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Health Infrastructure
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DUBBO HEALTH SERVICE REDEVELOPMENT STAGES 3 AND 4 PROVISION FOR FIRE ENGINEERING (CAPABILITY STATEMENT)

We refer to the proposed Alterations and Additions to the Dubbo Health Service Redevelopment Stages 3 and 4 (DHS Redevelopment Stages 3 and 4) located at Myall Street, Dubbo NSW. The Stage 3 and 4 works comprise the construction of a 4 storey newbuild, with associated car parking and land refurbishment works.

The purpose of this document is to outline the basis for the development of proposed Performance Solutions to address identified variations to the Deemed to Satisfy (DTS) provisions of the Building Code of Australia 2016 (BCA).

PROJECT DESCRIPTION

The DHS Redevelopment Stage 4 project scope is described as follows:

- Stage 4 – Site preparation works
 - Demolition of George Hatch and Existing Nurses Administration
 - Demolition of Existing Surgical Ward ('S' Block)
 - New Construction – Temporary Corridor Bypass Link
 - New Construction – 1 x permanent corridor bypass link south
- A new 3-storey clinical building comprising:
 - Ground Level
 - Medical Imaging
 - Emergency Department, including Short Stay Unit
 - A refurbished and expanded Main Entry
 - Level 1
 - Renal Dialysis Unit
 - Ambulatory Care Services
 - Level 2
 - 20 bed CCU/ Cardiovascular/ Stroke Unit
 - 12 bed ICU
 - Cardiovascular Suite
 - Level 3 – Plant Area
- Other associated works
 - Expansion of on grade car parking facilities and improved access and wayfinding.
 - Dedicated ambulance access off Myall Street
 - Amendments to the Cobbora Road roundabout to facilitate entry to the Hospital
 - Demolition of Playmates/Doctors Accommodation
 - Demolition of external component of existing Ambulatory Care Unit
 - Landscaping including tree removal and other public domain works
 - Upgrades of related engineering services infrastructure supporting Stages 4.
 - Refurbishment of the two ICU ensuites within the medical inpatient ward (G-ward).

BCA ASSESSMENT DATA

The relevant BCA Assessment Data for the subject development is summarised in Table 1 below.

Table 1: Relevant BCA data assessment summary

BCA Reference	BCA Assessment
Classification	Class 5 (office) Class 9a (patient care)
Rise in Storeys	4
No. of Levels Contained	4
Minimum Type of Construction Required	Type A
Effective Height	Less than 25 m
Maximum Fire Compartment Size	Assumed to comply

ACHIEVING COMPLIANCE WITH THE BCA

Compliance with the BCA is achieved by satisfying the Performance Requirements. Clause A0.2 of the BCA states that the Performance Requirements can be satisfied by:

- (a) *Performance Solution; or*
- (b) *Deemed-to-Satisfy Solution; or*
- (c) *a combination of (a) and (b).*

Clause A0.3(a) of the BCA states that a Performance Solution must:

- (a) *comply with the Performance Requirements; or*
- (b) *be at least equivalent to the Deemed-to-Satisfy Provisions,*

and be assessed according to one or more of the Assessment Methods.

Clause A0.5 of the BCA states that the following Assessment Methods, or any combination of them, can be used to determine that a Performance Solution or Deemed to Satisfy provisions complies with the Performance Requirements:

- (a) *Evidence to support that the use of a material, form of construction or design meets a Performance Requirement or a Deemed to Satisfy Provision as described in A2.2.*
- (b) *Verification methods such as -*
 - (i) *the Verification Methods in the NCC; or*
 - (ii) *such other Verification Methods as the appropriate authority accepts for determining compliance with the Performance Requirements.*
- (c) *Expert judgment*
- (d) *Comparison with the Deemed to Satisfy provisions.*

SUMMARY OF PROPOSED PERFORMANCE SOLUTIONS

Table 2 below summarises the identified Variations to the BCA DTS Provisions, the relevant BCA Performance Requirements, the Assessment Methods, the Methods of Analysis, and the Acceptance Criteria that are proposed to be used in the future Fire Engineering Assessment.

Table 2: Summary of proposed Performance Solutions

Performance Solution	BCA DTS Provisions	Variations to BCA DTS Provisions	BCA Performance Requirements
1	Specification C3.4 Fire and smoke doors Clause D2.20 Swinging doors	To have two way swinging fire and smoke doors within the building that will not be capable of preventing 100% smoke leakage from one side of the doorway to the other. To have a number of required fire and smoke doors within the building swing in one direction only against the direction of egress, in lieu of swinging in both directions or in the direction of egress.	DP2, CP3, EP2.2
	Summary of Fire Safety Strategy	The fire safety strategy is based on: <u>Smoke Leakage</u> - Fitting the two way swinging doors with smoke seals that limit smoke leakage through the doors to within the limitations specified under AS 6905. <u>Direction of Door Swing</u> - The provision of local smoke detectors on both sides of the two way swinging doors for the electromagnetic door holders to release the doors into a closed position for smoke separation upon activation of a detector. - The provision of signage to those doors that do not swing in the direction of egress to clearly indicate the direction of door swing. - The provision of emergency evacuation procedures, and 24 hour upright staff. - The required fire safety systems and measures, including fire sprinklers which is expected to mitigate the development and spread of fire.	
	BCA Compliance and Assessment Method	A0.3(a)(i) and A0.5(b)(i) , Absolute Assessment, Qualitative Analysis.	
	Acceptance Criteria	Ensuring the subject fire and smoke doors avoid the spread of smoke within the building to allow sufficient time for the orderly evacuation of building occupants. Ensuring the subject fire and smoke doors do not impede the ability of occupants to evacuate from the building in an emergency.	

Performance Solution	BCA DTS Provisions	Variations to BCA DTS Provisions	BCA Performance Requirements	
2	Clause C2.5 Smoke compartment floor areas	To permit a treatment area on the Ground floor to have a smoke compartment size of 1,050 m² in lieu of 1,000 m².	CP2, CP3	
	Summary of Fire Safety Strategy	The fire safety strategy is based on: ▪ The characteristics and use of the subject smoke compartment, in terms of occupant characteristics and comparing population numbers to a DTS Compliant Design. ▪ The smoke compartment will consist of both smoke-proof walls and fire walls, where the DTS provisions of the BCA only requires smoke-proof walls. ▪ The provision of fire safety systems including fire sprinklers throughout the building, smoke detection and EWIS throughout the building. ▪ The provision of an emergency evacuation plan and procedures to AS 3745-2010 and AS 4083-2010. ▪ The presence of trained staff.		
	BCA Compliance and Assessment Method	A0.3(a)(ii) and A0.5(d) , Comparative Assessment, Qualitative Analysis.		
	Acceptance Criteria	Ensuring the risk of fire and smoke spread between adjoining fire/smoke compartments is equivalent to the DtS provision of the BCA. Ensuring occupants evacuating from the subject smoke compartment is protected from the effects of fire and smoke that is equivalent to the DTS provision of the BCA.		
3	Clause C3.3 External separation of fire compartments Clause C3.4 Acceptable methods of protection	To vary the method of protection afforded to openings within the external walls of opposing fire compartments.	CP2	
	Summary of Fire Safety Strategy	The fire safety strategy is based on the: ▪ Variation to provide both internal and external wall wetting sprinklers to openings of one fire compartment only, in lieu of external wall wetting sprinklers to both compartments. ▪ External walls of one fire compartment will be of fire rated construction with an FRL of at least 120/120/120, in lieu of fire rated external wall construction to both fire compartments. ▪ Provision of fire sprinklers throughout the building to mitigate the development and spread of fire.		
	BCA Compliance and Assessment Method	A0.3(a)(ii) and A0.5(d) , Comparative Assessment, Qualitative Analysis.		
	Acceptance Criteria	Ensuring the risk of fire spread between adjoining fire compartments is not increased when compared to a DTS Compliant Design.		

Performance Solution	BCA DTS Provisions	Variations to BCA DTS Provisions	BCA Performance Requirements
4	Clause C3.15 Openings for Service Installations	To permit medical gas copper pipes to penetrate through required fire walls.	CP2, CP8
	Summary of Fire Safety Strategy	The fire safety strategy is based on the: - Medical gases being contained are not flammable. - Medical gas pipes are installed in accordance with AS 2896-2011. - Provision of sealing of copper pipes penetrating through the fire rated building elements. - Provision of sprinkler system in the building.	
	BCA Compliance and Assessment Method	A0.3(a)(i) and A0.5(b)(ii) , Absolute Assessment, Qualitative Analysis.	
	Acceptance Criteria	Ensuring the spread of fire and smoke within the building, via the medical gas line penetrations, is mitigated.	
5	Clause D1.4 Exit travel distances Clause D1.5 Distance between alternate exits	To permit the following extended travel distances in the Treatment areas: - Up to 15 m to a Point of Choice in lieu of 12 m; - Up to 35 m to an exit in lieu of 30 m; - Up to 55 m between alternate exits in lieu of 45 m.	DP4, EP2.2
	Summary of Fire Safety Strategy	The proposed fire safety strategy is based on the following: - The characteristics and use of the paths of travel where the extended exit travel distances occur. - The provision of fire safety systems including fire sprinklers throughout the building, smoke detection and EWIS throughout the building. - The provision of an emergency evacuation plan and procedures to AS 3745-2010 and AS 4083-2010. - The presence of trained staff.	
	BCA Compliance and Assessment Method	A0.3(a)(ii) and A0.5(d) , Comparative Assessment, Qualitative Analysis.	
	Acceptance Criteria	Ensuring occupants can evacuate from the new building safely and in conditions at least equivalent to the DTS provisions of the BCA.	

Performance Solution	BCA DTS Provisions	Variations to BCA DTS Provisions	BCA Performance Requirements
6	Clause D1.4 Exit travel distances	To permit the following extend travel distances: - Up to 31 m to a Point of Choice in lieu of 20 m in the open courtyard on Level 2; - Up to 21 m to a Point of Choice in lieu of 20 m in the non-patient care area on Ground floor	DP4, EP2.2
	Summary of Fire Safety Strategy	The proposed fire safety strategy is based on the following: - The characteristics and use of the paths of travel where the extended exit travel distances occur. - The provision of fire safety systems including fire sprinklers throughout the building, smoke detection and EWIS throughout the building. - The provision of an emergency evacuation plan and procedures to AS 3745-2010 and AS 4083-2010.	
	BCA Compliance and Assessment Method	A0.3(a)(ii) and A0.5(d) , Comparative Assessment, Qualitative Analysis.	
	Acceptance Criteria	Ensuring occupants can evacuate from the new building safely and in conditions at least equivalent to the DTS provisions of the BCA.	
7	Clause D1.5 Distance between alternate exits	To permit the distance between alternate exits on Level 3 Plant to be up to 70 m, in lieu of 60 m.	DP4
	Summary of Fire Safety Strategy	The proposed fire safety strategy is based on the following: - The characteristics and use of the paths of travel where the extended exit travel distances occur. - The provision of fire safety systems including fire sprinklers throughout the building, smoke detection and EWIS throughout the building.	
	BCA Compliance and Assessment Method	A0.3(a)(ii) and A0.5(d) , Comparative Assessment, Qualitative Analysis.	
	Acceptance Criteria	Ensuring occupants can evacuate from the new building safely and in conditions at least equivalent to the DTS provisions of the BCA.	

Performance Solution	BCA DTS Provisions	Variations to BCA DTS Provisions	BCA Performance Requirements
8	Clause D1.7 Travel via fire-isolated exits	To permit the discharge of the western fire-isolated stairway within a link corridor before discharging to open space.	DP5
	Summary of Fire Safety Strategy	The fire safety strategy is based on: - The required fire safety systems and measures, including fire sprinklers which is expected to mitigate the development and spread of fire. - Consideration of the nature and characteristics of the fire-isolated stairway.	
	BCA Compliance and Assessment Method	A0.3(a)(i) and A0.5(b)(ii) , Absolute Assessment, Qualitative Analysis.	
	Acceptance Criteria	Ensuring occupants evacuating from the building via the fire-isolated exit are protected from the effects of fire from within the building such as flames, smoke and radiant heat.	
9	Clause D1.7 Travel via fire-isolated exits	To permit the central stairway to be used only for egress from the Level 3 Plant, and discharge will occur via back inside the building to reach open space.	DP5
	Summary of Fire Safety Strategy	The fire safety strategy is based on: - The required fire safety systems and measures, including fire sprinklers which is expected to mitigate the development and spread of fire. - Consideration of the paths of travel so occupants are protected from the fire-affected area to reach open space.	
	BCA Compliance and Assessment Method	A0.3(a)(i) and A0.5(b)(ii) , Absolute Assessment, Qualitative Analysis.	
	Acceptance Criteria	Ensuring occupants evacuating from the building via the fire-isolated exit are protected from the effects of fire from within the building such as flames, smoke and radiant heat.	

Performance Solution	BCA DTS Provisions	Variations to BCA DTS Provisions	BCA Performance Requirements
10	Clause D1.11 Horizontal exits	To have the path of travel from one horizontal exit lead into another fire compartment that only comprises of horizontal exits in lieu of an egress stairway being available.	DP4
	Summary of Fire Safety Strategy	The fire safety strategy is based on the: - Provision of alternate paths of travel and multiple exits from each fire compartment. - Occupants crossing an exit to an adjacent fire compartment being accommodated and will not be required to return to the fire affected compartment. - The provision of fire safety systems including fire sprinklers throughout the building, smoke detection and EWIS throughout the building. - The provision of an emergency evacuation plan and procedures to AS 3745-2010 and AS 4083-2010. - The presence of trained staff.	
	BCA Compliance and Assessment Method	A0.3(a)(i) and A0.5(b)(ii) , Absolute Assessment, Qualitative Analysis.	
	Acceptance Criteria	Ensuring occupants are provided with exits in a fire compartment to travel away from the fire-affected area into an adjacent fire compartment or exit directly discharging to open space/road.	
11	Clause D2.19 Sliding doors	To permit sliding doors in patient care areas in lieu of sliding doors which lead directly to a road or open space.	DP2
	Summary of Fire Safety Strategy	The fire safety strategy is based on the: - Provision of a push-button device adjacent to each sliding door. - Battery backup is to be provided to maintain operation of the subject button devices in the event of building power failure. In the event of total power failure (battery backup & building power), the sliding doors must be manually openable (no more than 110 N of force). - Provision of a "PUSH TO OPEN" signage to instruct occupants the use of the push button device. - The provision of fire safety systems including fire sprinklers throughout the building, smoke detection and EWIS throughout the building. - Provision of building management plan and staff training to be familiar to undertake emergency and evacuation procedures for the building.	
	BCA Compliance and Assessment Method	A0.3(a)(i) and A0.5(b)(ii) , Absolute Assessment, Qualitative Analysis.	
	Acceptance Criteria	Ensuring the installation of the sliding doors do not adversely affect or impede occupant evacuation out of the building in the event of an emergency.	

Performance Solution	BCA DTS Provisions	Variations to BCA DTS Provisions	BCA Performance Requirements
12	Clause E1.4 Fire hose reel coverage	To permit the fire hose reels to not be provided in certain areas of the building e.g. small rooms bounding the general circulation fire compartment on Levels 1 and 2.	EP1.1
	Summary of Fire Safety Strategy	The fire safety strategy is based on the: - Provision of a portable fire extinguisher adjacent to the doorway outside each subject small room. CO2 fire extinguishers are appropriate. - The provision of fire safety systems including fire sprinklers throughout the building, smoke detection and EWIS throughout the building.	
	BCA Compliance and Assessment Method	A0.3(a)(i) and A0.5(b)(ii) , Absolute Assessment, Qualitative Analysis.	
	Acceptance Criteria	The omission of fire hose reels in fire-isolated rooms is acceptable provided that occupants are provided with an appropriate first aid firefighting alternative.	
13	Clause E2.2 Stair pressurisation	To omit a stair pressurisation system to the central stair adjacent to the lifts.	EP2.2
	Summary of Fire Safety Strategy	- Consideration of the use and characteristics of the central stair. - The provision of fire safety systems including fire sprinklers throughout the building, smoke detection and EWIS throughout the building.	
	BCA Compliance and Assessment Method	A0.3(a)(i) and A0.5(b)(ii) , Absolute Assessment, Quantitative and Qualitative Analysis.	
	Acceptance Criteria	Ensure conditions are maintained in the central stairway for occupant evacuation and for fire brigade intervention, at least equivalent to the DTS provisions of the BCA.	

REQUIRED FIRE SAFETY SYSTEMS

The following fire safety systems will be required to be installed throughout the subject building in accordance with relevant Australian Standards, and as where varied by the future Fire Engineering Report:

- Fire Hydrants - BCA Clause E1.3, AS 2419.1-2005
- Fire Hose Reels - BCA Clause E1.4, AS 2441-2005
- Sprinklers (including Wall-wetting sprinklers) - BCA Specification E1.5, AS 2118.1-1999
- Portable Fire Extinguishers - BCA Clause E1.6, AS 2444-2001
- Automatic Smoke Detection and Alarm System - BCA Specification E2.2a, AS 1670.1-2015
- Sound System & Intercom System for Emergency Purposes; AS 1670.4-2004
- Emergency Lighting - BCA Clauses E4.2 and E4.4, AS 2293.1-2005
- Exit Signs - BCA Clauses E4.5, E4.6 and E4.8, AS 2293.1-2005.

NOTE: The above list may change or vary during the design and development process, and / or as a result of the future Fire Engineering Report.

CONCLUSION

In consideration of the above, it is concluded that Performance Solutions can be developed to the DTS provisions of the BCA to ensure the proposed development can achieve compliance with the relevant Performance Requirements of the BCA.

Yours Faithfully

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