BUILDING REGULATION & FIRE SAFETY ENGINEERING CONSULTANTS

Project: **DUBBO BASE HOSPITAL REDEVELOPMENT**

Report: **BCA ASSESSMENT STATEMENT for SSD**

Date: 13 September 2012

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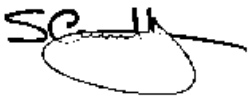
		Prepared by:	**Sean Connolly** Building Surveyor	Signature 

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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 Dubbo Base Hospital site, Myall Street Dubbo.

The scope of the proposed works for the SSD include the following:-

- Bulk excavation works
- Construction of a new 1& 2 storey building to accommodate a new maternity unit, Operating Theatre Suites, Central Sterilising Department and Day Surgery Unit with future flexibility to expand to a 3 storey building.
- Refurbishment of existing Theatres building to accommodate an expanded Renal Dialysis Unit.
- Demolition of existing Maternity Building and construction of new car parking spaces on the footprint of the existing maternity Building.
- Provision of new landscaping to Renal Unit.

1.2 Purpose

The purpose of this report is to undertake an assessment of the design proposal against the Deemed-to-Satisfy and or Performance provisions of the BCA, and to clearly identify any BCA compliance issues that require resolution/attention for the proposed development.

Not all details are shown on the drawings therefore the requirements to satisfy the BCA have been provided on a generic basis. These requirements will need to be incorporated into the design for the proposal.

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, 2012 Edition (BCA) incorporating the State variations where applicable.

1.4 Limitations

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

(a) Existing buildings on the site that do not form part of the proposed works,

(b) The structural adequacy or design of the building;

(c) The inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and

(d) The design basis and/or operating capabilities of any proposed electrical, mechanical or hydraulic fire protection services.

(e) The following provisions of the BCA are excluded from this Assessment:-

- The provision for access for persons with a disability – which will be addressed in a separate Access Report.

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;

(c) The Access to Premises Standards 2010;

(d) Demolition Standards not referred to by the BCA;

(e) Occupational Health and Safety Act;

(f) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Sydney Water, Electricity Supply Authority, Work Cover, RTA, Council and the like; and

1.5 United Buildings – Part A4 of the BCA

Clause A4.1 specifies that

" Two or more buildings adjoining each other form one united building if they –

(a) Are connected though openings in the walls dividing them; and
(b) Together comply with all the requirements of the BCA as though they are single buildings"

A number of the existing buildings on the site are connected or linked with enclosed pedestrian passageways which result in such buildings being considered as being 'united buildings'

Provision of fire or smoke separation of the pedestrian links from one or more buildings by the use of fire or smoke doors within the links or at the junction of the buildings and the links may be available and will be the subject of a fire engineered alternative solution that will need to be developed in order to satisfy the Performance Requirements of the BCA.

1.6 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 new building portion will have a rise in storeys of two (2),

NB: based on the future second floor stage as indicated on the drawings the building will have a rise in storeys of three (3).

2.2 Classification (Clause A3.2)

The building has been classified as follows.

Class	Level	Description
9a	All	Hospital
5	G	Administration

2.3 Effective Height (Clause A1.1)

The building has an effective height of less than 25metres.

2.4 Type of Construction Required (Table C1.1)

Type B Construction.

NB: Type A Construction required if the building has a rise in storeys of (3)

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^2
  -Maximum Volume 48,000m^3

- Class 9a -Maximum Floor Area 5,000m2
  -Maximum Volume 30,000m3

NB: based on a rise in storeys of (3)

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 000m²
- Treatment Area – Maximum Smoke Compartment - 1 000m²
- Ward Areas – Maximum 1 hour Fire Compartment - 1 000m²
- Ward Areas – Maximum Smoke Compartment - 500m²

2.6 Climate Zone (Clause A1.1)

The building is located within Climate Zone 4.

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	BCA2012 Clause C3.13
2.	Automatic fire detection and alarm system	BCA2012 Clause E2.2a, AS1670.1-2004
3.	Automatic fire suppression system (sprinkler system), or Zone Smoke Control System *NB: only required if the building has a rise in storeys of (3)*	BCA2012 Specification E1.5, AS2118.1-1999 BCA2012 Specification E2.2a, AS/NZS 1668.1 1998
4.	Emergency lighting	BCA2012 Clauses E4.2 & E4.4, AS2293.1-2005
5.	Exit signs	BCA2012 Clauses E4.5, E4.6 & E4.8, AS2293.1-2005
6.	Fire control centres and rooms	BCA2012 Clause E1.8
7.	Fire dampers	AS/NZS1668.1-1998
8.	Fire doors	BCA2012 Spec C3.4, AS1905.1-2005
9.	Fire hose reel system	BCA2012 Clause E1.4, AS2441-2005
10.	Fire hydrant system	BCA2012 Clause E1.3, AS2419.1-2005
11.	Fire seals protecting openings in fire resisting components of the building	BCA2012 Clause C3.15, Manufacturer's Specification
12.	Lightweight construction	Manufacturer's Specification
13.	Paths of travel, stairways, passageways or ramps	BCA2012 Section D
14.	Portable fire extinguishers	BCA2012 Clause E1.6, AS2444-2001
15.	Stair pressurisation system *NB: only required if the building has a rise in storeys of (3)*	BCA2012 Spec E2.2a, BCA Spec E2.2b, AS/NZS1668.1-1998
16.	Smoke dampers	AS/NZS1668.1-1998
17.	Smoke detectors and heat detectors	BCA2012 Clause E2.2a
18.	Smoke doors	BCA2012 Spec C3.4
19.	Sound systems and intercom systems for emergency purposes (formerly EWIS)	BCA2012 Clause E4.9, AS1670.4-2004
20.	Warning and operational signs	BCA2012 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.

NB: based on Type A Construction

Item	FRL's
Loadbearing External Walls • less than 1.5m to a fire source feature • 1.5 – 3m from fire source feature; • more than 3m from a fire source feature.	 120/120/120 120/90/90 120/60/30
Non-Loadbearing External Walls • less than 1.5m to a fire source feature • 1.5 – 3m from fire source feature; • more than 3m from a fire source feature.	 -/120/120 -/90/90 -/-/-
External Columns • Less than 3m • 3m or more	 120/-/- -/-/-
Fire Walls	120/120/120
Stair and Lift Shafts • Loadbearing • Non loadbearing	 120/120/120 -/120/120
Internal walls bounding sole occupancy units • Loadbearing • Non loadbearing	 120/-/- -/-/-
Internal walls bounding public corridors, hallways and the like: • Loadbearing • Non loadbearing	 120/-/- -/-/-
Ventilating, pipe garbage and the like shafts: • Loadbearing • Non loadbearing	 120/90/90 -/90/90
Other loadbearing internal walls, beams trusses and columns	120/-/-
Floors	120/120/120
Roofs	120/60/30
Roofs (sprinklered building)	-/-/-
Patient Care Areas - 2000m^2 (Clause C2.5)	120/120/120
Treatment Areas - 1000m^2 (Clause C2.5)	60/60/60
Ward areas – 1000m^2 (Clause C2.5)	60/60/60
Ward areas – 500m^2 (Clause C2.5)	Smoke Sep.

Notes: concessions apply to internal columns in the top most storey

PART 5 BCA ASSESSMENT

The following is a summary of the relevant areas of the Deemed-to-Satisfy Provisions of the Building Code of Australia, (BCA) that will need to be addressed in the detailed design for the proposed development.

5.1 STRUCTURE - SECTION B

5.1.1 Structural Provisions - Part B1

Structural engineering details would be required as per the following Australian standards (where relevant):

1. AS 1170.0-2002 General Principals
2. AS 1170.1-2002, Including certification for balustrading (dead and live loads)
3. AS 1170.2-2002, Wind loads
4. AS 1170.4-2002, Earthquake Loads
5. AS 3700-2001, Masonry Code
6. AS 3600-2009, Concrete Code
7. AS 4100-1998, Steel Structures and/or
8. AS 4600-2005, Cold Formed Steel
9. AS 2159-1995 or 2009, Piling
10. AS 3600.1-2000, Termite Control (or confirmation no primary building elements are timber.

New glazing must be provided in accordance with the following Australian Standards:

1. B1.4 (h) (iii) - to protect against nickel sulphide inclusions.
2. AS 2407-1999, Windows in buildings.
3. AS 1288-2006, Glass in buildings.

5.2 FIRE RESISTANCE - SECTION C

5.2.1 Type of Construction Required (Clause C1.1)

The fire resistance levels (FRL's) required for the various structural elements of the building are outlined in part 4 of this report.

5.2.2 Fire Hazard Properties (Clause C1.10)

The fire hazard properties of all new building materials and assemblies as well as all new floor materials, floor coverings, wall and ceiling lining materials used in the development must comply with the requirements of specification C1.10 of the BCA.

5.2.3 General Floor Area and Volume Limitations (Clause C2.2)

The fire compartment sizes within the existing building as proposed to be extended cannot be larger than the floor area and volumes as listed in Table C2.2 for the classifications involved.

It is therefore recommended that the new building be fire separated from the existing building by fire walls in accordance with Clause C2.7.

5.2.4 Class 9a and 9c Buildings (Clause C2.5)

The following areas are required to be separated as follows:

- Patient care area are to have a maximum size of each fire compartment of 2,000m²,
- Ward areas required to be divided into 60/60/60 FRL fire compartments with a maximum floor area of 1,000m².
- The ward areas are required to be further divided into smoke compartments with the maximum areas of 500m².
- Treatment areas are required to be divided into floor areas of not more than 1000m^2 by smoke proof walls
- Any kitchen areas, hyperbaric chambers, laundries or medical records areas exceeding 10m² are required to be separated by construction having an FRL of 60/60/60.
- Vertical separation of openings in external walls by spandrels complying with Clause C2.6 will be required unless the building is sprinklered.

5.2.5 Vertical Separation of Openings in External Walls (Clause C2.6)

Where a window or other opening in an external wall is above another window or opening in the storey next below and its vertical projection falls no further than 450mm outside the lower opening the opening must be separated by –

(a) A 900mm high non- combustible 60/60/60 FRL spandrel wall which extends 600mm above floor level, or
(b) Part of a curtain wall or panel wall that complies with (a), or
(c) A horizontal FRL60/60/60 slab which projects 1100mm from the outside face of the external wall and extends 450mm beyond the opening concerned.

NB: not required if the building is sprinkler protected

5.2.6 Separation by Fire Walls (Clause C2.7)

Fire walls separating the floor areas of the building into compliant fire compartments and separating the new three storey building from the existing front of house will need to have an FRL in accordance with Specification C1.1 and comply with Clause C2.7.

Fire walls must extend to the underside of the slab above or to the underside of the roof sheeting with no penetrations through the fire wall other than roof battens with a dimension of 75mm x 50mm or sarking.

Some upgrading of the existing fire walls within and separating the existing Theatre Building will need to be upgraded to comply with the requirements of this clause.

5.2.7 Separation of classification in different storeys (Clause C2.9)

Where parts of different classification are situated one above the other in adjoining storeys the floor between the storeys must have an FRL of not less than that prescribed in Specification C1.1 for the classification of the lower storey.

The use of the lower level of the existing Theatres building for incidental storage should be discontinued so that this storey will not need to be classified as a class 7b usage requiring an FRL of 240minutes for the slab separating storeys.

5.2.8 Separation of Lift Shafts (Clause C2.10)

Lift shafts are required to have an FRL in accordance with Specification C1.1

5.2.9 Stairways and Lifts in one Shaft (Clause C2.11)

A stairway and lift must not be located in the same shaft if either is required to be enclosed in a fire resistant shaft.

5.2.10 Separation of Equipment (Clause C2.12)

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

- Lift motors and lift control panels, except the wall between the lift shaft and the lift motor room need only have an FRL of 120/--/--.
- Emergency generators or central smoke control plant.
- Boilers where the water is boiled to greater than 100 degrees Celsius.
- Battery or batteries have a voltage exceeding 24 volts and a capacity exceeding 10 ampere hours. This may occur in a Comms room also.

Note that the following concessions are available-

- Smoke control fans located in the air stream, which are constructed for high temperature as per specification E2.2b.
- Stair pressurisation equipment installed as per AS 1668.1.
- A lift installation without a machine room.
- Equipment otherwise adequately separated from the remainder of the building.

5.2.11 Electricity Supply System (Clause C2.13)

Any electricity substation is to be fire separated from the remainder of the building with construction achieving an FRL of 120/120/120 with any doors to be –120/30 self closing fire doors.

Any main switchboard sustaining emergency equipment operating in the emergency mode must be separated from the remainder of the building with construction achieving an FRL of 120/120/120 with any doors to be --/120/30 self –closing fire doors.

Any electrical conductors located within the building that supply a main switchboard as detailed within (2) above must have a classification in accordance with AS/NZS 3013 of not less than WS53W (where subject to damage by motor vehicles) or WS52W otherwise. Alternatively the conductors may be enclosed or otherwise protected with construction having an FRL of not less than 120/120/120.

Where emergency equipment is required within the building all switchboards in the electrical installation that sustain the electrical supply to the emergency equipment must be constructed so that emergency equipment switchgear is separated from non- emergency equipment switchgear by metal partitions designed to minimise the spread of fault from the non-emergency switchgear.

Internal or external wall wetting sprinklers as appropriate or construction having an FRL of not less than --/60/--.

5.2.12 Protection of Openings in External Walls (Clause C3.2)

If the external walls of the building are to be located less than 6m from another building on the site (other than a Class 10a building) the openings in the external walls will need to be protected as required by Clause C3.2 by one of the acceptable methods of protection available under Clause C3.4.

5.2.13 Separation of External Walls and Associated Openings (Clause C3.3)

Openings in the external wall of different opening in different fire compartments must be separated in accordance with those distances as outlined in Table C3.3 or alternatively protected in accordance with Clause C3.4.

Openings in the external walls of the existing Theatres building which are within 6m of an adjacent building will need to be protected in accordance with Clause C3.4

5.2.14 Acceptable Methods of Protection (Clause C3.4)

The protection methods for openings in the external wall that require protection (as outlined in clauses C3.2 or C3.3 include the following:-

- Wall wetting drenchers on windows which are fixed closed or automatically close, or
- -/60/- FRL fire windows- automatic closing or fixed closed, or
- -/60/- FRL fire shutters

5.2.15 Doorways in Fire Walls (Clause C3.5)

Any doors to be provided in fire walls must be fire rated as per the fire walls, with the doors to be self – closing or auto closing on the activation of smoke detectors within 1.5- meters of either side of the doors as well as any sprinkler or smoke detection system within the building.

5.2.16 Openings in Fire Isolated Exits (Clause C3.7)

Any new horizontal exits must be designed in accordance with the requirements of this clause.

5.2.17 Openings in Fire Isolated Exits (Clause C3.8)

The doors to the fire isolated exits are required to be self or auto closing -/60/30 fire doors.

5.2.18 Service Penetrations in Fire Isolated Exits (Clause C3.9)

Fire isolated exits are not to be penetrated by any services other than electrical wiring for lighting, or security and essential services ; ducting for stair pressurisation systems (if adequately fire separated from the remainder of the building) and water supply pipes for fire services.

5.2.19 Openings in Fire Isolated Lift Shafts (Clause C3.10)

The doors to the lift shafts are to be protected by doors having an FRL of -/60/- and comply with AS 1735.11. in addition if the lift call panels exceed 35000mm2 they must be backed by construction with a rating of not less than --/60/60.

5.2.20 Openings in Shafts (Clause C3.13)

Any openings to the service shafts are required to be protected by -/30/30 panel (if in a sanitary compartment), or a self closing -60/30 fire door, or a -/60/30 access panel.

If the shaft is a garbage shaft, a door hopper of non-combustible construction is permitted to be installed.

5.2.21 Openings for Service Installations (Clause C3.15)

Where service installations penetrate the walls or floors required to have an FRL with respect to integrity and insulation they are to be protected by fire seals having an FRL of the building element concerned. Fire seals are required to comply with specification C3.15. Where the mechanical ventilation system penetrates floors or walls that require an FRL the installation is to comply with AS/NZS 1668.1-1998.

5.2.22 Construction Joints (Clause C3.16)

Any construction joints must be fire rated as per the ratings of the building elements within which they are installed.

5.3 ACCESS & EGRESS - SECTION D

5.3.1 Number of Exits Required (Clause D1.2)

A minimum of at least two exists must be provided from each storey in addition to any horizontal exits that are provided in patient care areas through the fire walls with an FRL of 120/120/120.

5.3.2 When Fire Isolated Exits are Required (Clause D1.3)

All required exits stairs must be fire isolated as per Specification C1.1.
Fire isolated stairways will need to be used as exits connection two or more levels in patient care area.

5.3.3 Exit Travel Distances (Clause D1.4)

In other non patient care areas, the distance to an exit or a point of choice of two exits must not exceed 20m, in which case the distance to one exit must not exceed 40m. Where such distances are exceeded a Performance Based Assessment will be required.

5.3.4 Distances between Alternative Exits (Clause D1.5)

The distance between exits must not exceed 45m in a patient care area and 60m in a non patient care area.

5.3.5 Dimensions of Exits and Paths of Travel to Exits (Clause D1.6)

Corridors that are likely to be used for the transportation of people in beds are to be a minimum of 1.8m wide. The doorways off such corridors must have with a minimum width of 1200mm if the corridor is less than 2.2m or 1070mm if greater than 2.2m to enable manoeuvring of beds.

5.3.6 Travel via Fire Isolated Exits (Clause D1.7)

Fire isolated exits must discharge direct to a road or open space or in a point in the storey that complies with the clause requirements.

5.3.7 Travel via non Fire Isolated Exits (Clause D1.9)

The distance from any point on the floor to a point of egress to the road or open space by way of a fire isolated stair or exit must not exceed 15m from one exit doorway or 30m from one of two exit doorways.

5.3.8 Discharge from Exits (Clause D1.10)

Where an exit discharges to open space that is at different levels than the public road to which it is connected the path of travel to the road must be a ramp or other incline having a gradient not steeper than 1:8 or 1:14 if an accessible path required by Part D3 in accordance with Clause D1.10.

5.3.9 Horizontal Exits (Clause D1.11)

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

5.3.10 Access to Lift Pits (Clause D1.17)

Access to lift pits must be as follows:-

1. Where the pit depth is not more than 3m, be through the lowest landing doors; or
2. Where the pit depth is more than3m, be provided through an access doorway comply with the following:
    I. In lieu of D1.6 the doorway must be level with the pit floor and not be less than 600mm wide by 1980mm high clear opening, which may be reduced to 1500mm where no part of the lift car or platform encroaches on the pit doorway entrance when the car is on a fully compressed buffer.
    II. Access to the doorways via a stairway complying with AS1657.
    III. In lieu of D2.21, doors fitted to the doorway must be-
        a) Of the horizontal sliding or outward opening hinged type and self-closing and self-locking from the outside; and
        b) Marked on the landing side with letters not less than 35mm high " DANGER LIFTWELL- ENTRY OF UNAUTHORISED PERSONS PROHIBITED- KEEP CLEAR AT ALL TIMES'

5.3.11 Fire Isolated Stairway (Clause D2.2)

The fire isolated stairs are required to be constructed of non-combustible materials and so that if there is local failure it must not cause structural damage, or impair the fire resistance of the shaft.

5.3.12 Non – Fire Isolated Stairways and Ramps (Clause D2.3)

To be reinforced concrete or steel or timber in accordance with the clause.

5.3.13 Separation of Rising and Descending Stair Flights (Clause D2.4)

A fire isolated exit must have no direct connection between a flight rising from any below ground levels and a flight descending from the above ground levels. The separating construction between flights must be non-combustible and smoke proof in accordance with clause 2 of specification C2.5.

5.3.14 Installations in Exits and Paths of Travel (Clause D2.7)

No access to service shafts must be provided within fire isolated stairs, passageways or ramps.

Any electrical meters, distribution boards or ducts, central communications distribution boards or equipment or electrical motors must be smoke sealed and enclosed within non-combustible construction with any penetrations smoke sealed.

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

Note that an opening to any chute that or duct that is to convey hot products or combustion from a boiler incinerator, fireplace or like must not be located in any part of a required exit or any corridor, hallway, lobby or the like leading to a required exit.

5.3.15 Pedestrian Ramps (Clause D2.10)

Any pedestrian ramp needs to have a non-slip finish.

5.3.16 Fire Isolated Passageways (Clause D2.11)

Fire isolated passageways are to be not less than the FRL not less than that required for the shaft or 60/60/60 as required.

5.3.17 Treads and Risers Clause (D2.13)

The stairs must comply with the tread, riser and going dimensions of this clause and the nosing of the stairs must be provided with a non-slip tread.

5.3.18 Landings (Clause D2.14)

Landings to have a 1:50 maximum gradient and be not less than 750mm long and be non-slip and have an area sufficient to move a stretcher 2m long and 600mm wide

5.3.19 Thresholds (Clause D2.15)

The door sill is not to be more than 25mm above the finished floor level to which the door opens

5.3.20 Balustrades (Clause D2.16)

Balustrades to be in accordance with Clause requirements

5.3.21 Handrails (Clause D2.17)

865mm high handrails to be along the side of each passageway or corridor used by patients and must be fixed 50mm clear of the wall and located along side at least one side of a ramp or flight of stairs in accordance with clause requirements.

5.3.22 Doorways and Doors (Clause D2.19)

Sliding doors are not permitted in a patient care area.

5.3.23 Swinging Doors (Clause D2.20)

A swinging door in a required exit must swing in the direction of egress and must not encroach by more than 500mm onto the required width of the stairway, ramp or passageway if it is likely to impede the path of travel of people already using the exit.

5.3.24 Operation of Latches (Clause D2.21)

A door in an exit or in a path of travel to an exit must be readily openable without a key from the side of a person seeking egress.

5.3.25 Re-Entry from Fire-Isolated Exits (Clause D2.22)

Doors to the fire Isolated exits must not be locked or If to be locked that they must comply with one of the following:

On at least every fourth storey, the doors are not able to be locked and a sign is fixed on such doors stating that re-entry is available; or
An Intercommunication system, or an audible or visible alarm system, operated from within the enclosure is provided near the doors and a sign is fixed adjacent to such doors explaining its purpose and method of operation.

5.3.26 Signs on Doors (Clause D2.23)

Warning signage is to be provided throughout the new works In accordance with subclauses (a) and (b).

Offences signage relating to fire stairs must also be provided as per clause 183 of the EP&A Regulations, 2000.

5.3.27 General Building Access Requirements (Clauses D3.1& D3.2)

Access to and within all areas of the building normally used by the occupants is required in accordance with AS 1428.1 - 2009.

An accessway must be provided:-

- From the main points of a pedestrian entry at the allotment boundary; &
- From another accessible building connected by a pedestrian link, &
- From any required accessible carparking space on the allotment

The accessways must be provided through the principal pedestrian entrance and through not less than 50% of all pedestrian entrances with non accessible pedestrian entrances not permitted to be more than 50m from an accessible entrance.

<u>The access requirements of this Clause will be addressed in a separate Access Assessment Report.</u>

5.3.28 Parts of Buildings to be Accessible (Clause D3.3)

Ramps must be designed in compliance with Clause 10 of AS1428.1 & stairways (including fire isolated stairways) must be designed in compliance with Clause 11 of AS1428.1 in respect to handrails, colour contrasting and the like.

Accessways must have passing spaces and turning spaces at least every 20m intervals and turning spaces within 2m of the end of an accessway where it is not possible to continue to travel along the accessway.

Carpets must have a pile thickness not more than 11-mm and a backing thickness not more than 4-mm.

The access requirements of this Clause will be addressed in a separate Access Assessment Report.

5.3.29 Exemptions (Clause D3.4)

Exemptions from the requirements for an area to be accessible apply where access would be in appropriate because of the particular purpose for which the area is used or the a health and safety risk would result.

The access requirements of this Clause will be addressed in a separate Access Assessment Report.

5.3.30 Accessible Carparking (Clause D3.5)

Accessible carparking spaces must be provided in accordance with Table D3.5 so as to comply with AS/NZS 2890.6Exemptions from the requirements for an area to be accessible apply where access would be in appropriate because of the particular purpose for which the area is used or the a health and safety risk would result.

The access requirements of this Clause will be addressed in a separate Access Assessment Report.

5.3.31 Signage (Clause D3.6)

Braille and tactile signage must be installed to indicate the sanitary facilities, lifts, a space with hearing augmentation, non-accessible pedestrian entrances in accordance with Specification D3.6.

The access requirements of this Clause will be addressed in a separate Access Assessment Report.

5.3.32 Tactile Indicators (Clause D3.8)

Tactile ground surface indicators are required to indicated stairways, escalators, ramps and overhead obstructions in accordance with AS1428.4.1

The access requirements of this Clause will be addressed in a separate Access Assessment Report.

5.3.33 Glazing on an Accessway (Clause D3.12)

All frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening must have visual indicators comprising of a solid and non-transparent contrasting line in accordance with As1428.1

The access requirements of this Clause will be addressed in a separate Access Assessment Report.

5.4 SERVICES & EQUIPMENT - SECTION E

5.4.1 Fire Hydrants (Clause E1.3)

A Hydrant system is to be installed to cover the building in accordance with AS 2419.1 - 2005.

It should be noted that the Hydrant Booster assembly is required to be located greater than 10 metres from an external wall of the building, or affixed to the external wall and protected by a radiant heat shield that has an FRL of 90/90/90 located 2 metres either side and 3 metres above the outlets.

Internal Hydrants are to be located within each required fire isolated exits.

Any hydrant pump room is required to have a door opening to a road or open space, or a door opening to a fire Isolated exit.

Fire Hydrants located in the fire Isolated stair must not encroach on the required 1 metre clear exit width.

A block plan complying with AS 2419.1 - 2005 is required to be installed to the hydrant booster assembly together with the required signage.

5.4.2 Hose Reels (Clause E1.4)

Fire hose reels are required to be located throughout the building in accordance with AS 2441-2005.
Hose reels are required to be located within 4 metres of an exit or adjacent to internal Hydrants (other than hydrants located in fire isolated exits).

5.4.3 Portable Fire Extinguishers (Clause E1.6)

Portable fire extinguishers are to be installed in accordance with clause E1.6 and AS 2444.

5.4.4 Smoke Hazard Management

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

Where any air handling system serves more than one fire compartment it must be designed to operate as a smoke control system as per AS 1668.1 -1998 or comply with sub-clause (ii)(A) and (B).

The building must be provided with AS 1670.1 - 2004 fire detection and alarm system

throughout in accordance with BCA Specification E2.2a.

If the building has a rise in storeys of three the following is required:-

- The building must be provided with either a sprinkler system or zone smoke control system throughout.
- The fire stairs must be pressurised as per AS 1668.1 -1998.

5.4.5 Stretcher Facilities in Lifts (Clause E3.2)

A stretcher facility is required to be provided in at least one emergency lift if required under Clause E3.4.

In addition where the building exceeds 12-metres in effective height, a stretcher facility must be provided to at least one lift serving each storey.

A stretcher facility must accommodate a raised stretcher with a patient lying on it horizontally by providing a clear space not less than 00-mm wide x 2000-mm long and 1400-mm high.

5.4.6 Warning Against use of Lifts in Fire (Clause E3.3)

Signage "DO NOT USE LIFT IF THERE IS A FIRE" is to be provided near the lift call buttons In letters not less than 10-mm in height.

5.4.7 Emergency Lifts (Clause E3.4)

At least one emergency lift must be installed to serve each storey, with two emergency lifts provided if multiple lifts are provided to each storey. The lifts are required to be two hour fire isolated and comply with subclause (e).

5.4.8 Facilities for People with Disabilities (Clause E3.6)

A new lift is required to be installed to serve each floor in accordance one of the options in table E3.6a to allow for access for with accessible features in accordance with table E3.6b and not rely on a constant pressure device for its operation where the lift cat is fully enclosed .

5.4.9 Fire Service Controls (Clause E3.7)

Any new lift is required to be provided with fire services controls where the buildings effective height exceeds 12-metres.

5.4.10 Emergency Lighting (Clause E4.2)

Emergency lighting is required throughout the building in accordance with AS 2293.1 - 2005.

5.4.11 Exit Signs (Clause E4.5)

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

5.4.12 Directional Exit Signs (Clause E4.6)

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

5.4.13 Sound System and Intercom System for Emergency Purposes (Clause E4.9)

A sound system and Intercom system for emergency purposes must be provided throughout, as per AS 1670.4 - 2004.

5.5 HEALTH AND AMENITY - SECTION F

5.5.1 Stormwater Drainage (Clause F1.1)

Stormwater drainage must be installed as per AS3500.3-2003

5.5.2 Roof Coverings (Clause F1.5)

A roof covering must be covered with-

- Concrete roof tiles complying with AS2049
- Cellulose cement corrugated sheeting complying with AS/NZS 2908.1
- Metal roof sheeting complying with AS 1562.1
- Plastic roof sheeting complying with AS?NZS4256 parts 1,2,3 & 5
- Asphalt shingles complying with ASTM D3018-90 Class A

5.5.3 Sarking (Clause F1.6)

Sarking must be installed to roof and walls for weatherproofing as per AS/NZS 4200.1 and 2 -1994.

5.5.4 Waterproofing of Wet Areas (Clause F1.7)

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

5.5.5 Damp-Proofing (Clause F1.9)

Damp proofing must be provided as per this clause and AS 2904 -1995 or AS 3660.1 - 2000.

5.5.6 Damp-Proofing of Floors on the Ground (Clause F1.10)

A vapour barrier is to be provided in accordance with the relevant requirements of AS 2870.

5.5.7 Facilities in Class 3 to 9 Buildings (Clause F2.3)

Suitable sanitary facilities are required for staff and patients as per table F2.3.
One shower for every 8 patients or part thereof and one island-type plunge bath in each storey containing a ward area must be provided in accordance with Clause F2.3

A least one slop-hopper must be provided on any storey containing ward areas or bedrooms in accordance with Clause F2.8

5.5.8 Facilities for People with Disabilities (Clause F2.4)

The new accessible WC/s must be designed In accordance with the requirements of AS 1428.1 - 2009 and this clause. Ambulant toilet facilities must also be provided as per subclause (c).

5.5.9 Construction of Sanitary Compartments (Clause F2.5)

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

5.5.10 Height of Rooms (Clause F3.1)

The minimum floor to ceiling heights in the building must be as follows:-

- patient care areas – 2.4m
- operating theatres or delivery rooms - 3m
- treatment rooms, clinic, waiting room, passageway, corridor or the like – 2.4m
- bathrooms and sanitary compartments, store rooms, tea rooms – 2.1m

5.5.11 Provision of Natural Light (Clause F4.1)

Natural light is required to be provided to all patient care areas used for sleeping purposes based on a ratio of 10% of the floor area of the room.

5.5.12 Artificial Lighting (Clause F4.4)

Artificial lighting to the building is required in accordance with AS/NZS 1680.0 - 2009.

5.5.13 Ventilation of Rooms (Clause F4.5)

The building is required to be provided with natural ventilation achieving 5% of the floor area of the room served. Where natural ventilation is not provided. AS 1668.2 - 1991 mechanical ventilation is to be provided.

5.5.14 Provision for cleaning of Windows (NSW Clause G1.01)

A safe manner of cleaning windows located 3 or more storeys above ground level must be provided. In this regard, the windows must be able to be cleaned from within the building, or provision made for cleaning by a method complying the OH&S Act 2000and regulations made under the Act.

5.6 ENERGY EFFICIENCY - SECTION J

5.6.1 Building Fabric (Part J1)

J1.1 Application- All new parts of the building envelope need to comply.
- Does not apply to the Main Switch room if not conditioned

The building envelope for the purpose of Section J is bound by the new external walls, floor and roof of the whole Building and the new external walls of the main Hospital building. ICT

J1.2 Thermal Construction General-

- Insulation must comply with AS/NZS 4859.1, in particular a continuous thermal barrier must be achieved.
- Reflective insulation must be installed with the necessary airspace between the reflective side of the insulation and the lining or cladding.
- Bulk insulation must be installed so that it maintains its position and thickness.
- When selecting insulation caution should be taken to clearly identify the total R-value of the installed roofing and ceiling system or wall system.

J1.3 Roof & Ceiling Construction

a) In this Climate Zone, Table J1.3 requires a minimum total R-value of R3.2 (downwards).

b) Where the area of ceiling insulation is reduced by more than 0.5% because of exhaust fans, flues or down lights, the loss of insulation must be compensated for by increasing the R-value of the insulation.

J1.4 Roof lights – not applicable

J1.5 External Walls

For external walls in this Climate Zone the minimum total R- Value of 2.8 is required.

J1.6 Floors

For a slab on ground in this Climate Zone, Table J1.6 does not require any additional insulation in the floor.

5.6.2 Glazing (Part J2)

J2.4 Glazing

The building must comply with glazing requirements, which satisfy option B calculations of the BCA Vol.1, 2012. In this instance the glazing calculator spreadsheet developed by the ABCB must be utilised to verify compliance.

NOTE: The glazing characteristics referred to are the new NFRC-100 characteristics, any glazing system which has either a ‘U value’ or ‘SHGC value’ EQUAL TO OR LESS THAN that specified, is acceptable.

5.6.3 Building Sealing (Part J3)

J3.3 Roof lights

A roof light must be sealed when serving a conditioned space and must be constructed with an imperforate ceiling diffuser or a weatherproof seal if it is a roof window, or a readily operable shutter system (manual, mechanical or electronic)

J3.4 Windows and doors

All external doors and windows must either have seals to restrict air infiltration or the windows must comply with AS 2047.

J3.5 Exhaust fans

All exhaust fans fitted in a conditioned space must have a sealing device such as a selfclosing damper or the like.

Compliance can be met by:

- Any new exhaust fans to have self-closing dampers, including “miscellaneous exhaust fans”.

J3.6 Construction of roofs, walls and floors

Roofs, walls and floors and any opening such as a window or door must be constructed to minimise air leakage by:

- enclosed or internal lining systems that are close fitting at ceiling, wall and floor junctions or
- sealed by caulking, skirting, architraves, cornices or the like.

5.6.4 A/C & Ventilation Systems (Part J5)

The air-conditioning system requires certification by a Mechanical Engineer, where the size of the air-conditioner is greater than 35kWr. For smaller package or split systems the motor efficiency performance is controlled under the Australian Governments Minimum Energy performance Scheme (MEPS).

A mechanical ventilation system will require certification by a Mechanical Engineer.

J5.3 Time switch

Where a Unit is greater than 10 kWr capacity or 1000L/s, a time switch must be installed in accordance with Specification J6 to control the unit, except where the unit is needed for 24 hour occupancy.

J5.4 Heating and cooling systems

A heater for heating a space other than via water must be

- a solar heater, or
- a gas heater, or
- an oil heater if reticulated gas is not available, or
- a heat pump heater, or
- a heater using reclaimed heat from another process, or
- a combination of any of the above, or
- an electric only heater if
  - reticulated gas is not available and the heater capacity is not more than 55W/m^2 , or
  - if the annual energy consumption for heating is no more than 15W/m^2 for the floor area of the conditioned space.

5.6.5 Artificial Lighting and Power (Part J6)

J6.2 Interior artificial lighting

a) All artificial lighting for the building must not exceed the aggregated maximum Illumination Power Density (IPD) specified in Table J6.2b.

b) The lighting limits do not apply to the following

- Emergency lighting
- Signage and display lighting
- A heater where it emits light
- Lighting for a specialised process nature
- Lighting for performances such as theatrical or sporting
- Lighting or permanent displays in museums or galleries.

J6.3 Interior artificial lighting and power control

Artificial lighting of a room or space must be individually operated by a switch or other control device.

An artificial lighting switch must –

i. Be located in a visible position in the room being switched or in an adjacent room or space from where the lighting being switched is visible,
ii. Not operate lighting for an area greater than 250m^2 except for single function spaces.

These lighting requirements do not apply to emergency lighting requirements or where lighting is required for 24 hours occupancy situations.

J6.4 Interior decorative and display lighting – not applicable

J6.5 Artificial lighting around the perimeter of a building

Artificial lighting around the perimeter of a building, must-

i. Be controlled by either a daylight sensor or a time switch in accordance with specification J6.
ii. When the total perimeter lighting load exceeds 100W, have an average light source efficiency of not less than 60 Lumens/W, or be controlled by a motion detector in accordance with Specification J6
iii. When used for decorative purposes, such as facade lighting or signage lighting, have a separate time switch in accordance with Specification J6

5.6.6 Water Supply (Part J7)

J7.2 Hot Water Supply

All hot water outlets must be fitted with a minimum 3 star water fittings, in this new section of the building.

Should ‘Zip’ type instantaneous water heaters be installed over sinks they must have time clocks installed.

5.6.7 Access for Maintenance (Part J8)

J8.2 Access for maintenance

Access for maintenance must be provided to al new services as they apply to this project, including-

- Time switches and motion detectors,
- Room temperature thermostats,
- Plant thermostats such as on boilers or refrigeration units,
- Motorised air dampers and control valves,
- Reflectors, lenses and diffusers of light fittings,

- Heat transfer equipment, and
- Adjustable or motorised shading devices.
- Plant that receives a concession under JV3(b) for the use of energy obtained from an Onsite renewable energy source or reclaimed energy

PART 6 STATEMENT OF COMPLIANCE

The design documentation as referred to in this report has been assessed against the applicable provisions of the Building Code of Australia 2012 and it is considered that such documentation complies or is capable of complying (as outlined above) with that Code.

Furthermore it should be noted that compliance with the Building Code of Australia may be achieved by either satisfying the Deemed-to-Satisfy provisions of the BCA or by formulating a performance based 'Alternative Solution' that satisfies the relevant Performance Requirements of the Building Code of Australia.

ANNEXURE A

Design Documentation

This report has been based on the following design documentation.

Architectural Plans Prepared by Cox Richardson Architects		
Drawing Number	**Revision**	**Title**
New Building		
ARC-NB-01-901	12	Cover Sheet
ARC-NB-11-910	04	Site Plan
ARC-NB-21-900	03	Ground Floor Plan
ARC-NB-21-910	05	Floor Plan - level 1
ARC-NB-21-920	04	Floor Plan – Level 2
ARC-NB-21-930	05	Roof Plan
ARC-NB-30-910	07	Elevations
ARC-NB-30-920	07	Elevations
ARC-NB-40-910	05	Sections
ARC-NB-40-920	05	Sections
Renal Dialysis		
ARC-RD-01-000	01	Cover Sheet
ARC-RD-14-000	02	Ground Floor Existing
ARC-RD-14-001	01	First Floor Existing
ARC-RD-14-003	01	Lower Ground Existing
ARC-RD-15-000	02	Ground Floor Demolition
ARC-RD-21-000	02	Ground Floor Proposed
ARC-RD-21-003	01	Lower Ground Floor Proposed
ARC-RD-30-001	02	North & East Elevations
ARC-RD-30-002	02	South & West Elevations
ARC-RD-30-004	01	South & West Existing Elevations
ARC-RD-40-001	02	Sections A-A, B-B, C-C
ARC-RD-40-002	01	Sections