

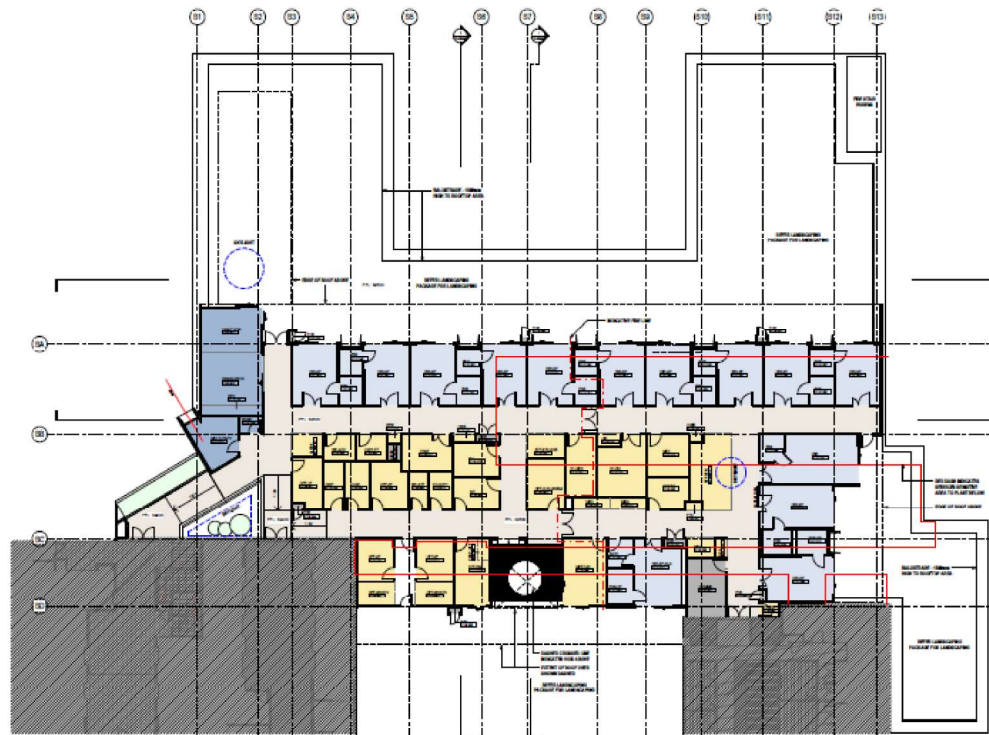


Figure 1: Option No. 2 Plan

## 1.2 Aim

The aim of this report is to:

- + Undertake an assessment of the proposed Schematic Architectural Documentation for the REF Submission against the deemed-to-satisfy provisions of the BCA.
- + Identify matters that require plan amendments in order to achieve compliance with the BCA.
- + Identify 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

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

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

## 1.4 Referenced Documentation

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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 Health Engineering Services Guide dated 12 December 2022.
- + Architectural Schematic Design Drawings prepared by BVN dated 03 July 2024.

## 1.5 Regulatory Framework

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- + 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

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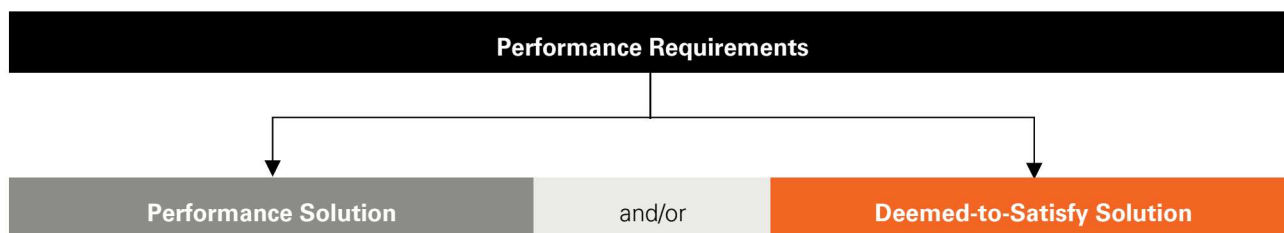
Pursuant to Section 6.28 of the Environmental Planning and Assessment Act 1979, the proposed building is subject to compliance with the relevant requirements of the BCA as in force at the time of the date of invitation for tenders to carry out the Crown building work. The current BCA that is in force 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 building's 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-

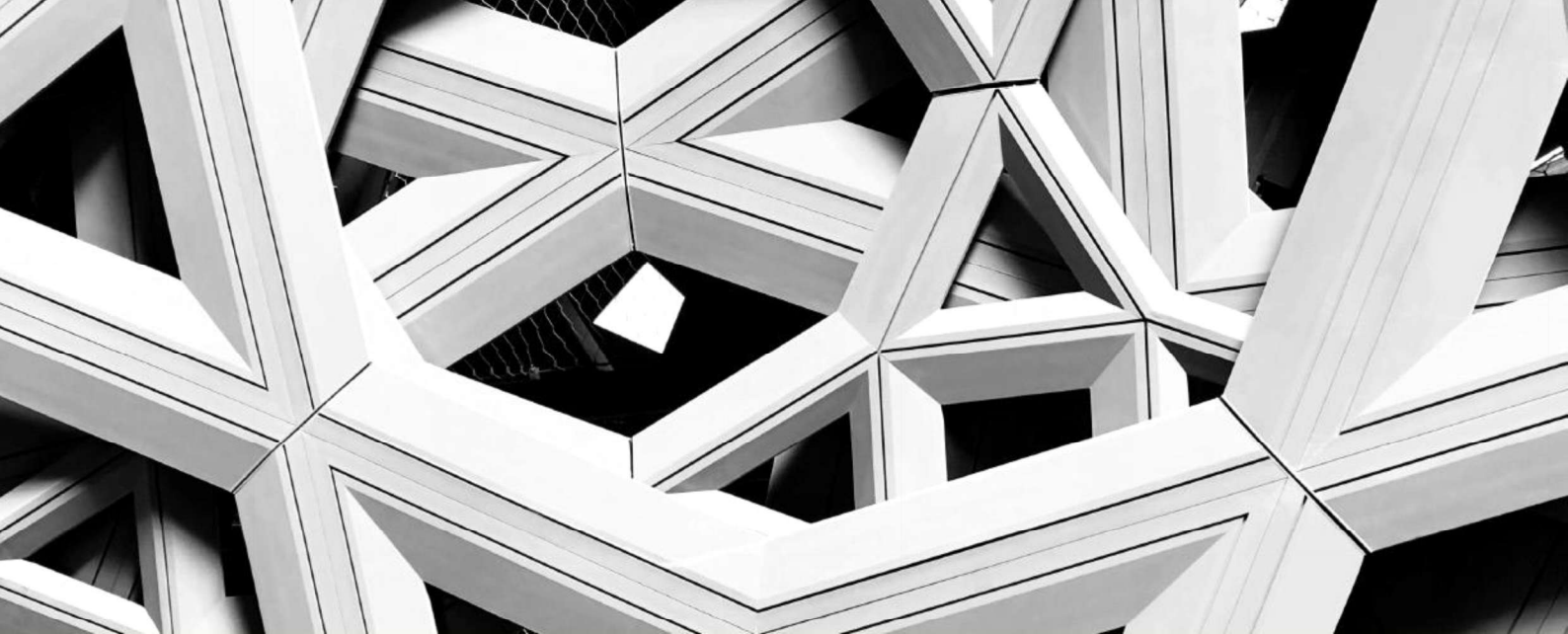
- complies with the Performance Requirements; or
- is shown to be at least equivalent to the Deemed-to-Satisfy Provisions; or

- + 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:

✦ <b>BCA Classifications:</b>	Proposed Development – Class 9a Existing Building - Class 3, Class 5, Class 6, Class 7b, Class 9a, Class 9b
✦ <b>Rise in Storeys:</b>	Thirteen (13)
✦ <b>Type of Construction:</b>	Type A Construction
✦ <b>Importance Level (Structural)</b>	4
✦ <b>Sprinkler Protected Throughout</b>	Yes
✦ <b>Effective Height</b>	> 25 m & > 50 m
✦ <b>Floor Area</b>	1205 m <sup>2</sup>
✦ <b>Largest Fire Compartment</b>	1205 m <sup>2</sup>
✦ <b>Climate Zone</b>	Zone 6



## 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 <sup>2</sup>	3,500m <sup>2</sup>	2,000m <sup>2</sup>
	Max. volume	30,000m <sup>3</sup>	21,000m <sup>3</sup>	21,000m <sup>3</sup>
5, 9b or 9c	Max. floor area	8,000m <sup>2</sup>	5,500m <sup>2</sup>	3,000m <sup>2</sup>
	Max. volume	48,000m <sup>3</sup>	33,000m <sup>3</sup>	18,000m <sup>3</sup>

## 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	Building on same allotment	> 6 m
East	Building on same allotment	> 6 m
West	Building on same allotment	> 6 m
South	Building on same allotment	> 6m

**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 structural engineer will need to certify that the structural capacity of any existing building will not be reduced as a result of the new works and that the building is considered structurally adequate for its intended use.
- + The Importance Level provisions of BCA (Section B) are to be acknowledged by the Structural Engineer and addressed to the degree necessary.  
The works are 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.
- + Consideration may be given to compliance with AS 3826-1998 - Strengthening existing buildings for earthquake for any required remedial works to the existing building where appropriate.

### 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 A 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 a Construction.

##### + Type A Construction:

- + Load-bearing external walls and columns must achieve an FRL regardless of distance from boundary / separate building.
- + Non load-bearing external walls (and columns incorporated within) need not achieve an FRL if > 3m from a boundary or separate building.
- + Floors must achieve a 2-hour FRL.
- + Roof must be of non-combustible construction.
- + Internal columns on the floor immediately below the roof need not achieve an FRL.

All new works will be required to be constructed in accordance with the requirements of the Type A Construction as applicable.

### Roof Lights

Where a roof is required to have an FRL or its covering is required to be non-combustible (proposed extension required to have a non-combustible roof), roof lights / sky lights or the like installed in the roof are required to comply with the following:

- + Have an aggregate area of not more than 20% of the roof surface; and
- + Be not less than 3 m from:
  - + Any boundary of the allotment other than the boundary within a road or public place; and
  - + Any part of the building which projects above the roof unless that part has the FRL required of a fire wall and any openings in that part of the wall for 6 m vertically above the roof light or the like are protected in accordance with Clause C4D5
- + Any roof light or the like in an adjoining fire separated section of the building.

Having regard to the proposed design, the triangular skylight to the Palliative Care extension is located within 3m of the external wall of the CASB which extends vertically above the proposed skylight. The existing external wall of the CASB is not fire rated nor are window openings protected as required by Specification 7 of the BCA. Refer to figures below.

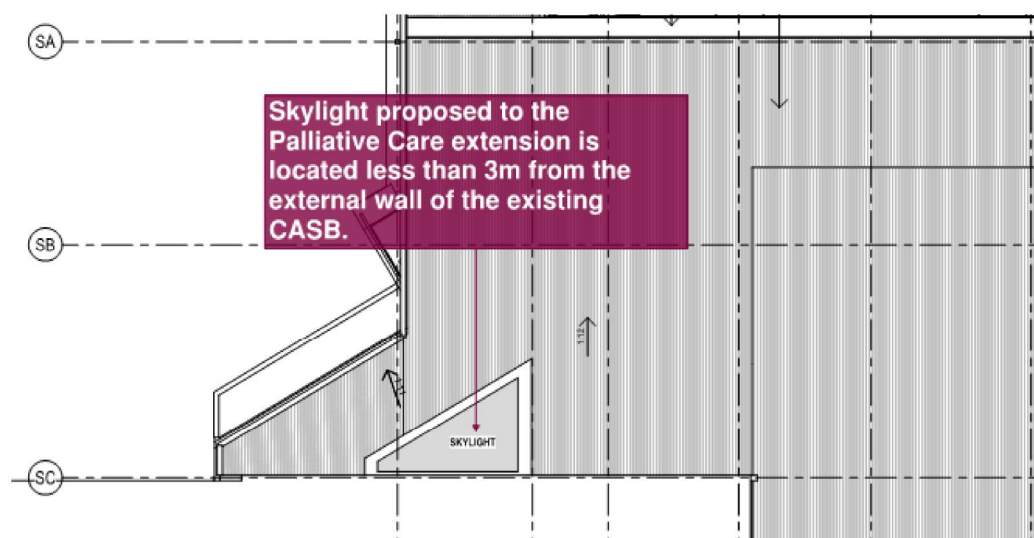


Figure No. 2 – Roof Plan showing the location of the proposed skylight in proximity to the external wall of the CASB



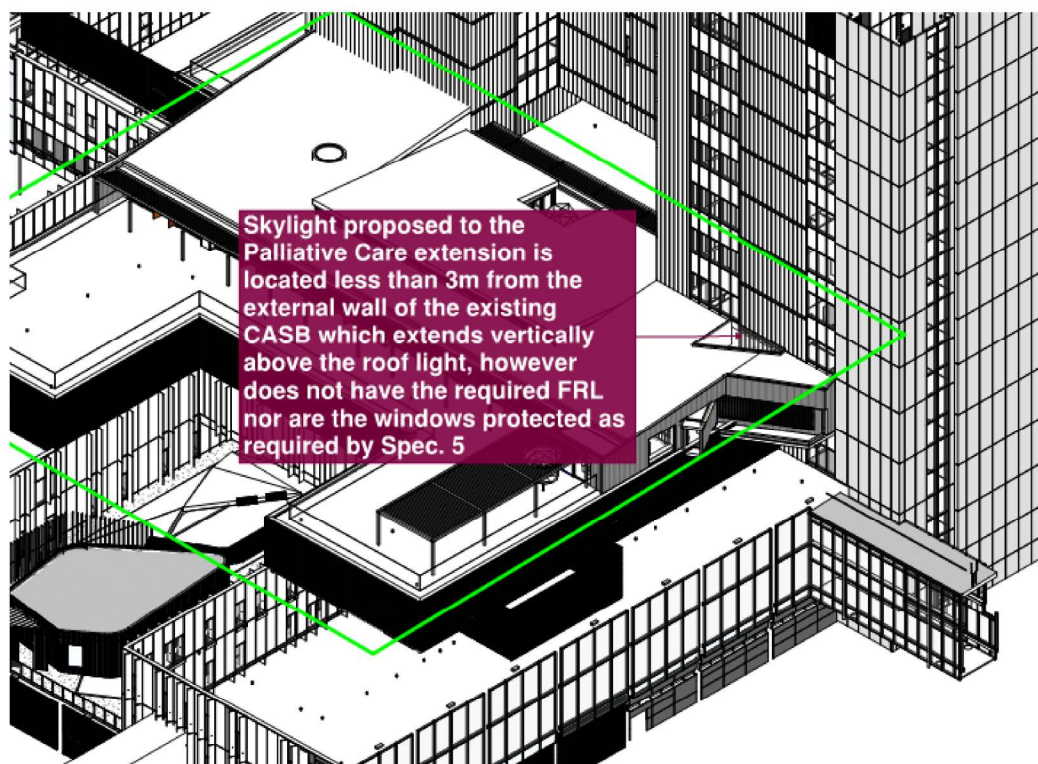


Figure No. 3 – Axo view from the South detailing the location of the rooflight from the external walls of the CASB

Having regard to the above, the skylight will need to be relocated so that it is a minimum of 3m from the external wall of the CASB or alternatively the proposed design will be required to be assessed by the Fire Safety Engineer to determine if the non compliance with Specification 7 can be assessed as part of the Fire Engineering Assessment.

## C2D10

### 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.

## C2D14

### Ancillary Elements:

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 extend 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.*

#### *Timber Noggins in Fire Walls*

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

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

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

#### **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 – 4.5 kW/m<sup>2</sup>
- + Non-Patient Care Areas – 2.2 kW/m<sup>2</sup>

Wall and Ceiling Lining Materials – Group Number

- + Public Corridor – Group 1



- + 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. 4 – 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.

#### *Illuminated Sky Panels on Ceilings*

Any proposed illuminated sky ceiling panels that may be proposed to be installed on the ceilings of rooms are required to comply with the abovementioned requirements. Any proposed illuminated sky ceiling panels 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. 5 – Illuminated sky panels installed to the ceiling of recent HI Projects

Any proposed illuminated sky panels that are to be installed to the ceiling of rooms that do not achieve the required Group Material No. will be required to be reviewed in further detail by BM+G and the Fire Safety Engineer.

## Part C3 Compartmentation and Separation

### 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 2,000 m <sup>2</sup> )	Ward Area	Where total floor area is <u>less</u> than 500 m <sup>2</sup> :	Where total floor area is <u>greater</u> than 500 m <sup>2</sup> , but <u>less</u> than 1000 m <sup>2</sup> :
		Separate from other areas with Smoke Walls	Separate with smoke walls into areas less than 500 m <sup>2</sup>
	Treatment Area	Where total floor area is <u>less</u> than 1000 m <sup>2</sup> :	
		Separate from other areas with Smoke Walls	

- + The proposed extension will be required to be fire separated from the existing hospital by a fire wall with an FRL of 120/120/120. Refer to Clause C3D8.
- + The proposed fire compartment size of the extension does not exceed 2000 m<sup>2</sup> with the total fire compartment size being approximately 1205 m<sup>2</sup>.
- + Smoke compartmentation within the extension will be required to be provided in accordance with the above table in which the maximum size of a smoke compartment for a Ward Area is 500 m<sup>2</sup>.

The proposed design contains two (2) smoke compartments that will have a floor area that exceeds 500 m<sup>2</sup> with approximate floor areas of 634 m<sup>2</sup> and 571 m<sup>2</sup>.

The smoke compartment sizes are proposed to be addressed as part of the Fire Engineering Assessment to be undertaken by the Fire Safety Engineer to demonstrate compliance with the nominated Performance Requirements of the BCA.

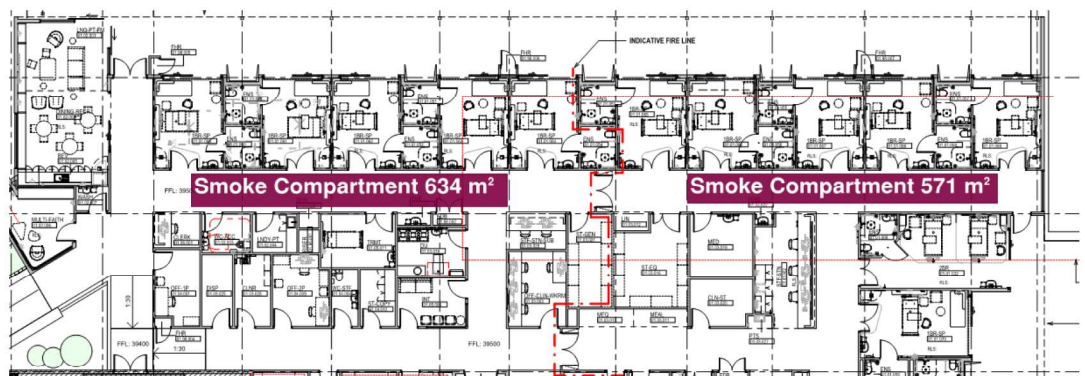


Figure No. 6: Proposed smoke compartment sizes that will exceed the maximum limitations of Clause C3D6

- + 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<sup>2</sup>.
  - ▲ A room containing a hyperbaric facility.
  - ▲ A room used predominately for the storage of medical records having a floor area of more than 10m<sup>2</sup>.
  - ▲ A laundry, where items of equipment are the type that are potential fire sources (e.g., gas fire dryers).

## C3D8

### Separation by Fire Walls:

A part of a building, separated from the remainder by a fire wall, may be treated as a separate fire compartment if the fire wall extends to the underside of:

- + A floor having an FRL required for a fire wall; or
- + The roof covering.

The proposed extension on Level 05 will be required to be constructed as a separate fire compartment to the existing fire compartments located on Level 05. The proposed fire wall will be required to be designed and constructed in accordance with the provisions of Clause C3D8 whereby the wall separating the extension from the existing Level 05 will be required to extended to the underside of the floor of Level 06 or roof covering.



Figure No. 7: Required fire separation of proposed extension from the existing hospital.



## Part C4 Protection of Openings

### 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° (walls opposite)	6m
More than 0° to 45°	5m
More than 45° to 90°	4m
More than 90° to 135°	3m
More than 135° to 180°	2m
0° or more	Nil

As a result of the proposed extension be designed and constructed as a separate fire compartment to the existing fire compartments on Level 05, there will be locations where exposure between different fire compartments at the junction of external walls as detailed in the figure below.



Figure No. 8: Locations where exposure occurs between fire compartments

Where exposure occurs, the external walls and any associated openings are required to be protected in accordance with the DtS Provisions.

In this instance it is noted that the proposed protection of the subject external walls and openings is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by the Fire Safety Engineer in order to demonstrate compliance with the nominated Performance Requirements of BCA.

### C4D6

#### Doorways in Fire Walls:

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

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

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

**C4D8**
**Protection of Doorways in Horizontal Exits:**

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

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

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

**Spec 11 Smoke Proof Walls in Health Care and Residential Care Buildings**
**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.

*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 smoke walls throughout the extension in order to support services, handrails etc.

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

**Spec 12 Fire Doors, Smoke Doors, Fire Windows and Shutters**
**Spec. 12**
**Fire Doors, Smoke Doors, Fire Windows and Shutters:**

All required smoke doors are required to swing in the direction of egress.

The fire safety doors located within the Palliative Care Unit along with the required fire safety doors separating the extension from the existing hospital will be required to swing the direction of egress.

It is noted that all of fire safety doors are proposed to swing in one direction only as detailed in the figure below.

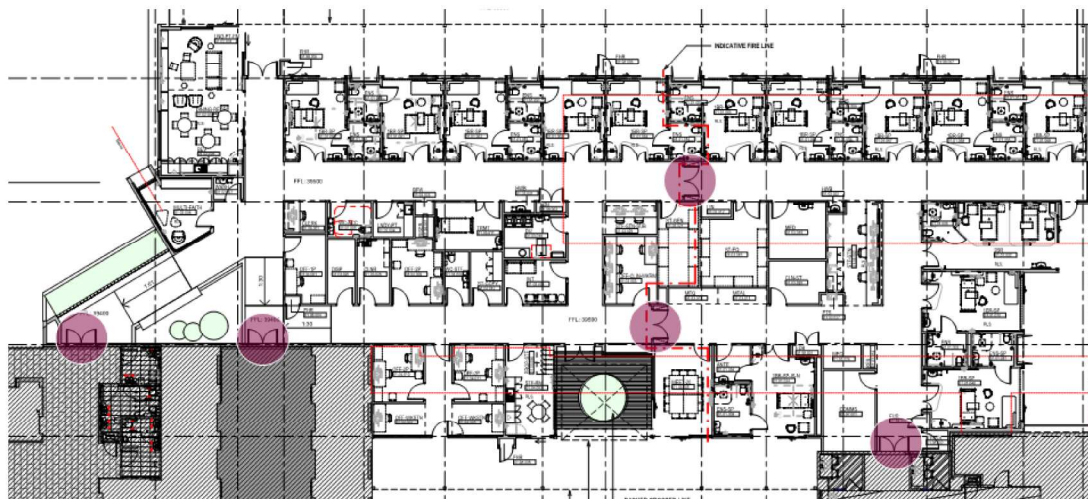


Figure No. 9: Fire safety doors that are proposed not to swing in the direction of egress

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

### 3.3 Parts D – Provision for Escape and Construction of Exits

#### Part D2 Provision for Escape

##### D2D3

##### Number of Exits Required:

The building and each storey containing patient care areas is required to be provided with a minimum of two (2) exits serving each storey.

The proposed design provides the minimum number of exits from the proposed extension with three horizontal exits providing access back into the existing CASB where there are fire isolated stairways that can be accessed directly along with access via an external flight of stairs to an existing fire isolated stairway of the rooftop terrace.



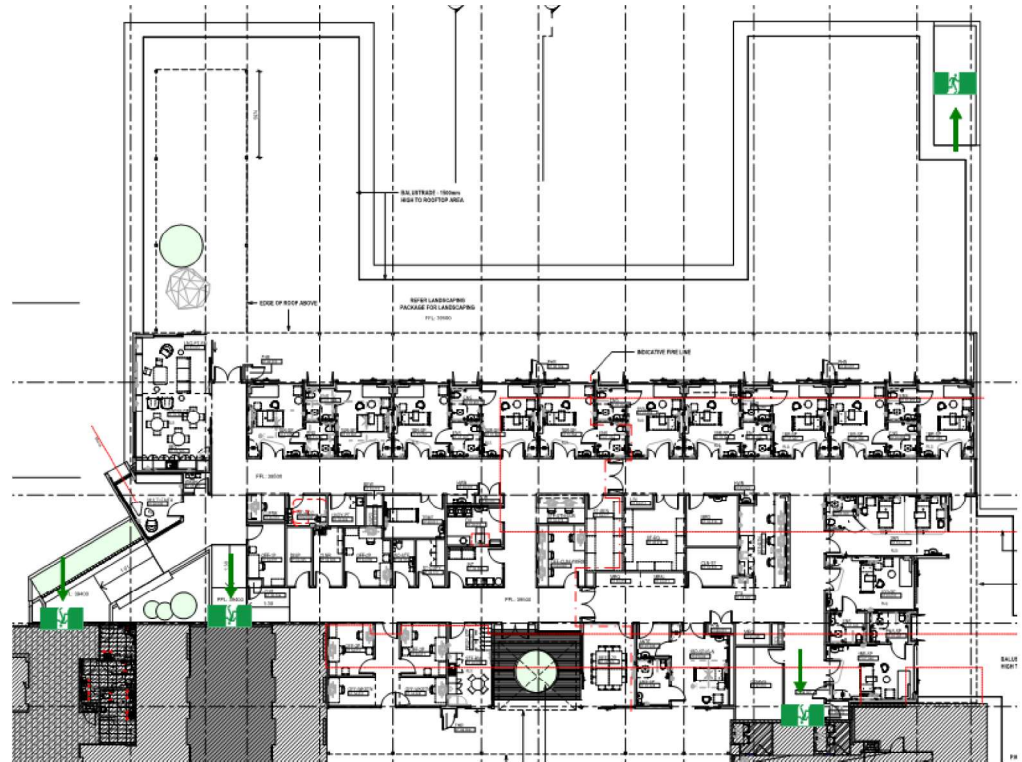


Figure No. 10: Available exits from the proposed Palliative Care Unit

## D2D4

### When Fire Isolated Exits and Ramps are Required:

Every stairway or ramp serving as a required exit from a Class 9a patient care area must be a fire isolated exit.

As part of the proposed design and as part of the egress strategy to ensure that egress travel distance remains within acceptable fire engineering limitations, access from the Northern external terrace will be provided down to the fire isolated stairway in the Northern Elevation between Grids S12 – S13 to ensure that occupants have access to an alternative exit from the terrace area.

Due to the fact that access to the fire isolated stairway will be provide via an non fire isolated stairway down to Level 04, a technical non compliance exists by virtue of the fact that egress from the storey containing patient care areas is not provided via a fire isolated stairway.

The provision of the external non fire isolated stairway providing access down to the fire isolated stairway will be required to be assessed as par to the Fire Engineering Assessment to be undertaken by the Fire Safety Engineer to demonstrate compliance with the nominated Performance Requirements of the BCA.

## D2D5

### Exit Travel Distances:

The following is noted in relation to egress travel distance:

- + Travel distances are permitted to extend to 20 m 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 12 m to a point of choice and 30 m to a single exit.

Based on a review of Schematic Design Drawings, the following is noted in relation to egress travel distance:

- + Egress travel distance from the ensuite of 1BR-SP 01.01.069 is 31m to an alternative exit (1 m over the maximum permitted distance of the DTS Provisions of the BCA).

The travel distance non-compliance is within the acceptable limitations for a fire engineering assessment.

- + Egress travel distance from the Eastern Terrace is up to 37 m to a point of choice back through the common doorway leading to the corridor (25 m over the maximum permitted distance of the DTS Provisions of the BCA).

This assessment to date has been undertaken without a review of the proposed landscaping design which may affect the travel distance identified above.

The extended travel distance to a point of choice back through the communal door will be required to be assessed further by BM+G and the Fire Safety Engineer to determine if there is a viable pathway for a Fire Engineering Assessment to be undertaken.

- + Egress travel distance from the Southern Terrace is up to 25 m to a point of choice back through the common doorway leading to the corridor (13 m over the maximum permitted distance of the DTS Provisions of the BCA).

This assessment to date has been undertaken without a review of the proposed landscaping design which may affect the travel distance identified above.

The travel distance non-compliance to a point of choice is within the acceptable limitations for a fire engineering assessment from an external area.

- + Egress travel distance from the Northern Terrace is up to 23 m to a point of choice back through the common doorway leading to the corridor (11 m over the maximum permitted distance of the DTS Provisions of the BCA).

This assessment to date has been undertaken without a review of the proposed landscaping design which may affect the travel distance identified above.

The travel distance non-compliance to a point of choice is within the acceptable limitations for a fire engineering assessment from an external area.

- + Egress travel distance from parts of the Northern Terrace is up to 41 m and 46 m to an alternative exit (16 m over the maximum permitted distance of the DTS Provisions of the BCA).

This assessment to date has been undertaken without a review of the proposed landscaping design and the detailing of the external stairway leading down to the existing fire isolated stairway which may affect the travel distance identified above.

The travel distance non-compliance to an alternative exit is within the acceptable limitations for a fire engineering assessment from an external area.

Each of the above egress travel distance non compliances will be required to be reviewed in detail by the Fire Safety Engineer to verify that a Fire Engineering Assessment can be undertaken to demonstrate compliance with the nominated Performance Requirements of the BCA.

## D2D5

### Distance Between Alternative Exits:

The maximum distance permitted between alternative exits is 45 m. This must be measured back through the point of choice. Alternative egress paths are not permitted to converge to less than 6 m, and alternative exits must be located more than 9 m apart.

Based on the Design Development Drawings, the following is noted:

- + Egress travel distance between alternative exits from the Northern Terrace is up to 80 m (35 m over the maximum permitted distance of the DTS Provisions of the BCA)

This assessment to date has been undertaken without a review of the proposed landscaping design and the detailing of the external stairway leading down to the existing fire isolated stairway which may affect the travel distance identified above.

The above egress travel distance non compliance between alternative exits will be required to be reviewed in detail by the Fire Safety Engineer to verify that a Fire Engineering Assessment can be undertaken in order to demonstrate compliance with the nominated Performance Requirements of the BCA.

## D2D7/ D2D8/ D2D9/ D2D10/ D2D11

### 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.



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 new 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.

The proposed design can comply with the above requirements.

## D2D16

### Horizontal Exits:

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

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

The following figure details the examples of travelling via the horizontal exits serving the palliative care unit.

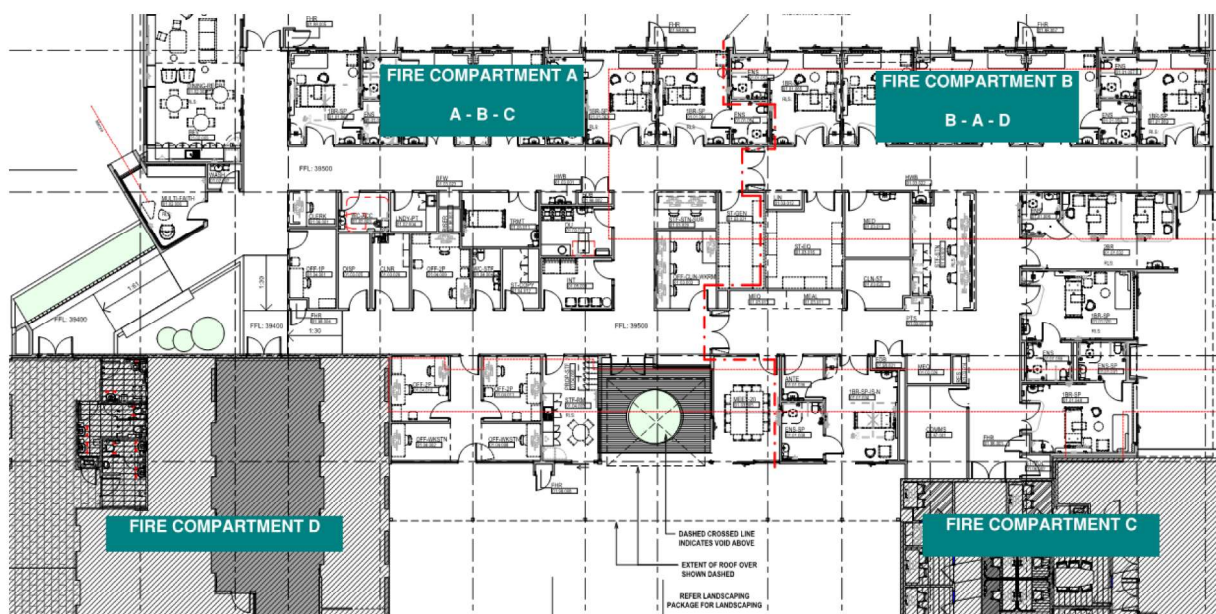


Figure No. 11: Available exits from the proposed Palliative Care Unit

Travel via the horizontal exits serving the palliative care unit will be required to be assessed as part of the Fire Engineering Assessment to be undertaken by the Fire Safety Engineering to demonstrate compliance with the nominated Performance Requirements of the BCA.

## 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.*

## D3D16

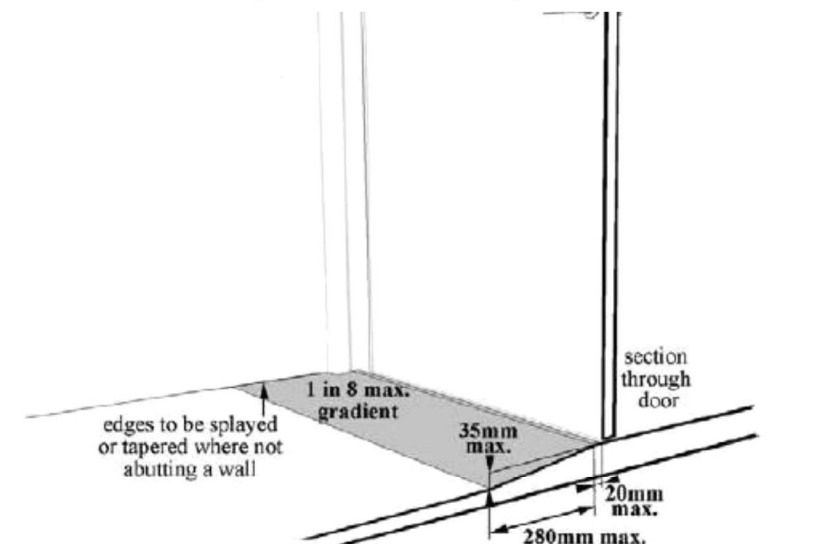
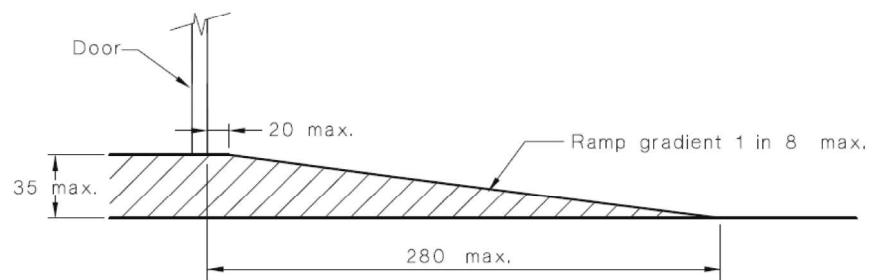
### Thresholds:

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°.



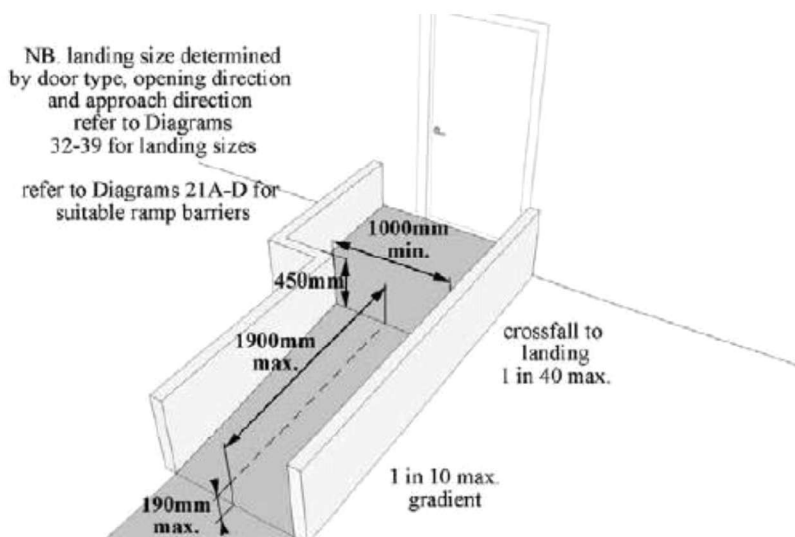


Figure No. 14: Step Ramp at External Doorway – Front Approach

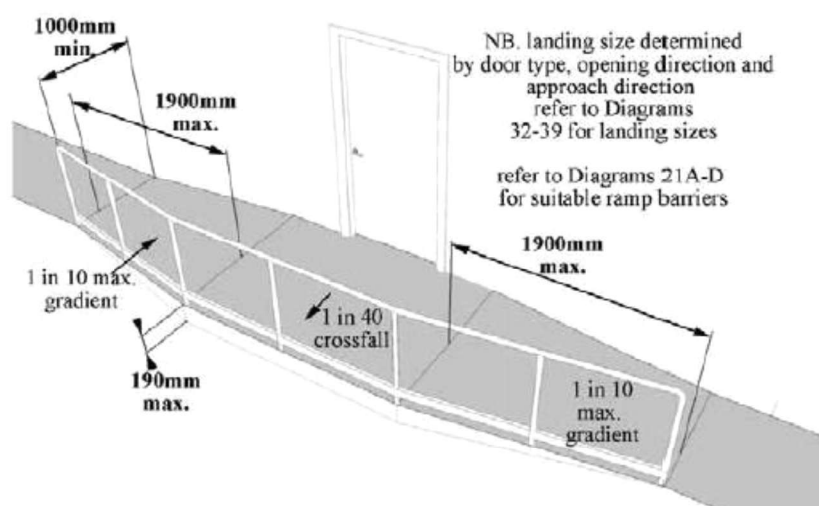


Figure No. 15: Step Ramp at External Doorway – Side Approach

D3D17

#### Barriers to Prevent Falls:

The balustrades to the terrace areas are to have a minimum height of 1000 mm above FFL. The Architectural Drawings indicate balustrades with a minimum height of 1500 mm above FFL.

The balustrade cannot contain any horizontal elements between 150 mm – 760 mm.

D3D22

#### Handrails:

Handrails are required to be provided along at least one side of all corridors used by patients and must be fixed not less than 50 mm clear of the wall and where practicable, continuous for their full length.

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 as identified on the drawings will be required to be assessed as part of a Fire Engineering Assessment to be undertaken by the Fire Safety Engineer to demonstrate compliance with the nominated Performance Requirements of the BCA.

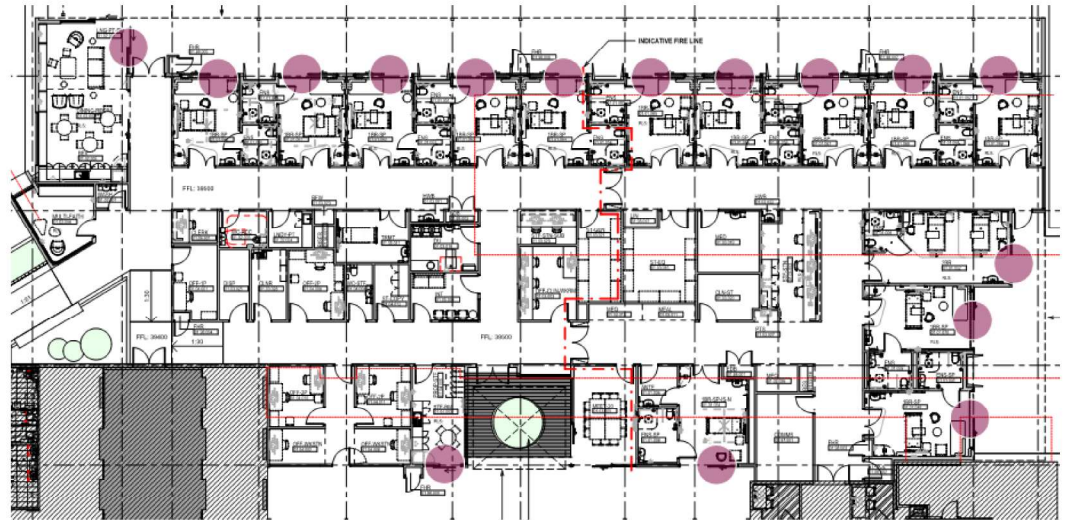


Figure No. 16: Sliding doors located within the patient care area

#### D3D25

##### Swinging Doors:

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

The horizontal exit doors serving the palliative care unit are proposed not to swing in the direction of egress (or only swing in one direction). The subject horizontal exits are detailed in the figure below.



Figure No. 17: Horizontal exit doors that do not swing in the direction of egress

The swing of the horizontal exit doors serving the Palliative Care Unit will be required to be addressed as part of a Fire Engineering Performance Assessment to be undertaken by the Fire Safety Engineer in order 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 operable 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.

#### D2D28

##### **Signs on Doors:**

All self-closing fire and/or smoke doors located within fire and smoke walls 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 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 refurbishment. This includes too and within all beds, throughout all patient care areas, staff areas, communal areas and patient balconies.

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:**

In accordance with the Access to Premises Standards, access will be required to be provided from the Main Entrance of the building to the refurbishment area on Level 05.

Given the age of the existing CASB, compliance would be considered readily achievable with the Access to Premises Standards from the main entrance of the building to the proposed Palliative Care Unit.

##### *Accessible Path of Travel*

- + 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 width 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.

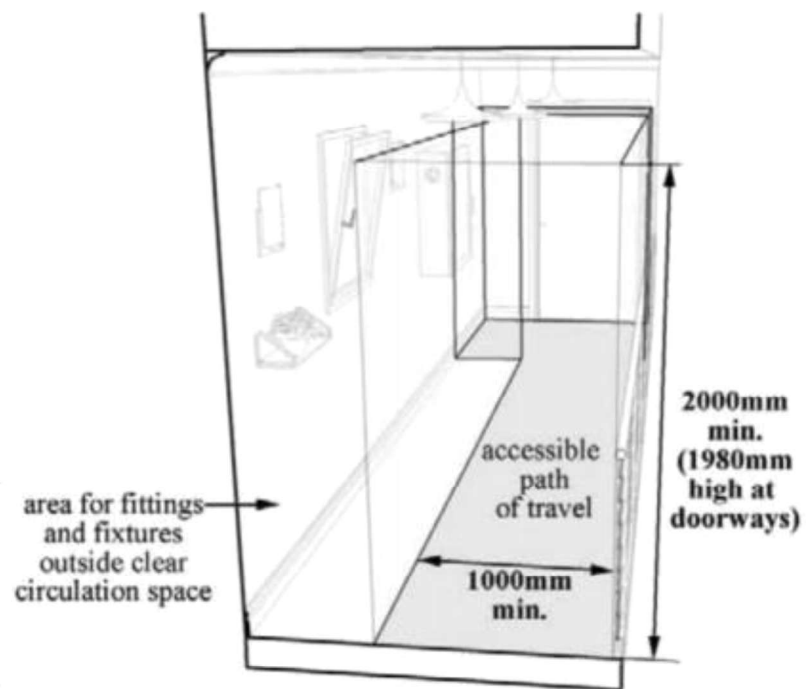


Figure No. 18: Minimum height and width of accessible path of travel

- + 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.

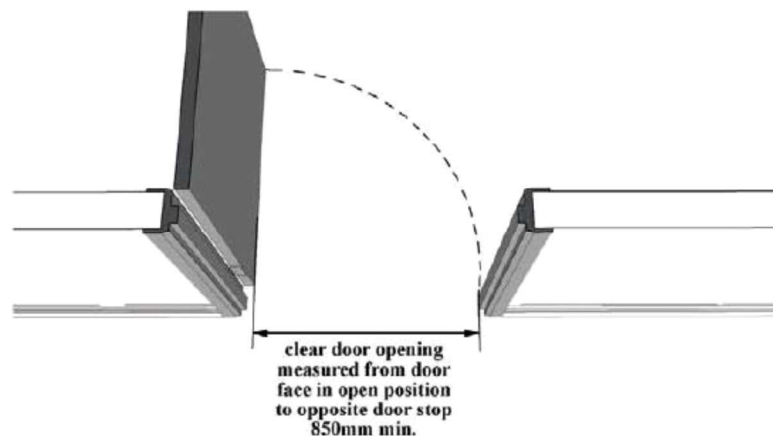


Figure No. 19: Clear Unobstructed Width of Doorway

- + 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 for all doorways throughout the building that are required to be accessible. 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.

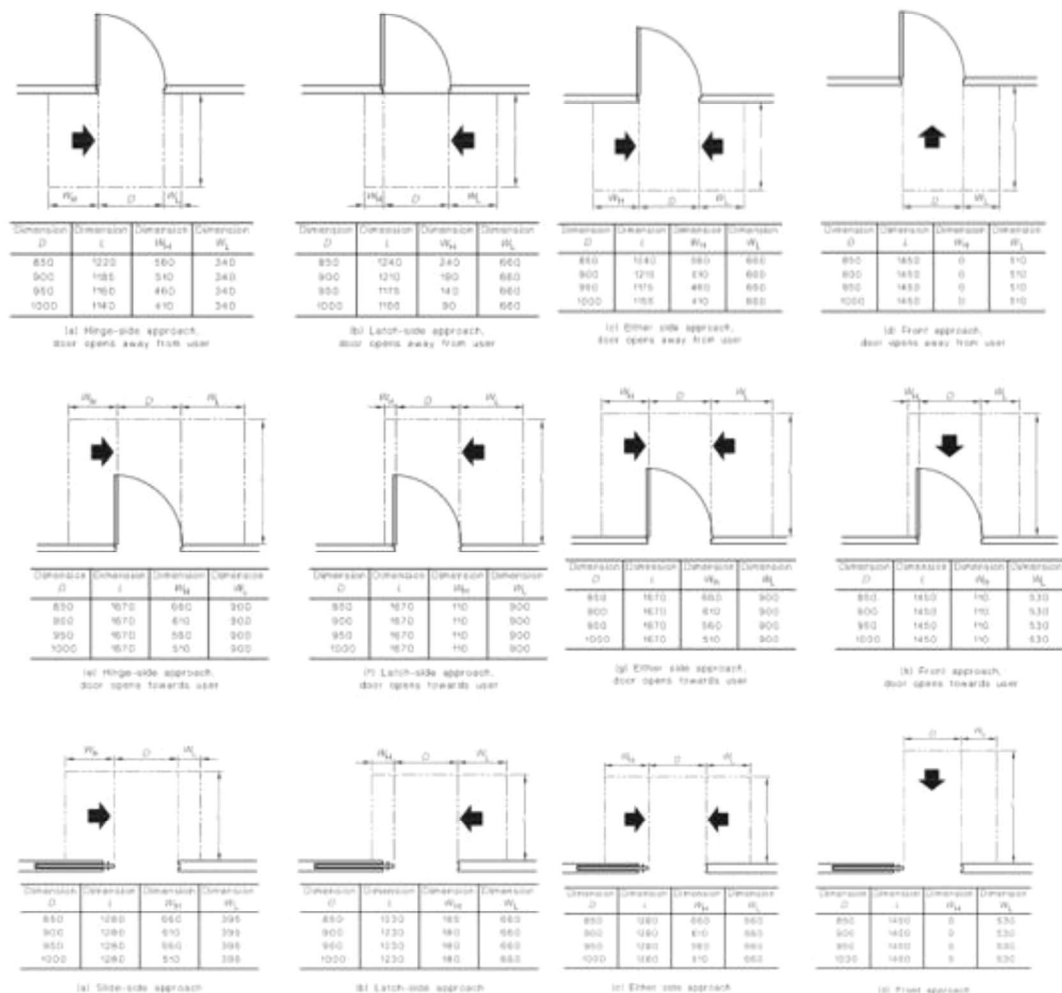


Figure No. 20: Circulation Space dimensions at swing doors



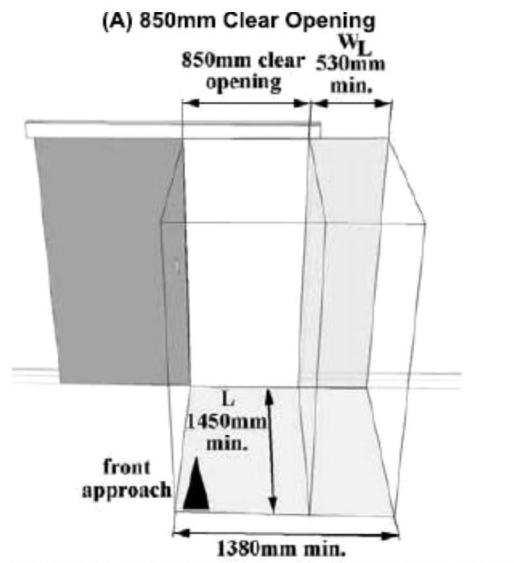


Figure No. 21: Circulation Space dimensions at swing doors

The below figure details doorways that require close attention to ensure that compliant latchside circulation space is provided.

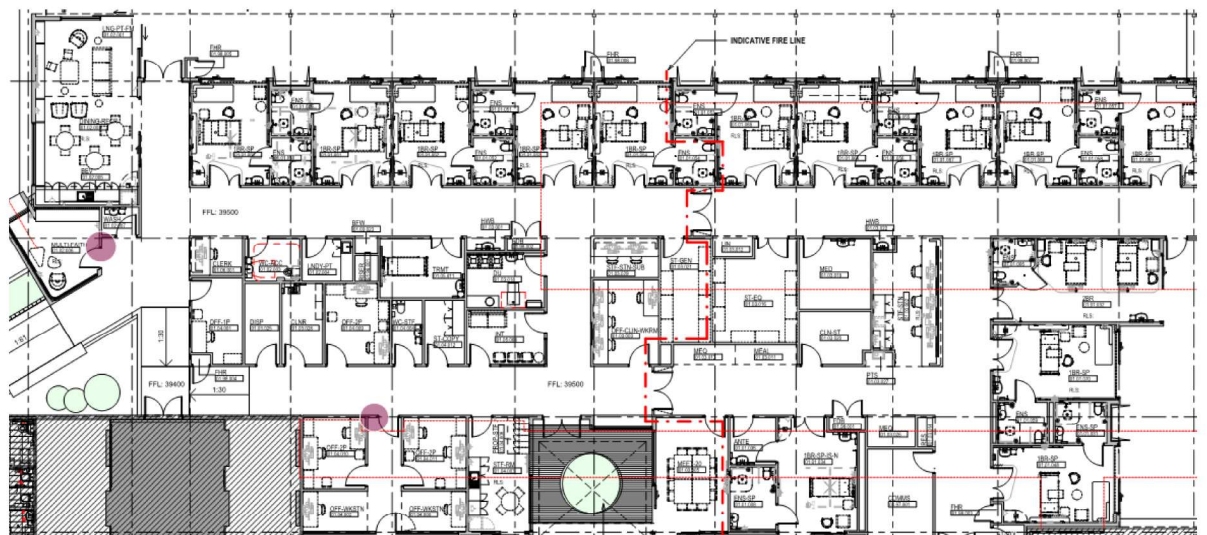


Figure No. 22: Circulation Space dimensions at swing doors

It is understood that all the sliding door leading from the patient bedrooms to the terrace areas are automatic sliding doors and thus circulation space is not required to be provided to the latch side of the doorway.

#### D4D4

#### Parts of Buildings to be Accessible:

##### Accessways

- + Accessways throughout the building are required to have –
  - ▲ Passes spaces complying with AS 1428.1 at a maximum 20m intervals on those parts of an access where a direct line of sight is not available; and
  - ▲ Turning spaces complying with AS 1428.1 –
    - Within 2 m of the end of accessways where it is not possible to continue travelling along the accessway, and
    - At maximum 20 m intervals along the accessway

- + All dead-end corridors where a person in a wheelchair is required to make a 90° to 180° turn is required to be not less than 2070 mm in the direction of travel and not less than 1540 mm wide.

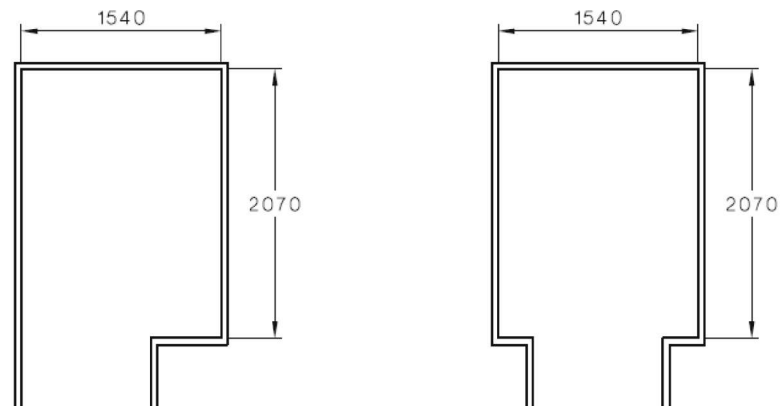


Figure No. 23: Minimum space required for >90o to 180o turn.

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

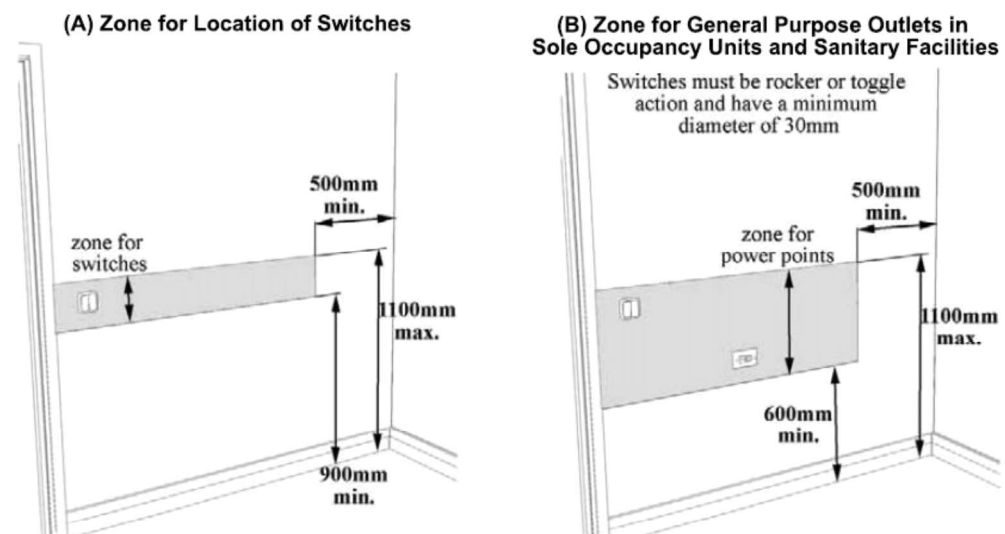


Figure No. 24: Zones for the location of switches and power outlets

### Clear Turning Space Behind Workstations

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

### Wheelchair Seating in Waiting Areas

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

### Accessible Counters

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

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

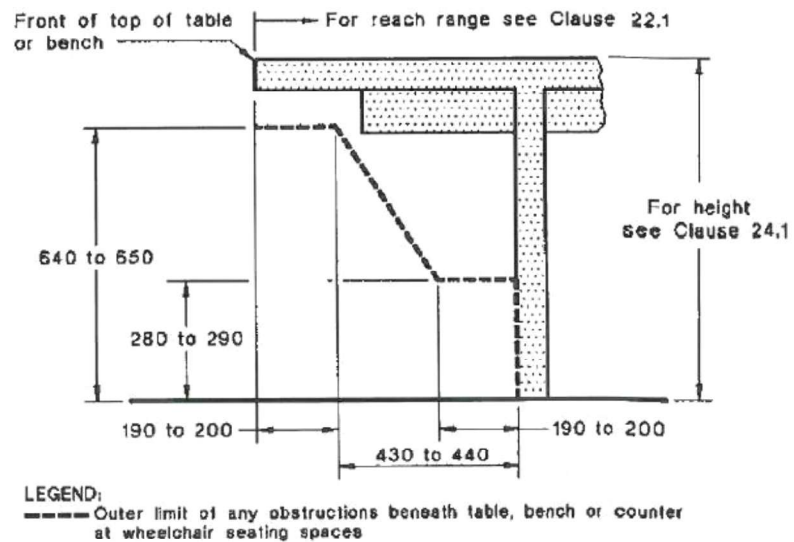


Figure No. 25 Clearances below an accessible counter or bench

### Beverage Bays

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

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



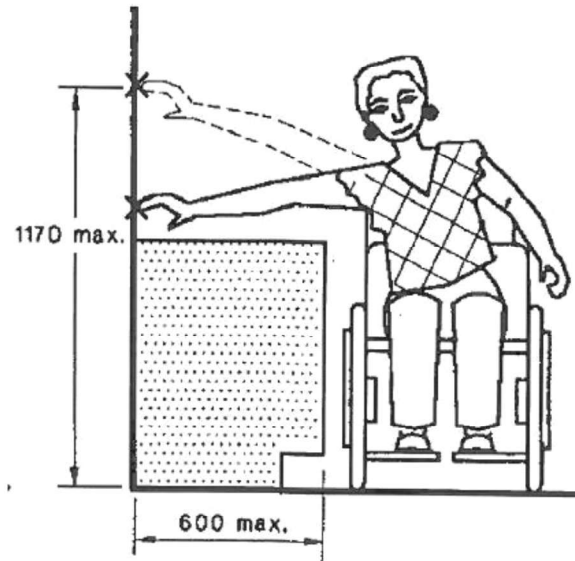


Figure No. 26: Side reach requirements for a wheelchair user

### 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 10 mm, 6 mm and 4 mm are to be replaced with 11 mm, 4 mm and 15 mm respectively.

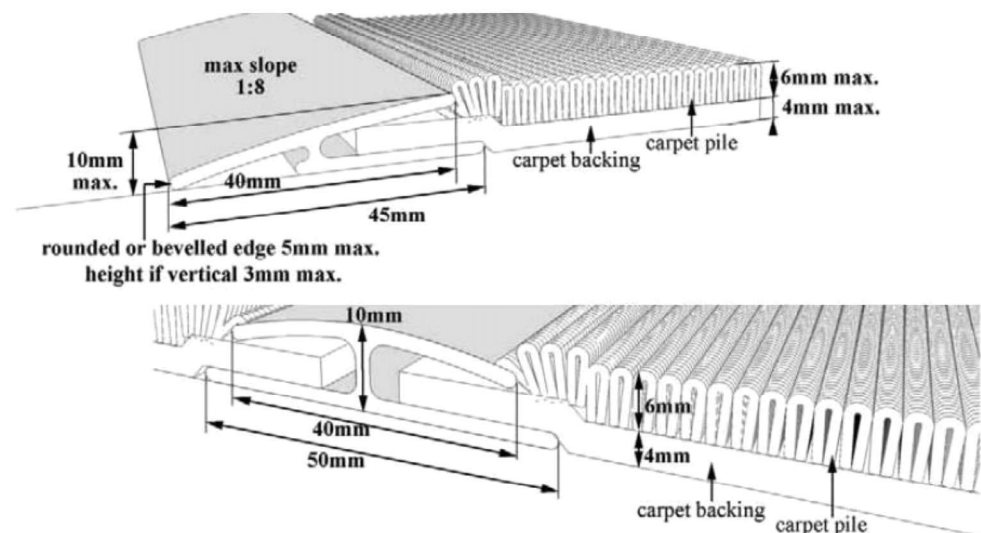


Figure No. 27: Carpet joints on an accessible path of travel

### 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.

### 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.

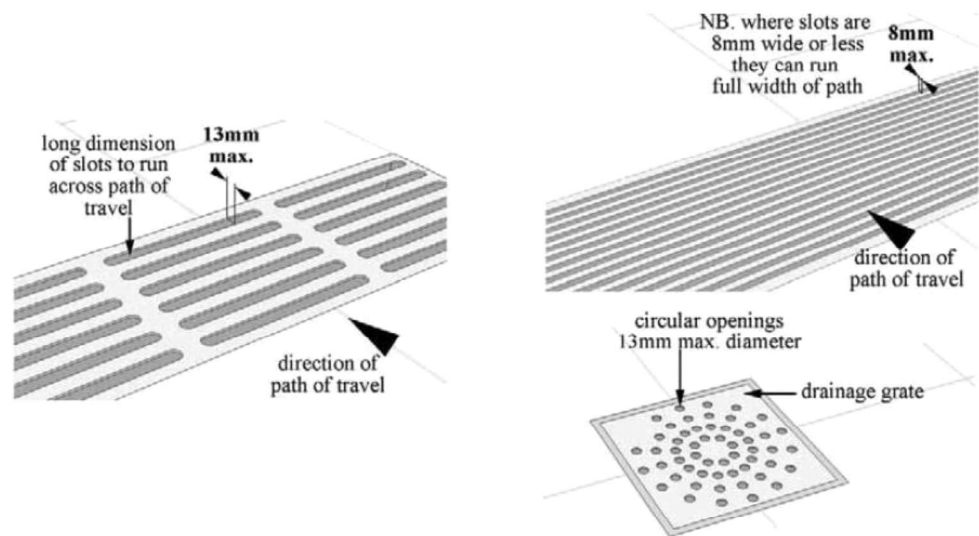
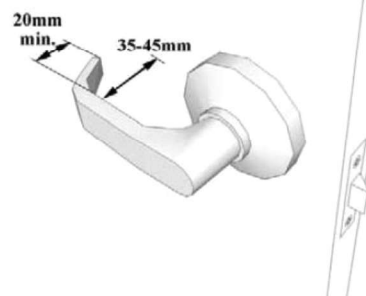


Figure No. 28: Maximum size of openings in grates

### 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:

(A) Example of Lever Handle Design



(B) Lever Handle Location

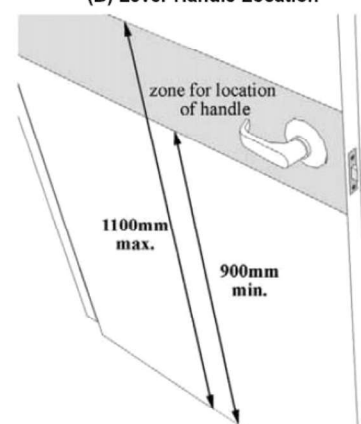
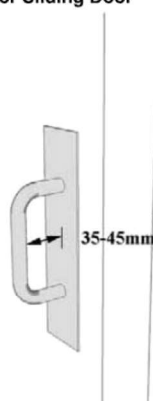


Figure No. 29: Door hardware to swing doors.

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

(C) Example of D Handle Design for Sliding Door



(D) D Handle for Sliding Door Location

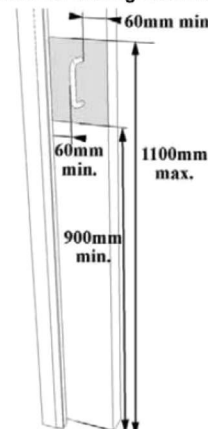


Figure No. 30: Door hardware to sliding doors.

- + 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 (which are identified in the figure below):

- + Dirty Utility Rooms
- + Clean Utility Rooms
- + Equipment Storerooms
- + General Storerooms
- + Cleaners Rooms
- + Disposal Rooms
- + Plant Rooms



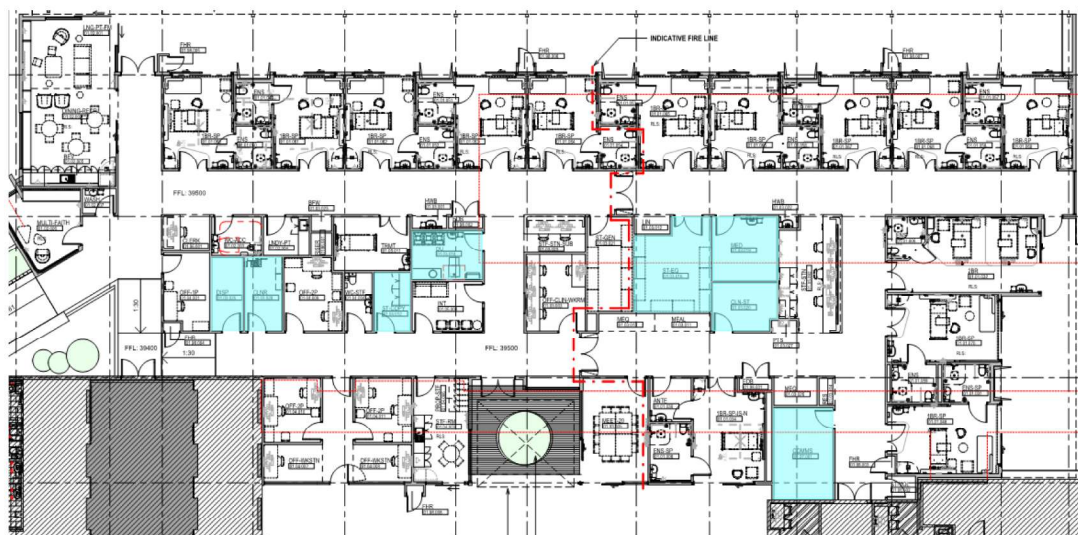


Figure No. 31: Room that may be subject of an exemption for no access for a person with a disability subject to confirmation from the LHD

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

#### 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

#### E1D2

##### Fire Hydrants:

Fire hydrant coverage is required to be provided to the building in accordance with AS2419.1–2021.

##### *Internal Hydrants*

Internal fire hydrants located within the existing fire isolated stairways can be relied upon to provide coverage, however additional fire hydrants will likely be required to provide compliant coverage to each of the occupiable outdoor areas.

The provision of additional on-floor hydrants will be required to be assessed as part of a Fire Engineering Performance Solution to be prepared by the appointed Fire Safety Engineer having regard to the requirements of AS 2419.1 – 2021 which no longer permit on floor hydrants as a DTS solution.

## E1D3

### Fire Hose Reels:

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

Compliant fire hose reel coverage will be required to be provided to the terrace (occupiable outdoor areas). All fire hose reels installed to provide coverage to the terrace will be required to be installed to an internal fire hydrant.

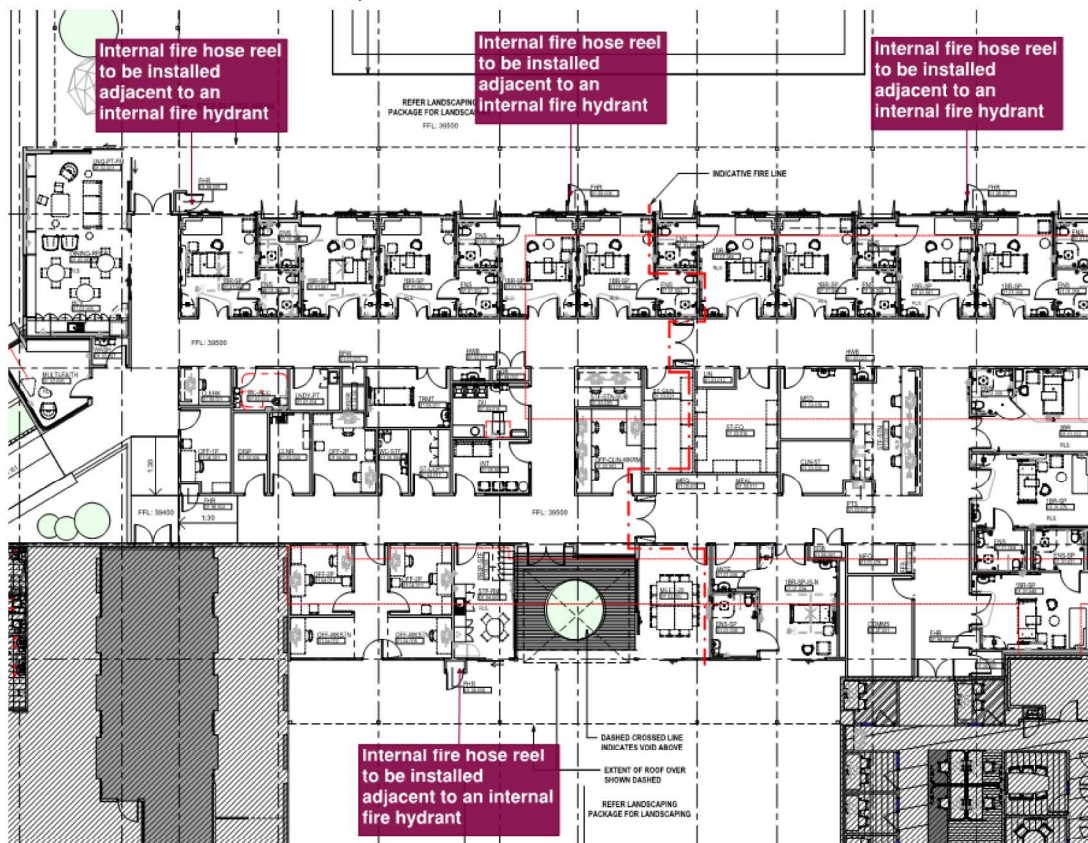


Figure No. 32: Internal fire hose reels located more than 4 m from an exit to be installed adjacent to an internal fire hydrant

### Fire Hose Reel Coverage to Fire Separated Rooms

It is noted that there will be a 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.



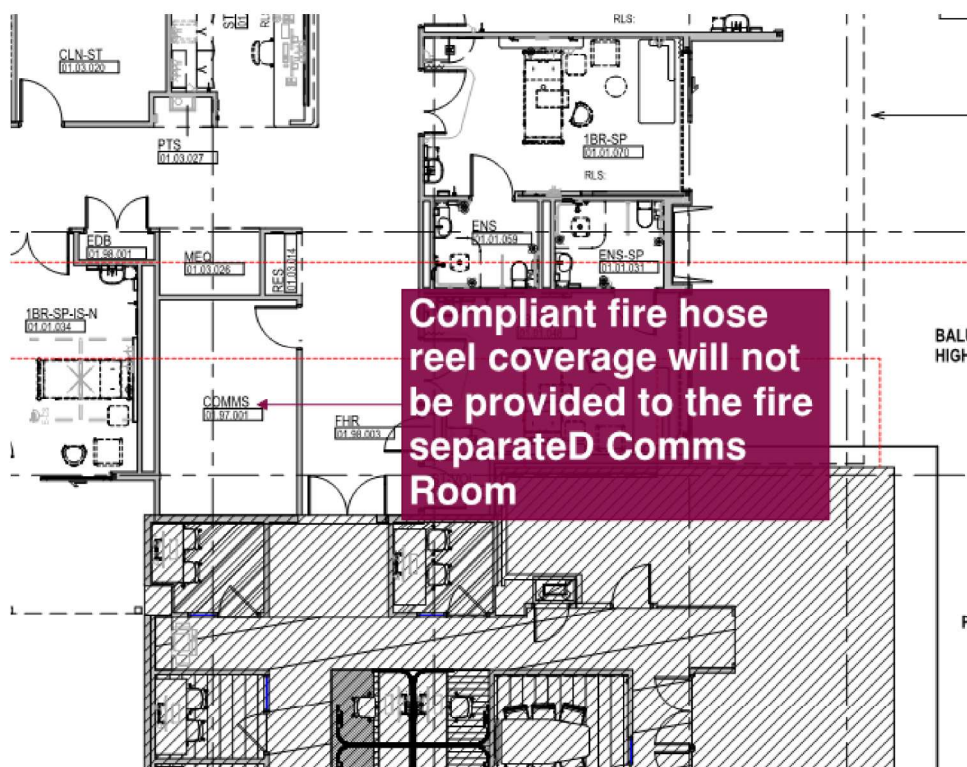


Figure No. 33: Compliant fire hose reel coverage not proposed to be provided to the fire separate Comms Room

### 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 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 proposed palliative care unit in accordance with AS 2118.1 – 2017 and AS 2118.6 – 2012 consistent with the base building design. Sprinklers will also be required to be extended to all covered patient balcony areas.

**E1D14**

#### **Fire Extinguishers:**

Portable fire extinguishers are required to be installed 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 to the proposed inpatient unit area consistent with the base building design:

- + An Automatic Fire Detection and Alarm System complying with AS 1670.1 – 2018 and S20C4.
- + Automatic shut-down of mechanical air handling systems upon fire trip in accordance with Section 5 and 6 of AS 1668.1.
- + Zone Smoke Control System in accordance with AS 1668.1 – 2015.



### *Automatic Fire Detection & Alarm System*

An Automatic Fire Detection & Alarm System is required to be installed throughout the palliative care unit 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 50m<sup>2</sup> i.e., when less than 50m<sup>2</sup>, 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 300 mm 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 300 mm radius, to a depth of 600 mm is required to be maintained from the smoke detector.
- + Detectors are required to be located a minimum distance of 900 mm from supply air fans or ceiling fans.
- + Detectors are required in all sanitary facilities with a floor area greater than 3.5 m<sup>2</sup>.
- + Any cupboard with a floor area > 3 m<sup>2</sup> is required to be protected.
- + All electrical cupboards, comms cupboards etc. irrespective of the size are required to be protected.

### *Zone Smoke Control System*

The existing CASB is provided with a Zone Pressurization System installed in accordance with the requirements of BCA 2016 and AS 16668.1 – 2015.

In this instance, the Zone Smoke Control System serving the proposed Palliative Care Unit will be required to comply with the provisions of BCA 2022 which requires a 20 kPa between vertical fire compartments (Level 04 below and Level 05) along with maintaining compliance with the base building design which has been designed to achieve a pressure differential of 20 kPa between horizontal fire compartments on Level 05.

Having regard to the numerous sliding doors opening on the patient balconies on Level 05, there may be an impact on the required pressure differentials being achieved between vertical and horizontal fire compartments.

This is to be reviewed in detail by the Mechanical Design Consultant as part of the Design Development process.

### *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.

Verification is required as to whether any manual call points are proposed to be installed within fire hose reel cupboards.

If they are proposed to be installed in cupboards, then the clear space around the manual call points will be required is proposed to be assessed as part of the Fire Engineering Assessment to be undertaken by the Fire Safety Engineer 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.

### **E4D2 & E4D4**

#### **Emergency Lighting:**

Emergency Lighting is required throughout the refurbishment area 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<sup>2</sup> 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): A

An Emergency Warning and Intercom System (EWIS) is required to be installed throughout the refurbishment as required in accordance with AS 1670.4 – 2018 consistent with the base building design.

##### *Rationalisation of EWIS Speakers*

It is understood that EWIS speakers are likely to be rationalized from patient bedrooms where the activation of the speaker within the room may cause trauma to the patient.

The rationalization of EWIS speakers from within patient bedrooms will be required to be assessed as part of the Fire Engineering Assessment to be undertaken by the Fire Safety Engineering 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 in the following areas:

- + On each floor as determined by the emergency control organisation defined in AS 3745; and
- + In each emergency zone as determined by the emergency control organisation defined in AS 3745.

## 3.5 Section F – Health and Amenity

### Part F1 Surface Water Management, Rising Damp & External Waterproofing

#### F1D3

#### Stormwater Drainage:

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

#### 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

### 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 to a 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.

	<ul style="list-style-type: none"> <li>+ An external waterproofing membrane consisting of materials complying with AS 4654.1 and designed and installed in accordance with AS 4654.2</li> </ul> <p>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.</p>
<b>F3D3</b>	<p><b>Sarking:</b></p> <p>Sarking-type material used for weatherproofing of roofs and walls is required to comply with AS/NZS 4200.1 and AS 4200.2.</p> <p>Verification is required from BVN as to whether any sarking is proposed to be installed within external walls as part of the refurbishment works.</p>
<b>F3D5</b>	<p><b>Wall Cladding:</b></p> <p>Wall cladding is required to comply with one of the following in accordance with NCC 2022 as part of a DTS Solution:</p> <ul style="list-style-type: none"> <li>+ Masonry, including masonry veneer, unreinforced and reinforced masonry in accordance with AS 3700</li> <li>+ Autoclaved aerated concrete in accordance with AS 5146.3</li> <li>+ Metal cladding in accordance with AS 1562.1</li> </ul> <p>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.</p>

## Part F4 Sanitary and Other Facilities

<b>Part F4</b>	<p><b>Sanitary Facilities:</b></p> <p>Sanitary facilities must be provided to comply with the requirements of F4D2 and F4D4 as applicable for the subject part for both staff and patients.</p> <p>The following facilities are also required to be provided:</p> <ul style="list-style-type: none"> <li>+ one kitchen or other adequate facility for the preparation and cooking or reheating of food including a kitchen sink and washbasin (this can be provided from the existing hospital building); and</li> <li>+ 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 (this can be provided from the existing hospital building); and</li> <li>+ one shower for each 8 patients or part thereof; and</li> <li>+ one island-type plunge bath in each storey containing a ward area.</li> </ul> <p><i>Island-Type Plunge Bath in Storeys Containing Ward Areas</i></p> <p>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.</p> <p>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.</p> <p>Any proposed Performance Solution will require written consent from the LHD.</p>
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Sanitary facilities for staff and patients are required to be provided in accordance with the following tables:

+ 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	1	1	0	1 – 30	1
	> 20	Add 1 per 20	11 – 25	1	> 30	Add 1 per 30
			26 – 50	2		
			> 50	Add 1 per 50		
Female Staff	1 – 15	1	-	-	1 – 30	1
	> 15	Add 1 per 15			> 30	Add 1 per 30

+ 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	2			1 – 8	1
	> 16	Add 1 per 8			> 8	Add 1 per 30
Female Patients	1 – 16	2	-	-	1 – 8	1
	> 16	Add 1 per 16			> 8	Add 1 per 8

#### Wc's for Staff

Having regard to the proposed design, the following requires verification:

- + Total staff numbers within the proposed palliative care unit at any one time
- + Is the proposed accessible sanitary facility available for use by both staff and patients / public.
- + Verification is required that staff within the palliative care unit have access to the sanitary facilities provided within the CASB along with their location.

#### 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 area.

#### F4D5

#### Accessible Sanitary Facilities:

A unisex accessible sanitary facility is required to be provided on the storey for a person with a disability.

The Schematic Design Architectural Drawings indicate the provision of a unisex accessible sanitary facility for a person with a disability as detailed in the figure below. Verification is required from the LHD as to whether this facility can shared by both staff and members of the public.





Figure No. 34: Unisex accessible sanitary facility provided within the palliative care unit

### Ambulant Sanitary Compartment

The staff sanitary facility will be required to be designed as an Ambulant Sanitary Compartment in accordance with A 1428.1 – 2009.

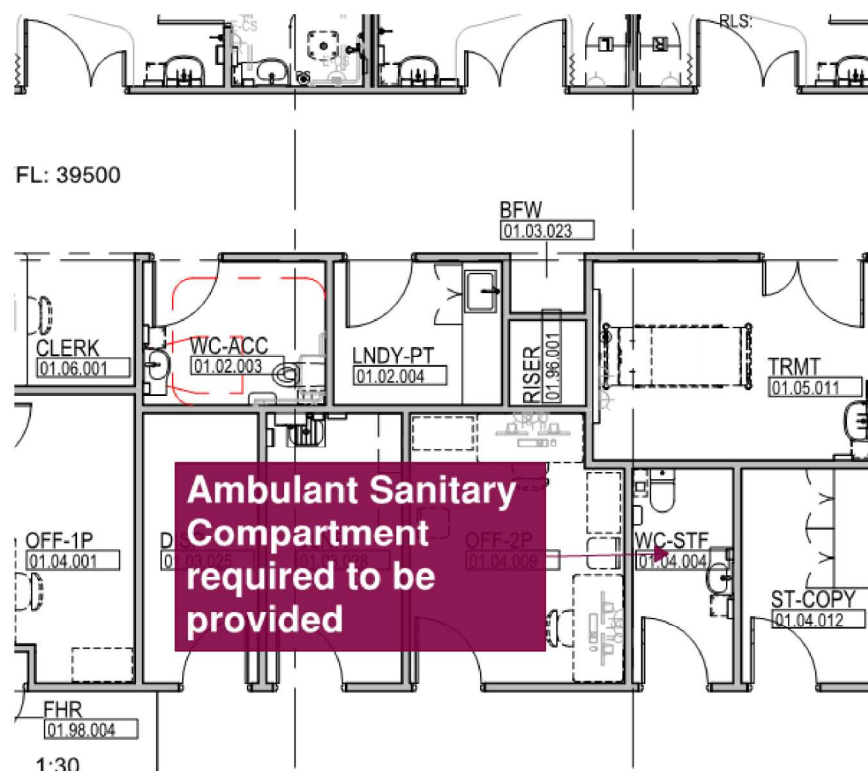


Figure No. 35 Ambulant sanitary compartment required to be provided for staff

### 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 a unisex ambulant sanitary compartment 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.

### Design of Accessible Sanitary Facilities

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

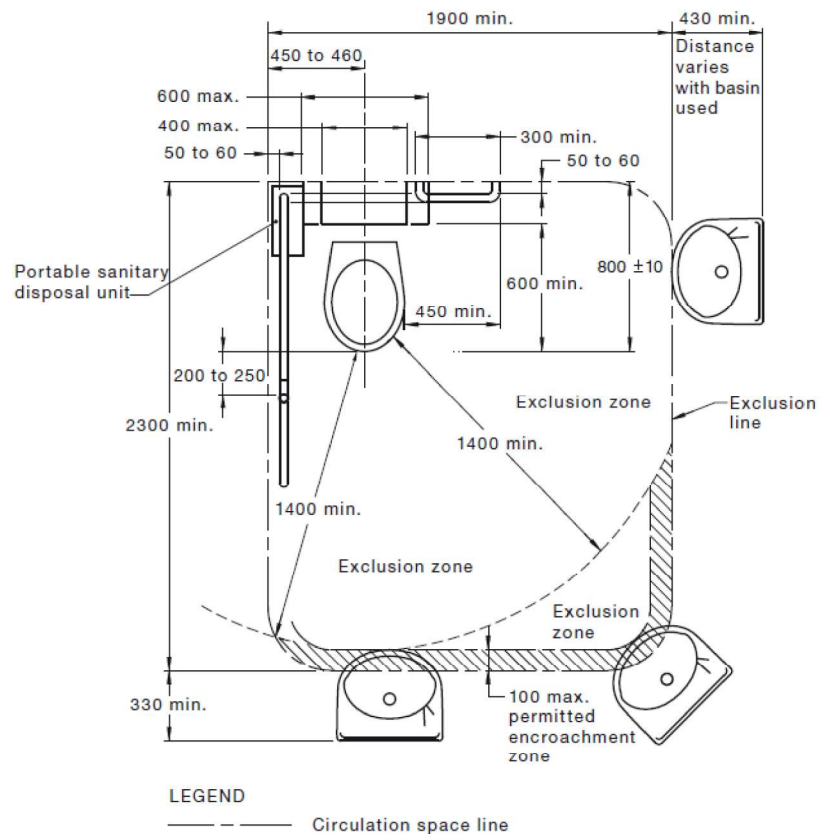


Figure No. 36: Circulation space required within the accessible sanitary facility.

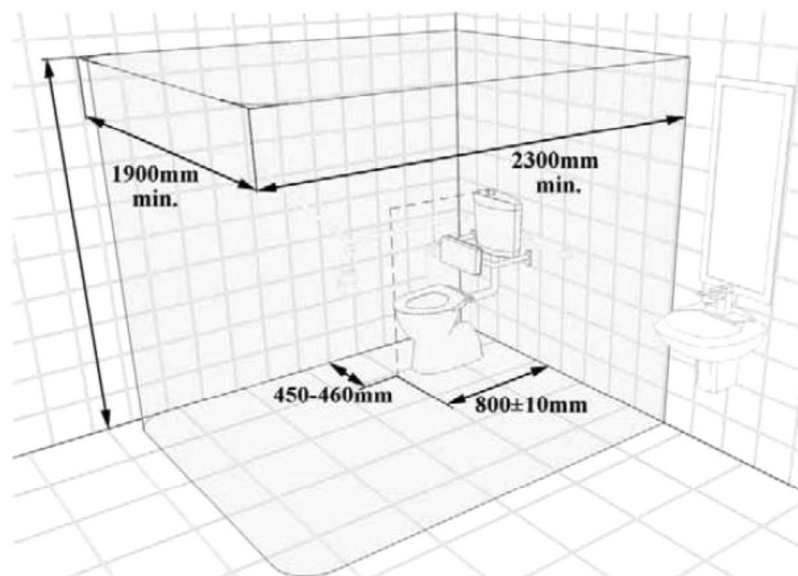


Figure No. 37: Toilet setout and circulation space

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

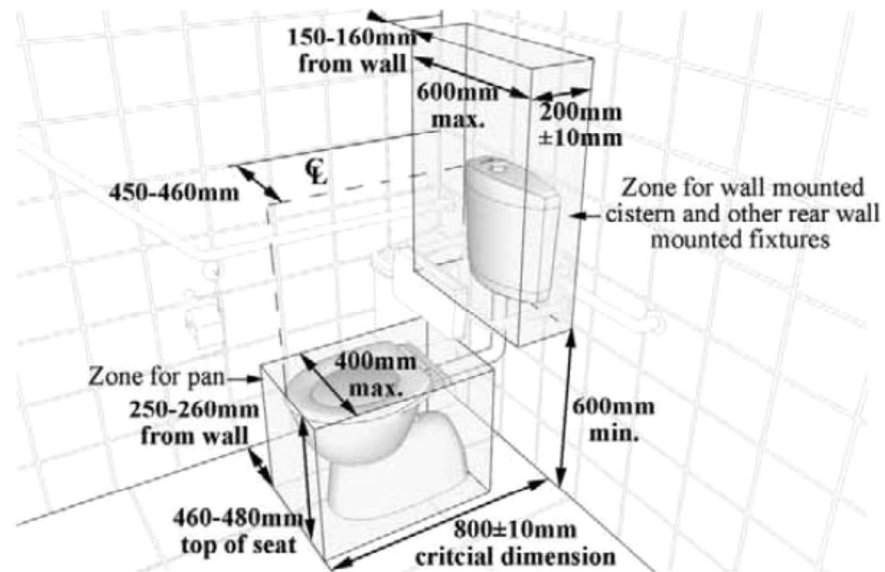


Figure No. 38: Zone for toilet pan and rear mounted fixtures and obstructions

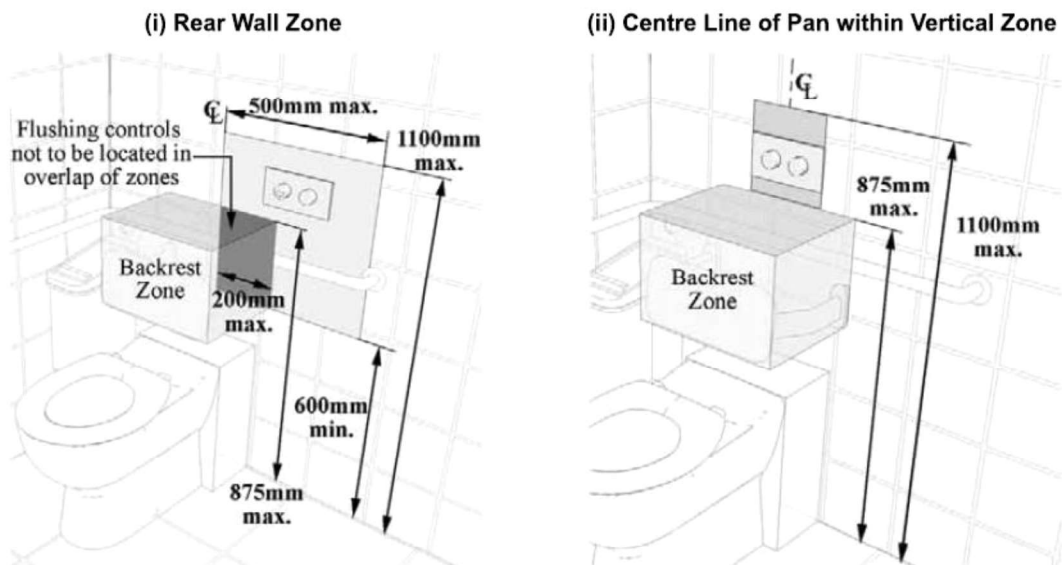


Figure No. 39: Flushing control zones





Figure No. 40: Zone for location of toilet paper dispenser

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

In this door/washbasin relationship the overall width of the space required must take into account the following parameters:

- clear door opening width of 850mm min. (a larger door opening width increases the overall width required)
- the 300mm offset zone from the door swing radius
- the width of the basin (varies between models)
- 425mm centre-line of basin from wall

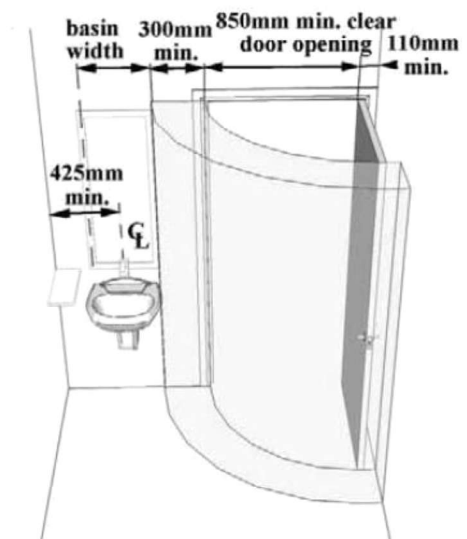
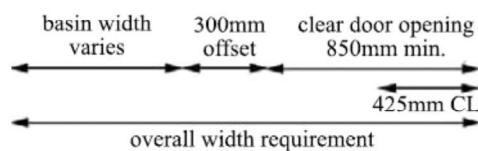


Figure No. 41: Swing door and washbasin circulation space overlap

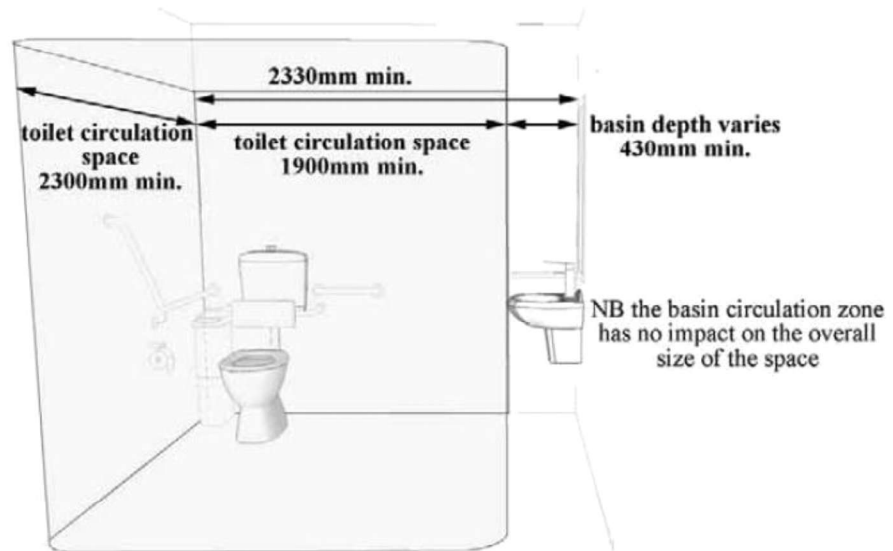


Figure No. 42: Toilet and basin circulation overlaps – position 1

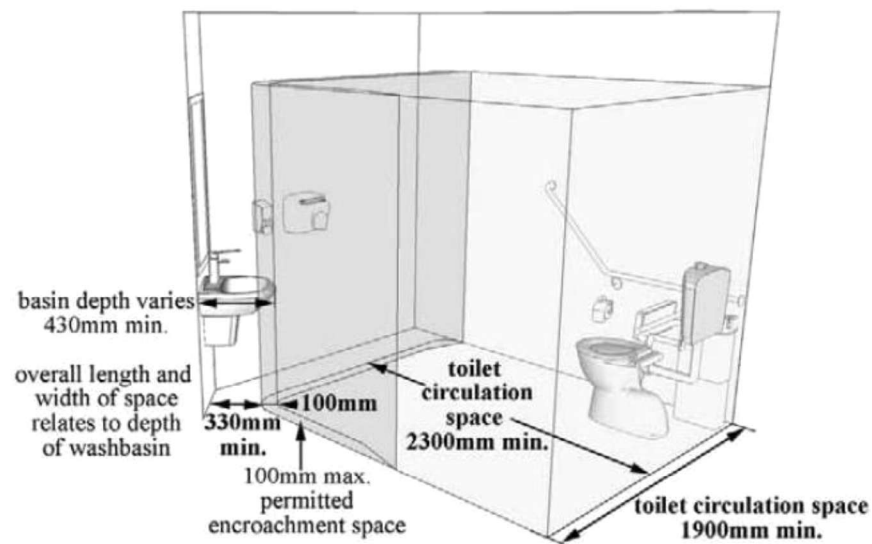


Figure No. 43 Toilet and basin circulation overlaps – position 1

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 in accordance with the following figure. The toilet paper cannot encroach upon the clearance space required around the grabrail.

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 mm; 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.

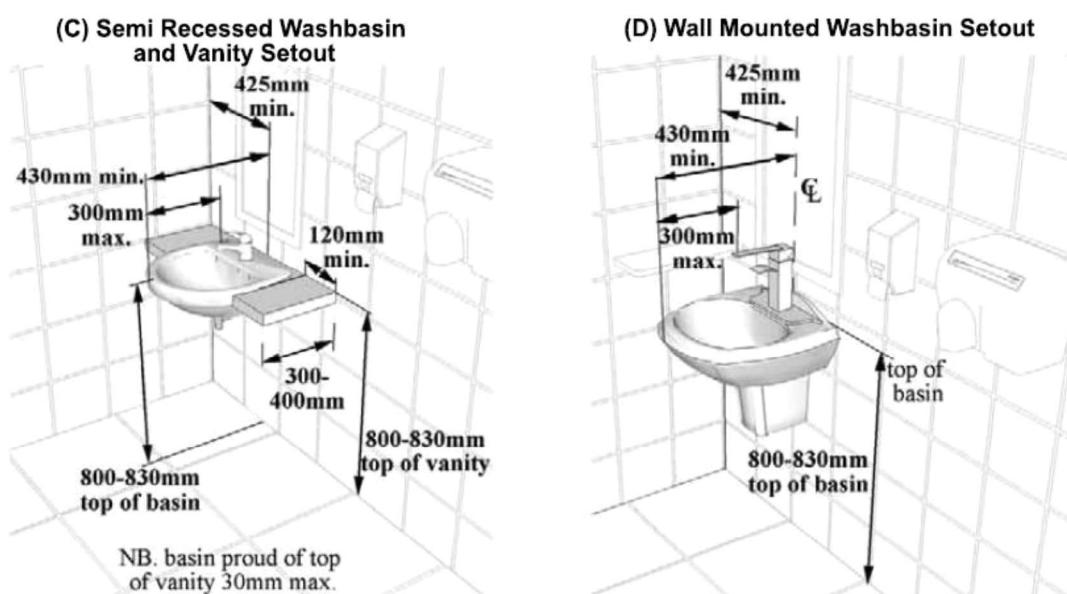


Figure No. 47: Washbasin setout

operable parts means the water source, and the centre-line of the tap, or where a lever handle is provided, the endpoint of the lever measured throughout its arc of movement, or where a sensor is provided, where the sensor is reliably activated.

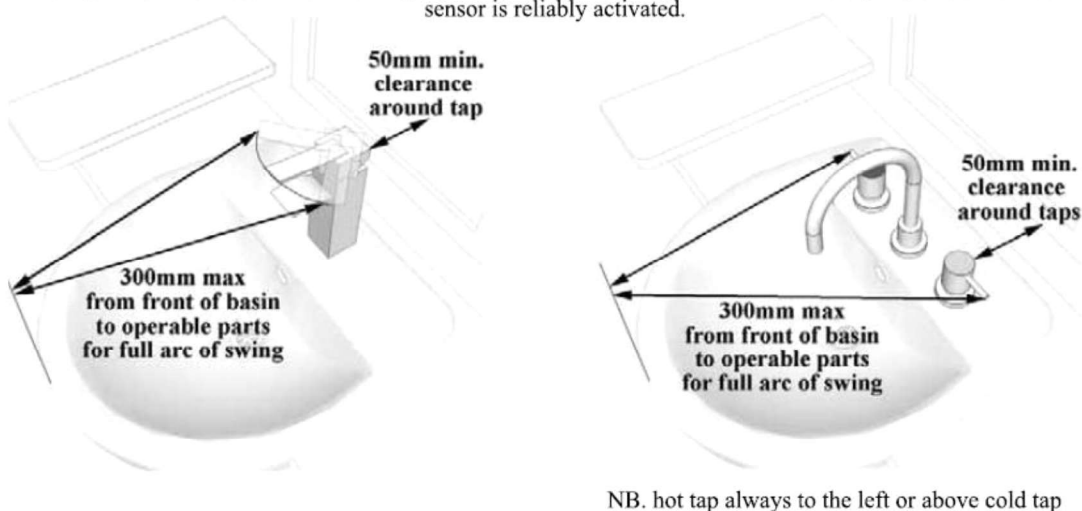
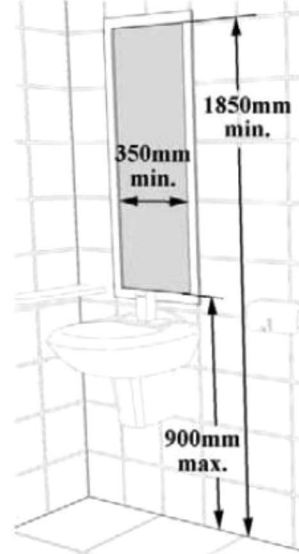


Figure No. 44: Tap clearances and locations



(A) Mirror Location and Size



(B) Second Mirror Location and Height

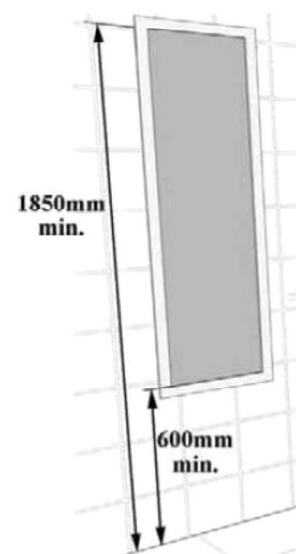


Figure No. 45: Mirror sizes and locations

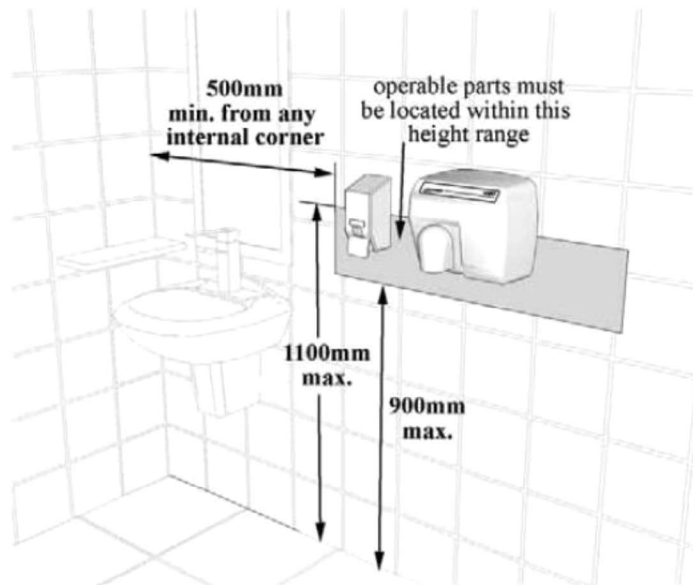


Figure No. 46: Soap and towel dispensers, hand dryers and other fittings – location zone

### Design of Ambulant Sanitary Compartments

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

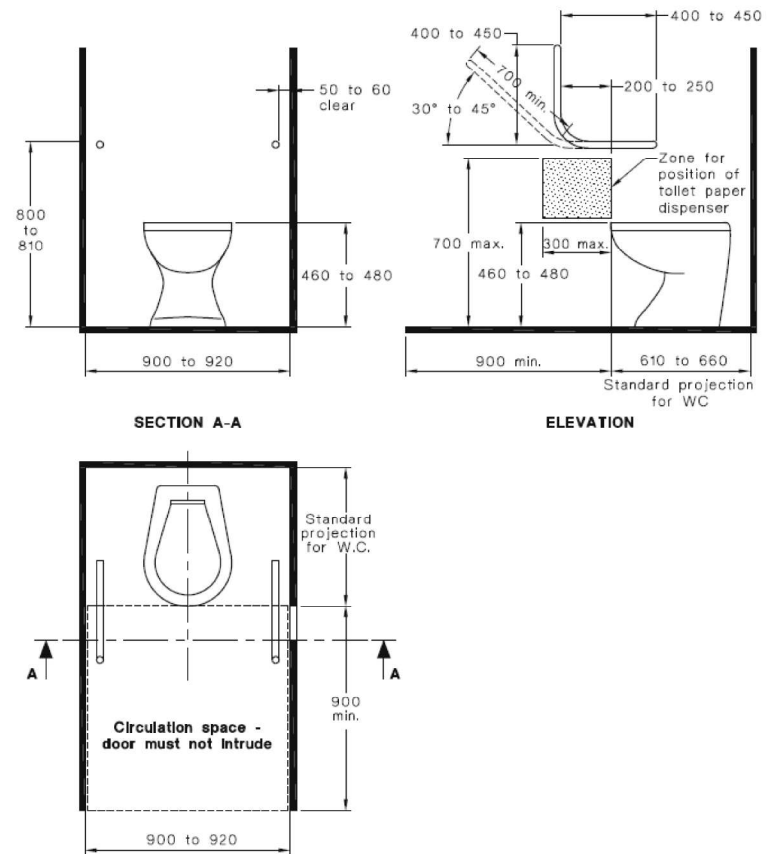


Figure No. 47: Layout requirements for ambulant sanitary compartments

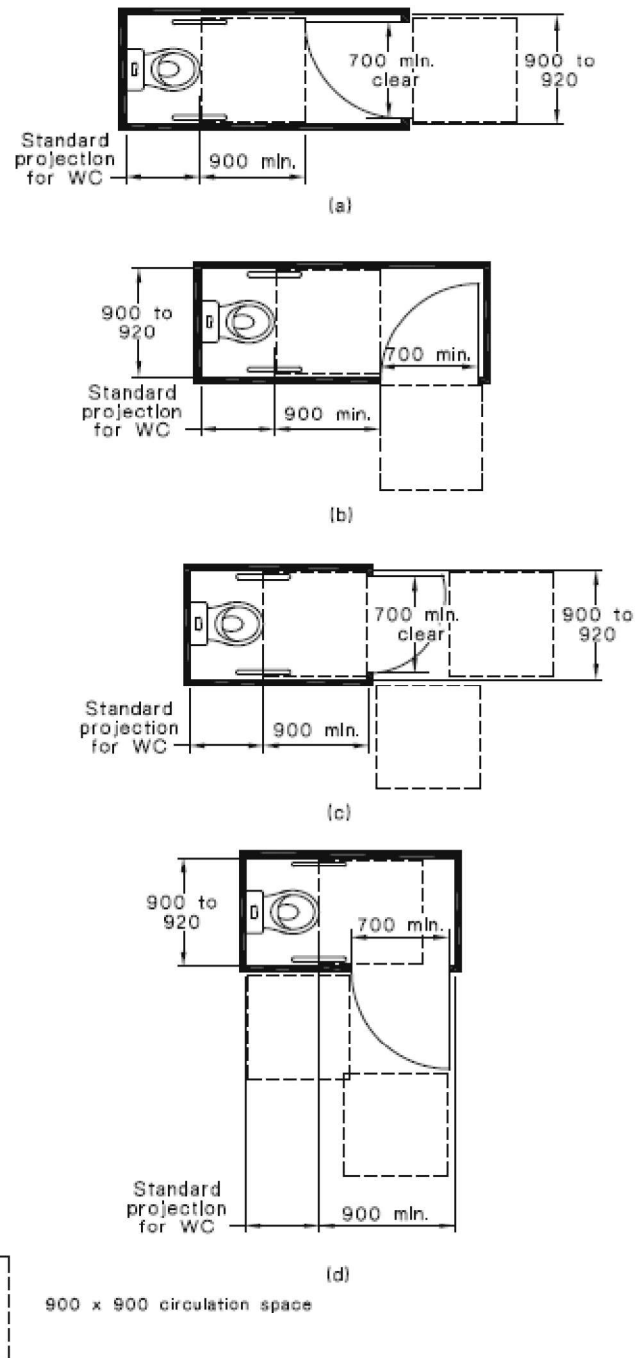


Figure No. 48: Options for doorways leading to ambulant sanitary compartments.

#### 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.



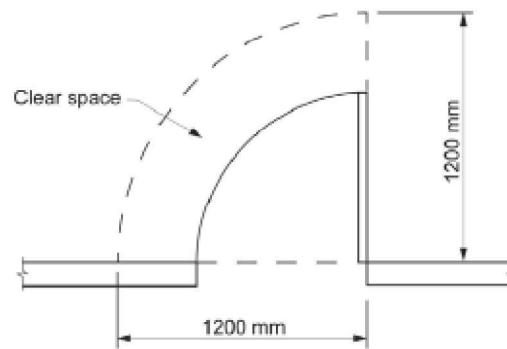


Figure No. 49: Minimum distance required between doorway and pan in a fully enclosed sanitary compartment.

The Architectural Design Development Drawings indicate compliance being achieved in this instance.

#### 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.

The Schematic Design Architectural Drawings indicate the provision of a Dirty Utility.

### Part F5 Room Heights

#### Part F5

#### Ceiling Heights:

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

- + A patient care area – 2400 mm;
- + A treatment room, clinic, waiting room, passageway, corridor, or the like – 2400 mm.
- + Staff Rooms, Meeting Rooms, Office areas etc – 2400 mm
- + Bathrooms, sanitary compartments, tea preparations rooms, pantries, storerooms, dirty utilities, clear utilities or the like – 2100 mm.

### Part F6 Light and Ventilation

#### F6D2

#### Provision of Natural Lighting:

##### 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 Design Architectural Documentation prepared by BVN indicate that natural light is proposed to be provided to the patient bedrooms.

#### 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.

### **Part G6 Occupiable Outdoor Areas**

#### G6D1

##### **Application of Part:**

The Deemed-to-Satisfy Provision of Part G6 apply to an occupiable outdoor area.

An occupiable outdoor area is defined as:

A space on a roof, balcony or similar part of a building –

- (a) *That is open to the sky; and*
- (b) *Which access is provided, other than access only for maintenance; and*
- (c) *That is not open space or directly connected with open space*

From a review of the Schematic Design Architectural Design Drawings prepared by BVN, the Patient Terraces as detailed in the figure below are considered occupiable outdoor areas.



Figure No. 50: Proposed occupiable outdoor areas associated with the palliative care unit

#### 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. Refer to comments provided under Clauses E1D2 and E1D3.

#### 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.

## 3.6 Section F – Energy Efficiency

#### Part J

**Energy Efficiency:** The new building works subject to compliance with the Energy Efficiency Provisions of BCA 2022 Section J relating to (as applicable):



- + 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



## 4.0 Conclusion

This report contains an assessment of the referenced Schematic Design documentation for the proposed delivery of 15 Palliative & Supportive Care beds for Westmead Hospital in a new build facility constructed on the rooftop of the existing Clinical Acute Services Building (linking the Palliative Care & Supportive beds)

Further reviews will be undertaken by **BM+G** as the design progresses to Design Development to ensure that the development can comply with the requirements of the Building Code of Australia, Fire Engineering Report and requirements of the Access Performance Solution Report.



## 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 5: Fire-Resisting Construction – Type A Construction**

TYPE A 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
<b>EXTERNAL WALL</b> – (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:				
<b>For loadbearing parts:</b>				
Less than 1.5m	90/90/90	120/120/120	180/180/180	240/240/240
1.5 to less than 3m	90/60/60	120/90/90	180/180/120	240/240/180
3m or more	90/60/30	120/60/30	180/120/90	240/180/90
<b>For non-loadbearing parts:</b>				
less than 1.5m	-/90/90	-/120/120	-/180/180	-/240/240
1.5 to less than 3m	-/60/60	-/90/90	-/180/120	-/240/180
3m or more	-/-/-	-/-/-	-/-/-	-/-/-
<b>EXTERNAL COLUMN</b> - Not incorporated in an external wall				
For loadbearing columns	90/-/-	120/-/-	180/-/-	240/-/-
For non-loadbearing columns	-/-/-	-/-/-	-/-/-	-/-/-
<b>COMMON WALLS and FIRE WALLS</b>	90/90/90	120/120/120	180/180/180	240/240/240
<b>INTERNAL WALLS</b>				
<b>Fire-resisting lift and stair shafts</b>				

Loadbearing	90/90/90	120/120/120	180/120/120	240/120/120s
Non-loadbearing	-/90/90	-/120/120	-/120/120	-/120/120
<b>Bounding public corridors, public lobbies and the like:</b>				
Loadbearing	90/90/90	120/-/-	180/-/-	240/-/-
Non-loadbearing	-/60/60	-/-/-	-/-/-	-/-/-
<b>Between or bounding sole-occupancy units:</b>				
Loadbearing	90/90/90	120/-/-	180/-/-	240/-/-
Non-loadbearing	-/60/60	-/-/-	-/-/-	-/-/-
<b>Ventilating, pipe, garbage, and the like shafts not used for the discharge of hot products of combustion:</b>				
Loadbearing	90/90/90	120/90/90	180/120/120	240/120/120
Non-loadbearing	-/90/90	-/90/90	-/120/120	-/120/120
<b>OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES, AND:</b>				
<b>COLUMNS</b>	90/-/-	120/-/-	180/-/-	240/-/-
<b>FLOORS</b>	90/90/90	120/120/120	180/180/180	240/240/240
<b>ROOFS</b>	90/60/30	120/60/30	180/60/30	240/90/60

Notes:

- Any lightweight construction in a fire wall or an internal wall required to have an FRL is to comply with Specification 11.
- A loadbearing internal wall and a loadbearing fire wall (including those that are part of a loadbearing shaft) must be constructed from; concrete or masonry.
- 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.
- 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.
- Fire rated shafts are required to be enclosed at the top and bottom by construction having an FRL of not less than what the shaft requires (in both directions)
- The concession granted under S5C15 results in the roof of the building not being required to be fire rated (the building is provided throughout with sprinklers). Notwithstanding, the Atrium provisions override this general concession in BCA Specification 5.
- Lift shafts are required to be enclosed at the top of the shaft with fire rated construction having an FRL of 120/120/120.
- Fire isolated exits are to be provided with a fire rated "lid" that achieves an FRL of 120/120/120.
- Where roof lights are proposed they are required to be located not less than 3 metres from a roof light in an adjoining fire separated part; and must not be more than 20% of the area of the roof.
- Any loadbearing internal walls or loadbearing fire walls are to be masonry or concrete.
- External walls must be non-combustible construction. Non-loadbearing parts of an external wall that are more than 3m from a fire source feature need not be fire rated.

12. Internal columns in this building (being less than 25m in effective height) that are in the storey immediately below the roof, can be constructed as follows:
  - a. Building with a rise in storeys exceeding 3 – FRL 60/60/60
  - b. *Building with a rise in storeys not exceeding 3 – no FRL*