



BUILDING REGULATION & FIRE SAFETY ENGINEERING CONSULTANTS

Project: **ST GEORGE HOSPITAL  
EMERGENCY DEPARTMENT**

Report: **BCA ASSESSMENT REPORT**

Date: 20<sup>th</sup> March 2012

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## **PART 1 BASIS OF ASSESSMENT**

### **1.1 Location and Description**

The building development, the subject of this report, is located at the St George Hospital site, with the proposed works on the Gray Street site of the property. The proposed works include the construction of a new emergency department and level 1 office to the western side of the existing ward building.

### **1.2 Purpose**

The purpose of this report is to assess the current design proposal against the Deemed-to-Satisfy Provisions of BCA2011, and to clearly outline those areas (if any) where compliance is not achieved, where areas may warrant redesign to achieve strict BCA compliance or where areas may be able to be assessed against the relevant performance criteria of BCA2011. Such assessment against relevant performance criteria will need to be addressed by means of a separate Performance Based Fire Safety Engineered Assessment Report to be prepared under separate cover.

### **1.3 Building Code of Australia**

This report is based on the Deemed-to-Satisfy Provisions of the National Construction Code Series Volume 1 - Building Code of Australia, 2011 Edition (BCA) incorporating the State variations where applicable. Please note that the version of the BCA applicable to new building works is the version applicable at the time of requests for tenders. The BCA is updated generally on the 1<sup>st</sup> of May each year.

In addition the purpose of this report is to assess the design proposal against the Deemed-to-Satisfy provisions of the BCA, and to provide BCA compliance certification in accordance with Section 109R of the Environmental Planning and Assessment Act 1979.

### **1.4 Limitations**

This report does not include nor imply any detailed assessment for design, compliance or upgrading for: -

- (a) the structural adequacy or design of the building;
- (b) the inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and
- (c) the design basis and/or operating capabilities of any proposed electrical, mechanical or hydraulic fire protection services.

This report does not include, or imply compliance with:

- (a) the National Construction Code – Plumbing Code of Australia Volume 3
- (b) the Disability Discrimination Act 1992 including the Disability (Access to Premises – Buildings) Standards 2010 – unless specifically referred to), (The provision of disabled access to the subject development has been assessed against the deemed to satisfy provisions of Part D3 and F2.4 of BCA2011 only) ;
- (c) Demolition Standards not referred to by the BCA;
- (d) Occupational Health and Safety Act;

- (e) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Sydney Water, Electricity Supply Authority, WorkCover, RTA, Council and the like; and
- (f) Conditions of Development Consent issued by the Local Consent Authority.

#### **1.5 Design Documentation**

This report has been based on the Design plans and Specifications listed in Annexure A of this Report.

## PART 2 BUILDING DESCRIPTION

For the purposes of the Building Code of Australia (BCA) the development may be described as follows.

### 2.1 Rise in Storeys (Clause C1.2)

The building has a rise in storeys of eight (8), this is based on the proposed works being a part of the existing 8 storey building.

### 2.2 Classification (Clause A3.2)

The building has been classified as follows.

| Class | Level   | Description |
|-------|---------|-------------|
| 9a    | Ground  | Hospital    |
| 5     | Level 1 | Office      |

### 2.3 Effective Height (Clause A1.1)

The building has an effective height of more than 25metres, due to the existing portion of the building having an effective height of greater than 25m. As advised the top floor level is RL56.50 and the ground level is RL28.73, making the effective height 27.77m.

### 2.4 Type of Construction Required (Table C1.1)

Type A Construction.

### 2.5 Floor Area and Volume Limitations (Table C2.2)

The building is subject to maximum floor area and volume limits of:-

- Class 5 - Maximum Floor Area 8,000m<sup>2</sup>  
Maximum Volume 48,000m<sup>3</sup>
- Class 9a - Maximum Floor Area 5,000m<sup>2</sup>  
Maximum Volume 30,000m<sup>3</sup>

Further to the above the Class 9a portion of the building is subject to the following additional floor area limitations in the patient care areas:

- Patient Care Areas – Maximum Fire Compartment - 2 000m<sup>2</sup>

Also any ward areas are required to have the following additional compartmentation:

- Ward Areas – Maximum 1 hour Fire Compartment - 1 000m<sup>2</sup>
- Ward Areas – Maximum Smoke Compartment - 500m<sup>2</sup>

### 2.6 Fire Compartments

The following fire compartments have been assumed:

- The northern compartment consisting of Acute Halls 1 and 2, Mental Assess, EMU and PECC and associated ancillary corridors;
- The southern compartment consisting of Resuscitation, Imaging, Adult Fast Track, Triage and PAED Precinct and associated ancillary areas.

It is noted that the subject new building area does not contain any ward areas, but does contain treatment areas and is proposed to be separated into smoke compartments of less than 1000m<sup>2</sup> which is satisfactory.

## 2.7 Exits

The following points in the building have been considered as the exits:

### Ground -

- A. The doorway from the EMU to the external stairway adjacent to grid point A3;
- B. The top of the ramp from the corridor adjacent to grid point E5;
- C. The doorway into the fire-isolated passageway formed by the corridor link to the existing hospital near grid point E8;
- D. The horizontal exit formed by the doorway through the fire wall near grid point E10, this horizontal exit is considered to travel in both directions;
- E. The doorway to fire stair 2 from the lift lobby;
- F. The door from the corridor into the courtyard;
- G. The horizontal exit formed by the doorway from the PAED Precinct into the existing corridor;
- H. The doorway into the existing fire-isolated stair adjacent to the new entry air-lock;
- I. The doorway from the existing corridor adjacent to the Pharmacy Distribution Centre into the new corridor adjacent to the existing pit.

### Level 1

- J. The doorways to the two fire-isolated stairways.

It is noted that the ground floor ambulance entry ramp is a vehicle ramp only and not for use by pedestrians, and therefore has not been considered as an exit route.

## 2.8 Climate Zone (Clause A1.1)

The building is located within Climate Zone 5.

## PART 3 ESSENTIAL FIRE SAFETY MEASURES

The following fire safety measures are required to be installed in the building.

| Item | Proposed Essential Fire Safety Measure                                      | Minimum Standard of Performance                       |
|------|-----------------------------------------------------------------------------|-------------------------------------------------------|
| 1.   | Access panels, doors and hoppers to fire resisting shafts                   | BCA2011 Clause C3.13                                  |
| 2.   | Automatic fire detection and alarm system                                   | BCA2011 Clause E2.2a, AS1670.1-2004                   |
| 3.   | Automatic fire suppression system (sprinkler system)                        | BCA2011 Clause E1.5, AS2118.1-1999                    |
| 4.   | Emergency lighting                                                          | BCA2011 Clauses E4.2 & E4.4, AS2293.1-2005            |
| 5.   | Exit signs                                                                  | BCA2011 Clauses E4.5, E4.6 & E4.8, AS2293.1-2005      |
| 6.   | Fire control centres and rooms                                              | BCA2011 Clause E1.8                                   |
| 7.   | Fire dampers                                                                | AS/NZS1668.1-1998                                     |
| 8.   | Fire doors                                                                  | BCA2011 Spec C3.4, AS1905.1-2005                      |
| 9.   | Fire hose reel system                                                       | BCA2011 Clause E1.4, AS2441-2005                      |
| 10.  | Fire hydrant system                                                         | BCA2011 Clause E1.3, AS2419.1-2005                    |
| 11.  | Fire seals protecting openings in fire resisting components of the building | BCA2011 Clause C3.15, Manufacturer's Specification    |
| 12.  | Lightweight construction                                                    | Manufacturer's Specification                          |
| 13.  | Paths of travel, stairways, passageways or ramps                            | BCA2011 Section D                                     |
| 14.  | Portable fire extinguishers                                                 | BCA2011 Clause E1.6, AS2444-2001                      |
| 15.  | Smoke control system                                                        | BCA2011 Spec E2.2a, BCA Spec E2.2b, AS/NZS1668.1-1998 |
| 16.  | Smoke dampers                                                               | AS/NZS1668.1-1998                                     |
| 17.  | Smoke detectors and heat detectors                                          | BCA2011 Clause E2.2a                                  |
| 18.  | Smoke doors                                                                 | BCA2011 Spec C3.4                                     |
| 19.  | Sound systems and intercom systems for emergency purposes (formerly EWIS)   | BCA2011 Clause E4.9, AS1670.4-2004                    |
| 20.  | Warning and operational signs                                               | BCA2011 Clause D2.23, EP&A Reg. 2000 Clause 183       |

## PART 4 FIRE RESISTANCE LEVELS

The following fire resistance levels (FRL's) required for the various structural elements of the building, with a fire source feature being the far boundary of a road adjoining the allotment, a side or rear boundary or an external wall of another building on the allotment except a Class 10 structure.

| Item                                                                                                                                                                                                                   | FRL's                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| Loadbearing External Walls <ul style="list-style-type: none"> <li>less than 1.5m to a fire source feature</li> <li>1.5 – 3m from fire source feature;</li> <li>more than 3m from a fire source feature.</li> </ul>     | 120/120/120<br>120/90/90<br>120/60/30 |
| Non-Loadbearing External Walls <ul style="list-style-type: none"> <li>less than 1.5m to a fire source feature</li> <li>1.5 – 3m from fire source feature;</li> <li>more than 3m from a fire source feature.</li> </ul> | -/120/120<br>-/90/90<br>-/-/          |
| External Columns <ul style="list-style-type: none"> <li>Less than 3m</li> <li>3m or more</li> </ul>                                                                                                                    | 120/-/<br>-/                          |
| Fire Walls                                                                                                                                                                                                             | 120/120/120                           |
| Stair and Lift Shafts <ul style="list-style-type: none"> <li>Loadbearing</li> <li>Non loadbearing</li> </ul>                                                                                                           | 120/120/120<br>-/120/120              |
| Internal walls bounding sole occupancy units <ul style="list-style-type: none"> <li>Loadbearing</li> <li>Non loadbearing</li> </ul>                                                                                    | 120/-/<br>-/                          |
| Internal walls bounding public corridors, hallways and the like: <ul style="list-style-type: none"> <li>Loadbearing</li> <li>Non loadbearing</li> </ul>                                                                | 120/-/<br>-/                          |
| Ventilating, pipe garbage and the like shafts: <ul style="list-style-type: none"> <li>Loadbearing</li> <li>Non loadbearing</li> </ul>                                                                                  | 120/90/90<br>-/90/90                  |
| Other loadbearing internal walls, beams trusses and columns                                                                                                                                                            | 120/-/                                |
| Floors                                                                                                                                                                                                                 | 120/120/120                           |
| Roofs                                                                                                                                                                                                                  | 120/60/30                             |
| Patient Care Areas (not including any Ward Areas) – 1000m <sup>2</sup> (Clause C2.5)                                                                                                                                   | Smoke Sep.                            |
| Ward areas – 1000m <sup>2</sup> (Clause C2.5)                                                                                                                                                                          | 60/60/60                              |
| Ward areas – 500m <sup>2</sup> (Clause C2.5)                                                                                                                                                                           | Smoke Sep.                            |
| Ancillary Areas with a high fire hazard in the Class 9a areas (Clause C2.5)                                                                                                                                            | 60/60/60                              |

N.B. <sup>1</sup> The roof need not comply with any FRL's due to the sprinkler protection of the entire building.

## PART 5 MATTERS FOR FURTHER CONSIDERATION

### 5.1 General

Assessment of the Architectural design documentation against the Deemed-to-Satisfy Provisions of the Building Code of Australia, 2011 (BCA) has revealed the following areas that involve assessment as Performance Based (Fire Engineered) Alternative Solutions, and/or special consideration to clearly indicate methodologies for achieving compliance with the relevant Performance Requirements or Deemed-to-Satisfy Provisions of the BCA.

**Annexure B** to this report provides a detailed assessment of the proposal against all relevant Deemed-to-Satisfy Provisions of the BCA.

**Note:** It is important that Annexure B is read in conjunction with the items below, as some matters may not have had sufficient information provided to allow a detailed assessment to be undertaken.

### 5.2 Performance Based Design – Alternate Solutions

There are specific areas throughout the development where strict Deemed-to-Satisfy BCA Compliance will not be achieved by the proposed design and site constraints. These matters will need to be addressed in a detailed Fire Safety Engineering Report to be prepared for this development under separate cover:

| Item | Description of Alternate Solution                                                                                                                                                                              | DTS Provision                         | Performance Requirement to be met |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------|
| 1.   | Discharge of new exits into the new central courtyard and through the fire-lock. As a part of this assessment the existing exits that discharge into the new courtyard will need to be included in the review. | D1.4<br>D1.5<br>D1.6<br>D1.7<br>D1.10 | DP4<br>DP5<br>DP6                 |
| 2.   | Reduction in the fire resistance level required to the loadbearing elements of the external walls to the Level 1 office area.                                                                                  | C1.1                                  | CP1                               |
| 3.   | Deletion of zone smoke control to the new ED building regardless of the connection to the existing 8 storey hospital building.                                                                                 | E2.2                                  | EP2.2                             |

### 5.3 Fire Resistances – Clause C1.1

The specific fire ratings are detailed in Part 4 of this report. In addition to the specific fire ratings it is also noted that under Type A Construction that as detailed in the table below a number of elements are also required to be non-combustible and some are required to be of concrete or masonry

| 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 or masonry |
| Loadbearing fire walls                                     | Concrete or masonry |
| Non-loadbearing walls required to be fire-resisting        | Non-combustible     |

| BUILDING ELEMENT                                                                                                   | TYPE A CONSTRUCTION |
|--------------------------------------------------------------------------------------------------------------------|---------------------|
| Non-loadbearing lift, ventilation, pipe, garbage and like shafts which do not discharge hot products of combustion | Non-combustible     |

It is our understanding that the proposed works include the following proposed constructions:

**Ground Floor -**

1. Generally concrete structure and concrete /masonry walls;
2. Generally concrete slab above;
3. Light weight construction, including steel framed walls and roof, light weight cladding to the walls and roof to the corridor like to the existing hospital and fire lock;
4. Light weight construction, including steel framed walls and roof, light weight cladding to the walls and roof to the area running down gridline E from the body holding room to approximately gridline 11

**Level 1 -**

5. Concrete floor slab;
6. Concrete structure to plant area with concrete/masonry walls;
7. Light weight construction, including steel framed walls and roof, light weight cladding to the walls and roof to the entire office area;
8. Existing fire rated concrete/masonry wall to the existing building.

Concern is raised over the lightweight areas proposed. Of those lightweight areas under this clause the following elements will be required to be fire rated:

- A. All loadbearing elements in the external walls, including columns regardless of their proximity to a fire source feature;
- B. Internal loadbearing columns on the ground floor.

Further it would be expected that under Clause D1.7 and very likely the Alternate Solution for the discharge of the exits into the central courtyard the following lightweight areas will need to be fire rated:

- C. The wall of the external walls imaging room on the ground floor;
- D. The entire external wall to the east of gridline E;
- E. The corridor link to the existing hospital and the fire lock.

Details on the proposed methods of achieving the required fire ratings will need to be provided.

#### 5.4 Separation External Walls of Fire Compartments – Clause C3.3

External walls and associated openings are to be protected as per this clause.

This will require the following areas to be fire rated to a minimum of 60/60/60 measured in both directions and any openings in these areas protection in accordance with BCA Clause C3.4:

##### Ground -

- A. 4m of the western wall from the junction of the office of the imaging room;
- B. 4m of the northern wall from the junction of the imaging room of the offices;
- C. 4m of the southern wall from the junction of the ENC2 and Resus 3 near grid point B10;
- D. 4m of the eastern wall from the junction of the ENC2 and Resus 3 near grid point B10;
- E. 4m of the southern wall of the Pharmacy Distribution area from the junction of the corridor near grid point H13;
- F. 4m of the western wall of the corridor from the junction of the 4m of the southern wall of the Pharmacy Distribution area from the junction of the corridor near grid point H13;
- G. 4m of the existing building to the east and west of the fire lock near grid points F7 and F8;
- H. 4m south from the existing building to the fire lock near grid points F7 and F8;

##### Level 1 -

- A. 4m of the northern wall from the junction of the new portion of building from the existing plantroom adjacent to grid point G12;
- B. 4m of the western wall from the junction of the existing plantroom from the new portion of building adjacent to grid point G12 (this point is a recommended upgrading strategy to offset the non-compliance caused to the existing building by the installation of the new fire compartment).

It is noted that Clause C3.4 permits the following methods of protection for openings:

##### (i) Doorways—

- (A) internal or external wall-wetting sprinklers as appropriate used with doors that are self-closing or automatic closing; or
- (B) –/60/30 fire doors that are self-closing or automatic closing.

##### (ii) Windows—

- (A) internal or external wall-wetting sprinklers as appropriate used with windows that are automatic closing or permanently fixed in the closed position; or
- (B) –/60/– fire windows that are automatic closing or permanently fixed in the closed position; or
- (C) –/60/– automatic closing fire shutters.

##### (iii) Other openings—

- (A) excluding voids — internal or external wall-wetting sprinklers, as appropriate; or
- (B) construction having an FRL not less than –/60/–.

### 5.5 Exit Travel Distances – Clause D1.4

Given the exits as noted in Part 2 of this report a number of areas are not provided with compliant travel distances within the ground floor area. These areas are marked on an attached drawing.

Within the Class 9a areas the travel distance is required to be no more than 12m to a point of choice with a total exit travel distance of 30m.

As can be seen from the marked up drawings (SK1) the southern areas of the Acute Halls 1 and 2 are more than 12m to a point of choice where alternate exits are a compliant distance apart and the total travel distances exceed the permitted total 30m. It is recommended that an additional exit be provided around grid point A8 between the two Acute Halls with an external stairway as is proposed elsewhere in the building.

As can be seen from the marked up drawings (SK2) a number of areas are more than 12m to a point of choice where alternate exits are a compliant distance apart and the total travel distances exceed the permitted total 30m. It is recommended that additional exits be provided:

1. By utilising the doorway from the resuscitation area into the western fire compartment as a horizontal exit;
2. By providing access into fire stair 1 near grid point D15, accessible both the internal corridor of the Adult Fast Track and the ambulance area.

### 5.6 Distances Between Alternative Exits – Clause D1.5

Given the exits as noted in Part 2 of this report a number of areas are not provided with compliant distances between alternate exits within the ground floor area. Within the Class 9a areas the distance between alternate exits is required to be no more than 45m.

It is anticipated that with the provision of additional exits to comply with Clause D1.4 for travel distances that the distances between alternate exits can be made to comply.

### 5.7 Exits into the Courtyard – Clauses D1.4, D1.5 and D1.7

As the central court yard is not open space as defined by the BCA, as it is not open all the way to the road, subsequently the travel distances, distances between alternate exits and travel from the fire-isolated exit stair are not compliant. It is proposed that the discharge of the exits into the courtyard area will be the subject of a Fire Engineered Alternate Solution.

It will be required that the Alternate Solution will need to consider the exits from the existing building that discharge into this courtyard area as currently this area is open space as defined by the BCA being the loading dock driveway area.

## 5.8 Access – Part D3 and Clauses D2.10 and F2.4

The accessibility requirements of the subject Part and Clauses of the BCA have been considered against the proposal and the following issues are noted:

### Ground level – Door Circulation Spaces

1. 530mm required to latch side from within office clinical trials (bench obstructing)
2. 530mm required to latch side from within office director (object obstructing)
3. Ensure circulation space into/from waiting room dispensing clinical trials
4. 530mm required to latch side from within consulting room Paed Precinct (460mm provided, hand basin obstructing)
5. 530mm required to latch side from within waiting room pharmacy distribution centre
6. Ensure 530mm to latch side from within accessible WC (adjacent to stairs at entry)
7. 530mm required to latch side from within change room associated with imaging room

### First Floor – Door Circulation Spaces

8. 510mm required to latch side into male & female change room, 530mm required to latch side from male & female change room

### Ramps

9. The ramp at the front entrance requires landings to top and bottom of the ramp before the doorways in accordance with Clause 10.8 of AS1428.1-2009, and handrails on either side of the ramp in accordance with Clause 12 of AS1428.1-2009.
10. The ramp adjacent to the PECC area is calculated to be a gradient of 1:13, which exceeds 1:14, landings are required to top and bottom, and at 9m intervals of the ramp in accordance with Clause 10.8 of AS1428.1-2009, and handrails are required on either side of the ramp in accordance with Clause 12 of AS1428.1-2009.
11. The gradient of the ramp adjacent to the hearse parking area is to be no steeper than 1:14, landings are required to top and bottom, and at 9m intervals of the ramp in accordance with Clause 10.8 of AS1428.1-2009, and handrails are required on either side of the ramp in accordance with Clause 12 of AS1428.1-2009.
12. Kerbs or kerb rails are required to the ramps in accordance with Clause 10.3 of AS1428.1-2009

### Tactile Indicators

13. Tactile indicators are required at the top and bottom of the ramps, and stairways other than the fire-isolated stairways in accordance with BCA Clause D3.8 and AS/NZS 1428.4.1

### Threshold ramp

14. A threshold ramp will be required to the door leading to the courtyard in accordance with Clause 10.5 of AS1428.1-2009.

### Accessible sanitary facilities

15. An additional accessible sanitary facility in accordance with Clause 15 of AS1428.1-2009 is required on the ground floor
16. 1 shower on the ground floor is to be made accessible in accordance with Clause 15.5 of AS1428.1-2009

17. Ambulant sanitary facilities in accordance with Clause 16 of AS1428.1-2009 are required at each bank of toilets where there is one or more toilets, in addition to an accessible unisex sanitary facility for use by male and females.

#### **5.9 Hydrant System – Clause E1.3**

It has been brought to our attention by the Hydraulic Engineer that the fire hydrant system for the existing main building is a Specification 10 system under Ordinance 70. This system has a lower pressure that is required of today's systems and as such it is a significant task to upgrade the existing system to AS2419.1-2005.

The BCA requires that the new works be covered by a hydrant system compliant with AS2419.1-2005 and as such the expectation is to either upgrade the existing system or provide a new system serving the new building.

We have discussed this with our fire engineer and we believe that it would be appropriate to receive preliminary comments on this matter from Fire and Rescue NSW (FRNSW) before proceeding with a reduced design as we are concerned that they will not accept the reduction in the fire hydrant system and either the existing system will need to be upgraded or a new system serving the new works will need to be provided.

#### **5.10 Hydrant Booster Location – Clause E1.3**

It is noted that the new switch room and substations will be located adjacent to the existing hydrant booster. AS2419.1-2005 requires that a hydrant booster be located at least 10m from any high voltage main electrical equipment such as transformers and distribution boards, this is an operation issue for Fire and Rescue NSW (FRNSW).

It is our understanding that the proposed location of the switch room will be within 10m of the existing booster and will therefore create a non-compliance.

We believe the first step is for the distance between these two items to be confirmed and then it may be required to contact FRNSW to have them assess the operational impact of the proximity of the booster and the electrical equipment.

#### **5.11 Fire Hose Reels – Clause E1.4**

Fire hose reels are to be located to provide sufficient coverage and are to be within 4m of an exit, with the exits defined in Part 2 of this report. It is noted that the FHR adjacent to gindpoint E7 is more than 4m from the exit formed by the doorway to the corridor link; the FHR in the Resuscitation area near the ambulance bays is more than 4m from an exit.

Further insufficient FHR coverage is provided to the new works as the FHR's are not permitted to pass through the smoke walls, therefore additional FHR's will be required to be provided to ensure coverage of all areas of the building without the need to pass through the smoke doors.

## 5.12 BCA Compliance Specification

The following BCA matters are to be addressed by specific BCA Design Certifications to be issued by the relevant architectural, services and engineering consultants. This schedule should be forwarded to all consultants to obtain verification that these items have and will be included in the design documentation / specifications:

### Architectural Design Certification:

1. The FRL's of the building elements for the proposed works will be designed in accordance with table 3 of Specification C1.1 of BCA2011 for a building of Type A Construction, unless altered as a part of an Alternate Solution.
2. Materials, floor and wall linings/coverings, surface finishes and air-handling ductwork used in the works will comply with the fire hazard properties in accordance with Specification C1.10 of BCA2011.
3. Any fire rated lightweight construction will comply with Clause C1.8 of BCA2011 and the manufacturer's specifications.
4. Any areas of high potential fire hazard will be fire separated from the remainder of the building with construction achieving a FRL of not less than 60/60/60 in accordance with Clause C2.5 of BCA2011.
5. The new fire wall will comply with Clause C2.7 of BCA2011.
6. The lift shaft will be fire rated to a minimum FRL of 120/120/120 to maintain the fire separation between the levels.
7. Any new main switch room sustaining emergency equipment required to operate in emergency mode, will be separated from the remaining building with construction having a FRL of 120/120/120 and provided with self-closing -/120/30 fire doors in accordance with Clauses C2.12 and C2.13 of BCA2011.
8. Doorways in any fire walls separating fire compartments will be protected in accordance with Clause C3.5 of BCA2011.
9. Doorways in horizontal exits will be protected in accordance with Clause C3.7 of BCA2011.
10. Doorways into fire-isolated exits will be automatic of self-closing -/60/30 fire doors in accordance with Clause C3.8 of BCA2011.
11. Fire isolated exits will not contain services not associated with fire safety and any penetrations will be suitably fire sealed in accordance with BCA2011 Clause C3.9.
12. Services penetrating elements required to possess a FRL will be protected in accordance with Clauses C3.12, C3.13 and C3.15 and Specification C3.15 of BCA2011.
13. All attachments to the external facade of the building will be of a non-combustible material in accordance with Clause 2.4 of Specification C1.1 of BCA2011.
14. All fire rated shafts will be provided with a fire rated bottom and fire rated lid in accordance with Clause 2.7 of Specification C1.1 of BCA2011.
15. Smoke-proof walls and doorways will be in accordance with Specification C2.5 of BCA2011.
16. Fire doors will comply with AS1905.1 and Specification C3.4 of BCA2011.
17. Smoke doors will be constructed so smoke will not pass from one side of the doorway to the other and in accordance with Specification C3.4 of BCA2011.
18. The dimensions of exits and paths of travel to exits will be provided in accordance with Clauses D1.6 and D2.9 of BCA2011.

19. Discharge points of exits will be protected from being blocked with suitable barriers, and the path of travel from the exits/space to the road will be in accordance with Clause D1.10 of BCA2011.
20. Horizontal exits will be in accordance with Clause D1.11 of BCA2011.
21. The construction of EDB's will be in accordance with Clause D2.7 of BCA2011 with the enclosure bounded by a non-combustible or fire protective covering and smoke seals provided around the perimeter of the doors at each level.
22. New pedestrian ramps will comply with AS1428.1-2009, Clause D2.10 and Part D3 of BCA2011.
23. The fire-isolated passageway will comply with Clause D2.11 of BCA2011.
24. Stair geometry to the new stairways will be in accordance with Clause D2.13 of BCA2011.
25. Landings and door thresholds throughout the development will be provided in accordance with Clause D2.14 and D2.15 of BCA2011.
26. The handrails and balustrades to all stairs and throughout the new works will be in accordance with Clause D2.16 and D2.17 of BCA2011.
27. The doorways and doors will be in accordance with Clause D2.19 and D2.20 of BCA2011.
28. The door latching mechanisms to the proposed required exit doors will be in accordance with Clause D2.21 of BCA2011 and where applicable AS1428.1-2009.
29. The doorways within the fire-isolated exits will not be locked from inside the exit on the hospital levels in accordance with Clause D2.22 of BCA2011.
30. Signage will be provided on fire and smoke doors in accordance with Clause D2.23 of BCA2011.
31. The new works will be accessible in accordance with Clause D3.1 and table D3.1, D3.2, D3.3 of BCA2011, and with AS1428.1-2009, with particular note to door circulation spaces, accessway widths, turning spaces and floor coverings, in accordance with Part D3 of BCA2011.
32. Luminance contrast strip of a minimum 30% to the background, 50-75mm deep will be provided to the nosing of all stairways for the width of the path of travel in accordance with Clause 11.1 (f) & (g) of AS1428.1-2009.
33. Braille and tactile signage will be in accordance with Clause D3.6, and Specification D3.6 of BCA2011.
34. Tactile ground surface indicators will be provided in accordance with Clause D3.8 of BCA2011.
35. On an accessway, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, will be clearly marked in accordance with AS1428.1-2009 and Clause 3.12 of BCA2011.
36. Fire precautions whilst the building is under construction fire precautions will be specified to be in accordance with Clause E1.9 of BCA2011.
37. The new roof covering will be in accordance with Clause F1.5 of BCA2011.
38. Any sarking proposed will be installed in accordance with Clause F1.6 of BCA2011.
39. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F1.7 of BCA2011 and AS3740.

40. Damp proofing of the proposed structure will be carried out in accordance with Clause F1.9 and F1.10 of BCA2011.
41. Floor wastes will be installed in accordance with AS3740 and Clause F1.11 of BCA2011.
42. All new glazing to be installed throughout the development will be in accordance with Clause F1.13 of BCA2011 and AS1288 / AS2047.
43. Accessible sanitary facilities will be constructed in accordance with AS1428.1-2009.
44. The construction of the sanitary facilities will be in accordance with Clause F2.5 of BCA2011.
45. Ceiling heights to the new areas will be in accordance with Clause F3.1 of BCA2011.
46. The sanitary compartments will be either provided with mechanical exhaust ventilation or an airlock in accordance with Clause F4.9 of BCA2011.
47. Insulation will be in accordance with AS4859.1 and will be installed as required by NSW Part J1 of BCA2011.
48. Glazing will be in accordance with Part J2 of BCA2011.
49. Access for maintenance to all services and their components will be provided in accordance with Clause NSW J8.2 of BCA2011.
50. Facilities for Energy Monitoring will be provided in accordance with Clause J8.3 of BCA 2011.
51. A means of cleaning of windows in accordance with the Construction Safety Act and G1.101 of BCA2011 will be provided.

**Electrical Services Design Certification:**

52. A smoke detection and alarm system will be installed throughout the building in accordance with Clause E2.2, Table E2.2a, and Specification E2.2a of BCA2011, as modified by any Alternate Solutions.
53. Emergency lighting will be installed throughout the building in accordance with Clause E4.2, E4.4 of BCA2011 and AS2293.1 - 2005
54. Exit signage will be installed throughout the building in accordance with Clause E4.5, E4.6, E4.7, and E4.8 of BCA2011 and AS2293.1.
55. A SSISEP (formally an EWIS) will be provided to the building in accordance with Clause E4.9 of BCA2011.
56. Artificial lighting will be installed throughout the development in accordance Clause F4.4 of BCA2011 and AS/NZS 1680.0.
57. Lighting power and controls will be installed in accordance with Part J6 of BCA2011.

**Hydraulic Services Design Certification:**

58. Storm water drainage will be provided in accordance with Clause F1.1 of BCA2011 and AS3500.3
59. Fire hydrants will be installed in accordance with Clause E1.3 of BCA2011 and AS2419.1-2005 as required, or as altered by any alternate solutions.
60. Fire hose reels will be installed in accordance with Clause E1.4 of BCA2011 and AS2441-2005.
61. The new works will be provided with sprinkler coverage in accordance with Clause E1.5 of BCA2011.

62. Portable fire extinguishers will be installed in accordance with Clause E1.6 of BCA2011 and AS2444-2005.
63. A slop-hopper, or equivalent, will be provided in accordance with Clause F2.8 of BCA2011.
64. The hot water supply systems will be designed and installed to Section 8 of AS3500.4 and Clause J7.2 of BCA2011.

**Mechanical Services Design Certification:**

65. An air-handling system which does not form part of a smoke hazard management system will be installed in accordance with Clause E2.2 of BCA2011, and ASNZS 1668.1
66. The building will be mechanically ventilated in accordance with Clause F4.5 of BCA2011 and AS1668.2-1991.
67. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J5 of BCA 2011.

**Structural Engineers Design Certification:**

68. The material and forms of construction for the proposed works will be in accordance with clause B1.2, B1.3 and B1.4 of BCA2011 as follows:
  - Dead and Live Loads – AS1170.1
  - Wind Loads – AS1170.2
  - Masonry – AS3700
  - Concrete Construction – AS3600
  - Steel Construction – AS4100
  - Aluminium Construction – AS/NZS1664.1 or 2
69. The FRL's of the structural elements for the proposed works have been designed in accordance with table 3 of Specification C1.1 of BCA2011 for a building of Type A Construction.
70. The construction joints to the structure will be in accordance with Clause C3.16 of BCA2011 to maintain the FRL integrity of the element concerned.
71. Any columns protected with lightweight construction to achieve a FRL will comply with Clause C3.17 of BCA2011.
72. The fire-isolated exit stairways will comply with Clause D2.2 of BCA2011.

**Lift Services Design Certification:**

73. The lift doors will have a FRL of not less than -/60/- and will comply with AS1735.11 in accordance with Clause C3.10 of BCA2011.
74. Access to the lift pit will be in accordance with Clause D1.17 of BCA2011.
75. The lift will be provided with warning signage in accordance with Clause E3.3 of BCA2011.
76. The lifts will comply with AS1735.12 in accordance with Clause E3.6 of BCA2011.

## **ANNEXURE A**

### **DESIGN DOCUMENTATION**

This report has been based on the following design documentation.

| Architectural Plans Prepared by HPI |          |                                   |
|-------------------------------------|----------|-----------------------------------|
| Drawing Number                      | Revision | Title                             |
| SGHED-A-P-G(11.6c)                  | 10       | Floor Plan – Ground Option 11.6c  |
| SGHED-A-P-1(11.6c)                  | 11       | Floor Plan – Level 1 Option 11.6c |

## **ANNEXURE B**

### **DETAILED ASSESSMENT OF THE DEEMED-TO-SATISFY PROVISIONS OF BCA2011**

## BUILDING ASSESSMENT

Outlined below is a detailed assessment of the Deemed-to-Satisfy Provisions of the Building Code of Australia (BCA) including the State variations where applicable.

All Deemed-to-Satisfy clauses that are applicable to the subject building have been referred to below, including a comment adjacent to each clause of the proposal's ability to satisfy each respective clause.

The abbreviations outlined below have been used in the following tables.

|          |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| N/A      | - | Not Applicable. The Deemed-to-Satisfy clause does not apply to the subject building.                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Complies | - | The relevant provisions of the Deemed-to-Satisfy clause have been satisfied by the proposed design.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| CRA      | - | <p>'COMPLIANCE READILY ACHIEVABLE'. It is considered that there was not enough information included in the documentation to accurately determine strict compliance with the individual clause requirements. However, subject to noting the requirements of each clause, compliance can be readily achieved.</p> <p>This information may be included in other documentation, which was not forwarded to this office for assessment, such as door schedules, electrical, mechanical and hydraulic design documentation or architectural specifications.</p> |
| FI       | - | Further Information is necessary to determine the compliance potential of the building design.                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| AS       | - | Alternative Solution with respect to this Deemed-to-Satisfy Provision is necessary to satisfy the relevant Performance Requirements.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| DNC      | - | Does Not Comply                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Noted    | - | BCA Clause simply provides a statement not requiring specific design comment or confirmation                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## DEEMED TO SATISFY CLAUSE ASSESSMENT SUMMARY

| Clause                                                                              | Comment                                                                                                                                                                                                                                                                | Status   |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>SECTION B: STRUCTURE</b>                                                         |                                                                                                                                                                                                                                                                        |          |
| <b>PART B1 – STRUCTURAL PROVISIONS</b>                                              |                                                                                                                                                                                                                                                                        |          |
| B1.0: Deemed-to-Satisfy Provisions                                                  | Noted                                                                                                                                                                                                                                                                  | -        |
| B1.1: Resistance to Actions                                                         | For Information Only – Structural Engineer to certify.                                                                                                                                                                                                                 | CRA      |
| B1.2: Determination of Individual Actions                                           | No details of loads imposed upon the building – Structural Engineer to certify.                                                                                                                                                                                        | CRA      |
| B1.4: Determination of Structural Resistance of Materials and Forms of Construction | No details of materials and forms of construction – Structural Engineer, Architect and Manufacturers to certify.                                                                                                                                                       | CRA      |
| <b>SECTION C: FIRE RESISTANCE</b>                                                   |                                                                                                                                                                                                                                                                        |          |
| <b>PART C1 – FIRE RESISTANCE AND STABILITY</b>                                      |                                                                                                                                                                                                                                                                        |          |
| C1.0: Deemed-to-Satisfy Provisions                                                  | Noted                                                                                                                                                                                                                                                                  | -        |
| C1.1: Type of Construction Required                                                 | The building is required to be of Type A Construction as it is part of the larger building. See Parts 4 and 5 for further information.                                                                                                                                 | CRA      |
| C1.2: Calculation of Rise in Storeys                                                | The building, being part of the existing building has a rise in storeys of eight.                                                                                                                                                                                      | Noted    |
| C1.3: Buildings of Multiple Classification                                          | The building is required to be of Type A Construction.                                                                                                                                                                                                                 | Noted    |
| C1.4: Mixed Types of Construction                                                   | The building is required to be of Type A Construction.                                                                                                                                                                                                                 | Noted    |
| C1.8: Lightweight Construction                                                      | Any lightweight construction to comply with manufacturer's specifications and this clause.                                                                                                                                                                             | CRA      |
| C1.10: Fire Hazard Properties                                                       | No details of the fire hazard properties of the materials and assemblies in the proposed building. Fire hazard indices to comply with Specification C1.10.                                                                                                             | CRA      |
| C1.11: Performance of External Walls in Fire                                        | External walls if of tilt-up panels are to comply with this clause.                                                                                                                                                                                                    | Noted    |
| <b>PART C2 – COMPARTMENTATION AND SEPARATION</b>                                    |                                                                                                                                                                                                                                                                        |          |
| C2.0: Deemed-to-Satisfy Provisions                                                  | Noted                                                                                                                                                                                                                                                                  | -        |
| C2.1: Application of Part                                                           | Noted                                                                                                                                                                                                                                                                  | -        |
| C2.2: General Floor Area and Volume Limitations                                     | The proposed hospital building will be restricted to fire compartment of less than 2000m <sup>2</sup> and the office portion is under the maximum limitations.                                                                                                         | Complies |
| C2.5: Class 9a and 9c Buildings                                                     | No ward areas, the fire compartment and smoke compartment sizes are satisfactory. If any ancillary areas contain equipment of materials that are a high potential fire hazard then those areas are to be fire separated from the patient care areas to a 60/60/60 FRL. | CRA      |
| C2.6: Vertical Separation of Openings in External Walls                             | The building is proposed to sprinkler protected and therefore this clause does not apply.                                                                                                                                                                              | Noted    |
| C2.7: Separation by Fire Walls                                                      | Fire walls separating fire compartments are to comply with this clause.                                                                                                                                                                                                | CRA      |
| C2.8: Separation of Classifications in the Same Storey                              | Single classifications on each storey.                                                                                                                                                                                                                                 | Noted    |
| C2.9: Separation of Classifications in Different Storeys                            | The floor between the levels will be a fire rated slab to Type A Construction.                                                                                                                                                                                         | Noted    |
| C2.10: Separation of Lift Shafts                                                    | The lift must be located in a fire rated shaft with a FRL of not less than 120/120/120.                                                                                                                                                                                | CRA      |
| C2.11: Stairways and Lifts in One Shaft                                             | The stairways and lift are in different shafts.                                                                                                                                                                                                                        | Complies |
| C2.12: Separation of Equipment                                                      | Insufficient information provided at this stage. The equipment required to be separated by this clause includes the following: LMR's, boiler rooms, hydrant pump rooms and the like all to be enclosed in a FRL of 120/120/120.                                        | CRA      |
| C2.13: Electricity Supply System                                                    | The substation and main switch room are separate to this building. Any distribution boards required to maintain emergency equipment operating in emergency mode are required to be fire rated to 120/120/120.                                                          | CRA      |

| <b>PART C3 – PROTECTION OF OPENINGS</b>                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| C3.0: Deemed-to-Satisfy Provisions                                                        | Noted                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | -                               |
| C3.1: Application of Part                                                                 | Noted                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | -                               |
| C3.2: Protection of Openings in External Walls                                            | The building is located more than 6m from any fire source features. It is noted that the new emergency department is an addition to the existing main hospital building and therefore that building is not considered as a separate building on the allotment and therefore is not a fire source feature for the purposes of this clause.                                                                                                                              | Noted                           |
| C3.3: Separation of External Walls and Associated Openings in Different Fire Compartments | Separation of external walls in different fire compartments is required.                                                                                                                                                                                                                                                                                                                                                                                               | FI<br>See Part 5 of this Report |
| C3.4: Acceptable Methods of Protection                                                    | Methods of protection noted in this clause.                                                                                                                                                                                                                                                                                                                                                                                                                            | Noted                           |
| C3.5: Doorways in Fire Walls                                                              | Doorways in fire walls are to self-closing or automatic closing fire doors with FRL relative to the FRL of the wall.                                                                                                                                                                                                                                                                                                                                                   | CRA                             |
| C3.6: Sliding Fire Doors                                                                  | No sliding fire doors proposed.                                                                                                                                                                                                                                                                                                                                                                                                                                        | N/A                             |
| C3.7: Protection of Doorways in Horizontal Exits                                          | Doorways in fire walls forming horizontal exits are to be self-closing or automatic closing fire doors with FRL relative to the FRL of the wall.                                                                                                                                                                                                                                                                                                                       | Complies                        |
| C3.8: Openings in Fire-isolated Exits                                                     | Doorways into fire-isolated exits are to be self-closing or automatic closing fire doors with a FRL of at least -/60/30.                                                                                                                                                                                                                                                                                                                                               | CRA                             |
| C3.9: Service Penetrations in Fire-isolated Exits                                         | Fire isolated exits may not contain any services except those relating to fire services and any penetrations into the exit are to be appropriately fire stopped.                                                                                                                                                                                                                                                                                                       | CRA                             |
| C3.10: Openings in Fire-isolated Lift Shafts                                              | The lift doors are to have a FRL of no less than -/60/- and are to be in accordance with AS1735.11.                                                                                                                                                                                                                                                                                                                                                                    | CRA                             |
| C3.12: Openings in Floors and Ceilings for Services                                       | No details of sealing of services penetrating fire rated elements although assumed that electrical and hydraulic services will be sealed at each slab level penetration, with mechanical exhaust discharging vertically via fire isolated mechanical riser shafts.                                                                                                                                                                                                     | CRA                             |
| C3.13: Openings in Shafts                                                                 | Access to any service shafts is to be through an access panel, or self-closing fire door, having a FRL of not less than -/60/30.                                                                                                                                                                                                                                                                                                                                       | CRA                             |
| C3.15: Openings for Service Installations                                                 | Installations through fire rated walls, floors and other elements are to be protected via a method having a FRL relative to the wall they are penetrating.                                                                                                                                                                                                                                                                                                             | CRA                             |
| C3.16: Construction Joints                                                                | Joints are to have the required FRL with respect to integrity and insulation relative to the building element they are joining. Structural Engineer to certify.                                                                                                                                                                                                                                                                                                        | CRA                             |
| C3.17: Columns Protected with Lightweight Construction to Achieve an FRL                  | It is considered that all columns will be of concrete construction and therefore will have sufficient fire resistance without the need for light weight construction to provide a FRL. Structural Engineer to certify.                                                                                                                                                                                                                                                 | CRA                             |
| <b>SPECIFICATION C1.1 – FIRE-RESISTING CONSTRUCTION</b>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
| 2.0: General Requirements                                                                 | Noted                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | -                               |
| 2.1: Exposure to Fire-Source Features                                                     | The building is located more than 6m from any fire source features. It is noted that the new emergency department is an addition to the existing main hospital building and therefore that building is not considered as a separate building on the allotment and therefore is not a fire source feature for the purposes of this clause.                                                                                                                              | Noted                           |
| 2.2: Fire Protection for a Support of Another Part                                        | 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 have an FRL not less than that required by other provisions of this Specification; and if located within the same fire compartment as the part it supports have an FRL in respect of structural adequacy the greater of that required for the supporting part itself and for the part it supports. | Noted                           |
| 2.3: Lintels                                                                              | A lintel must have the FRL required for the part of the building in which it is situated, unless it does not contribute to the support of a fire door, fire window or fire shutter, and it spans an opening in masonry which is not                                                                                                                                                                                                                                    | Noted                           |

|                                                |                                                                                                                                                                                                                                                                                                                                         |       |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
|                                                | more than 150 mm thick and is not more than 3m wide if the masonry is non- loadbearing; or not more than 1.8m wide if the masonry is loadbearing and part of a solid wall.                                                                                                                                                              |       |
| 2.4: Attachments Not to Impair Fire-resistance | All attachments proposed to the external façade of the building are to be of non-combustible materials that are permitted by this clause.                                                                                                                                                                                               | CRA   |
| 2.5: General Concessions                       | No concessions required.                                                                                                                                                                                                                                                                                                                | Noted |
| 2.6: Mezzanine Floors: Concession              | No mezzanines proposed.                                                                                                                                                                                                                                                                                                                 | N/A   |
| 2.7: Enclosure of Shafts                       | Fire rated shafts are required to be enclosed, at the top and bottom, with construction having a FRL required for the walls of a non-load-bearing shaft in the same building, unless the shaft extends beyond the roof covering, with the exception of fire isolated stair and lift shafts that are to have lids with a FRL regardless. | CRA   |
| 3.0: Type A Fire-resisting Construction        | Noted                                                                                                                                                                                                                                                                                                                                   | -     |
| 3.1: Fire-resistance of Building Elements      | The FRL's of all elements are to be in accordance with the FRL's detailed in the Table contained within Part 4.0 of this report                                                                                                                                                                                                         |       |
| 3.2: Concessions for Floors                    | Floors located on the ground may not have a FRL.                                                                                                                                                                                                                                                                                        | Noted |
| 3.5: Roof: Concession                          | The roof needs not have an FRL as the building is to be sprinkler protected.                                                                                                                                                                                                                                                            | Noted |
| 3.6: Rooflights                                | No rooflights proposed.                                                                                                                                                                                                                                                                                                                 | N/A   |
| 3.7: Internal Columns and Walls: Concession    | The internal columns to the upper level needed not have an FRL as the building is to be sprinkler protected.                                                                                                                                                                                                                            | Noted |

**SECTION D: ACCESS AND EGRESS**

| <b>PART D1 – PROVISION FOR ESCAPE</b>                     |                                                                                                                                                                                                                               |                                  |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| D1.0: Deemed-to-Satisfy Provisions                        | Noted                                                                                                                                                                                                                         | -                                |
| D1.1: Application of Part                                 | Noted                                                                                                                                                                                                                         | -                                |
| D1.2: Number of Exits Required                            | Sufficient exit numbers proposed.                                                                                                                                                                                             | Complies                         |
| D1.3: When Fire-Isolated Stairways and Ramps are Required | The stairways from the upper levels are not required fire-isolated stairs at this stage, however given the proposal for vertical expansion they have been considered as fire-isolated exits for future proofing the building. | Noted                            |
| D1.4: Exit Travel Distances                               | Exit travel distances do not comply.                                                                                                                                                                                          | DNC<br>See Part 5 of this Report |
| D1.5: Distance Between Alternative Exits                  | The distances between some exits do not comply.                                                                                                                                                                               | DNC<br>See Part 5 of this Report |
| D1.6: Dimensions of Exits and Paths of Travel to Exits    | The exit travel distance from the courtyard area through the fire lock is insufficient for the amount of occupants potentially using this exit.                                                                               | AS<br>See Part 5 of this Report  |
| D1.7: Travel via Fire-Isolated Exits                      | Some of the fire-isolated exits discharge into the courtyard which is not open space. Further the travel from some fire-isolated exits is within 6m of the buildings and therefore require protection                         | AS<br>See Part 5 of this Report  |
| D1.9: Travel by Non Fire-Isolated Stairways or Ramps      | Travel via the ramp is satisfactory.                                                                                                                                                                                          | Complies                         |
| D1.10: Discharge from Exits                               | Exits protected from being blocked by vehicles, no assessment of the existing site in relation to gradients of discharge paths has been carried out.                                                                          | CRA                              |
| D1.11: Horizontal Exits                                   | There is sufficient space on within the fire compartments to accommodate the population as required by this clause.                                                                                                           | Complies                         |
| D1.13: Number of Persons Accommodated                     | Each fire compartment being approximately 2000m <sup>2</sup> is considered under this clause to accommodate approximately 200 people, based on 1 person per 10m <sup>2</sup> as given in this clause.                         | Noted                            |
| D1.14: Measurement of Distances                           | Information only.                                                                                                                                                                                                             | Noted                            |
| D1.15: Method of Measurement                              | Information only.                                                                                                                                                                                                             | Noted                            |
| D1.16: Plant Rooms and Lift Motor Rooms: Concession       | This concession is not required as the plant area is on the Level 1 floor level.                                                                                                                                              | Noted                            |

|                                                         |                                                                                                                                                                                                                                                                                        |                                          |
|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| D1.17: Access to Lift Pits                              | Access to the lift pit is assumed to be through the bottom landing doors as the pit is assumed to be less than 3m deep.                                                                                                                                                                | CRA                                      |
| <b>PART D2 – CONSTRUCTION OF EXITS</b>                  |                                                                                                                                                                                                                                                                                        |                                          |
| D2.0: Deemed-to-Satisfy Provisions                      | Noted                                                                                                                                                                                                                                                                                  | -                                        |
| D2.1: Application of Part                               | Noted                                                                                                                                                                                                                                                                                  | -                                        |
| D2.2: Fire-Isolated Stairways and Ramps                 | It is assumed that the fire isolated stairways will be constructed of reinforced concrete and therefore comply. The structural engineer is to certify that the shaft will withstand a local failure.                                                                                   | CRA                                      |
| D2.3: Non-Fire-Isolated Stairways and Ramps             | It is assumed the ramp will be of concrete construction.                                                                                                                                                                                                                               | Complies                                 |
| D2.4: Separation of Rising and Descending Stair Flights | No rising and descending stairs.                                                                                                                                                                                                                                                       | Complies                                 |
| D2.7: Installations in Exits and Paths of Travel        | Electrical and comms cupboards located in corridors are to be enclosed in non-combustible construction and smoke sealed.                                                                                                                                                               | CRA                                      |
| D2.8: Enclosure of Space Under Stairs and Ramps         | No enclosures proposed under stairways.                                                                                                                                                                                                                                                | Complies                                 |
| D2.9: Width of Stairways and Ramps                      | The stairways are to be a minimum of 1m in clear width.                                                                                                                                                                                                                                | CRA                                      |
| D2.10: Pedestrian Ramps                                 | The ramps are to comply with AS1428.1.                                                                                                                                                                                                                                                 | <b>DNC</b><br>See Part 5 of this Report  |
| D2.11: Fire-Isolated Passageways                        | The corridor link to the existing hospital has been considered as a fire-isolated passageway.                                                                                                                                                                                          | CRA                                      |
| D2.13: Goings and Risers                                | Stair geometry to all stairs throughout the development to comply with Table D2.13.                                                                                                                                                                                                    | CRA                                      |
| D2.14: Landings                                         | Landings are to have a non-slip finish and a gradient of not steeper than 1:50.                                                                                                                                                                                                        | CRA                                      |
| D2.15: Thresholds                                       | No thresholds indicated.                                                                                                                                                                                                                                                               | CRA                                      |
| D2.16: Balustrades or Other Barriers                    | Balustrading shown on the referenced details is shown to be 1m in height, this is sufficient, however no details of other balustrading or of the gaps in the balustrading detailed. All balustrading and barriers to openable windows are to comply with this clause.                  | CRA                                      |
| D2.17: Handrails                                        | Handrails are to be provided to a least one side of all stairways and ramps, and both sides where required for disabled access, in accordance with this clause.                                                                                                                        | CRA                                      |
| D2.18: Fixed Platforms, Walkways Stairways and Ladders  | Plant rooms are located on floor levels therefore this concession is not required.                                                                                                                                                                                                     | Noted                                    |
| D2.19: Doorways and Doors                               | All exit doors are swinging doors.                                                                                                                                                                                                                                                     | Complies                                 |
| D2.20: Swinging Doors                                   | All swinging exit doors swing in the direction of travel.                                                                                                                                                                                                                              | Complies                                 |
| D2.21: Operation of Latch                               | Latching mechanisms to required exit doors are to be readily openable with a single handed downward or pushing motion, as are the latches to doors in a path of travel and are to comply with this clause.                                                                             | CRA                                      |
| D2.22: Re-entry from Fire-Isolated Exits                | The doors to the fire-isolated stairways may not be locked from inside the stair.                                                                                                                                                                                                      | CRA                                      |
| D2.23: Signs on Doors                                   | Required signage is to be located on all fire and smoke doors stating "Fire Safety Door, Do Not Obstruct, Do Not Keep Open" and the discharge door from the fire isolated stairways are to state "Fire Safety Door – Do Not Obstruct" in capital letters not less than 20mm in height. | CRA                                      |
| <b>PART D3 – ACCESS FOR PEOPLE WITH A DISABILITY</b>    |                                                                                                                                                                                                                                                                                        |                                          |
| D3.0: Deemed-to-Satisfy Provisions                      | Noted                                                                                                                                                                                                                                                                                  | -                                        |
| D3.1: General Building Access Requirements              | Access is to be provided to all areas of both levels normally used by the occupants.                                                                                                                                                                                                   | CRA                                      |
| D3.2: Access to Buildings                               | Access to the building is from the main portion of pedestrian entry off Gray Street, access from other buildings on this allotment or accessible carparking spaces are existing and therefore outside the scope of this report.                                                        | Noted                                    |
| D3.3: Parts of Buildings to be Accessible               | All areas are to be accessible.                                                                                                                                                                                                                                                        | <b>DNC</b><br>See Part 5 of this report. |
| D3.4: Exemptions                                        | Exemptions are noted.                                                                                                                                                                                                                                                                  | Noted                                    |

|                                |                                                                                                                                                                                                                                              |          |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| D3.5: Accessible Car Parking   | Carparking is not within the scope of these works.                                                                                                                                                                                           | N/A      |
| D3.6: Signage                  | Braille and tactile signage complying with Specification D3.6 and incorporating the international symbols as appropriate must identify each sanitary facility and all accessible entrances where an entrance is not accessible.              | CRA      |
| D3.8: Tactile Indicators       | Based on the current proposal with only fire-isolated stairways no tactile are required by this clause. The ramps are to be provided with tactile ground surface indicators.                                                                 | CRA      |
| D3.11: Ramps                   | On an accessway a series of connected ramps must not have a combined vertical rise of 3.6m and a landing for a step ramp must no overlap a landing for another step ramp or ramp.                                                            | Complies |
| D3.12: Glazing on an Accessway | On an accessway, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, must be clearly marked in accordance with AS 1428.1. | CRA      |

**SECTION E: SERVICES AND EQUIPMENT****PART E1 – FIRE FIGHTING EQUIPMENT**

|                                            |                                                                                                                                                      |                                  |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| E1.0: Deemed-to-Satisfy Provisions         | Noted                                                                                                                                                | -                                |
| E1.3: Fire Hydrants                        | As advised the hydrant system is proposed to comply with Spec 10 and concern is raised over the booster location.                                    | DNC<br>See Part 5 of this Report |
| E1.4: Fire Hose Reels                      | Fire hose reels to be within 4m of an exit.                                                                                                          | DNC<br>See Part 5 of this Report |
| E1.5: Sprinklers                           | The building is to be provided with a sprinkler system compliant with Specification E1.5 as it is part of the larger building.                       | CRA                              |
| E1.6: Portable Fire Extinguishers          | PFE's are to be installed in accordance with AS 2444.                                                                                                | CRA                              |
| E1.8: Fire Control Centres                 | The new works are to have a fire control centre or be connected to the existing fire control centre.                                                 | CRA                              |
| E1.9: Fire Precautions During Construction | Information only. Whilst the building is under construction there is to be not less than one fire extinguisher provided at all times to each storey. | Noted                            |

**PART E2 – SMOKE HAZARD MANAGEMENT**

|                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                     |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| E2.0: Deemed-to-Satisfy Provisions                            | Noted                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | -                                   |
| E2.1: Application of Part                                     | Noted                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | -                                   |
| E2.2: General Requirements (including Tables E2.2a and E2.2b) | <p>The building is required to be provided with the following smoke hazard management systems:</p> <ol style="list-style-type: none"> <li>1. Automatic smoke detection and alarm system compliant with Specification E2.2a; and</li> <li>2. A zone smoke control system in accordance with AS1668.1.</li> </ol> <p>It is noted that at this stage the new stairways do not serve a Class 9a portion of the building with a rise in storeys of two and therefore currently stair pressurisation is not required.</p> | CRA/AS<br>See Part 5 of this Report |

**PART E3 – LIFT INSTALLATIONS**

|                                            |                                                                                                         |          |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------|----------|
| E3.0: Deemed-to-Satisfy Provisions         | Noted                                                                                                   | -        |
| E3.2: Stretcher Facility in Lifts          | Based on the current proposal a stretcher facility is not required.                                     | Noted    |
| E3.3: Warning Against Use of Lifts in Fire | Warning against using the lifts in the event of a fire must be provided in accordance with this clause. | CRA      |
| E3.4: Emergency Lifts                      | Based on the current proposal an emergency lift is not required.                                        | Noted    |
| E3.5: Landings                             | Lift landing dimensions are satisfactory.                                                               | Complies |
| E3.6: Passenger Lifts                      | The lifts are required by the BCA to comply with AS1735.12 for disabled access.                         | CRA      |
| E3.7: Fire Service Controls                | Based on the current proposal fire services controls are not required.                                  | Noted    |

| <b>PART E4 – EMERGENCY LIGHTING, EXIT SIGNS AND WARNING SYSTEMS</b> |                                                                                                                                                               |     |
|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| E4.0: Deemed-to-Satisfy Provisions                                  | Noted                                                                                                                                                         | -   |
| E4.2: Emergency Lighting Requirements                               | Emergency lighting is to be installed in every fire-isolated exit, each floor level, common corridor and the like.                                            | CRA |
| E4.3: Measurement of Distance                                       | Information Only                                                                                                                                              | CRA |
| E4.4: Design and Operation of Emergency Lighting                    | To comply with AS 2293.1-2005.                                                                                                                                | CRA |
| E4.5: Exit Signs                                                    | Exits signs are to be provided above or adjacent to a door providing egress as well as directional signage throughout the entire development where necessary. | CRA |
| E4.6: Direction Signs                                               | Where an exit is not readily apparent a directional sign is to be installed indicating the direction of egress being primarily within the carpark areas.      | CRA |
| E4.8: Design and Operation of Exit Signs                            | To comply with AS 2293.1-2005.                                                                                                                                | CRA |
| E4.9: Sound Systems and Intercom Systems for Emergency Purposes     | A SSISE is to be provided.                                                                                                                                    | CRA |

| <b>SECTION F: HEALTH AND AMENITY</b>                              |                                                                                                                                                                                                                                      |                                  |
|-------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| <b>PART F1 – DAMP AND WEATHERPROOFING</b>                         |                                                                                                                                                                                                                                      |                                  |
| F1.0: Deemed-to-Satisfy Provisions                                | Noted                                                                                                                                                                                                                                | -                                |
| F1.1: Stormwater Drainage                                         | Stormwater drainage to comply with AS 3500.3.2.                                                                                                                                                                                      | CRA                              |
| F1.5: Roof Coverings                                              | The metal roof covering is to comply with AS1562.1.                                                                                                                                                                                  | CRA                              |
| F1.6: Sarking                                                     | The sarking is to comply with AS 4200.                                                                                                                                                                                               | CRA                              |
| F1.7: Water Proofing of Wet Areas in Buildings                    | Waterproofing to wet areas to comply with AS 3740.                                                                                                                                                                                   | CRA                              |
| F1.9: Damp-proofing                                               | Moisture is to be prevented from reaching the walls above a damp-proof course, and the underside of the suspended floors.                                                                                                            | CRA                              |
| F1.10: Damp-proofing of Floors on the Ground                      | A vapour barrier in accordance with AS 2870 must be installed.                                                                                                                                                                       | CRA                              |
| F1.11: Provision of Floor Wastes                                  | Floor wastes to comply.                                                                                                                                                                                                              | CRA                              |
| F1.13: Glazed Assemblies                                          | Glazed assemblies are to comply with AS 2047 and AS 1288.                                                                                                                                                                            | CRA                              |
| <b>PART F2 – SANITARY AND OTHER FACILITIES</b>                    |                                                                                                                                                                                                                                      |                                  |
| F2.0: Deemed-to-Satisfy Provisions                                | Noted                                                                                                                                                                                                                                | -                                |
| F2.2: Calculation of Number of Occupants and Facilities           | It is noted that each fire compartment could accommodate approximately 200 people, however if beds are counted each area within the new works will accommodate between 5 – 16 patients with associated staff.                        | Noted                            |
| F2.3: Facilities in Class 3 to 9 Buildings (including Table F2.3) | Sufficient facilities numbers are proposed.<br><br>It is assumed that a kitchen, laundry and plunge bath are located elsewhere in the hospital building and therefore they are not required to be provided within the subject works. | Complies                         |
| F2.4: Accessible Sanitary Facilities (including Table F2.4)       | Insufficient details on the provision of sanitary facilities are provided at this stage.                                                                                                                                             | FI<br>See Part 5 of this report. |
| F2.5: Construction of Sanitary Compartments                       | Where the pans to the bathroom areas are within 1.2m of the doorway with the doorway swinging inwards. In these instances the doors are to be removable from outside the bathroom.                                                   | CRA                              |
| F2.6: Interpretation: Urinals and Washbasins                      | Information only.                                                                                                                                                                                                                    | Noted                            |
| F2.8: Waste Management                                            | Slop hoppers are to be provided.                                                                                                                                                                                                     | CRA                              |
| <b>PART F3 – ROOM SIZES</b>                                       |                                                                                                                                                                                                                                      |                                  |
| F3.0: Deemed-to-Satisfy Provisions                                | Noted                                                                                                                                                                                                                                | -                                |
| F3.1: Height of Rooms and Other Spaces                            | The ceiling heights are to be a minimum of 2.4m.                                                                                                                                                                                     | CRA                              |

| <b>PART F4 – LIGHT AND VENTILATION</b>                     |                                                                                                                                                          |       |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| F4.0: Deemed-to-Satisfy Provisions                         | Noted                                                                                                                                                    | -     |
| F4.1: Provision of Natural Light                           | It is considered that the emergency department is not an area used for sleeping purposes and therefore natural light is not required.                    | Noted |
| F4.4: Artificial Lighting                                  | Lighting to all areas is to comply with AS 1680.0.                                                                                                       | CRA   |
| F4.5: Ventilation of Rooms                                 | Insufficient details provided at this stage. It is assumed that mechanical ventilation complying with AS1668.2 will be provided throughout the building. | CRA   |
| F4.8: Restriction on Position of Water Closets and Urinals | It is assumed that all bathrooms, ensuites and WC's will be mechanically exhausted.                                                                      | CRA   |
| F4.9: Airlocks                                             | It is assumed that all bathrooms, ensuites and WC's will be mechanically exhausted.                                                                      | CRA   |
| F4.11: Carparks                                            | No carparks within this scope.                                                                                                                           | N/A   |

**SECTION G: ANCILLARY PROVISIONS****PART G5 – CONSTRUCTION IN BUSHFIRE PRONE AREAS**

|                           |                                                                          |       |
|---------------------------|--------------------------------------------------------------------------|-------|
| G5.1: Application of Part | Noted                                                                    | -     |
| NSW G5.2: Protection      | It is assumed that the building is not located in a bushfire prone area. | Noted |

**SECTION I: MAINTENANCE****PART I1 – EQUIPMENT AND SAFETY INSTALLATIONS**

|                                          |                                                                                               |       |
|------------------------------------------|-----------------------------------------------------------------------------------------------|-------|
| I1.0: Deemed-to-Satisfy Provisions       | Noted                                                                                         | -     |
| NSW I1.1: Essential Fire Safety Measures | Essential fire or other safety measures must be maintained and certified on an ongoing basis. | Noted |

**SECTION J: ENERGY EFFICIENCY**

Section J Assessment and reporting being carried out in a separately. No assessment against Section J has been carried out in this report.

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4: 103206-ED-BCA-r2

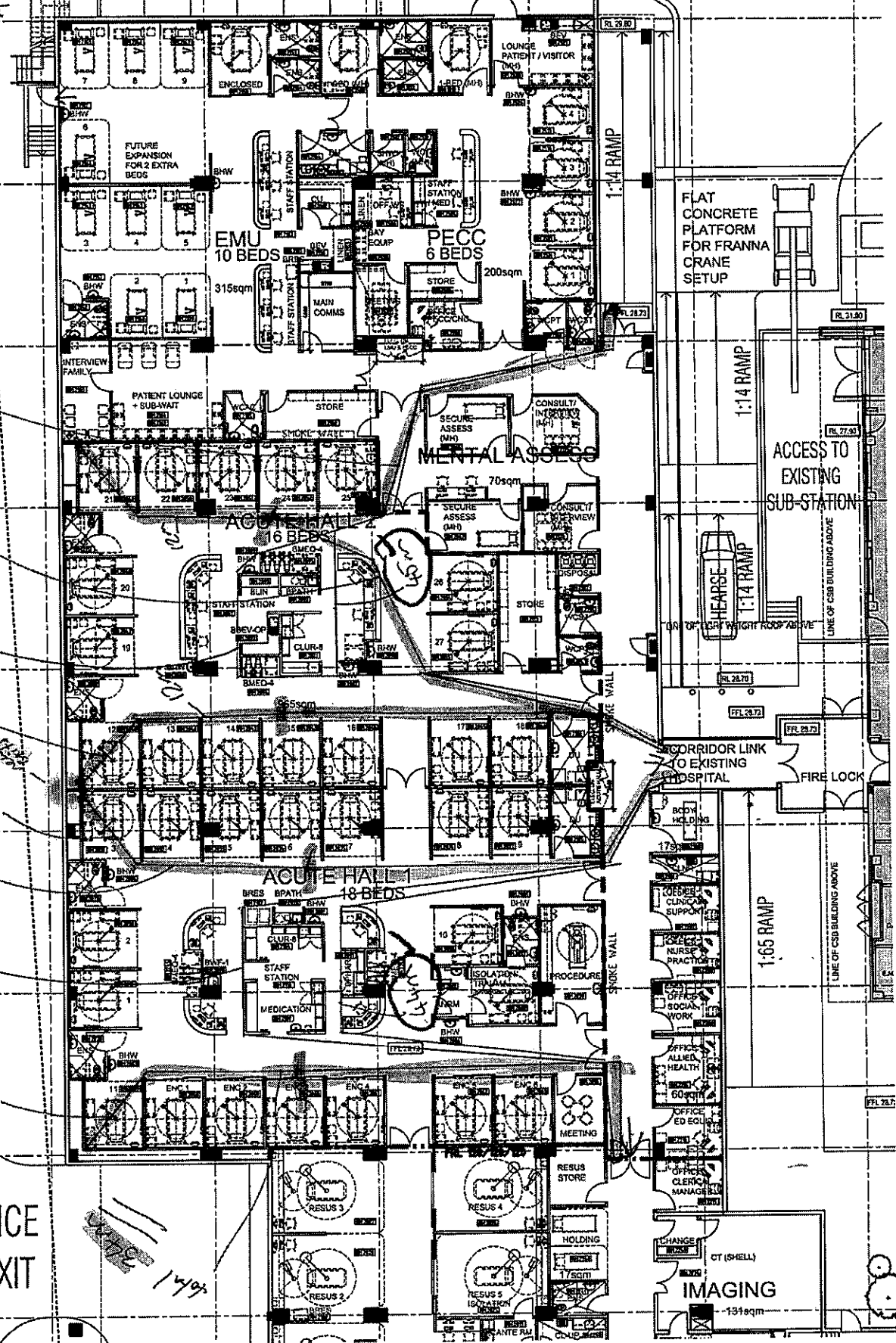
GRAY STREET SERVICES ACCESS

10 CARS

COURTYARD

SHORT PARAPET WALL

TEMPORARY KIOSK BY OTHERS



NCE  
EXIT

FLAT CONCRETE PLATFORM FOR FRANNA CRANE SETUP

ACCESS TO EXISTING SUB-STATION

CORRIDOR LINK TO EXISTING HOSPITAL

IMAGING

5

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