BLACKETT MAGUIRE+ GOLDSMITH

BCA Assessment Report

Goulburn Rehabilitation Unit

Sub-Acute Bed Program

Revision 4

8 February 2012

Project No. 110349

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REPORT STATUS				
DATE	**REVISION**	**STATUS**	**AUTHOR**	**REVIEWED**
16.09.2011	1	Preliminary BCA Assessment Report for Design Development Phase	MM	DB
12.10.2011	2	Revised BCA Assessment report to incorporate design modifications to lower ground floor & first floor levels.	MM	DB
09.11.2011	3	Revised BCA Assessment report to incorporate further design changes to the gymnasium and fire stair construction.	MM	DB
08.02.2012	4	Revised BCA Assessment report to incorporate further design changes and updated architectural plan.	MM	DB

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Accredited Certifier

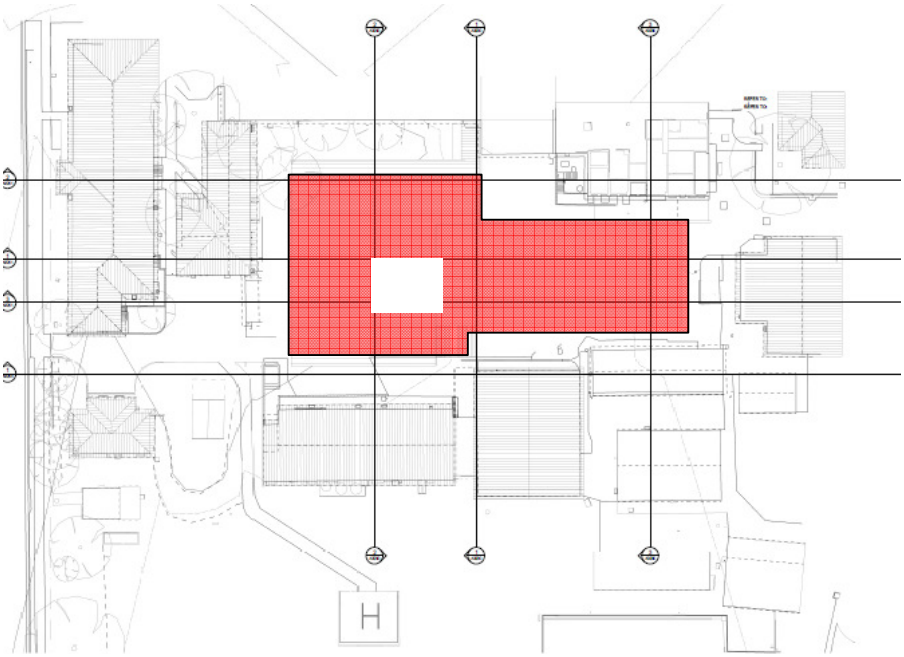
A. INTRODUCTION

A.1 BACKGROUND

Blackett Maguire + Goldsmith Pty Ltd (BM+G) have been commissioned by Aurora Projects Pty Ltd to undertake a preliminary BCA assessment of the design development phase documentation for the proposed Sub-Acute Bed program at the Goulburn Rehabilitation Unit.

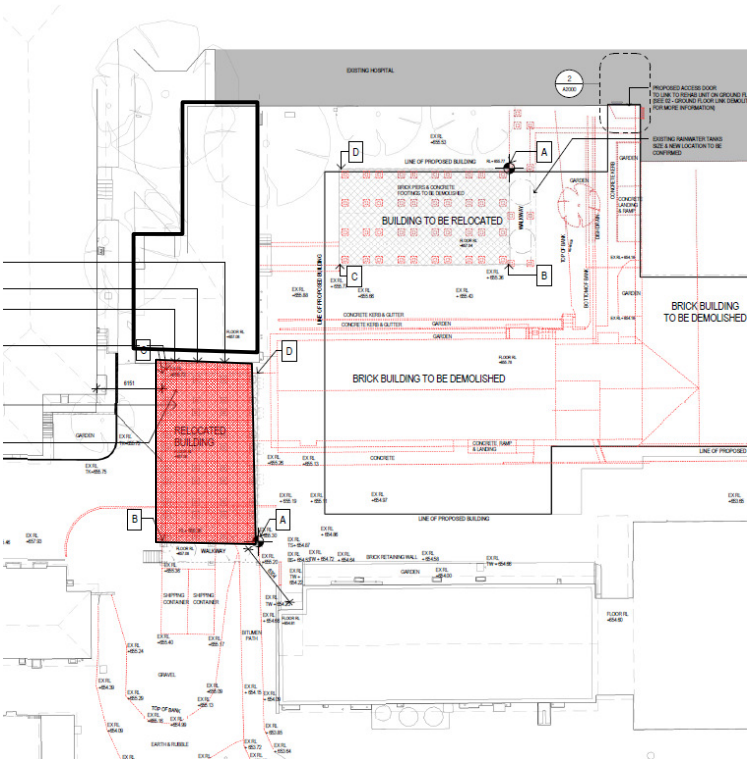
It is understood that the project includes demolition of a number of existing buildings, relocation of a demountable building, and construction of a stand alone twenty (20) bed rehabilitation unit at the Goulburn Hospital:

The subject new building is identified in red in the below site plan:



A.2 RELOCATED BUILDING

As part of the proposed building works identified above, it is also proposed to relocate an existing lightweight constructed demountable type building to the area shown in the attached site plan:



We note that whilst the demountable building will be positioned greater than 6m from the adjacent buildings to the east and west, the building to the north is located approximately 1m away which poses a risk of fire spread between the two building given that the demountable is of lightweight construction.

In this regard, we would recommend that this non compliance be addressed against the performance requirements of the BCA (prepared by a suitably qualified fire safety engineer), in which case the existing double brick building to the north will have the southern elevation entirely bricked up to achieve a minimum FRL of 120/120/120 to prevent the spread of fire between buildings.

A.3 Aim

The aim of this report is to:

- Undertake an assessment of the proposed development against the deemed-to-satisfy provisions of the BCA.
- Identify any BCA compliance issues that require resolution/attention for the proposed development.

A.4 Project Team

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

- David Blackett
- Matt Morrisey

A.5 Documentation

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

- Building Code of Australia 2011 (BCA)
- Guide to the Building Code of Australia.
- Architectural plans prepared by Woods Bagot, drawing no.s A2200(J), A2201(I), dated 6 February 2012.

A.6 LIMITATIONS & EXCLUSIONS

The limitations and exclusions of this report are as follows:

- The following assessment is based upon a review of the architectural documentation.
- The Report does not address matters in relation to the following:
  i. Local Government Act and Regulations.
  ii. Occupational Health and Safety Act and Regulations.
  iii. WorkCover Authority requirements.
  iv. Disability Discrimination Act.
  v. Water, drainage, gas, telecommunications and electricity supply authority requirements.
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A.7 TERMINOLOGY

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

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

(a) structural adequacy; and

(b) integrity; and

(c) insulation,

and expressed in that order.

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

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

(a) a public or private hospital; or

(b) a nursing home or similar facility for sick or disabled persons needing full-time care; or

(c) a clinic, day surgery or procedure unit where the effects of the predominant treatment administered involve patients becoming non-ambulatory and requiring supervised medical care on the premises for some time after the treatment.

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

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

Compliance with the Performance Requirements can only be achieved by-

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

(b) formulating an Alternative Solution which-

(i) complies with the Performance Requirements; or

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

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

Patient care area - means a part of a *health-care building* normally used for the treatment, care, accommodation, recreation, dining and holding of patients including a *ward area* and *treatment area*

Rise in storeys - means the greatest number of *storeys* calculated in accordance with BCA C1.2.

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

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

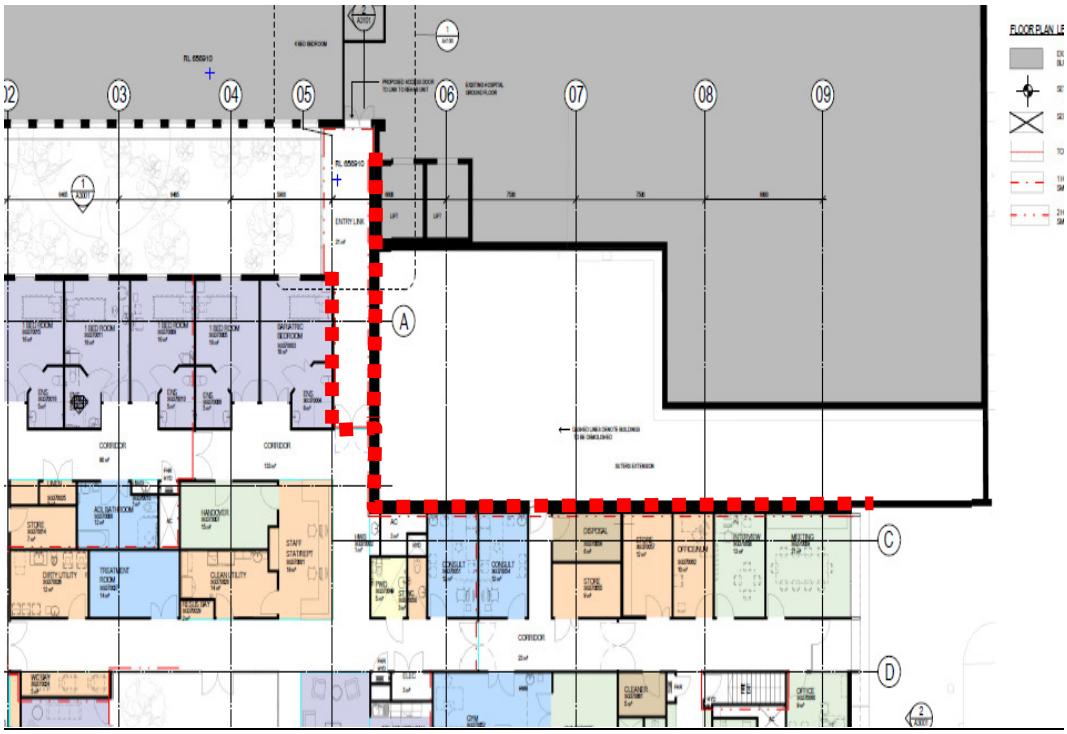
B. BCA ASSESSMENT

The following is a summary of relevant areas of BCA Compliance that would need to be addressed for the proposed development. In summary, the key building characteristics have been identified as follows:

▪ **BCA Classification:**	Class 9a: Heath care Class 5: Administration
▪ **Rise in Storeys:**	Two (2) (note 1)
▪ **Effective Height:**	Less than 12 metres
▪ **Type of Construction:**	Type B
▪ **Climate Zone:**	7
▪ **Compartmentation:**	Fire Compartment Size:- 1,319m^2 (Note1) Smoke Compartment/Fire Zone Size:- Less than 500m^2.

Note 1: The proposed new building will need to be fire separated at the link connection between the existing hospital building and from the Suters proposed works as indicated by the red hatched line in the below diagram, via construction which achieves an FRL of not less than 120/120/120.

It is noted that a number of window openings in the external of the existing hospital building will need to be protected accordingly.



BCA SECTION C – FIRE RESISTANCE

1. Clause C1.10 – 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. Details indicating compliance will need to be provided prior to the completion of works.

2. Clause C2.2 – General Floor Area and Volume Limitations

The proposed new building is compliant with maximum fire compartment sizes.

3. Clause C2.5 – Class 9a buildings

The fire and smoke compartments will need to comply with the following requirements:

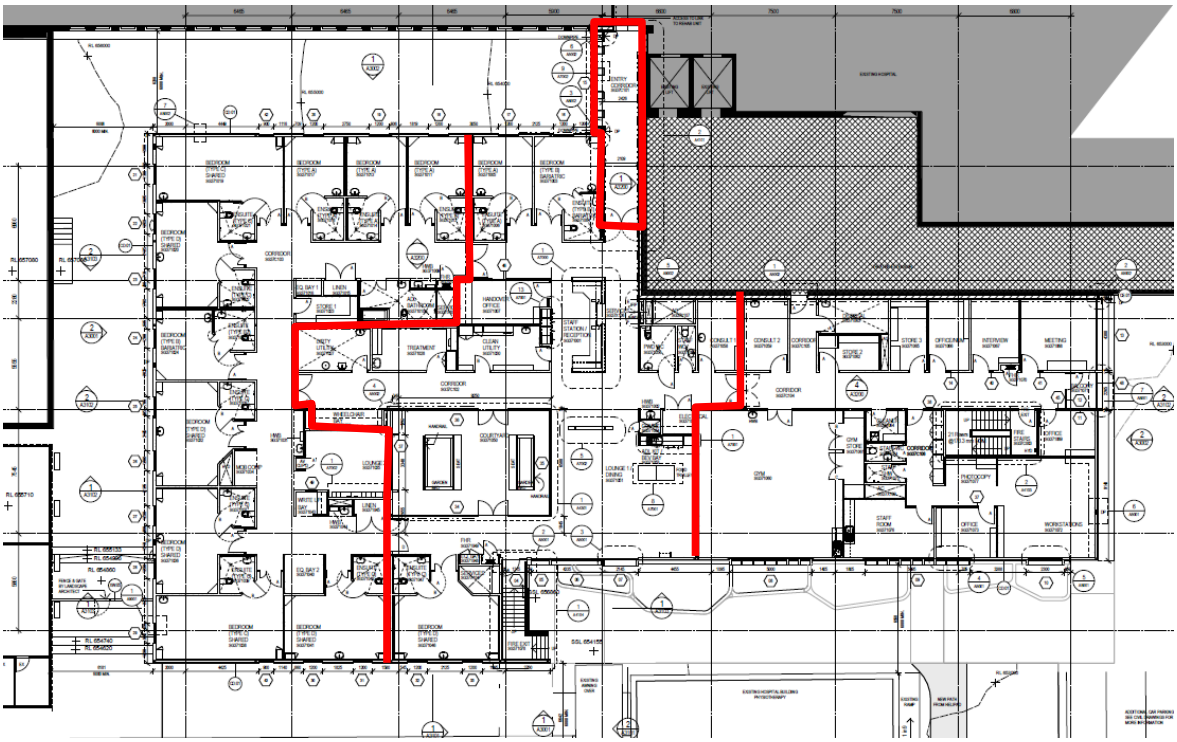
Treatment areas are divided into smoke compartments not more than 1,000m^2. Architectural plans indicate compliance.

Ward areas being separated into 500m^2 smoke compartments. In addition, as the proposed new building exceeds 1000m^2 a smoke wall which also achieves an FRL of 60/60/60 must be provided to limit the fire compartment size. Architectural plans indicate compliance.

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

Patient care areas also need to be fire compartmented into 2000m^2 fire compartments with fire walls having an FRL of 120/120/120, however we note the overall building area (being the new building only due to separation from the existing building) is less than 2,000m^2 therefore the above requirements apply.

It is understood that smoke / fire compartments will be installed within the following locations:

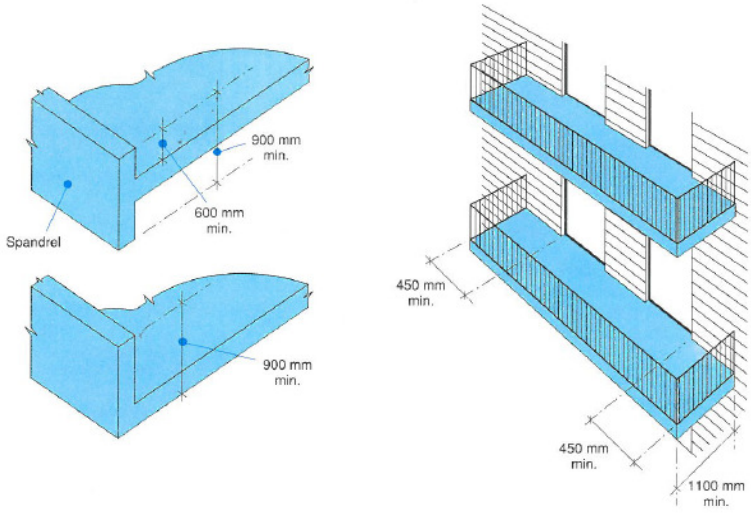


The facility does not appear to include any ancillary use areas that necessitate additional fire separation in accordance with clause C2.5(vi) of the BCA.

Note: A wall which is required to provide a smoke barrier in a Class 9a must be of non combustible construction (i.e. no timber framing or the like).

4. Clause C2.5(a)(iv)(B) – Spandrels

As the building is of type B Construction, the floor separating lower ground and ground floor levels must achieve an FRL of not less than 120/120/120 and the openings in the external wall bounding patient care areas must be vertically separated in accordance with C2.6 of the BCA as indicated in the following diagram:



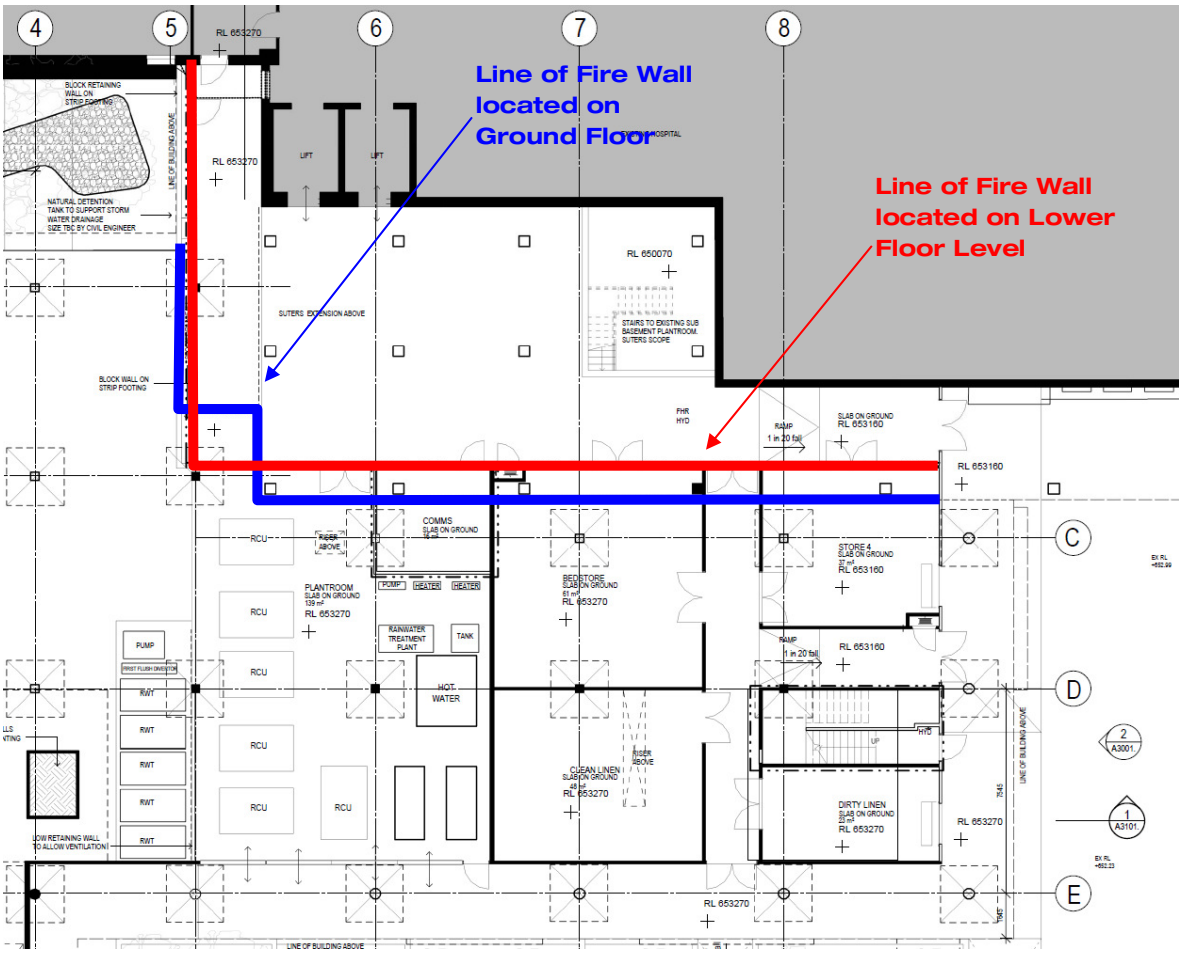
(i) Spandrels (ii) Horizontal Projection

In this regard we note that spandrel separation has not been provided between the under croft level and the ground floor plan. Additional details are to be provided in this regard.

5. Clause C2.7 – Separation by Fire Walls

Fire walls (*and fire rated walls*) must extend from the floor slab to the underside of the roof sheeting with no penetrations through the fire wall other than roof battens with a dimension of 75mm x 50mm or sarking.

In this regard we note that the proposed fire wall located between the existing hospital building and Suters extension does not technically comply with the deemed to satisfy provisions of the BCA, in so far as the wall is not continuous between the lower ground floor and ground floor levels as indicated in the below diagram:



Whilst the above is a technical non compliance against the DtS provisions of the BCA due to not being continuous from the floor of the lowest level, this non compliance has been addressed against the performance requirements of the BCA by the Fire Safety Engineer..

6. Clause C2.12 – Separation of Equipment

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

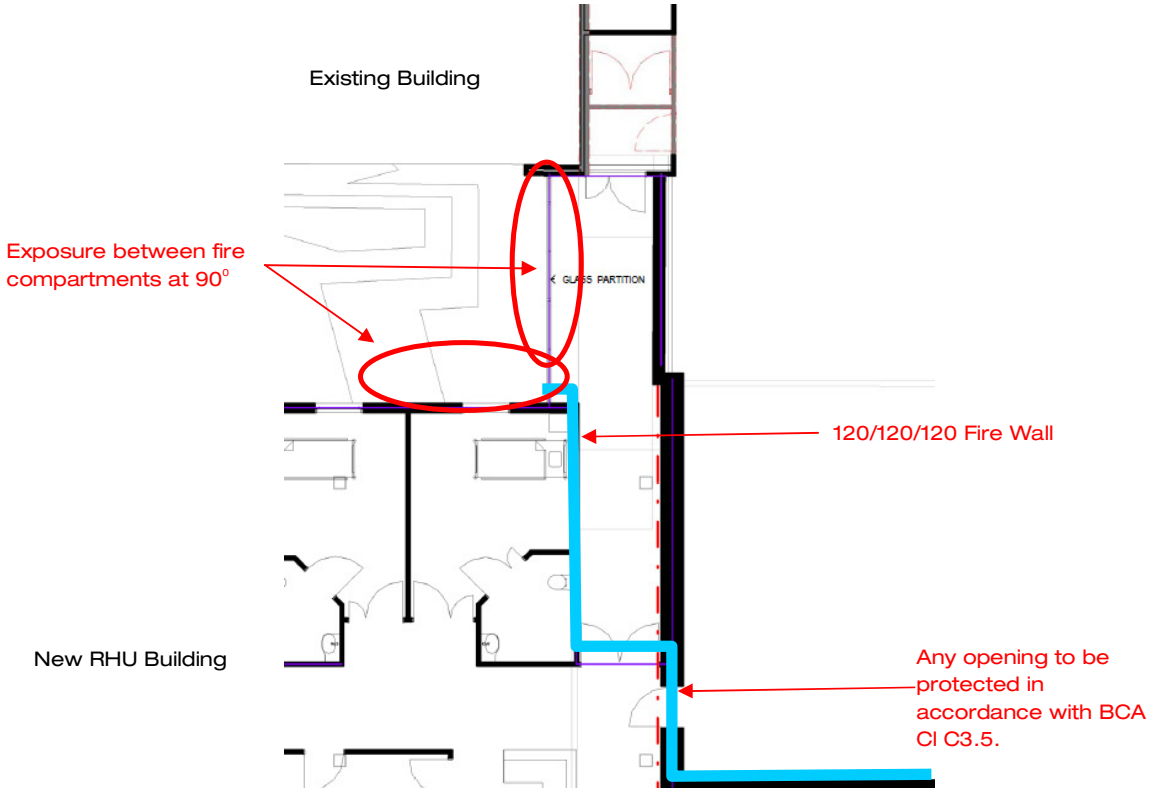
- Boilers where the water is boiled to greater than 100 degrees Celsius.
- Battery or batteries have a voltage exceeding 24 volts and a capacity exceeding 10 ampere hours. This may occur in a Comms room also.

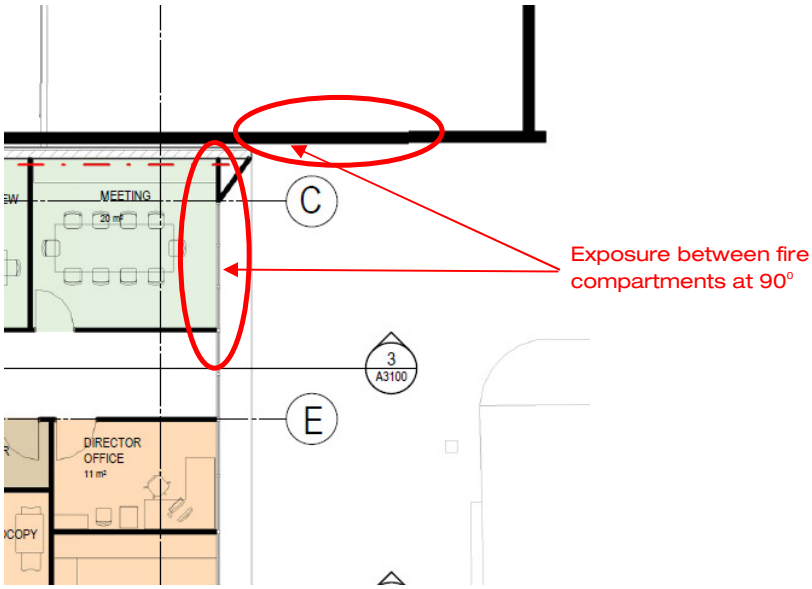
7. Clause C3.3 –Separation of External Walls and Other Openings in Different Fire Compartments

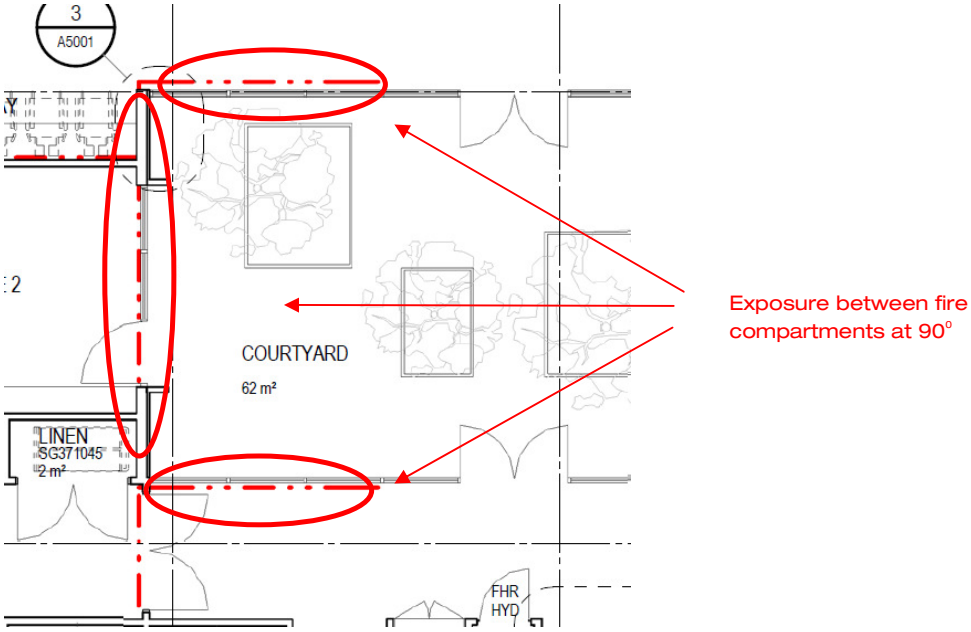
As a result of the proposed new works, we note that there are a number of openings within the external walls of the new RHU and the existing hospital building which are exposed to one another where located in separate fire compartments.

In this instance, should the openings of the new and existing buildings which are located within 4m of another fire compartment not be protected in accordance with Clause C3.4

of the BCA then it will be necessary to obtain a fire engineered alternative solution to justify the non compliances illustrated below:-







In this regard we note that the Fire Safety Engineering report addresses this matter by way of requiring the construction of fire rated walls or installation of drenchers. See Figures 2, 3 & 4 of fire engineering report for further clarification.

8. Clause C3.5 – Doorways in Fire Walls

Any doors to be provided in fire walls must be fire rated to achieve the same rating as the fire wall itself, with the doors to be self-closing or auto closing on the activation of smoke detectors within 1.5-metres of either side of the doors as well as any sprinkler or smoke detection system within the building.

In this instance the fire rated walls located within the RHU are to achieve 60/60/60 FRL. Doors contained within the fire rated walls are to achieve --/60/30 FRL. The doors are also to incorporate smoke seals to maintain smoke compartmentation.

Notwithstanding, the fire wall which separates the existing buildings from the proposed RHU will need to achieve a minimum of 120/120/120 FRL with doors that will necessitate --/120/30 fire doors.

9. Clause C3.15 – Openings for Service Installations

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

Note: Where a wall is required to achieve both smoke and fire compartmentation, the penetrations must be protected to accommodate both.

10. Specification C1.1 – Fire Resisting Construction

Type B Construction

The proposed building elements are required to comply with the requirements detailed under Specification C1.1 for Type B Construction for Cass 5 & 9a use – refer to the below Table:-

BUILDING ELEMENT	Class 5 & 9a
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any fire-source feature to which it is exposed is –	
For loadbearing walls:	
less than 1.5m	120/120/120
1.5m to less than 3m	120/90/60
3m to less than 9m	120/30/30
9m to less than 18m	120/30/-
18m or more	-/-/-
For non - loadbearing walls:	
less than 1.5m	-/120/120
1.5m to less than 3m	-/90/60
3m or more	-/-/-
EXTERNAL COLUMN not incorporated in an external wall, where the distance from any fire source feature to which it is exposed is –	
Less than 3m	120/-/-
3m or more	-/-/-
COMMON WALLS & FIRE WALLS-	120/120/120
INTERNAL WALLS	
Fire resisting lift and stair shafts *(loadbearing)* –	120/120/120
Fire resisting stair shafts *(non-loadbearing)* –	-/120/120
Bounding public corridors, public lobbies and the like –	
Loadbearing	120/-/-
Non Loadbearing	-/-/-
Between or bounding sole-occupancy units –	
Loadbearing	120/-/-

Non Loadbearing	-/-/-
OTHER LOADBEARING INTERNAL WALLS & COLUMNS:	120/-/-
ROOFS	-/-/-

BCA SECTION D – ACCESS & EGRESS

11. Clause D1.3 – Fire Isolated Stairways

The stairway located on the southern side of the proposed new extension is required to be fire isolated due to the fact that the building contains two storeys and includes patient care areas.

In this regard we note that the Fire Safety Engineering report has allowed the southern stairway to remain as an open stairway.

12. Clause D1.4 – Exit Travel Distances

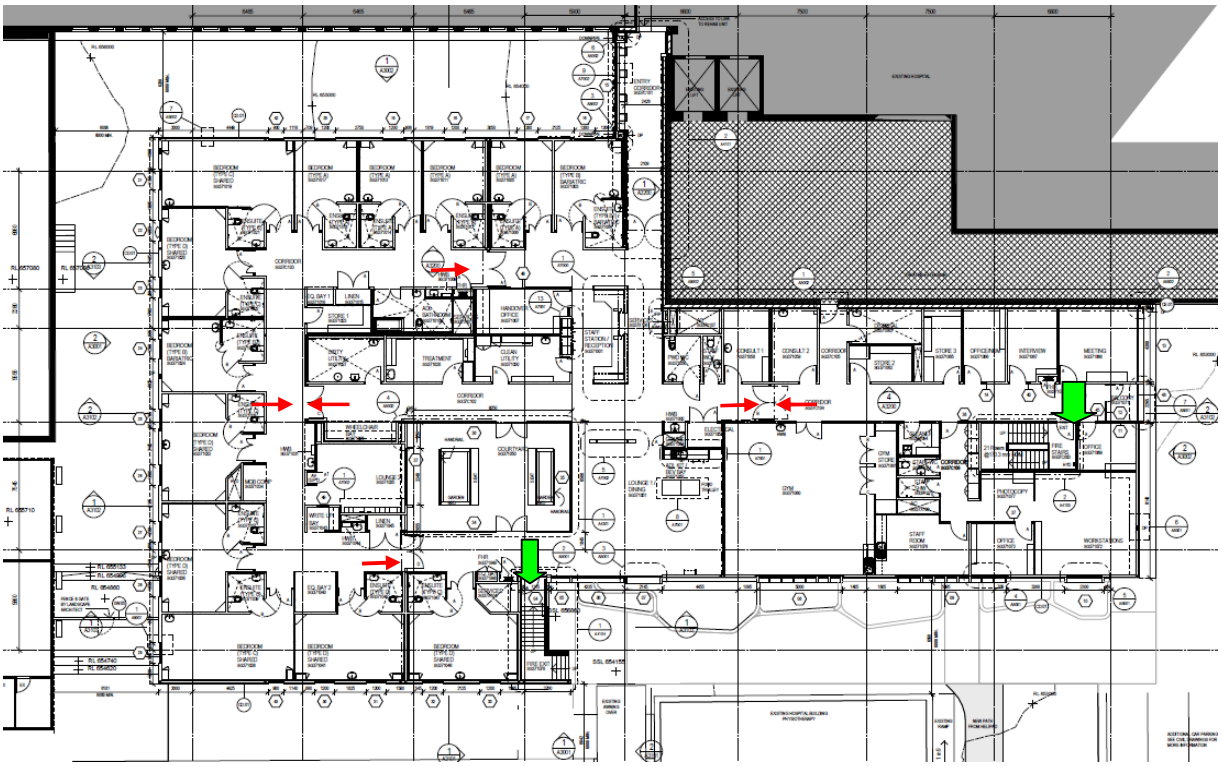
The exit travel distances within the RHU comply with the DTS provisions of the BCA, namely maximum 12m travel to a point of choice and maximum 30m to an alternative exit.

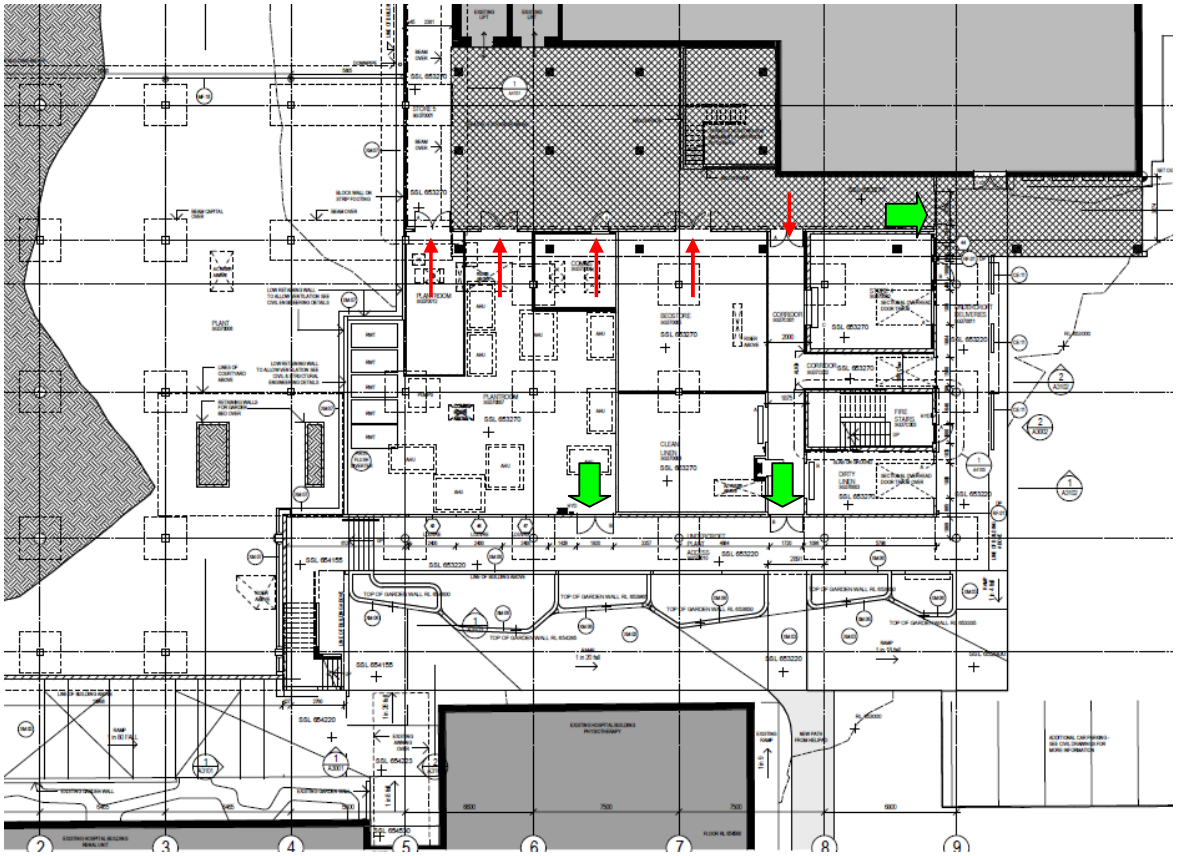
Note: For the purposes of ensuring compliance with the Deemed to satisfy provisions we have considered the fire wall located at the western end of the building to be a horizontal exit to ensure that travel distances comply from this area.

Egress from the central staff station is permitted to have 20m to a point of choice and maximum 40m to the alternative exit. Compliance is achieved in the current design.

The nominated exits from the RHU are illustrated below in green arrows:-

(Note: The required swing of internal fire / smoke egress doors are also indicated below in red arrows)





13. Clause D1.5 – Distances Between Alternative Exits

The distance between alternative exits complies with the DTS provisions of the BCA, namely maximum 45m between alternative exits having regard to the horizontal exit located on the western side of the building.

14. Clause D1.6 – Dimensions of Exits

The unobstructed height throughout an exit or a path of travel to an exit is not less than 2 metres, except for doorways which may be reduced to not less than 1980mm. In addition, the unobstructed width of an exit or a path of travel to an exit (public corridors) is not less than 1 metre on the understanding that patients will not normally be transported in beds.

The minimum widths of doors throughout the patient care areas are to achieve 850mm. A door schedule should be provided for further review.

15. Clause D1.10: Discharge of Exits

The discharge of exits to open space cannot incorporate any steps to connect the discharge point to the adjoining roadway in accordance with the DTS provisions of the BCA. The site plan indicates that there are generally no steps to the roadway once occupants discharge from the building.

16. Clause D2.7: Installations in exits and Paths of Travel

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

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

17. Clause D2.10 – Pedestrian Ramps

All pedestrian ramps and walkways (and stairways) need to have a non-slip finish.

18. Clause D2.13 – Treads and Risers

All stairways are to have compliant and consistent tread, riser and going dimensions in accordance with this clause and the nosing of the stairs must be provided with a non-slip tread with no gaps between risers exceeding 125mm.

Each stairway is to be provided with a contrast strip to the nosing in accordance with AS1428.1-2009.

19. Clause D2.14 – Landings

In a Class 9a building, the area of any landing of a stairway must be sufficient to move a stretcher 2m long and 600mm wide at a gradient not more than the gradient of the stairway, with at least one end of the stretcher on the landing while changing direction between flights.

Alternatively, the stair must have a change in direction of 180° and the landing a clear width of not less than 1.6m and a clear length of not less than 2.7m

Further details are to be provided which indicates that the southern stairway achieves compliance with the above requirements.

20. Clause D2.15 – Thresholds

All external doors are to have a maximum 25mm set in the door threshold with the exception of the door thresholds that are to facilitate access for people with disabilities – in which case maximum 3mm step in the door threshold can be accommodated.

Confirmation is to be provided which confirms that the southern stairway step down does not exceed 25mm.

21. Clause D2.16 - Balustrades or other barriers

All balustrades will need to be compliant in terms of a minimum of 1m in height above any fall more than 1m with no gaps greater than 125-mm.

For the external non-fire isolated stairs where the fall exceeds 1-metre the balustrade must be provided a minimum of 865-mm in height with no gaps greater than 125-mm and where any landing exceeds 500-mm that the height of balustrading will be a minimum of 1-metre. The plans indicate compliance in this regard.

22. Clause D2.17 – Handrails

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

23. Clause D2.20 – Swinging Doors

All required exit doors are to swing in the direction of egress. Smoke and fire doors are to swing in the direction of egress. The plans indicate compliance in this regard.

24. Clause D2.21 – Operation of Latch

All required exit doors will be fitted with single-handed lever action hardware at a height of between 900-mm and 1100-mm above the floor level that will be openable without a key from the direction of egress other than doors.

Any exit doors, internal doors fitted with secured devices and or external gates are to electronically fail unlocked in fire mode.

25. Clause D2.23 – Signs on Doors

The single swing smoke and fire doors leading into the fire stairs are to have signage located on the side from which a person seeks egress which states “FIRE SAFETY DOOR, DO NOT OBSTRUCT, DO NOT KEEP OPEN”.

For double swing smoke doors and fire doors that are part of a horizontal exit or in a path of travel, signage is required on both sides “FIRE SAFETY DOOR DO NOT OBSTRUCT DO NOT KEEP OPEN” for self-closing doors and for auto-closing doors “FIRE SAFETY DOOR DO NOT OBSTRUCT”.

26. Clause D3.2 – General Building Access Requirements

The new facility and associated parking and access ramps will comply with the DTS provisions of BCA2011.

This will include the following requirements:-

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

  Access need not be provided to:

(a) An area where access would be inappropriate because of the particular purpose for which the area is used.

(b) An area that would pose a health or safety risk for people with a disability.

(c) Any path of travel providing access only to an area exempted by (a) or (b).

BCA2011 Part D3.2 – Access to Buildings & D3.3 – Parts of Buildings to be Accessible

- Access for persons with disabilities is required from the entry at the site boundary, from all other assessable buildings on the site and from all nominated accessible parking spaces on the site.
- Access must be provided through the principal pedestrian entrance(s) of each building and through not less than 50% of all pedestrian entrances of the respective buildings (including the principal pedestrian entry).

  In addition, as the buildings are greater than 500m^2, any *non-accessible* entrances must not be greater than 50m from an accessible entrance.

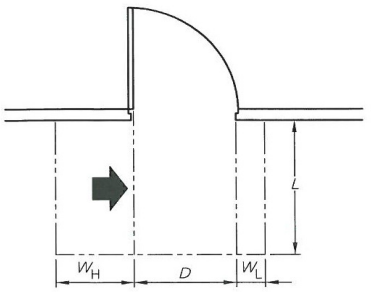
- The minimum width of an accessible doorway must have a *clear opening* width of not less than 850mm in accordance with AS1428.1.

  Each of the SOU doors in the Class 9a facilities is to achieve minimum 850mm clear width – this is on the understand that transportation of beds is not .

- All 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.

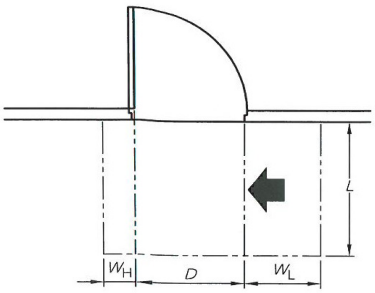
  The minimum width of the area of luminance contrast shall be 50 mm.

- Circulation to doorways that are required to be accessible are to comply with Section 13 of AS1428.1-2009, including as follows:



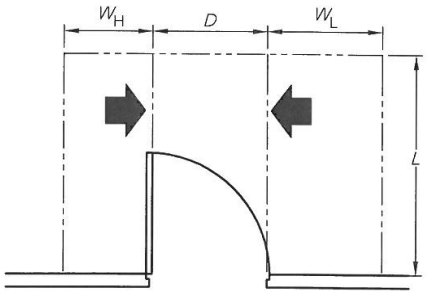
Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1220	560	340
900	1185	510	340
950	1160	460	340
1000	1140	410	340

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



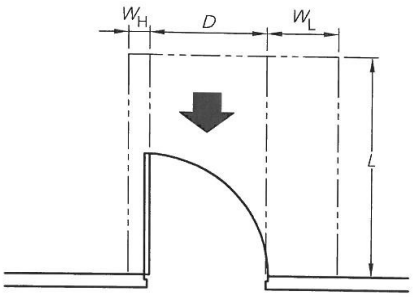
Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1240	240	660
900	1210	190	660
950	1175	140	660
1000	1155	90	660

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



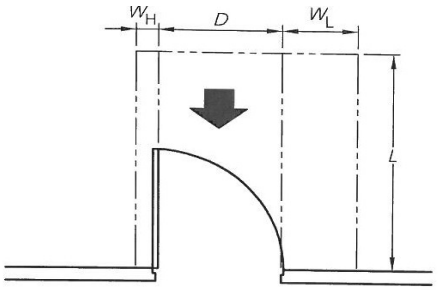
Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1670	660	900
900	1670	610	900
950	1670	560	900
1000	1670	510	900

(g) Either side approach, door opens towards user



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

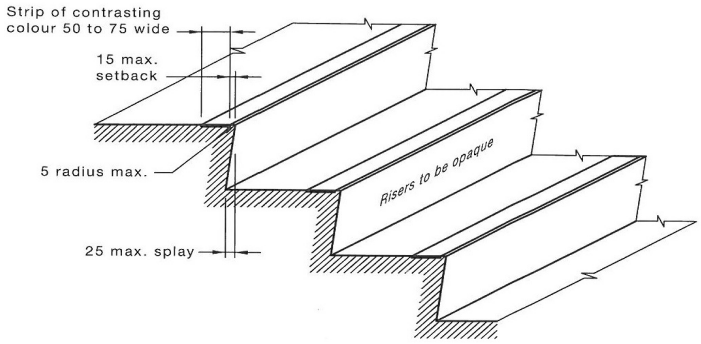
(h) Front approach, door opens towards user



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

(h) Front approach, door opens towards user

- All stair nosing's (internal and external) shall comply with the following diagram, which achieves a colour contrast luminance of 30% to the background (tread):



NOTE: A chamfered nosing 5 × 5 mm may be used.

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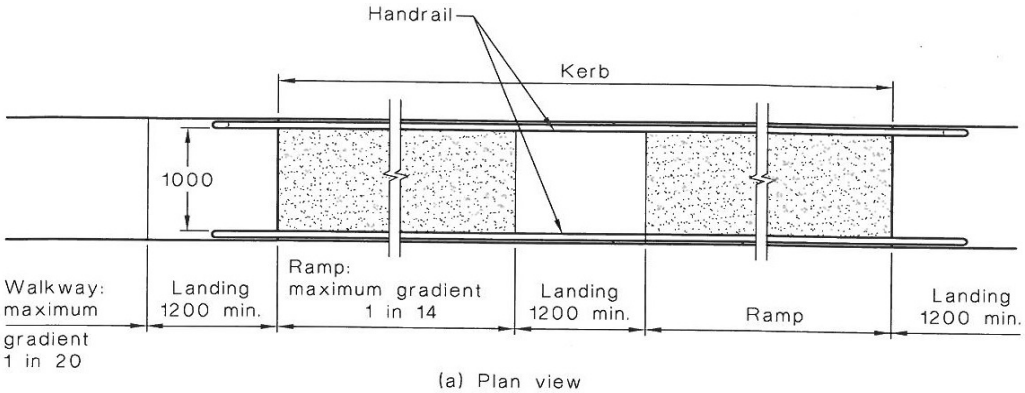
FIGURE 27(A) A TYPICAL STAIR NOSING PROFILE WITH NOSING STRIP

- Stairways and ramps will not need to be served by Tactile Ground Surface Indicators in accordance with AS1428.4.1 – *BCA2011 includes a concession for Class 9a buildings.*

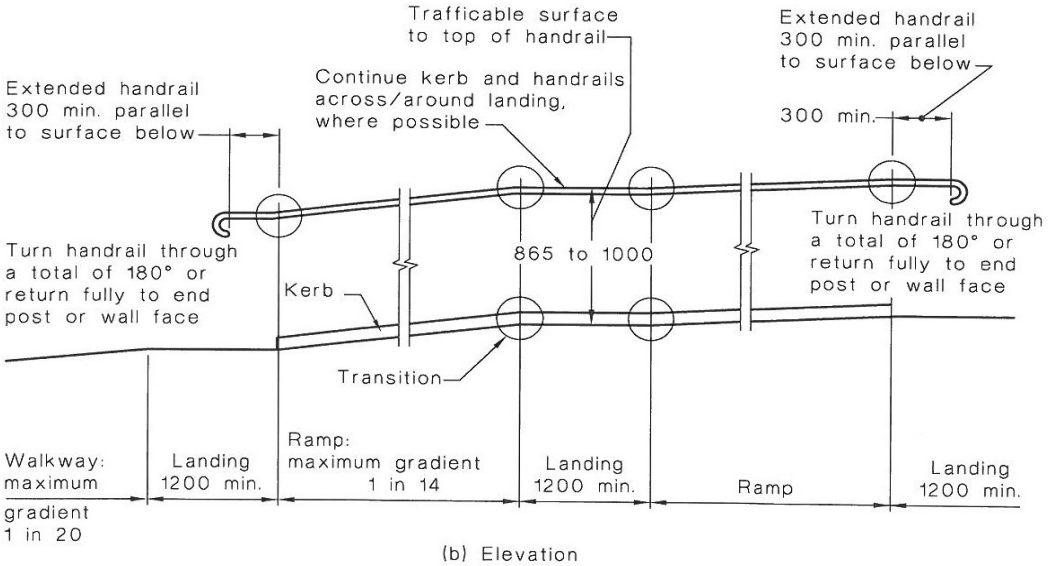
  Instead, handrails to stairways and ramps are to have raised tactile warning, in the form of a domed button 4-5mm in height and 10-12mm in diameter, and shall be provided on the top of each handrail, 150 (+/-10mm, from the end of the handrail.

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

- AS1428.1 defines an accessible ramp as an inclined surface on a continuous accessible path of travel between two landings with a gradient steeper than 1:20 but not steeper than 1:14.
- Landings (complying with AS1428.1 Section 10.8) are to be provided at maximum 9m intervals for 1:14 ramps and maximum 15m intervals for 1:20 ramps.
- Handrails are required both sides of all accessible ramps.



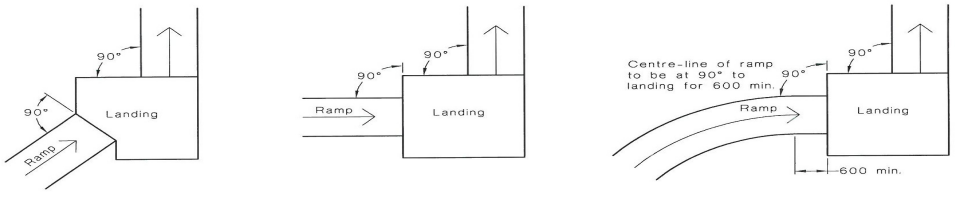
(a) Plan view



(b) Elevation

DIMENSIONS IN MILLIMETRES

- Where ramps are constructed with a change in direction, the angle of approach shall create a 90° angle to the line of transition between the ramp surface and the landing surface



(a) Angled approach (b) Straight approach (c) Curved approach

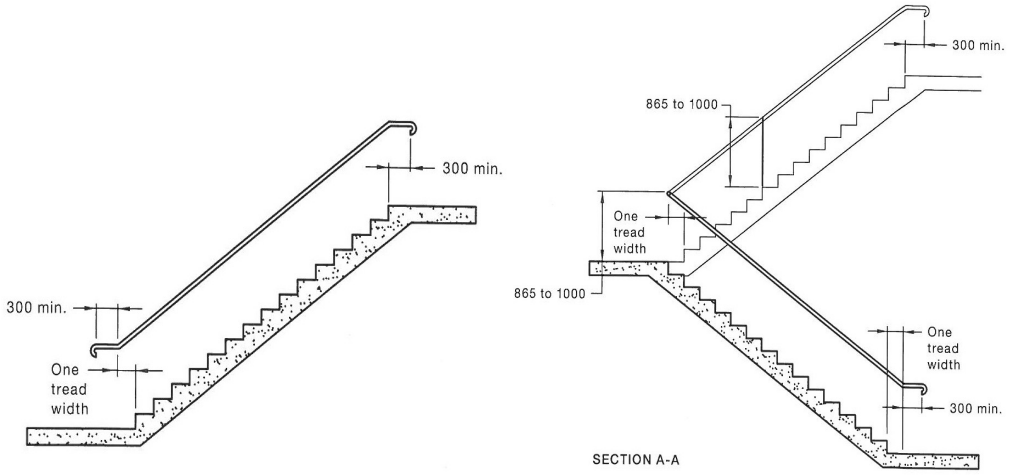
DIMENSIONS IN MILLIMETRES

Accessible Stairways (AS1428.1-2009 Section 11):

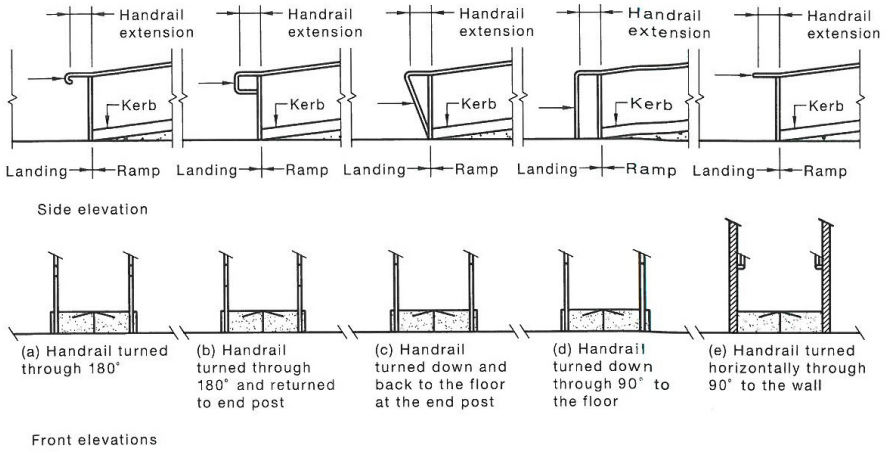
- Where the intersection is at the property boundary, the stair shall be set back by a minimum of 900 mm so that the handrails do not protrude into the transverse path of travel.
- Where the intersection is at an internal corridor, the stair shall be set back
- Stairs shall have opaque risers.
- Stair nosings shall not project beyond the face of the riser and the riser may be vertical or have a splay backwards up to a maximum 25 mm
- Stair nosing profiles shall—
  (i) have a sharp intersection;
  (ii) be rounded up to 5 mm radius; or
  (iii) be chamfered up to 5 mm × 5 mm.

Handrails:

- Handrails shall be installed along stairways as follows:
  - Shall be continuous through the flight and where practicable, around landings and have no obstruction on or above up to a height of 600mm,
  - Shall be constructed to comply with Clause 12 of AS1428.1,
  - Installed along *both* sides of the stairway (giving consideration also to the required 1m unobstructed width),
  - Handrails must not contain any vertical sections,
  - Handrails to stairways shall terminate in accordance with the following diagrams:



- Handrails to ramps shall terminate in accordance with the following diagrams:



Accessible Fixtures & Fittings:

- Not less than 1 unisex communal wheelchair accessible WC is to be provided to comply with Section 15 of AS1428.1-2009.
- Required accessible showers and bathrooms/ensuites are to comply with Section 15 of AS1428.1-2009
- Required WCs for people with ambulant disabilities are to comply with Section 16 of AS1428.1-2009.
- All fixtures, fittings and door hardware are to comply with Section 13.5 & Section 14 of AS1428.1-2009.

Required Sanitary Facilities

- BCA2011 Part F requires sanitary facilities with the Class 9a facilities as follows:-

(a) Facilities for Staff:-

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

User Group	Closet Pans		Urinals		Washbasins	
	Design Occupancy	Number	Design Occupancy	Number	Design Occupancy	Number
Class 9a						
Male employees	1 — 20	1	1 — 10	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 employees	1 — 15	1			1 — 30	1
	> 15	Add 1 per 15			> 30	Add 1 per 30

- At each bank of communal and staff toilets, where there is one or more toilets *in addition* to an accessible unisex WC at that bank of toilets, a sanitary compartment suitable for a person with an ambulant disability in accordance with AS 1428.1 must be provided for use by males and females.

  In this instance the proposed staff BOH will require:

  (a) a further wheelchair accessible unisex WC (i.e. in addition to the proposed communal wheelchair accessible WC), and
  (b) ambulant accessible WCs for both male and female.

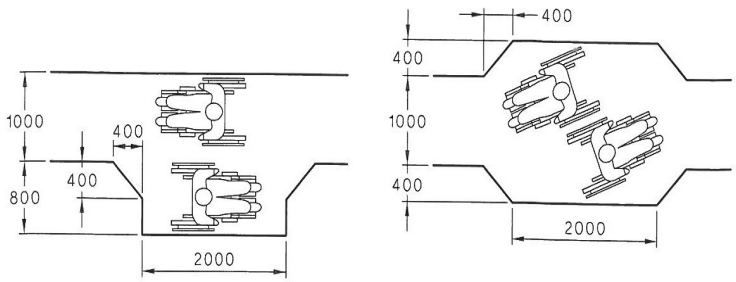
  On account of the likely 'abled-bodied' staff to be employed in the respective facilities, it is considered that the need for a further accessible WC for staff use and or the need for facilities for ambulant staff is unlikely and hence we recommend an alternative solution will be required from a suitably qualified and experienced access consultant.

(b) Facilities for Patients:

- Every SOU ensuite that is nominated to be accessible for people with disabilities is to be compliant with AS1428.1-2009.

Continuous Accessible Paths of Travel

- Accessways / corridors within the buildings must be constructed in accordance with the following:
  - Passing spaces complying with the following diagram at *20m intervals* on those parts of the accessway / corridor, *where a direct line of sight is not available*:



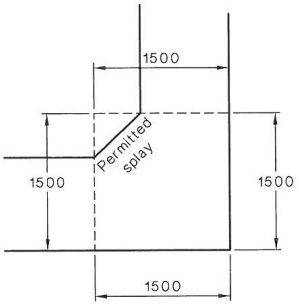
DIMENSIONS IN MILLIMETRES

FIGURE 3 EXAMPLES FOR PASSING SPACE FOR WHEELCHAIRS

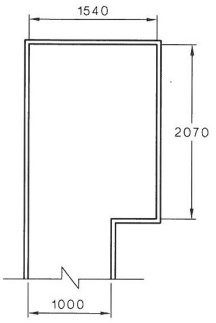
The design complies in this regard.

  - Turning spaces provided (in accordance with the following diagram) within 2m of the end of an accessway where it is not possible to continue travelling along the accessway, and at maximum 20m intervals along the accessways.

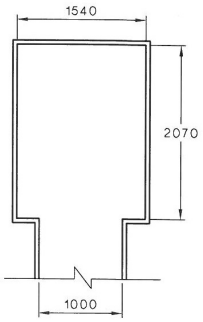
    As the corridors are approximately 2m wide, this satisfies the requirements of this clause.



Turn 90° in path of travel
Corridor less than 1500 mm wide requires widening at turn



(a) Space required in corridor



(b) Space required in corridor

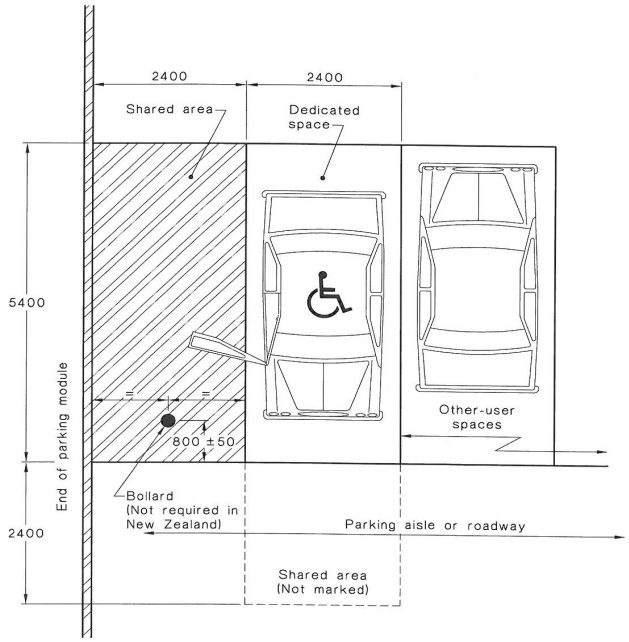
- The carpet pile height or pile thickness shall not exceed 11mm and the carpet backing thickness shall not exceed 4mm. Note: combined thickness of 15mm respectively.
- Signage to identify any ambulant or accessible sanitary facility which is located on the door of the facility.
- Where a pedestrian entrance is not accessible, then directional signage incorporating the international symbol of access or deafness must be provided to direct a person to the location of the nearest accessible pedestrian entrance.
- On an accessway where there is no rail, handrail or transom provided to glazed walls and doors which may be mistaken as an 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

Accessible Parking Spaces:

A minimum of 1 disabled carparking space must be provided for every 100 car parking spaces or part thereof for the non-outpatient areas.

A minimum of 1 disabled carparking space must be provided for every 50 car parking spaces or part thereof for the outpatient areas.

The required accessible parking spaces are required to comply with AS2890.6 and the following:



DIMENSIONS IN MILLIMETRES

FIGURE 2.2 EXAMPLE OF AN ANGLE PARKING SPACE WITH SHARED AREA ON ONE SIDE ONLY—DIMENSIONS FOR AUSTRALIA ONLY*

27. Clause D3.6 – Identification of Accessible Facilities, Services and Features

Braille and tactile signage must be installed to indicate the disabled toilet and lift as per Specification C3.6.

BCA SECTION E – SERVICES AND EQUIPMENT

28. Fire Safety Requirements

The following essential fire safety measures are to be implemented to and within the proposed new building to comply with BCA and relevant Standards as nominated:

Statutory Fire Safety Measure	Design/Installation Standard
Alarm Signalling Equipment	AS1670.3 – 2004
Automatic Fail Safe Devices	BCA Clause D2.21
Automatic Fire Detection & Alarm System	BCA Spec. E2.2a & AS 1670.1 - 2004.
Automatic Suppression system (Drenchers) *if used to protect openings exposed to one another in different fire compartments.*	AS2118.2
Emergency Lighting	BCA Clause E4.4 & AS 2293.1 - 2005
EWIS	BCA Clause E4.9 & AS 1670.4 – 2004 & AS 4428.4 - 2004

Statutory Fire Safety Measure	Design/Installation Standard
Emergency Evacuation Plan	AS 3745 - 2002
Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS 2293.1 - 2005
Fire Blankets	AS 3504 - 1995 & AS 2444 – 2001
Fire Dampers	BCA Clause C3.15, AS 1668.1 - 1998 & AS 1682.1 & 2 - 1990
Fire Doors	BCA Clause C2.12, C2.13, C3.2, C3.4, C3.5, C3.6 & C3.7, C3.8, C3.11 and AS 1905.1 – 2005
Fire Hose Reels	BCA Clause E1.4 & AS 2441 – 2005
Fire Hydrant Systems	Clause E1.3 & AS 2419.1 - 2005
Fire Seals	BCA Clause C3.15, AS 1530.4 & AS4072.1 - 2005
Lightweight Construction	BCA Clause C1.8 & AS 1530.3 – 1999
Mechanical Air Handling Systems (automatic shutdown)	BCA Clause E2.2, AS/NZS 1668.1 - 1998 & AS 1668.2 – 1991
Paths of Travel	EP & A Regulation Clause 186
Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001
Smoke Dampers	AS/NZS 1668.1 - 1998
Smoke Doors	BCA Spec. C3.4 & C2.5
Warning & Operational signs	Section 183 of the EP & A Regulations 2000, AS 1905.1 - 2005, BCA Clause C3.6, D2.23, E3.3

29. Clause E1.3 – Fire Hydrants

Internal or external fire hydrants are to be provided to comply with AS 2419.1 – 2005.

The hydrant booster assembly if required and any external fire hydrants are required to be located greater than 10 metres from an external wall of the building, or affixed to the external wall and protected by a radiant heat shield that has an FRL of 90/90/90 located 2 metres either side and 3 metres above the outlets.

Any gas meter must be located a minimum of 10-metres from the hydrant booster outlet.

30. Clause E1.4 – Hose Reels

Fire hose reels are to be provided to comply with AS 2441 – 2005.

Note: As Fire Hose Reels are not permitted to pass through Fire doors, consideration will need to be given to the installation of additional FHR located in the bedstore, Comm's room and plant room located on the under croft level.

31. Clause E1.6 – Portable Fire Extinguishers

Portable fire extinguishers are to be installed in accordance with clause E1.6 and AS 2444. This includes the provision of type E fire extinguishers to nurse and staff stations.

32. Clause E2.2 – Smoke Hazard Management

Any air-handling system (other than non-ducted systems with a capacity not more than 1000 litres/second) must shut down automatically on the activation of smoke detectors installed as per Specification E2.2a.

AS 1670.1 – 2004 smoke detection and alarm must be provided throughout the new works.

33. Clause E4.2 – Emergency Lighting

Emergency Lighting is required throughout the new works in accordance with AS 2293.1 -2005.

34. Clause E4.5 – Exit Signs

Exit signs are to be installed throughout the new works in accordance with AS 2293.1 - 2005.

35. Clause E4.6 – Directional Exit Signs

Directional exit signs are to be installed throughout the new works where the exits are not readily apparent to occupants in accordance with AS 2293.1 -2005.

36. Clause E4.9 – Sound System and Intercom System for Emergency Purposes (EWIS)

A sound system and intercom system for emergency purposes must be provided throughout the new works as per AS 1670.4 – 2004.

BCA SECTION F – HEALTH & AMENITY

37. Clause F1.7 – Waterproofing of Wet Areas

Wet areas in the building are required to comply with AS 3740.

38. Clause F1.9 – Damp-Proofing

The building design is to make necessary provision to ensure moisture from the ground is prevented from reaching the lowest floor timbers and walls above the lowest floor joists.

The required damp proof course is to comply with AS/NZS2904 or include impervious termite shields in accordance with AS3660.1.

39. Clause F1.12 – Sub-Floor Ventilation

Sub floor ventilation to the building is to be compliant with clause F1.12 of the BCA including suitable means of permanent cross flow ventilation and minimum 400mm vertical clearance between the ground surface and the underside of the floor structure.

40. Clause F2.3– Facilities in a Class 9a Building

The Class 9a facility is required to have:

- Kitchen facilities
- Laundry facilities
- One island-type plunge bath

Confirmation is to be provided which confirms whether the ADL Bathroom will contain an island type plunge bath.

41. Clause F2.4– Facilities for People with Disabilities

Accessible WC is to be designed in accordance with the requirements of AS 1428.1 – 2009.

42. Clause F2.5 – Construction of Sanitary Compartments

The door to fully enclosed sanitary facilities must open outwards, slide or be readily removable from the outside unless there is a clear space of 1.2 metres measured in accordance with figure F2.5.

43. Clause F2.8 – 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 waste management device is to be located within the dirty utility or similar location.

44. Clause F3.1 – Height of Rooms

The floor to ceiling heights in the new works must be 2.4-metres throughout.

45. Clause F4.1 – Provision of Natural Light

Natural light is required to be provided to all ward bedrooms as per clause F4.2.

This has been achieved and is therefore compliant with BCA.

46. Clause F4.4 – Artificial Lighting

Artificial lighting to the new works is required in accordance with AS 1680.0 2009.

47. Clause F4.5 – Ventilation of Rooms

The new works are to be provided with either natural ventilation achieving 5% of the floor area of the room served or where natural ventilation is not provided, AS 1668.2 – 1991 mechanical ventilation is to be provided. Confirmation is required from the Mechanical Consultant.

SECTION J – ENERGY EFFICIENCY

The new works are subject to the requirements of Part J1 for Building Fabric, Part J2 for glazing where new external glazing is installed, Part J3 for building sealing including clause J3.3 (External Doors and Windows), clause J3.5 (Exhaust Fans), clause J3.6 (Construction of Roofs, Walls and Floors) and clause J3.7 (Evaporative Coolers).

Furthermore, the proposed new works are required to comply with clause J5.2 (Air Conditioning and Ventilating Systems), clause J5.3 (Time Switch), clause J5.4 (Heating and Cooling Systems), and clause J5.5 (Ancillary Exhaust Systems)for any new air-conditioning systems.

New artificial lighting is required to comply with Part J6 (Artificial lighting and power).

In addition, any new hot water supply is required to be installed in accordance with clause J7.2 (Hot Water Supply). Compliance with clauses J8.2 (Access for Maintenance) and J8.3 (Facilities for Energy Monitoring) is required.

Details and design certification are required to be provided from the Architect, Mechanical, Electrical, and Hydraulic Consultants prior to the issue of the Crown Certification.

C. CONCLUSION

This report contains a BCA assessment of the referenced architectural documentation for the proposed Sub-Acute bed RHU, against the Deemed-to-Satisfy provisions of the Building Code of Australia 2011 (BCA).

Arising from our preliminary assessment we are satisfied that the project design can generally comply the DTS provisions of the BCA2011 subject to compliance with the above requirements.

The following design issues are to be addressed by means of an alternative solution report in conjunction with the preceding BCA assessment report and certification:-

Fire Safety Engineer

1. Exposure between the relocated demountable building and the building to the north as identified in section 1.2 of this report. Completed
2. Exposure between the proposed RHU and the existing hospital building. Completed
3. Construction of Fire Wall which is not continuous from the lowest storey through the roof of the upper floor level. Completed
4. Fire rated construction of southern egress stairway. Completed.

Access consultant

1. General departures from AS1428.1-2009 to staff areas
2. Omission of accessible WC and ambulant WC facilities for staff

Additional information required

1. Proposed spandrel separation between storeys.
2. Copy of the door schedule to determine the unobstructed width of all proposed doors.
3. Details are to be provided which indicates that the southern stairway step down does not exceed 25mm.
4. Provision of FHR in some rooms separated by Fire Walls in the under croft area.