Preliminary Infrastructure Planning Study for Kingaroy Hospital

Volume 1 of 2

July 2010

Please note:
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About this study

The Preliminary Infrastructure Planning Study for Kingaroy Hospital was commissioned by Queensland Health through the Project Services Department of Public Works on 28 May 2010. This study investigates future infrastructure for Kingaroy Hospital based on the options endorsed by Queensland Health’s Integrated Policy and Planning Executive Committee in April 2010.

This Preliminary Infrastructure Planning Study was undertaken from 28 May 2010 to 30 June 2010 and was prepared by consultants and sub-consultants under the direction of Queensland Health’s Planning and Coordination Branch. Every effort has been made by consultants and sub-consultants to investigate and document in sufficient detail—and within the timeframe—the infrastructure issues, gaps and requirements for Queensland Health in relation to Kingaroy Hospital future service provision.

Assumptions

The study has been prepared based on site inspections, discussions with Queensland Health representatives and previous reports made available by Queensland Health.

The option studies are based on the requirements for current and future projections contained in the Service Profile for Kingaroy Hospital (draft) provided by Queensland Health.
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1 Executive Summary

In April 2010 Suers Architects with a team of engineering specialist consultant was commissioned to undertake a Preliminary Infrastructure Plan for Kingaroy Hospital. The objective was to review the existing Hospital infrastructure and review its suitability for provision of services for the current and future expansion requirements for the Hospital based on the Services Profile up to 2021/22.

This included a site visit, review of existing reports and discussions with District and Queensland Health planning staff to prepare this report.

An audit of all existing buildings on site was undertaken to evaluate their existing physical condition and suitability for functions of the existing Hospital and future expansion plans in accordance with the Service Profile.

Although the Hospital was functioning adequately as a facility, because of the older age of the building stock it was found that the spaces and building services were generally found to lack compliance in the following areas:

- Current building regulations in terms of the Building Code of Australia (BCA), Disabilities Discrimination Act (DDA) and technical codes.
- The Australasian Health Facility Guidelines (AHFG) developed in recent times also meant most spaces were below the minimum sizes although occasionally some were larger.
- Service provision - A number of room types were also missing from departments as requirements have changed over time eg: Mental Health consulting room.
- Occupational and Health safety issues for patients, staff and visitors.

In general the Hospital evaluated in the study exhibited problems in terms of lack of space and facilities in the Emergency Department, lack of space, poor room sizes in Maternity and the need for more consultancy rooms generally.

A number of risks were identified. These risks cover building life, compromised patient care, fire, accidents, security, health and safety, disadvantages to persons with a disability, dissatisfaction, running costs, failure of building services systems and legal risks.

Each consultant visited the site and prepared a report detailing their findings and recommendations for action, these are contained in Volume 2. The findings have been summarised and compiled in the main body of the study.

The Assessment team comprised the following:

- Architects – Suters Architects
- Structural /Civil Engineers - Bornhorst and Ward
- Electrical/Fire/Mechanical Engineers – DMA Professional Engineers
- Hydraulic Engineers – MRP
- Quantity Surveyor/Building Surveyor/Access Consultant – Davis Langdon.

Following assessment of the existing infrastructure it was reviewed against the Service Profile requirements for future capacity of the Hospital. Upgrades to existing services such as electrical, fire, mechanical and hydraulic were determined. Plan layouts were developed to address current and future requirements of the Hospital. Options were developed based on minimum to maximum intervention to address the above.

Conceptual planning studies were developed.

Option 1 (status quo – minimum requirements) includes the minimal work to protect patient and staff safety, meet partial BCA requirements, meet minimum access codes, ensure Health Services are provided albeit in not an optimal manner. It excludes upgrade to AHFG.
The main advantages are that it is minimal cost and maintains Hospital operation. The disadvantages are that spaces generally do not comply with AHFG, insufficient space to meet the Services Profile and does not address most of the current problems in the existing infrastructure. The project cost is $3 – 4,000,000 (category 2 estimate level).

Option 2 provides for the extensive refurbishment of the main Hospital buildings to be compliant with current regulations. In addition there is expansion of the Emergency Department including new ambulance bays. New buildings include new Operating Theatres and recovery areas, New Maternity and Ward Building and a new Dental and Renal Building. Refurbishment of the existing Hospital includes new allied health and consulting fitout of the upper level of the Hospital, PWD facilities in the ward areas and new staff facilities to ground level of the existing Hospital. The main advantages are the re-use of existing building stock being less expensive than a new build Hospital, compliances with building regulations and the AHFG. It also provides an expanded floor area to meet requirements of the Services Profile. The main disadvantages are a less efficient layout due to reuse of existing buildings, possible latent building costs in refurbishing existing buildings and disruptions to the functioning of areas of the existing building as repair and/or strengthening works are carried out to the existing structure. The project cost is $31 - 38,000,000 (Category 2 estimate level).

Option 3 builds on Option 2 by continuing the proposal of a new Allied and Oral Health builds and Emergency Department expansion, but also provides a new build maternity, general wards, Operating Theatre and Renal Building. Once complete it allows for the Hospital administration to be relocated into the upper level of the main Hospital building. Also included is a consolidation of the support building to provide a more compact, easy access Hospital site. This will provide new build for all treatment facilities while continuing use of the majority of the existing infrastructure. This allows easy decanting of crucial services and cost effective refurbishment of the existing buildings. This also removes old building stock nearing end of life and all demountables while also providing code compliant access through the site. The project is $33 – 41,000,000 (category 2 estimate level).

Following review of the proposed options and options analysis was undertaken addressing the following issues: Rationale, benefits, risk, assumptions, criticality, resource implications and comparisons to the AHFG.

All proposed Options are viable from a construction perspective, however only Options 2 and 3 enable the realisation of service requirements as identified by Queensland Health and in accordance with current standards and guidelines.
2 Introduction

The Queensland Health Infrastructure Renewal Project for Rural and Remote Areas aims to define a rural model of health service delivery at specific service hubs across Queensland. Queensland Health have identified 12 rural health service hubs from where core health services will be provided—including service support to their associated health service partners (spokes).

Intrinsic to the Infrastructure Renewal Project for Rural and Remote Areas is the assessment of existing infrastructure, and identification of any subsequent infrastructure refurbishment or redevelopment requirements to adequately support identified rural health services.

The Preliminary Infrastructure Planning Study assesses the condition of the buildings and building services and the impacts on the delivery of health services for rural and remote Hospital sites in a number of ways including:

- inefficient and outmoded layouts
- lack of compliance with current building codes, accreditation and safety standards
- workplace health and safety issues
- staff recruitment and retention issues as a result of the work environment and staff accommodation
- Inability to provide the required health services due to the age and quality of facilities.

As part of the study, options have been developed to address identified risks associated with the condition of the infrastructure and gaps in service delivery resulting from inadequate or non-existent infrastructure.

2.1 Objective

The key objectives of the study are to:

- provide a brief review of the adequacy of existing infrastructure arrangements and facilities as it relates to the core service requirements
- identify options for the future development of infrastructure to meet the core service requirements
- develop concept plans and options costing including:
  - provision of a cost effective and efficient concept plan
  - identification of the capital cost impacts of the preferred option
- Undertake broad analysis across all options to assist Queensland Health determine a preferred option.
3 Study Context

3.1 Locality

Kingaroy is the largest town in the South Burnett and the region’s commercial centre, offering all the services, shopping facilities and many of the industries generally expected in much larger centres. The township is located approximately 210 kilometres or about 2½ hours drive north-west of Brisbane. The town is situated on the junction of the D’Aguilar and the Bunya Highways. Kingaroy has a population of 7,620.

Kingaroy is the hub for Hospitals in the South Burnett region. Other major Referral Hospitals in the West Moreton and Darling Downs Health Service District include Ipswich, Toowoomba.

3.2 Kingaroy Hospital Site

The Kingaroy Hospital is located on the corner of Youngman and Albert Street on the Northern edge of the township. The Community Health Care Unit is located in a detached building in the business centre of town on Glendon Street.

The Kingaroy Hospital site is positioned on a sloping site falling to the road. The buildings are spread around the site with large areas of unutilized land available to the rear.
3.3 Kingaroy Building History

The existing Main Hospital building was designed in 1938, and was designed as stage 1 of a multi stage building. The main building has seen minor extensions throughout its life to the rear of the Emergency Department and the kitchen area. A major extension occurred in the mid nineties with the construction of the ward block at the front of the main building.

Other main buildings on the site include:

- The Administration building which was built in the 1940’s and extended in the early 1980’s. It was originally constructed as the nurses quarters.
- The age care facility, Farr Home, was constructed in the early 1960’s originally the maternity ward.
- Old Farr Home, constructed in 1950’s as a nursing home with extension of mental health in the 1960’s. This building is currently the canteen and nurses break area although it is currently being vacated as it has been condemned.
- Dental demountable building constructed late 1990’s.
- Renal demountable building, located on site in 2009.
- Other ancillary buildings include the mortuary, stores, goods receiving, laundry, Red Cross, and maintenance workshop and offices that have been constructed throughout the life the Hospital.

3.4 Existing Built Environment

An audit was undertaken of the existing campus with comments noted below. Please also refer to accompanying concept drawings and detailed consultant reports contained in the appendix.

The existing Hospital buildings are all generally older stock and do not comply with access standards AS 1428.1 or the current BCA. This relates to doorways and clearances, PWD, ensuites and WC’s in general. A number of level changes are experienced throughout the Hospital complex generally linked with footpaths and covered ways.

A number of functional issues and workflow relationships are not optimum. The rooms generally do not comply with the AHFG. These are identified in detail in the Architects Report in Volume 2.

The existing building services, especially mechanical and electrical have a number of issues which need addressing and are generally non-compliant with current regulations.

The Downtown Community Centre building is a two storey building and has some compliant issues. It is generally in reasonable order. It does not have a lift or ramp access to the upper level.

The buildings are generally well maintained but have a variety of issues:

- Cracks in brick buildings, non-structural but unsightly and continuing to move with soil changes. (Refer concrete spalling report). There is rain egress from some of the parapet areas in the existing Hospital Building.
- Lack of suitable signage makes way-finding very difficult in a labyrinth of corridors.
- Some areas are without air-conditioning and/or fresh air. This is critical in Operating Theatre number 2.
- Some areas such as verandahs have been enclosed over time but not constructed correctly, allowing ingress of rain.
- BEMS buildings are generally in good condition but the office demountable is nearing end of life with the veranda needing to be removed due to deterioration.
• The existing Canteen/Staff Dining Room is proposed to be closed and not used.
• A number of the windows in the Administration Building and Old Hospital Building are unable to close fully allowing dust and rain to enter.
• Roof parapet flashing and some lower roofs of original Hospital Building is rusting and may cause future leaks.
• Visible termite damage to walls in Main Hospital Building.
• Dividing walls of showers in the Ward block are deteriorated and need replacement.

3.5 Kingaroy Hospital Maintenance Issues

Major maintenance issues highlighted by district staff are:

• Facade and Lintels cracking and concrete cancer - Main Building and Administration Building
• Large section of large lintel fallen out near main walkway
• Sections of lintels outside maternity and allied health are blown/blowing out and could be a potential hazard to anybody walking below
• Concrete cancer on Administration Building also potential hazard to people below
• Cracking outside Allied Health Administration is letting rain water into office through the ceiling - exterior cracking appears to have been sealed sometime ago but has re-opened
• Some drumminess evident in places inside building. Some cracking in walls evident inside building i.e. in birth suite storage room
• External paint needs redoing as a part of repairs
• Asbestos throughout buildings
• A number of building extensions and refits that have occurred over the years leaving old fittings, pipe work, cabling etc that has not been properly decommissioned or removed.
• Roof on main building is getting corroded particularly the gutters
• Ceilings in Level 1 of the Administration Building and level 2 of the Hospital Building need repainting
• Water leak in Emergency Department treatment area
• Sunken floor in Emergency Department treatment area
• Damage to wall in Mental Health consulting room of the Emergency Department
• Number of cracks in wall out of the front of Pharmacy
• Cracking in vinyl floor of Oral Health demountable buildings
• Cracking between modules of Renal demountables buildings
• Allied health area of upper level of Hospital Building in poor condition with damage to walls, cracking and general repaint required
• Unable to shut window in public toilet of the upper level Hospital Building
• Movement of Fire Stairs near CSSD and Birth Suite away from main building. Fire stairs appear not to be pinned to main building.
• Access under Main Hospital Building and Administration Building is very difficult due to nature of construction, builder’s rubble, extensive data and power runs under the floor, and areas of friable asbestos that have not been cleaned up and would be difficult to do so.
• Access to roof space due to lack of any roof safety systems (fall restraint)
• Poor circuit ID, very limited earth leakage protection, cracked bus-bar insulation and full electrical switchboards throughout.
• Air conditioning to Major Operating Theatre does not have enough air changes and does not have compliant HEPA filtration.
• Air conditioning to recovery has asbestos in the thermal insulation around the heater bank and has been isolated so it cannot be used
• Main hot water ring main is corroded and urgently needs to replacing
• Town water has a high TDS and Calcium content and is very corrosive to all equipment that comes into contact with it.
• Current water softeners serve very little of the Hospital
• Poor hydrant pressures
• Some cracking in Canteen area of Old Farr Home noted in original July 2008, Baker Rossow Report.
• Deteriorating asbestos floor tiles throughout Old Farr Home Pricing from QBuild for removal of tiles requested
• Deterioration of timber decking and inside gutter on ground floor of Administration building.

3.6 Kingaroy Hospital Development Proposals
Queensland Health has advised that the current Works that have funding approval are:
• Currently the District is proposing to provide a new lift. There are ongoing discussions regarding access on upper level and the impact on ED storage on the ground floor
• A concrete spalling report on existing slabs and sunhoods has been prepared with remedial action recommended
• A new demountable has been located on site to the east of the existing Administration Building.

3.7 Site Constraints
3.7.1 Heritage Issues
Part of the original Hospital building and the Administration building has been heritage listed. A report is available.
The Downtown centre is not heritage listed.

3.7.2 Town Planning/Designation issues
The Main Hospital site is currently not a designated site and consequently requires a Development Approval for works from the local council.

3.8 Consultation
Consultation was undertaken with district staff, Queensland Health Offices and Project Services Department of Public Works Offices.
4 Health Service

4.1 Design and Functionality of Current Facility

The Main Hospital was built in the 1940’s and 1980’s on two levels. Additional ward wing has been added together with ancillary buildings to the north and east. A two storey Administration/Allied Health Building is located to the southeast. There has been some refurbishment over time however the spaces are generally undersized compared to contemporary building standards and facility guidelines.

The buildings need to be refurbished to upgrade to current standards and expanded to meet the larger room sizes required. In addition the buildings need to be expanded to accommodate the increase in service provision envisaged by Queensland Health. The accommodation of services within existing buildings and on enclosed verandahs has also impacted adversely on the efficiency of functional layouts in some departments.

Current Health Services are listed below:

- Emergency Department
- Maternity
- Paediatrics
- Medical and surgical (including palliative)
- Chemotherapy
- Renal Dialysis
- Allied Health
- Dental
- Operating Theatres

4.2 Future Health Services

The table below provides projected beds from 2006/07 to 2021/22 for Kingaroy Hospital. Kingaroy Hospital bed requirements are projected to increase from 43 beds in 2006/07 to 62 in 2021/22. This information has been provided by Queensland Health.
The following table shows current and future bed requirements for Kingaroy Hospital. They are categorised according to definitions in the Review of the More Beds for Hospital Strategy including overnight beds (medical/surgical beds, maternity and paediatric beds), same day beds and bed alternatives (Attachment C). Projections shown in Category A are based on data used in the South Burnett Health Service Plan, June 2008 (not endorsed).

Table 1: Current and future bed requirements for Kingaroy Hospital (Bed projections)

<table>
<thead>
<tr>
<th>Item</th>
<th>Current</th>
<th>Projections: From South Burnett Health Service Plan, June 2008</th>
<th>2011/12</th>
<th>2016/17</th>
<th>2021/22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category A: Beds</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>A1. Overnight Beds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overnight beds including:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• medical and surgical (incl. palliative)</td>
<td>33</td>
<td>70%</td>
<td>34.8</td>
<td>37.8</td>
<td>41.1</td>
</tr>
<tr>
<td>• paediatric</td>
<td>4</td>
<td>70%</td>
<td>2.0</td>
<td>1.8</td>
<td>1.6</td>
</tr>
<tr>
<td>• maternity</td>
<td>4</td>
<td>70%</td>
<td>4.9</td>
<td>4.3</td>
<td>3.8</td>
</tr>
<tr>
<td>• mental health - acute</td>
<td>N/A (included in medical beds)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>• sub- and non-acute (GEM)</td>
<td>N/A (included in medical beds)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>• Emergency Department short stay</td>
<td>N/A</td>
<td>90%</td>
<td>6.4</td>
<td>8.5</td>
<td>11.1</td>
</tr>
<tr>
<td>• ICU/PICU/HDU</td>
<td>N/A</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>• CCU</td>
<td>N/A</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>• neonatal (NICU/SCN)</td>
<td>N/A</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>• mental health - non-acute</td>
<td>N/A</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Total overnight beds</td>
<td>41 multi-purpose beds</td>
<td>48.1</td>
<td>52.4</td>
<td>57.6</td>
<td></td>
</tr>
<tr>
<td>A2. Same Day Beds*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Same day beds including:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• medical (including obstetrics, paediatrics and oncology / chemotherapy)</td>
<td>2.8</td>
<td>3.4</td>
<td>4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• surgical (including obstetrics and paediatrics surgery)</td>
<td>N/A</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>• mental health</td>
<td>N/A</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>• sub- and non-acute</td>
<td>N/A</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total same day beds</td>
<td>2.8</td>
<td>3.4</td>
<td>4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3. Bed Alternatives*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 2 recovery bays (chairs)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure Stage 2 recovery chairs and same day beds are not double-counted: often same item in rural hospitals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antenatal Day Assessment Unit chairs</td>
<td>N/A (assumed level of activity does not warrant these chairs)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Chemotherapy chairs / trolleys</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(data will show levels of activity for chemo, but District needs to inform numbers of chairs required according to numbers of chemo cases scheduled for visiting oncologist)</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Renal Dialysis chairs / trolleys (self care)</td>
<td>6 chairs, two sessions/day, three days per week utilising 4 chairs</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>(renal dialysis benchmark currently being finalised TBA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Department chairs / trolleys</td>
<td>Part of ED treatment space numbers – refer category B below</td>
<td>Part of ED treatment space numbers – see category B below</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(For admitted patients that require a brief period of observation. Not counted in overnight beds and not considered as short stay beds)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total bed alternatives</td>
<td>6</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Totals for Category A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total A1 Overnight beds</td>
<td>41 multi-purpose beds</td>
<td>48.1</td>
<td>52.4</td>
<td>57.6</td>
<td></td>
</tr>
<tr>
<td>Total A2 Same day beds</td>
<td>0</td>
<td>2.8</td>
<td>3.4</td>
<td>4.1</td>
<td></td>
</tr>
<tr>
<td>Total A3 Bed alternatives</td>
<td>6</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Total beds</td>
<td>47</td>
<td>56.9</td>
<td>61.8</td>
<td>67.7</td>
<td></td>
</tr>
</tbody>
</table>
Table 1 continued: Current and future bed requirements for Kingaroy Hospital

<table>
<thead>
<tr>
<th>Item</th>
<th>Current number</th>
<th>2011/12</th>
<th>2016/17</th>
<th>2021/22</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category B: Emergency Department treatment spaces</strong>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Further details, see Table 2, page 4</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>• Emergency bays (observation areas) for Triage Categories 1–3</td>
<td>1 resuscitation room with three trolley spaces for Triage Category 1–3</td>
<td>1 resuscitation cubicle with two trolley spaces for Triage Category 1</td>
<td>No further change expected, based on current and projected activity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(can be used for observation bed for Triage Categories 2–3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Consultation rooms for Triage Categories 4–5 (excludes treatment, plaster and eye rooms)</td>
<td>4 consultation rooms</td>
<td>9</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Total emergency treatment spaces</td>
<td>7</td>
<td>15 Based on the South Burnett District Plan</td>
<td>16 Based on the South Burnett District Plan</td>
</tr>
<tr>
<td><strong>Category C: Operating/Intervention Rooms using Victorian Benchmarks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical imaging</td>
<td>1 x-ray room</td>
<td>No change expected, based on current and projected activity</td>
<td>(may require capacity for additional x-ray room and CT scanner)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 ultrasound room</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Theatre – major (1100 overnight surgical separations per theatre)</td>
<td>1 major theatre (currently no visiting surgical specialists except FOG, and does not comply with the Australasian Health Facilities Guidelines*)</td>
<td>No further change expected, based on current and projected activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Theatre – minor (1900 same day surgical separations per theatre)</td>
<td>1 minor theatre</td>
<td>No further change expected, based on current and projected activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 1 recovery (less than 4 theatres). Requires 2 recovery bays per Operating Theatre</td>
<td>2 (currently requires 4)</td>
<td>4 Stage 1 Recovery Bays</td>
<td>No further change expected, based on current and projected activity</td>
<td></td>
</tr>
<tr>
<td>Treatment procedure rooms/delivery suites</td>
<td>2 delivery suites (located separately from other maternity services)</td>
<td>2 delivery suites</td>
<td>No expected, based on current and projected activity</td>
<td>(additional delivery suite may be required)</td>
</tr>
<tr>
<td>(250 births per room &lt; 300 separations) + antenatal consultation room</td>
<td>2 antenatal treatment/procedural/assessment room (could be used as a third delivery suite)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternity / women’s health / gynaecology consultation rooms + antenatal consultation room</td>
<td>3 consultation rooms</td>
<td>1 child-friendly waiting room</td>
<td>No further change expected, based on current and projected activity</td>
<td></td>
</tr>
<tr>
<td>Well Baby nursery cots (1 nursery cot per 3 obstetric beds)</td>
<td>2 cot spaces + 1 resuscitation bay/cot for back transfers/low risk qualified babies</td>
<td>No change expected, based on current and projected activity</td>
<td>(may require additional cot space if births increase)</td>
<td></td>
</tr>
<tr>
<td><strong>Category D: Consultation/Treatment/Procedure Rooms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multipurpose consultation rooms (ambulatory care), includes specialist and general practice, excludes Emergency Department activity</td>
<td>4 specialist rooms upstairs near theatres, ED consult rooms are used if necessary (minimum of 7 consult rooms required for specialist visits) Primary care clinics use ED consult rooms.</td>
<td>7 minimum, to meet demand for visiting specialist visits (As there are no visiting surgeons currently this is an underestimation. In addition more consultation rooms would be required for primary care clinics)</td>
<td>No further change expected, based on current and projected activity</td>
<td></td>
</tr>
<tr>
<td>Allied health areas</td>
<td>(data not available)</td>
<td>(data not available)</td>
<td>(data not available)</td>
<td>(data not available)</td>
</tr>
<tr>
<td>Investigation rooms</td>
<td>- N/A</td>
<td>- N/A</td>
<td>- N/A</td>
<td>- N/A</td>
</tr>
<tr>
<td>Total consultation/treatment/procedure rooms</td>
<td>4</td>
<td>7 minimum</td>
<td>7 minimum</td>
<td>7 minimum</td>
</tr>
</tbody>
</table>

Data source: aIM data using medium series projections and Queensland Health Admitted Patient Data Collection (April 2010)

*Definitions applied from More beds for hospitals – need reference

**Victorian Benchmarks applied – need reference
Table 2 shows Emergency Department treatment spaces required at Kingaroy Hospital. In rural hospitals a core number of Emergency Department treatment spaces are required regardless of the level of activity, despite the majority of Emergency Department presentations being Triage Categories 4–5. Rural hospitals must have the capacity to manage patients presenting in all Triage Categories. This means that the range of treatment spaces essential for emergency patient care may be in excess of the activity-based requirements.

In rural facilities treatment spaces can be used for a number of purposes. To reflect this, the left-hand column of the table identifies a core set of Emergency Department treatment spaces required for rural and remote hub hospitals with associated benchmarks to be applied. The right-hand column shows current requirements for Kingaroy Hospital based on the core set of Emergency Department treatment spaces required.

<table>
<thead>
<tr>
<th>Treatment spaces required for rural and remote hub hospitals</th>
<th>Existing spaces at Kingaroy Hospital</th>
<th>Needs met?</th>
<th>Current treatment spaces required by Kingaroy Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triage room/desk. Requires clear view of waiting area (to categorise triage patients)</td>
<td>1 triage room/desk, with inadequate view</td>
<td>☒</td>
<td>1 triage room/desk with clear view of waiting area</td>
</tr>
<tr>
<td>Central staff desk/computer space. Requires clear view of Emergency treatment spaces</td>
<td>1 central desk/computer space, with inadequate view</td>
<td>☒</td>
<td>1 central staff desk/computer space, with clear view of emergency treatment spaces</td>
</tr>
<tr>
<td>Emergency treatment spaces including:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ resuscitation space (1 resuscitation space required per 500 Triage Category 1 presentations)</td>
<td>1 resuscitation room with 3 trolley spaces for Triage Categories 1–3</td>
<td>☒</td>
<td>1 resuscitation space with two trolley spaces for Triage Category 1, with clear view from central staff desk required</td>
</tr>
<tr>
<td>▪ isolation and decontamination (1 room per 10,000 attendances - to be subtracted from total treatment places)</td>
<td>0</td>
<td>☒</td>
<td>1 isolation/decontamination room required</td>
</tr>
<tr>
<td>▪ psychiatric treatment space, requires 2 entry/exit doors (multipurpose room able to be used for mental health purposes)</td>
<td>1 consulting room (used for this purpose but does not meet guidelines for use)</td>
<td>☒</td>
<td>1 psychiatric treatment space</td>
</tr>
<tr>
<td>▪ consult/treatment room</td>
<td>5 consultation rooms</td>
<td>☒</td>
<td>11* (13,748 /1300 ACEM ED presentations Triage Categories 1–5)</td>
</tr>
<tr>
<td>▪ examination room</td>
<td>1 treatment room</td>
<td>☒</td>
<td>(13 by 2021/22)</td>
</tr>
<tr>
<td>▪ procedure and interview room (with telehealth facilities available)</td>
<td>1 procedure room 1 interview room</td>
<td>☒</td>
<td>(1 additional consultation rooms required by 2021/22)</td>
</tr>
<tr>
<td>Plaster room</td>
<td>0 (currently use mobile trolley)</td>
<td>☒</td>
<td>1 plaster room</td>
</tr>
<tr>
<td>Paediatric spaces (No requirement for a separate paediatric area until there are &gt; 16,000 presentations)</td>
<td>0</td>
<td>☒</td>
<td>0 (included in total emergency spaces*) (1 paediatric space required by 2021/22)</td>
</tr>
<tr>
<td>Clean and dirty rooms, utility rooms, and patient, public and staff toilet/bathroom facilities</td>
<td>0 (currently dirty/ utility rooms and storage located outside hospital building)</td>
<td>☒</td>
<td>As per requirements in the Australasian Health Facilities Guidelines*</td>
</tr>
<tr>
<td>Waiting room chairs (3 seats per patient treatment space)</td>
<td>30</td>
<td>☒</td>
<td>33 waiting room chairs (11 Emergency treatment spaces x 3) (39 required by 2021/22)</td>
</tr>
</tbody>
</table>

Total emergency treatment spaces
(1 emergency treatment space per 1300 ED presentations (all ages) – allocated from total spaces for CSCF Levels 1–5)

11* (13,748 /1300 ACEM ED presentations Triage Categories 1–5) (13 by 2021/22)

*For patients requiring a brief period of observation, excludes short stay ward beds and ED treatment bays for non-admitted patients (More Beds definition)
4.3 Infrastructure Gaps

The Main Hospital is functioning in the existing facility however not optimally as there are significant issues in relation to conditions and lack of facilities generally and in a number of departments:

Refer to the table in the next section that compares the current facilities with the projected requirements.

Emergency Department

- The triage cannot view the waiting area
- The waiting area is undersized
- Lack of consultant rooms
- Lack of NUM’s office (currently in a consulting room)
- Main treatment area is very cramped and undersized especially the resuscitation bay
- Narrow corridors within the clinical areas
- Lack of storage for trolleys and equipment
- Storage located outside of the Emergency Department
- No room for relatives
- Inadequate staff station, too small
- Inadequate size and number of bays
- Only one ambulance bay
- No secure room
- No isolation room

Maternity

- No maternity bedrooms – housed in general ward
- Lack of ensuites
- No ante-natal area
- Inadequate birthing suite
- Existing bathrooms very poor condition, too small and layout

Allied Health

- Located in an adhoc manner throughout the building, very cramped conditions
- External corridor access to some areas
- Inadequate sized rooms
- Over-crowded office areas
- Lack of consulting rooms
- Inadequate sized waiting area
- Signage inadequate (general Hospital comment)

Kitchen

- Ok in size, could be reduced in size

Dental Health

- Cramped facilities.
• No room for required expansion

Wards
• No secure room
• Lack of toilets
• Lack of storage
• Mainly 4 bed wards, some singles
• Remote from Operating Theatres, on different floor level

Theatres
• One Operating Theatre too small compared to AHFG
• Neither have cardiac protection
• Inadequate size for recovery stage 1
• No stage 2 recovery nearby
• No waiting area for outpatients
• On upper level compared to ward areas
• New lift access required

Administration building
• Poor pedestrian access
• No PWD access to upper level
5 Inspection Reports

5.1 Method

In conjunction with our consultant team, Suters Architects have undertaken a review of the available drawings of the buildings on campus, an inspection of the buildings on site and discussion with Queensland Health staff to assess current issues and future requirements.

Site inspections were undertaken on 14, 15 and 16 April 2010 by the following consultant team.

Architects     Suters Architects
Structural and Civil engineers   Bornhorst Ward
Electrical and Mechanical engineers  DMA professional engineers
Hydraulic Engineers    MRP
Building surveyor and Access consultants Davis Langdon

5.2 Exclusions

Areas of the buildings were inspected which were visible from normally accessible positions from the ground or floor level, permanent stairways, ladders etc. No ceiling areas were opened up or claddings removed to view the concealed structure behind.

The interiors and exteriors of all buildings were inspected with the exceptions of the Staff Accommodation, the Gas Enclosure, the Switch and Plant room and the Fire Pump House where only the exteriors were viewed.

5.3 Overlap

There is some overlap between building specialist reports, where the same problem has been identified by different specialists. This generally occurs in fire upgrade requirements and the building fabric. The cost for rectification of identified issues has only been allowed for once.

5.4 Current Site and Infrastructure Condition

This section summarises and identifies the main issues as highlighted within the building specialist’s assessment of existing infrastructure and provides a brief outline of current site and infrastructure condition. Refer to the Volume 2 for more detailed information from specialist consultant reports.

The buildings on the Main Hospital site are generally well maintained but have a variety of issues:

- The existing Hospital buildings are all generally older stock and do not comply with access standards AS 1428.1 and the DDA. Upgrades are required to doorways and clearances, PWD, ensuites and WC's in general. A number of level changes are experienced throughout the Hospital complex.
- The existing Hospital buildings do not comply with the current BCA. This especially relates to fire egress and fire fighting equipment.
- The buildings also do not generally comply with AHFG space requirements, although in the main are functional although not ideally planned.
- With the exception of the Old Farr Home and the car port east of the Administration Building, the majority of all other buildings were in a reasonable structural condition with the majority of the buildings only having minor cracking due to foundation movement.
The Main Hospital Block has issues with concrete spalling and termites that need to be addressed immediately.

Concrete spalling is seen to the Main Hospital Block and the Administration / Community Health buildings.

Movement to the northern wing of the Main Hospital Block.

The roof truss issue in the Old Farr Home.

Wall cracking to the Old Farr Home.

Differential movements between the footpath and entry ramp and the entry ramp and existing building.

It is recommended that all advice and outcomes from previous structural reports and subsequent discussions are fully addressed and implemented.

From a structural perspective, with the exception of the Old Farr Home and the car port east of the Administration Building, there was no issue that would prevent any building on site from being re-used, refurbished, reconfigured or expanded so long as the alternate uses are within the load capacities of the original buildings.

With the mechanical services the majority of wall mounted and cassette in-ceiling split package air conditioning units do not have provision for outdoor air introduction with an age varying from months to 15-20 years.

The limited ducted air conditioning systems throughout the site similarly vary in age and condition due to staged installation and replacement, varying from months to 15-20 years.

The Operating Theatre area comprising the operating theatre, sterilising room, staff offices, staff room, store and scrub room is provided with an antiquated air conditioning system and although operational is not truly fit for purpose and non compliance with current regulations is a given.

The Operating Theatre mechanical services system comprises of a direct expansion air handling unit, open drive compressor set, and external air cooled condenser and interconnected refrigeration system located within a plantroom above the theatres. No pressure gradients or discretion exists between the various areas served, minimal outdoor air introduction exists, and supply air is via side discharge diffusers at high level with return air from high and low levels. No terminal HEPA filters exist however a HEPA filter has been retrofitted to the system within the supply air duct within the plantroom.

The Operating Theatre recovery room is served by a dedicated air condition unit located within the plantroom over, however this system is decommissioned, understood to be due to asbestos heater bank linings.

The minor operating theatre is provided with a wall mounted split air conditioning unit only. No outdoor air or extraction is provided to this room. The tundish that collects condensate from the air conditioning unit is located within the room. It is non compliant with current regulations.

The installation of external condensing units in accessibly difficult areas is a genuine issue as many are installed on ledges or rooves which present a health and safety risk to access them for maintenance or repair.

The kitchen cold room refrigeration system is in good order, with the compressor being replaced recently. The kitchen freezer room refrigeration system has been replaced totally within the last few months.

The kitchen exhaust canopy serves an area approximately 4 times larger than required due to changes in the kitchen usage over time. A defunct dishwasher exhaust hood exists where a previous dishwasher existed. There is no exhaust canopy serving the current dishwasher.
• Medical gases systems comprising Medical Suction, Venturi Suction, Medical Air, Oxygen and Nitrous Oxide are present throughout the Hospital. The alarm panels in the original sections of the main building are very old and are questioned as to whether they are functioning correctly. Alarm panels to the refurbished Outpatients and Emergency Department are of the electronic type Multegas Alarm system as manufactured by BOC. The suction system to the Operating Theatres is a venturi suction system and not a more conventional vacuum suction system.

• Other than the alarm panels, the medical gas systems appear to be satisfying the Hospital's current needs.

• The lift is a very old cable operated lift and should be replaced with a modern lift to provide an acceptable level of reliability and safety in operation as recommended in the previously prepared lift report.

• The air conditioning units to the Downtown Community Health Centre are in fair to good condition. The majority of the external condensing units are mounted off the rear building wall at a height of approximately 4 metres which makes maintenance access difficult.

• The existing Hydraulic Services infrastructure for the Hospital is generally in reasonable condition with the rainwater harvest system been recently upgraded with new filtration system and pumps been installed.

• The major concern is that the town reticulated water is unsuitable for potable use at the Hospital. The backup plan should there be insufficient rainfall, is to truck water from Gympie would seem to be problematic.

• The house drainage system is understood to be operating successfully with no ongoing problems with sewerage blockages and the like.

• In the Main Hospital the existing mains cables might be undersized as they are not installed as per supplied drawings. Only four (4) existing cables rather that 7x240mm SQ PVC/PVC was identified as documented. As a result there might be limited electrical spare capacity for future expansion.

• Distribution boards throughout the Hospital and remote buildings generally have limited space capacity and have compliance issues with current regulations. In particular cracked busbars, extent of RCD protection, surge diverters, and locations in passageways and clearances.

• An upgrade to existing ground 500KVA (670 A 3-phase) transformer should be considered since transformer current load is close to maximum capacity.

• Body protection electrical systems are provided in some areas of the Hospital. No cardiac protection is provided.

• Lighting levels are below standard in some interior spaces and the use of clinical observation lamps is contrary to lighting codes in many areas. External lighting level is poor and presents security and safety issues.

• Exit and evacuation lighting is provided to most areas. There are numerous anomalies with current codes such as testing facilities, spacing, pictogram diagrams and directional signage.

• The voice and data system is distributed extensively throughout the Hospital via fibre optic and copper backbone cabling to equipment racks within the Hospital buildings and most remote buildings. There is insufficient spare capacity in central communication room and room size is below current standard.

• CCTV and after hours intercom system have limited coverage.

• The duress system requires upgrading to current AHFG and extension to include more buildings.
• The Hospital is provided with non-addressable thermal and smoke detection system. Manual call points are provided in most of the Hospital buildings. Many remote buildings have no manual call points (like Morgue, Workshop, and Engineering office). Consideration needs to be given in providing full detection to all remote buildings.

• In the Downtown Community Health Building Glendon Street, the building distribution board is in poor condition and should be replaced immediately. There is concern about public safety because distribution board life parts can be easily exposed (DB door is not secure). The uses of rewireable fuses are outdated and it is illegal to install them under current standards. Fire detectors spacing and provision are to be upgraded to code requirements. The building does not have fire alarms and further investigation will be required by the Certifier.

5.5 Building Viability

The Hospital buildings are in a reasonable condition but are showing signs of physical deterioration of the building fabric and are in need of maintenance upgrade to extend their usable life.

This is especially evident in the Electrical and Mechanical services areas where maintenance and replace of old equipment is needed urgently as old equipment will potentially fail, replacement parts become difficult and current safety regulations are not met.

The following issues related to the physical conditions of the Main Hospital infrastructure should be addressed to extend its useful life and ongoing operation:

• Undertake works prescribed in report "Kingaroy Hospital Concrete Lintel/Facade Repair to Main Hospital Building and Administration Building" outlining the issues with the parapet and sun awnings.

• Undertake regular termite inspections and eradication. Visible areas of termite damage should also be repaired.

• Service and repair existing windows to ensure a tight seal when closed to prevent water and dust ingress.

• Parapet capping, roof flashing and some balcony roof sheeting are near end of life and should be replaced before water ingress occurs.

• External painting of the building should take place to preserve the facade fabric from further deterioration.

• Dividing walls of showers in Ward block are deteriorated and need replacement.

• Some areas such as verandahs have been enclosed over time but not constructed correctly, allowing ingress of rain.

• Around the North West end of the CSSD several large cracks were present in the external walls and there was a noticeable fall on the floor suggesting a localised area of foundation settlement.

• Spalling concrete to external sunshades and awnings on the Main Hospital building and the Administration/Community Health Building is a problem, but once rectified, those elements should continue to perform their intended functions safely.

• Some termite damage was present in the Main Hospital Building and this should be addressed and rectified immediately.

• The majority of the cracking in the buildings is a result of foundation movement which will continue due to the nature of the supporting ground. With proper maintenance and localised repairs, where required, the buildings should continue to perform their intended structural functions.

• The Hydraulic Services are in reasonable condition based on visual inspections and existing records made available.
• The local council water reticulated to site is not suitable for potable water use. Rainwater is collected and stored for this purpose, but has the problem with supply when insufficient rain to meet demand.

• The majority of the mechanical plant and equipment is original and is approximately 30 years old. Despite the age of the building and systems, relatively little modifications have taken place and the plant is in fair to good condition, and in general terms is operating satisfactorily and is meeting the general needs of the Hospital, however this does not comply with current regulations, codes or guidelines.

• All mechanical systems currently operate on refrigerant R22 which is to be phased out in coming years, at this stage most likely between 2014 and 2016, which would require replacement. If significant alterations to the building use and functionality are implemented or areas refurbished generally, it would be prudent to replace systems as part of these works to achieve compliance and to provide longer life expectancies. An additional life expectancy of 5 to 10 years is foreseeable whilst carrying out an appropriate level of maintenance and replacement or refurbishment of system components as they deteriorate or fail.

• The Main Hospital and ancillary buildings are predominantly stand alone split system type air conditioning units without outdoor air introduction will continue to serve the occupied spaces until a major refurbishment or upgrade is done to the building, or parts of the building. It is expected that code complaint systems would be installed with outdoor air introduction at that point. In the absence of a refurbishment or upgrade, it would be expected that as individual systems or components fail, that they will be swapped out with like systems, extending the life expectancy for in the order of 10 to 15 years, however not addressing system non-conformances.

• External condensing units that are installed in unsafe positions need to be relocated to ensure safe maintenance access exists.

• Ergon electrical supplies comprise one transformer sub stations. The economic life of this equipment is subject to Ergon appraisal.

• The generator and site main switchboard have been recently installed and they are in good condition.

• Distribution boards in many buildings including Hospital Main Building and Administration Building are close to service life expectancy. Replacing distribution boards should be considered.

• A heat issue with some distribution boards that require immediate attention to resolve this issue.

• Replacing the existing body protection with cardiac protection should be considered as this protection is outdated.

• Fire detection system is not providing suitable protection to all required areas throughout the Hospital Building. Some Hospital areas have no reasonable protection at all.

• Central communication room is close to maximum capacity and cannot handle new IT based services. Recommendation to extend communication room should be adopted.

• Security system function and coverage are minimal. More attention to Hospital security should be considered.

• CCTV, Intercom and Duress systems are limited in their usage but in reasonable condition.

The following issues related to the physical conditions of the Community Health Building at Glendon Street should be addressed to extend its useful life and ongoing operation:

• The distribution switchboard should be replaced as detailed herein.

• Lighting in poor condition and should be upgraded

• Fire alarm system should be upgraded to current standards.
• The air conditioning systems to the Downtown Community Health Centre will continue to serve the occupied spaces, aside of temperature problems to the first floor. The life expectancy of various systems is in the order of 8 to 12 years, depending on operational hours.

Issues with other buildings on site:

• The Old Farr Home building has been condemned due to structural issues with the roof. Temporary propping of the roof structure has taken place. The building was supposed to be vacated late 2009 but is still in use.
• Maintenance and engineering office demountable is nearing the end of life and a permanent solution should be sought.
• The medical records and pharmacy storage building is nearing end of life with roof sheeting and internals deteriorating. Provision should be made for this building to be refurbished or replaced. Trolley access to the Hospital is poor due to having to travel along the service road.
• The laundry building, although structurally sound, has significant sealing issues and finishes are in a poor condition. Trolley access to Hospital is poor due to having to traverse service road.
6 Current risks

6.1 Introduction

The risks have been identified based on compliance with the following:

- Australasia Health Facility Guidelines
- Building Code of Australia 2009 (BCA)
- Queensland Health Guidelines
- Relevant Australian Standards and technical codes.

6.2 Building Life

The following risks associated with the deterioration of the buildings and site works that affect the life of the buildings are:

- Water ingress through the failure of the roof parapet and roof flashing of the Main Hospital building
- There are signs of termite damage to walls in the Pharmacy waiting area. It is understood that baiting and monitoring is taking place which needs to be maintained/stepped up to prevent any further damage
- Timber elements may become more susceptible to rot or termite attack. Load bearing timber elements were not inspected during the inspection as they were concealed by claddings or in inaccessible locations
- Evidence of termite attack was present in an architrave and the floor in one area of the Hospital was “spongy” most likely due to termite attack. It is recommended that the floor area is investigated as a matter of urgency and rectified to reinstate its structural capacity. To mitigate the risk of likely damage to rot or termite attack, a thorough inspection of representative areas of the various timber elements should be undertaken to assess their condition. Such an inspection will involve opening up areas to allow access to the floors.
- Repair drummy render in walls of Old Hospital Building and the Administration Building
- Floor in Emergency Department has sunk. This should be investigated and repaired
- The Old Farr Home building has been condemned due to structural issues with the roof
- The Maintenance and engineering office demountable is deteriorated and nearing the end of life
- Corroding reinforcing steel within concrete elements and the resulting concrete spalling could reduce the strength of structural elements and cause injury to building users
- Spalling concrete was present on some external sunshades and awnings on the Main Hospital Building and the Administration/Community Health Building and is the subject of several reports prepared for the Hospital. It is recommended that all advice and outcomes from previous reports and subsequent discussions are fully addressed and implemented
- Generally, the depth of carbonation of the concrete, which leads to reinforcing steelwork corroding, was not measured during the course of our inspection
- Extensive testing would be required to determine the extent of carbonation on reinforced elements across the site in order to provide an accurate state of the existing buildings, the risk of spalling and hence likely remedial actions, which would
involves removal and reinstatement of concrete areas with a high probability of spalling in the future

- The potential for spalling in the non-repaired areas will increase with time, so additional repairs to those areas may be required in the future
- Salt attack to external bricks and mortar could lead to a loss of strength in structural elements incorporating those elements. Areas of salt attack were present in the Laundry building. Mitigation strategies could include installation of moisture barriers, prevention of contact with bore water through the control of landscape sprinkling or application of render to affected walls or by removing and replacing the affected bricks and mortar. If moisture is not prevented from contact with the masonry walls, the degradation will continue. Once the moisture has been removed and badly affected areas removed and reinstated, the masonry elements should continue to perform their intended function.
- Corroding structural steelwork could reduce the strength of structural steel elements causing greater than expected deformations within or collapse of those members and associated collateral damage to neighbouring portions of the building
- Minor corrosion is present throughout the campus, but did not witness any steel sections in danger of collapse in the near future. Mitigation strategies would involve the cleaning of the steelwork to remove the corroding areas and then the application of a suitable protective paint system. Provided this is done thoroughly, the steel should continue to perform adequately
- The Hydraulic Services fixtures, fittings, pipework etc will need to be maintained and replaced as necessary to maintain the system and site conditions. Based on our site inspections general maintenance has been ongoing and depending on the future use of the facilities the base back bone Hydraulic Services systems will be suitable in the short to medium term.

6.3 Compromised Patient care (due to infrastructure inefficiencies)

The existing Hospital buildings are all generally older stock and do not comply with access standards AS 1428.1 or the current BCA. This relates to doorways and clearances, PWD, ensuites and WC’s in general. A number of level changes are experienced throughout the Hospital complex generally linked with footpaths and covered ways.

The Downtown Community centre building is a two storey building and has some compliant issues. It is generally in reasonable order. It does not have a lift or ramp access to the upper level.

The following risks associated with Patient care due to infrastructure inefficiencies:

- Emergency Department is not large enough and there is a lack of a mental health consulting room
- Toilets in the wards are not large enough for wheelchairs or assistance
- No Person with disability showers are available in the wards
- The Monitored Care Ward is the old Paediatrics ward and has only child height amenities
- Operating Theatres are body protected not cardiac protection as per health code requirements
- Level change between Maternity Ward and birthing suites
- Insufficient space in Ward block to provide an adequate patient lounge
- Sanitary facilities are undersized, cramped and fixtures located within circulation spaces providing difficulty with patient manoeuvrability and transfers
- There are no sanitary facilities for patients with disabilities
• There are no sanitary facilities for people with disabilities provided to the dental clinic and community health
• Lift is slow and does not level out and the buttons are inaccessible.

6.4 Fire risks
The following Fire risks associated with current buildings at the Hospital site are:

• Fire and smoke walls have been breached by penetrations.
• Fire hydrant system deficient in relations to pressure and flows.
• Fire hoses reels installed to high.
• Paths of travel compromised by electrical switchboards.
• Smoke detection layout
• Missing emergency lights and exit signage in the Administration building.
• No smoke seals are installed to distribution boards cupboards located in the escape path corridors.
• Non-compliance issue with emergency light spacing in many areas. Exit signs to be upgraded to pictogram type
• Non-compliance issue with smoke and heat detectors spacing. Heat detectors are used in corridors instead of smoke detectors. There are no smoke detectors within 2 meters on each side of smoke doors as per Australian Standards
• The busbar cracks in some of the distribution boards because of overheating problems present a potential risk as the distribution board might fail or catch fire at any time. Further investigation should be carried out to resolve this problem and check all distribution boards.

The following Fire risks associated with current buildings at the Glendon St site are:

• Evacuation lighting to be provided to current standards.
• Fire detectors spacing and provision to be upgraded to code requirements.

6.5 Risks of accidents
The following personal injury risks associated with the deterioration of the buildings and site works at the Hospital site are:

• Only one unisex accessible toilet for people with disabilities (current complies only with BCA) – other toilets are too small and if a patient collapses they are difficult to get out easily
• Communication cupboards spread throughout the complex, often in rooms with unprotected backs to doors with loose wires visible – could be disconnected
• Deterioration to paths between building that are a trip hazard
• No adequate pedestrian link to staff carpark from Hospital buildings
• Surface treatment to staff carpark has deteriorated causing trip hazards
• Lighting levels are below the required standards in car parks, walkways and some internal areas
• Uneven ground and paths linking Hospital to Medical and Pharmacy storage building
• Uneven floor in treatment area of Emergency department
• Floor finish in public toilets of Ward block has deteriorated causing possible trip hazard
• Spalling of concrete sunhoods that could chip off and fall on people below
• Stairs that have open risers or do not have visual nosings can be a tripping hazard
• On street parking for people with disabilities does not provide kerb ramp adjacent to the bay for safe transfer. Transfer is via the road
• Lift at risk of breaking down
• The absence of data monitoring system for evacuation lights makes it difficult in many cases to identify faulty evacuation lights prior to routine test.
• In case of future deterioration in plumbing pipes passing through central communications room and the Administration Building Communications Room presents a risk to IT services throughout the campus. Leakage from those pipes might cause damage to IT services and disable it throughout the campus
• Communications rooms should be enlarged to current standards
• RCD should be upgraded to all lighting and power sub-circuits.

The following personal injury risks associated with the Glendon Street site are:
• Distribution board (DB) location is not safe and door cannot be completely closed. This is a potential hazardous situation as life parts can be easily exposed by the public
• Distribution board rewireable fuses are outdated and it is illegal to install them under current standards
• Car park lighting levels to be upgraded to code requirements.

6.6 Infection risks
The following risks associated with the deterioration of the buildings and site works:
• A number of areas have a minimum number of basins and often with in-appropriate tapware
• The minor operations theatre is served by a wall mounted split air conditioning unit only, with no outdoor air introduction of exhaust and no HEPA filter
• The sealing of the building around windows and doors is inadequate, allowing large amounts of dust blow in.

6.7 Security risks (incorporating personal attack risks)
The following Security risks associated with the deterioration of the buildings and site works
• Lighting levels are below the required standards in car parks, walkways and some internal areas
• The spread out nature of campus buildings means buildings are accessed by open walkways which can pose a security issue to staff, especially during night time hours
• Insufficient security to the nurses station in the Ward block to deal with mental health patients
• Number of entrances to the Administration building allowing people to enter and exit the building without being monitored
• Duress alarm and CCTV system be upgraded to AHFG requirements
• Lighting levels are below the required standards in car parks, walkways and some internal areas.

6.8 Health and safety risks
The following Occupational Health and Safety risks associated with the buildings and siteworks are:
• Uneven surfaces in the car park
• Medical records compactus closes while persons are between shelves
• Inadequate storage space in Medical records long term storage
• Lack of sufficient storage for Pharmacy in Hospital building causing issues with clients patients while staff collect stock from storage
• Rear entrance to Pharmacy is required to allow a discrete entrance for staff
• Inadequate height of scrub sink causing potential back issues
• Floor surface in kitchen area is slippery
• No trolley access from the Hospital and laundry buildings to staff accommodation
• X-ray doors to dental treatment rooms are difficult to close potentially causing injury
• The location of numerous external condensing units does not allow safe access for maintenance and repair
• The Operating Theatre air conditioning unit condenser located at roof level is mounted on a framed platform only, with no floor or handrails, not providing for safe access for maintenance and repair
• The air conditioning equipment serving the Emergency Department is located on a roof platform with suitable handrails and flooring. There is no suitable permanent access method to the platform and the use of a portable ladder is difficult due to the ambulance bay below
• The Operating Theatre recovery area ducted air conditioning system in in-operable, due to asbestos lined heater banks
• Sanitary facilities are undersized, cramped and fixtures located within circulation spaces providing difficulty with patient manoeuvrability and transfers
• Pedestrian crossings are poorly signed and line marked
• Exit signs viewing distance in wards corridor needs to be checked as it might exceed 24 m.

6.9 Disadvantage to persons with a disability

The following disadvantages to persons with a disability occur at the Hospital site:

• The current lift has no fire service
• Doors generally undersized
• Ward block ensuites and doors undersized
• Ramps and stairs not compliant
• Parking generally not adequately signed
• No braille and tactile signage.
• No ramp access to Red Cross Building
• No ramp access to front of Administration Building and no lift access to upper level
• No compliant Person with disability or ambulant person toilet provided in the Administration Building
• No access for patients to a person with disability shower
• No access for ward patients to a compliant person with disability or ambulant person toilet
• Permanent Hearing Augmentation Listening Systems are not provided
• Visual Alarms are not provided
• Parking is not provided to all buildings/sites
• Not all areas of the site and/or buildings are accessible
• The Lift cannot be independently accessed and used
• Door widths are undersized
• Inadequate signage for people with disabilities
• Lower section of counter are not provided to public counters
• Disability lighting in car parks inadequate
• AS1428 light switch and socket outlet heights are non-compliant.
The following Disadvantages to persons with a disability occur at the Glendon St site:

- Access only to ground floor
- No access to a unisex toilet facility
- Entry difficult to access independently.

### 6.10 Staff, patient and visitor dissatisfaction

The following risks are associated with the deterioration of the buildings and site works:

- Emergency Department – Staff concern over lack of view of waiting by triage area, inadequate bay areas, privacy and space issues at the staff station, lack of storage space, unprotected communication cupboards in the treatment room
- Maternity rooms – Staff concern over very small ward rooms which make bed manoeuvring extremely difficult through narrow doorways and corridors
- Lack of adequate wayfinding signage
- Lack of adequate sanitary facilities.
- Limited access to Red Cross and OHS/patient Safety, and within Community Health and Administration Buildings.

### 6.11 Excessive running costs

The following issues associated with the deterioration of the buildings that may contribute to excessive running costs:

- A number of windows in the old Hospital Building and the Administration Building are unable to close with most of the original windows unable to provide an adequate seal
- Most of the air conditioning is provided by individual air conditioners instead of a central plant, that they each have local control only and are prone to being left on when the space is not in use
- A review of all mechanical systems should be undertaken and time clocks set or installed where not existing to ensure that systems are inoperable when not required to satisfy the Hospital function requirements. e.g. air conditioning systems to administration areas
- Effective maintenance needs to be provided to all mechanical equipment
- Inadequate lagging to hot water pipes from hot water system
- Use of prefabricated demountable buildings which are not as insulated and air tight as a permanent structure
- Two trade waste pump sets and chambers from main kitchen to grease trap need to be updated
- Rainwater harvest tanks, pump sets and filtration systems need to be updated
- The absence of building management systems throughout the Hospital increase the maintenance cost as services need to be checked physically by the Hospital Staff on a regular basis
- Surgical theatre lights are connected to the battery backup with no UPS support. Battery should be checked more regularly to minimise malfunction during operations
- The lack of data monitoring system for evacuation lights increases maintenance time as evacuation lights need to be checked physically
• No energy saving measures to BCA Section J6 or NSW Health TS11 Engineering Services Guidelines is evident

• The existing non-addressable fire detection system increases maintenance as system does not provide feedback on location of faulty devices which add more time to identify them.

6.12 Failure of building services systems

The following risks are associated with the deterioration of the buildings and site works:

• Fire hydrant system upgrade to current Australian Standard compliance requirements
• Rainwater is used for potable water supply and backup systems, the water available from the local authority main is not suitable for potable water use and that rainwater is stored and used
• Insufficient rainfall to meet potable water demand
• Trade waste from the existing kitchen is collected and pumped to the grease trap. This creates a possible problem with pump sets
• Ongoing maintenance/renewal/replacement of in ground Hydraulic Services due to age and general wear and tear
• The majority of the plant and equipment in the Operating Theatre is original and is approximately 30 years old and is in fair to good condition only
• It is reasonable to expect that failure rates of items like electrical motors, fans, bearings, compressors, cooling and condenser coils, electrical and controls systems and the like will occur more frequently in the years ahead when considering the age of the equipment.
• Given that the space usage does not change significantly and non compliances with current day regulations and guidelines were accepted, a staged replacement of the air handling unit, refrigeration equipment and the like, complete with associated electrical and controls work is a viable approach to renew the plant to ensure reliable ongoing operation. The flaw in this approach however is that inherent current day non-conformances are not addressed.
• An assessment of the refrigeration compressor serving the Operating Theatre air conditioning system should be undertaken to ascertain whether any reconditioning works should be undertaken to ensure ongoing reliability and effectiveness.
• In the absence of a refurbishment or replacement of current systems with code complaint systems, it would be expected that as individual systems or components fail, they will be swapped out with like systems, extending the life expectancy in the order of 10 to 15 years, however this does not address system non-conformances.
• Considering the age of the installation, the frequency of component failure will increase
• The antiquated lift will continue to become more unreliable and pose an ever increasing health and safety risk to staff and public users
• The existing mains cables are undersized and might not handle minor increase in the Hospital loads. Further investigations should be carried out
• Busbar cracks in some distribution boards might cause distribution board to fail at any time
• Regular thermo scanning of the existing distribution boards especially in the older buildings should be conducted at regular basis as some distribution boards have heat issue
• Sealing of fire and smoke wall penetrations and switchboard smoke door sealing is required
• Plumbing pipes should be diverted clear of main communications rooms.
6.13 Legal action lists

The following risks associated with the deterioration of the buildings and site works:

- The disadvantages to persons with disabilities as noted above could lead to a legal action under the Disabilities Discrimination Act (DDA) at any time.
7 Options

Following on site inspections and audit, discussions with the District and Queensland Health stakeholders the following options have been prepared which address the broad planning and infrastructure needs to meet the Services Profile.

7.1 Staff Accommodation

Queensland Health has advised that no additional staff accommodation is required at Kingaroy Hospital site at this stage.
7.2 Option 1 – Status Quo (minimum requirements)

The service plan cannot be met with the existing infrastructure. The existing infrastructure needs upgrades and expansion to meet those needs.

7.2.1 Scope of this option

This option would include the minimal work to protect patient and staff safety, meet BCA requirements, meet minimum access codes, meet fire requirements of the BCA and ensure services are provided. It excludes upgrade to AHFG.

- Repair parapet and replace flashing to prevent rain coming into the upper floor of the Hospital Building (Allied Health)
- Provide rear door entrance to the Pharmacy for security issues
- Ramp to be provided to Red cross building and Community Health at Glendon Street to allow for equal access
- Refurbish a toilet to the Ward Block to provide a unisex person with disability compliant toilet and shower
- Upgrade the public access, person with disability toilet in the Emergency Department of the Hospital Building to comply with Australian standards
- Replace the amenities to the monitored care ward (currently children size toilets)
- Demolish and Replace the wall dividers in shower cubicles of Ward Block due to their deteriorated condition
- Refurbish a toilet to the Administration building to provide a unisex, person with disability compliant toilet.
- Rectify steps between the footpath and entry ramp to the Main Hospital Building and Ward Block to avoid a trip hazard and prevent future injuries to users of this area.
- Rectify spalling concrete to the external portions of the Main Hospital Building and to the Administration/Community Health building
- Continue the ongoing investigation into the cause of the building movement to the northern wing of the Main Hospital Block. (the subject of previous reports for the Hospital and ongoing investigations)
- Address ongoing structural design issues with the present condition of the roof to the Old Farr Home and implementing all recommendations from previous reports and investigations
- Address idle water around the water tanks to the New Staff Accommodation Units
- Mitigate overland flow down the hill from the Engineering Building and beyond locally flooding the southern entrance to the Main Hospital Block (between the Ambulance Bay and the Kitchen)
- Attend to general corrosion of steelwork around the campus
- Rectify the joint in the Laundry floor
- Repair the pergola east of the Old Farr Home
- Repair or demolishing the verandah outside the Engineering Office
- Rectify external stairs to the new Staff Accommodation units
- Develop a Disability Discrimination Act (DDA) Action Plan which considers all aspects of the Kingaroy Health Sites operations
- Test and certify the fire hydrant and fire hose reel systems
- Rectify temperature control of the hot water use
- Address potable water issue, i.e. that the water available from the local authority main is not suitable for potable water use and that rainwater is stored and used
• Refurbish Operating Theatre air handling units, condensate drain, clean supply and return air ductwork
• Undertake Operating Theatre refrigeration system compressor assessment and rectify as required
• Upgrade return air filtration to Operating Theatre AC system and provide terminal HEPA filters
• Refurbish Operating Theatre Mechanical Services Switchboard
• Provide code compliant floor to condenser enclosure and safety handrail
• Recommission defunct theatre recovery air conditioning system
• Provide code compliant access method to the Emergency Department plant platform
• Relocate external air conditioning unit condensers to safe locations
• Install remote monitoring to Morgue body cabinet
• Assess air conditioning system to Downtown Community Health Centre
• Replace the lift
• Provide switching drawings in the switchroom
• Provide RCD protection to lighting and power circuits for staff and residential safety as required by current standards
• Undertake maintenance to existing electrical distribution boards throughout the Hospital in particular fix cracked insulation and busbars, provide pole fillers, provide door seals, upgrade extent of RCD protection and carry out infrared scanning of switchboards
• Provide compliant fire protection to all areas
• Provide compliant evacuation lighting system.
• Provide cardiac protection Operating Theatres, Recovery Bays, Procedure Rooms and Resuscitation need to be upgraded to Cardiac Protected Areas.
• Provide compliant existing lighting level to all areas
• Relocate exposed plumbing pipes above central communications rooms in Main Hospital building and Administration Building needs to be relocated.
• Provide code compliant telecommunication rooms throughout the Main Building and Wards.
• Upgrade the existing security systems to current standards
• Upgrade the lightning Protection System to code compliant
• Upgrade Surgical Theatre lights and general lights in existing theatres to AHFG and current codes

The following scope applies to the Downtown Community Health Building Glendon Street:

• Switchboard should be replaced immediately
• Upgrade Exit and evacuation lighting
• Upgrade RCD protection to lighting and power sub-circuits
• Upgrade Car park lighting levels and lighting in stairwells
• Upgrade fire alarm system.

7.2.2 Capital cost

The cost plan is based on the conceptual planning studies. A full list of information and methodology used in the preparation of this report is located in Cost report, Volume 2.

This cost plan is based up on a 'Category 2 Estimate Level' as defined in the 'Capital Works Management Framework' with a level of confidence 'Low'.

The cost plan has been priced at current Brisbane rates (2Q 2010) with allowance for a locality factor but no allowance for cost escalation.
The capital cost range is $3,100,000 to $3,700,000 excluding escalation.

7.2.3 Whole-of-Life costs

Based on asset replacement value, backlog maintenance and gross floor area it is estimated that whole-of-life costs will be $2,195,737 per annum.

Operating Income, Statutory Charges and Operating Expenses (with the exception of building repairs and maintenance) are excluded.

7.2.4 Advantages

Advantages anticipated to be achieved through Option 1 include:

- Maintains Hospital operation
- Where minor new work is proposed then this scope of work only would need to comply with current Regulations
- Reduces some of the identified risks
- Provides equal access to all buildings on site
- Creates a safer and equal access environment for staff and patients
- Prolongs the life of the buildings and reduces future maintenance expense
- Prolongs the serviceable life of the building
- Avoids possible accidents from incidences such as trips and falls and injuries from falling concrete
- This will assist Queensland Health to describe its policies and strategies to ensure a non-discriminatory, inclusive environment, improve services, decrease the likelihood of complaints under the DDA, increase the likelihood of successfully defending complaints, and allow for a planned approach to the development of inclusive facilities and services
- To address the compliance issues with current Australia Standards and local authority requirements including hot water temperature control, fire hydrant and fire hose reel compliance
- The operating energy usage of the current systems are not envisaged as changing significantly given that appropriate ongoing preventive maintenance is provided. The items of work nominated with this option have very minimal effect on system energy usage
- Has the least cost compared to other options
- Less interruption to existing services
- Upgrading of some existing electrical and electronic services (ex. fire system and evacuation lights) to current codes.

7.2.5 Disadvantages

Disadvantages anticipated to be achieved through Option 1 include:

- Spaces generally do not comply with AHFG
- Does not provide sufficient space to meet the Services Profile
- Does not address most of the current problems in the existing infrastructure
- Only a stop gap until future works.
- Does not resolve the issues of future proofing the Hospital for future accommodation issues.
- A large number of risks remain at the Hospital.
- It is currently possible to meet all the requirements of the Building Code of Australia (BCA) and still not provide an environment that is free from discrimination under the Disability Discrimination Act (DDA). If issues are not addressed it increases the risk of a complaint under the Disability Discrimination Act (DDA) and does not address the other risks addressed above.

- No ability to address existing hydraulic concerns including problem with collection, storage and reticulation of potable water

- Maintenance costs including more substantial component or system repair and/or replacement costs will increase over coming years to keep the plant is satisfactory working order, due to higher failure rates of the aging installation.

- The life expectancy of the existing installation will not change appreciably with most plant and equipment approaching the end of its life expectancy over the next 5-15 years.

- The installation has limited building management and automation technology and in order to support the existing outdated services infrastructure, expensive and frequent system facilities management is necessary to maintain the services.

- Partial upgrade to existing systems does not offer the benefit of full system upgrade because it does not take advantages of available modern building management systems. Also, partial system upgrade has limited life expectancy.
7.3 Option 2 – Refurbishment or Expansion at Existing Site

7.3.1 Scope of this option

The service plan can be met with the refurbishment and extension of existing infrastructure along with an expansion of a new building. Refer to drawings of proposed scheme plan layouts.

The project will need to be staged to ensure continued health service provision throughout the construction work.

The initial process is to construct the new Oral Health and Renal Building next to the existing Administration and Community Health Building. The decanting of Oral health from the Main Hospital building into this building frees up space in next to the Emergency Department. The relocation of Renal into a permanent building also allows for its current demountable to be removed from the Hospital campus.

The area left vacant from Oral health, and along with an extension, is to be fitted out for an enlarged Emergency Department capable of meeting the service plan requirements. The extended part is to be fitted out first to allow for the existing area to maintain operation, then once relocated, the existing area is to be refurbished.

To the north of the main Hospital building once the renal demountable building is removed it is proposed to construct a new Ward and Maternity Building followed by a new Theatre building. They are currently designed so that they can be constructed on an as required basis. Through the construction of these new buildings it means that there is little to no disruption to the existing facilities during the construction.

By providing a new build for these facilities the advantage is that all the treatment areas are compliant to the AHFG while providing more compact, lower maintenance facilities.

Once the clinical services have been removed from the main Hospital building, this allows for the upper floor of the existing Hospital building to be refurbished into all allied health and consulting suites. The design allows for the refurbishment of the new spaces into the now redundant maternity and theatre areas while maintaining operation in their current location.

Finally works to occur on the ground floor of the Hospital once the other areas are complete the kitchen is to be reduced to allow for expansion of the pharmacy, staff dining, activity room and canteen to be relocated into the old rooms and the relocation of imaging reception to allow for more office space or possible treatment space. The amenities in the Ward Block are to be refurbished to provide person with disability compliant bathrooms and showers to each four and one bed ward. To be able to provide this though it has meant that the four bed wards are reduced slightly in width resulting that they do not comply fully with AHFG.

The Administration building is to be fitted out with a lift to the rear of the building to provide wheelchair access to the upper floor and reduce Occupational Health and Safety risk of injury when moving items to the upper level. The amenities and doors are also to be refurbished to comply with current standards.

The option is summarised below and in the accompanying concept drawings:

- Oral Health - Relocate into new permanent facilities
- Renal Dialysis - Relocate into new permanent facilities
- ED – New building expansion at rear of Hospital and expand into redundant Oral health suites.
- Maternity - Relocate into new permanent facilities
- Theatres – Relocate into new permanent facilities
- Allied health – Relocate into refurbished upper floor of the old Hospital building
• Wards – Refurbish amenities to be PWD compliant, new Patient lounge and 16 bed expansion and provide new and 21 bed facility
• Pharmacy - extension into kitchen area.
• Imaging - New reception, refurbish old into larger office space
• Medical Files - minor expansion at rear.
• Staff and Patient Facilities - new staff dining, workplace facilities and canteen in redundant physio rooms.
• Administration Building - Install new Lift to upper level, Refurbish doors and toilets to comply with current standards.
• Red Cross Building - Construct new compliant entry ramp.
• Carpark - extend visitor carpark in front of Administration building.
• Provide new structural elements for the new buildings
• Provide adequate public and patient sanitary facilities for people with disabilities.
• Upgrade existing sanitary facilities sanitary facilities for people with disabilities.
• Widen doorways.
• Improve statutory signage.
• Provide adequate parking located adjacent to main entrances where none exists.
• Upgrade trip hazards.
• Provide permanent hearing augmentation listening systems to main reception counter
• Address minimum hydraulic requirements
• Installation of new hydraulic services infrastructure to suit the refurbished and new areas of the Hospital
• Upgrade the hot water plant to suit the additional demand
• Address issue with potable water supply and backup
• Address hot water temperature control issues to AS3500
• Ensure fire hose reel and fire hydrant system is fully compliant to the Building Code of Australia and AS2419
• Rectify any damaged Hydraulic Services infrastructure required to accommodate changes and additions
• Address minimum mechanical and electrical services requirements in option 1.
• Upgrade Hospital consumers mains (as per DMA detailed report)
• Upgrade Ergon transformer to accommodate new refurbishment.
• Upgrade main switchboard to accommodate new site layout.
• Upgrade existing electrical distribution boards
• Upgrade lighting installation to AS1680
• Upgrade to meet BCA Energy Efficiency Section J6 provisions
• Install body and cardiac electrical protection systems to AS3003 and AHFG
• Install surgical and examination lighting and UPS to AHFG.
• Install Evacuation Lighting Installation to AS2293.
• Upgrade Fire Detection system
• Split loads to essential and non-essential to allow for generator to accommodate new refurbishment and new Buildings loads.
• Upgrade site electrical services to new buildings
• Install Lightning Protection System to AS1768.
• Provide new external lighting to car parks to AS1158 and the new extensions.
• New distribution board for lift circuit in the Administration Building.
• Expand existing central communications room in Administration Building.
• Upgrade Lead-in communication cable.
• Install duress system and PA system to be upgraded to AHFG.
• Upgrade electrical, communication systems, fire, CCTV to refurbished areas of Main Hospital Building and Ward Block to be provided with -:
  • Achieve required fire and smoke compartmentation in both the vertical and horizontal planes
  • Fire isolate centre stair
  • Reposition hose reels to within 4m of an exit
  • Fit complying hardware to all exit doors
  • Smoke detection system to be made fully compliant
  • Install an emergency lift with fire service controls
  • Install an early emergency warden intercom system
  • Remove storage areas under stair
  • Fire separate all equipment rooms and electrical switchboards located in paths of travel
  • Hydrant system to be upgraded

7.3.2 Capital cost
For introduction and methodology please refer to Capital Cost Option 1 – Status Quo
The capital cost range is $31,000,000 to $38,000,000 excluding escalation.

7.3.3 Whole-of-Life costs
For introduction and methodology please refer to Whole-of-Life Costs Option 1 – Status Quo
Based on asset replacement value, backlog maintenance and gross floor area it is estimated that whole-of-life costs will be $2,550,851 per annum.
Operating Income, Statutory Charges and Operating Expenses (with the exception of building repairs and maintenance) are excluded.

7.3.4 Advantages
Advantages anticipated to be achieved through Option 2 include:
• Provides adequate space to meet the service plan
• Utilises as much as possible of the existing infrastructure
• Provides new buildings for treatment services.
• Services are able to be maintained during refurbishment
• Refurbishment can be undertaken in multiple stages over an as required time period
• Improves relationship between services.
• Improves safety and security issues.
• Provides equal access and facilities to all medical staff and patients
• Lower cost to refurbish existing buildings into non - treatment spaces.
• Improve amenity for staff and patients.
• Improve independence, equality and dignity of people with disabilities when visiting the site.
• Improve public and staff satisfaction.
• Improve patient care.
• Reduce risk of DDA complaint; risk to health and safety and accidents.
• Address problem with potable water collection, treatment and reticulation
• To address the complies issues with current Australia Standard and local authority requirements including hot water temperature control
• Upgrade fire hydrant and fire hose reel system to make fully compliant
• Ability to address the potable water backup store, pump and reticulation issues
• Ability to rectify age and condition of existing hydraulic services infrastructure
• The efficiency of new plant will be improved due to more stringent BCA efficiency requirements and improved efficiencies for new plant and equipment, and controls optimised and more intelligent control system configuration.
• Maintenance costs for refurbished or replaced systems will be reduced due to the lower age of the equipment and corresponding lower failure rates of key components and systems.
• The life expectancy of all new equipment would be increased where existing aging equipment was replaced, being in the order of 15–20 years.
• Demolition of existing building or buildings which have non-compliance issues.
• Utilizing existing site electrical and electronics infrastructure for new refurbishments.
• Upgrading existing electrical and electronic services (ex. fire system and evacuation lights) to current codes.
• Provide opportunity to upgrade some infrastructures for future expansion.

7.3.5 Disadvantages

Disadvantages with Option 2 include:

• Minor disruption to ground floor accommodation of Hospital during upstairs refurbishment and extension.
• 4 bed wards of existing ward block are not AHFG compliant.
• Most outer buildings have poor access to Hospital building.
• Deterioration and maintenance costs continue of minor Hospital buildings
• High cost of refurbishing and additional lift to Administration Building.
• Inefficient allied health layout.
• High visitor turnover areas of allied health and consulting are located on upper floor of existing Hospital creating high traffic through Hospital building.
• Community Services are spread out across the Hospital campus with no main entrance point.
• Disruption to the functioning of areas of the existing building as repair and / or strengthening works are carried out to the existing structure.
• Impact on service provision during works
• No ability to address existing concerns including problem with collection, storage and reticulation of potable water
• Will not address Australia Standard compliance issues
• Will not address Queensland Health and local authority issues
• The operating energy usage of the proposed Option 2 works will increase, due primarily to the increased areas served, the introduction of outdoor air to air conditioning systems, and higher outdoor air rates necessary to achieve compliance with infection control guidelines.
• Additional electrical work required to be carried out throughout the Hospital site to accommodate the new building or buildings which add more load on electrical infrastructure.
• Partial upgrade to existing systems does not offer the benefit of full system upgrade because it does not take advantages of available modern building management systems. Also, partial system upgrade has limited life expectancy.
• Does not include lighting upgrade to all external areas including carparks.
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7.4 Option 3 – Significant Redevelopment

Through the refurbishment of the existing Hospital buildings and an extension to the north of the service plan can be met. This most effective way of meeting the service plan while maintaining services throughout the construction and refurbishment stage. This option alleviates most of the risks that have been highlighted while maintaining the majority of the existing infrastructure. The scheme builds on Option 2 with a number of the proposals carried across into Option 3. The scheme provides all new clinical and acute facilities while maintaining the existing Hospital building for Staff Administration.

The Emergency Department phase of this option is reliant on the new allied health and oral health building taking place, but the other services area builds can occur on an as required bases. The recommended rollout of phases though is as follows.

The initial process is to relocate the existing oral health administration demountable. This allows for the construction of a new combined, Allied Health and Oral Health Building connecting to the main entry to the Hospital. The decanting of oral health and allied health from the Main Hospital building frees up space next to the Emergency Department and upper level of the Hospital.

The area left vacant from Oral health, and along with an extension, is to be fitted out for an enlarged Emergency Department capable of meeting the service plan requirements. The extended part is to be fitted out first to allow for the existing to maintain operation, and then the existing area is to be refurbished once complete.

To the north of the main Hospital building it is proposed to construct a new Ward and Maternity Building followed by a new Theatre and Renal Building. Through the construction of these new buildings it means that there is little disruption to the existing facilities during construction other then moving the existing renal demountable building.

By providing a new build for these facilities to means that all areas are compliant to the AHFG while providing more compact, lower maintenance facilities.

Once the clinical services have been removed from the main Hospital Building, this allows for the administration offices to be relocated across into the main Hospital providing a better link to the main Hospital facilities while also negating the requirement to install a new lift and PWD facilities into the current Administration Building with the upper level being decommissioned.

Works to occur on the Ground floor of the Hospital is for the kitchen to be reduced to allow for expansion of the pharmacy, Staff dining, activity room and canteen to be relocated into old physio rooms and the relocation of imaging reception to allow for more office space. The amenities in the Ward Block are to be refurbished to provide person with disability compliant bathrooms and showers to each four and one bed ward. To be able to provide this though, it has meant that the four bed wards are reduced slightly in width resulting that they do not comply fully with AHFG. Due to the construction of new ward facilities the Ward Block can be mainly used as a secondary facility. At this stage, due to the age and condition of the building it is not feasible to propose the demolition and reconstruction of this building over a minimal lack of space.

In reference to the other buildings on site, The Administration Building is to receive minimal work to the ground floor to provide compliant bathrooms and doors to the ground floor only. The medical records, laundry and goods store is to be demolished and new builds located where the current old Farr Home is. This provides a more compact services layout within easy, code compliant access from the Hospital building. It is also proposed that due the age of the existing BEMS demountable office that it is removed and a new build is located in its place with access to the maintenance sheds from the central ring road. In doing this it brings all the Hospital support services and maintenance within access of the central ring road, providing a more compact, easier to maintain and access site.
7.4.1 Scope of this option

The option is summarised below and in the accompanying concept drawings:

- Oral Health - Relocate into new permanent facilities
- Allied health – Relocate into new permanent facilities
- Emergency Department – New building expansion at rear of Hospital and expand into redundant oral health suites
- Maternity - Relocate into new permanent facilities
- Operating Theatres – Relocate into new permanent facilities, decommission old.
- Birthing - Relocate into new permanent facilities
- Wards – Refurbish amenities to be PWD compliant, new patient lounge to existing ward block and provide new and 21 bed facility
- Pharmacy - extension into kitchen area.
- Imaging - New reception, refurbish old into larger office space
- Medical Files - minor expansion at rear
- Staff and patient facilities - new staff dining, workplace facilities and canteen in redundant physiotherapy rooms
- Administration Building - relocates to level 1 of the main Hospital building, decommission old
- Medical Records store - Relocate into new permanent facilities
- Laundry - Relocate into new permanent facilities
- Goods receiving store - Relocate into new permanent facilities
- BEMs office - Relocate into new permanent facilities
- Renal - Relocate into new permanent facilities
- Red Cross Building - Construct new compliant entry ramp
- Carpark - extend visitor carpark in front of Administration Building
- Assess the walls to be removed in the Main Hospital Building to determine if they are providing load bearing support to the upper floors or bracing function for wind or earthquake loads and strengthen the building accordingly to accommodate their removal.
- Extend existing Ward Building wings with new construction. Any bracing walls at the ends of the existing wings are to remain
- Provide new structural elements for the new buildings
- Provide adequate public and patient sanitary facilities for people with disabilities
- Widen doorways
- Improve directional and statutory signage
- Upgrade all parking
- Upgrade trip hazards
- Upgrade external paths of travel
- Provide permanent hearing augmentation listening systems to all counters
- Upgrade ramps and stairs
- Upgrade lift.
- Provide visual alarms.
- Provide access to OHS/Patient Care and Red Cross Building.
- Address minimum requirements
- Alterations, upgrade and extensions of the existing hydraulic services infrastructure to suit the new areas of the Hospital
- Install/upgrade existing water service connection to site to suit additional demand
• Address issue with potable water supply and backup
• Upgrade the hot water plant to suit the additional demand
• Address hot water temperature control issues to AS3500
• Ensure fire hose reel and fire hydrant system is fully compliant to the Building Code of Australia and AS2419
• Address issues of redundant hydraulic services and renewal of council service connections to suit additional loads and demands
• Upgrade Hospital consumers mains (as per DMA detailed report)
• Upgrade Ergon transformer to accommodate new refurbishment
• Upgrade site main switchboard
• Alterations, additions, and upgrade to existing distribution boards
• Lighting installation to AS1680
• BCA Energy Efficiency Section J6 provisions
• Body and Cardiac electrical protection systems to AS3003 and AHFG
• Surgical and Examination lighting and UPS’s to AHFG
• Evacuation Lighting Installation to AS2293
• Fire Detection system upgrade
• Split loads to essential and non-essential to allow for generator to accommodate new refurbishment and new Buildings loads
• Site electrical services to new Dental and Allied Health Building including new essential and non-essential sub-mains from site MSB
• Site electrical services to new Ward and Birthing Building including new essential and non-essential sub-mains from site MSB
• Site electrical services to new Renal Unit and Theatre Building including new essential and non-essential sub-mains from site MSB
• Site electrical services to new Laundry, new Medical Records, and new Store including new essential and non-essential sub-mains from site MSB
• Relocation and then deletion of site electrical services to existing Dental Demountable
• Deletion of site electrical services to existing Old Farr Home Building
• Deletion of site electrical services to existing store, laundry, and medical record
• Lightning Protection System to AS1768
• Provide new external lighting to car parks to AS1158 and the new extensions
• Decommission of Administration Building upper level electrical services
• Electrical services for Emergency Department expansion and refurbishment
• Expand existing central communications room in Administration building
• Upgrade Lead-in communication cable
• Duress System and Public Address system to be upgraded to AHFG
• Horizontal voice and data cabling and telecommunications outlets to code requirements
• Duress Alarms to AHFG
• Extend access Control and Electronic security areas to AHFG
• Expand CCTV to AHFG
• Fire Alarm and EWIS to be upgraded to AS1670 and BCA
• Site communications services including data and voice backbone cabling, fire alarms, security, MATV and CCTV to new Dental and Allied Health Building
• Relocation and then demolition of site electronics and communications services to existing Dental Demountable Building
• Deletion of site electronics and communications services to existing Old Farr Home Building.
• Site communications services including data and voice backbone cabling, fire alarms, security, MATV and CCTV to new Ward and Birthing Building.
• Site communications services including data and voice backbone cabling, fire alarms, security, MATV and CCTV to new Renal Unit and Operating Theatre Building.
• Site communications services including data and voice backbone cabling, fire alarms, security, MATV and CCTV to new Laundry, new Medical Records, and new Store.
• Deletion of site electronics and communications to existing Old Farr Home Building.
• Deletion of site electronics and communications to existing store, laundry, and medical record.
• Decommission of Administration Building upper level electronics and communications services.
• Electronic and communications services for Emergency Department expansion and refurbishment.
• Where more than 50% of the volume of the building is altered then the whole building would need to be brought up to comply with the current Regulations.
• This would also apply to a section of a building that requires a new certificate of classification due to a change of use.
• Where a new building is proposed then all of the new work would need to comply with current regulations.

7.4.2 Capital cost
For introduction and methodology please refer to Capital Cost Option 1 – Status Quo
The capital cost range for Option 3 is: $33,000,000 to $41,000,000 excluding escalation.

7.4.3 Whole-of-Life costs
For introduction and methodology please refer to whole-of-life Costs Option 1 – Status Quo
Based on asset replacement value, backlog maintenance and gross floor area it is estimated that whole-of-life costs will be $2,296,151 per annum.
Operating Income, Statutory Charges and Operating Expenses (with the exception of building repairs and maintenance) are excluded.

7.4.4 Advantages
Advantages anticipated to be achieved through Option 3 in addition to Option 2 include:
• Provides adequate space to meet the service plan
• Utilises as much as possible of the existing infrastructure
• Provides new building for treatment services.
• Services are able to be maintained during refurbishment
• Refurbishment can be undertaken in multiple stages over an as required time period
• Improves relationship between services
• New facilities mostly not dependant on other stages taking place
• Provides more compact and efficient site
• Improves safety and security issues
• Provides equal access to all buildings
• Lower cost to refurbish existing buildings into office space
• Improve amenity for staff and patients
• Improve independence, equality and dignity of people with disabilities when visiting the site
• Improve public and staff satisfaction
• Improve patient care
• Reduce risk of DDA complaint; risk to health and safety and accidents
• Address problem with potable water collection, treatment and reticulation
• To address the complies issues with current Australia Standard and local authority requirements including hot water temperature control
• Upgrade fire hydrant and fire hose reel system to make fully compliant
• Ability to address the potable water backup store, pump and reticulation issues
• Ability to rectify age and condition of existing hydraulic services infrastructure
• Replacement of existing main hydraulic service infrastructure
• Upgrade to suit new demand the exiting Council connections
• Meet new standards and Queensland Health requirements
• Demolition of buildings that do not meet current Australian Standards, BCA, Australasian Health Facility Guidelines and NSW Engineering Services and Sustainable Development Guidelines TS11
• New Buildings meet current Australian Standards, BCA, Australasian Health Facility Guidelines and NSW Engineering Services and Sustainable Development Guidelines TS11
• Upgrading existing electrical and electronic services (ex. fire system and evacuation lights) to current codes
• Provide opportunity to upgrade some infrastructures for future expansion use.

7.4.5 Disadvantages

Disadvantages anticipated to be achieved through Option 3 include:

• Additional cost
• Construction time frame
• Four bed wards of Ward Block are not AHFG compliant
• Deterioration and maintenance costs continue to occur of Main Hospital Building
• Disruption to the functioning of areas of the existing building as repair and / or strengthening works are carried out to the existing structure
• Impact on service provision during works
• No ability to address existing concerns including problem with collection, storage and reticulation of potable water
• Will not address Australia Standard compliance issues
• Will not address Queensland Health and local authority issues
• No ability to address existing hydraulic services infrastructure age, condition and under sizing
• Additional electrical work required to be carried out throughout the Hospital site to accommodate the new buildings which add more load on electrical infrastructure.
• Partial upgrade to existing systems in some areas does not offer the benefit of full system upgrade because it does not take advantages of available modern building management systems. Also, partial system upgrade has limited life expectancy
• Does not include lighting upgrade to all external areas including carparks.
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OPTION 3 - NEW ORAL HEALTH & RENAL UNIT DEPARTMENTAL
QUEENSLAND HEALTH

A FIRST ISSUE 22.06.10 AE PA
B REVISED ISSUE 12.07.10 JA PA

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## 8 Options Analysis

### Option 1

| Option features | • Address need to do safety upgrades  
|                 | • Provide equal access to all buildings  
|                 | • Addresses code and BCA compliance issues to a number of electrical and electronic building services  
| Rationale       | • Address safety issues  
|                 | • Ensure health services are provided to all  
|                 | • Address some electrical and electronic safety issues  
| Benefits        | • Minimal costs  
|                 | • Maintains existing infrastructure  
|                 | • Plan of action to address areas of non-compliance suggests Queensland Health is proactive and willing to provide inclusive services and facilities for people with disabilities.  
|                 | • Prolongs life of the buildings  
|                 | • Minimal costs (8 – 15% of cost of Option 2 and 3)  
| Risks           | • Not providing sufficient required facilities to the community  
|                 | • Facilities do not meet current AHFG and code  
|                 | • Lowers risk of complaint under DDA  
|                 | • Will not prolong life of partially refurbished building services  
| Assumptions     | • Based on visual site inspections and load readings from site.  
| Criticality     | • Urgent Safety upgrade  
|                 | • Some electrical and electronic upgrades are critical - refer main report.  
| Resource impacts| • Higher ongoing maintenance costs due to deteriorating infrastructure and maintaining redundant buildings.  
|                 | • Possible higher staff turn-over due to low grade facilities.  
|                 | • Higher ongoing maintenance costs of building services with partial upgrades than if whole system was replaced.  
|                 | • Overall maintenance costs are retained at approximately the same level across the options.  
|                 | • The capital cost range is $3,100,000 to $3,700,000 excluding escalation.  

### Option 2

| Option features | • Emergency Department refurbished and expanded  
|                | • Maternity and birthing refurbished  
|                | • Theatres added and refurbished  
|                | • Pharmacy expanded  
|                | • New Allied Health and Oral Health Building  
|                | • Wards extended and PWD compliant facilities added  
|                | • New staff facilities and canteen  

<table>
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<th>July 2010</th>
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<tr>
<td>• Equal access to Administration building</td>
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<td>• New day surgery area.</td>
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<td>• Demolish Old Farr Home</td>
<td></td>
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<tr>
<td>• Addresses code and BCA compliance issues to a number of electrical and electronic building services</td>
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### Rationale

| • Refurbish within the existing building fabric, providing spaces and services to suit the AHFG |          |
| • Extend minor areas where required – Theatres and ED |          |
| • Minor new build of allied and oral health to free up space in existing building. |          |
| • Demolish redundant buildings to reduce ongoing costs |          |
| • Address some electrical and electronic safety issues |          |
| • Demolish redundant electrical and electronic building services to reduce ongoing costs | |

### Benefits

| • Re-use of existing building stock |          |
| • Less expensive than a new build Hospital |          |
| • Complies with AHFG |          |
| • Improves amenity for staff and patients |          |
| • Provides facilities required under the services plan |          |
| • Maintains some existing electrical and electronic building services. | |

### Risks

| • Less efficient layout due to reuse of existing buildings |          |
| • Possible latent building costs in refurbishing existing buildings |          |
| • Disruptions to the functioning of areas of the existing building as refurbishment take place |          |
| • Further minimises risk of complaint under DDA |          |
| • Disruptions to existing electrical and electronic building services during construction |          |
| • Facilities do not meet all current AHFG and codes electrical and electronic building services requirements |          |
| • Will not prolong life of partially refurbished electrical and electronic building services | |

### Assumptions

| • Based on visual site inspections and load readings from site |          |
| • Based on projections as per Services Profile |          |

### Criticality

| • Upgrades facilities to current guidelines |          |
| • ED – high |          |
| • Maternity – high |          |
| • Allied Health - high |          |
| • Operating Theatres –High |          |
| • Oral Health - High |          |
| • Pharmacy – Medium |          |
| • Staff facilities - Medium |          |
| • Administration Building - Low |          |
| • Wards – Low |          |
| • Some electrical and electronic building services upgrades are critical - refer main report | |

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Preliminary Infrastructure Plan – Kingaroy Hospital
July 2010
### Resource implications

- Maintenance costs reduced in demolishing redundant building, and refurbishing main Hospital
- Staff – Better retention due to improved facilities
- Higher ongoing maintenance costs of building services with partial upgrades than if whole system was replaced
- The capital cost range is $31,000,000 to $38,000,000 excluding escalation.

### Option 3

#### Option features

- Emergency Department refurbished and expanded
- Maternity and birthing new build
- Theatres new build
- Wards added under new build
- Renal new permanent build
- Pharmacy expanded
- New Allied Health and Oral Health Building
- Existing Wards PWD compliant facilities added
- New staff facilities and canteen
- Administration facilities added to Main Hospital.
- New day surgery area.
- Demolish Old Farr Home
- Medical records store new build
- Laundry new build
- Goods receiving store new build

#### Rationale

- Refurbish within the existing building fabric, maintaining existing infrastructure
- New fully compliant treatment facilities
- Provide equal access across whole site
- Condenses support building creating a greater efficient environment.
- Demolish redundant buildings to reduce ongoing costs

#### Benefits

- Re-use of existing building stock
- Less expensive than a new build Hospital
- Complies with AHFG
- Efficient layout of space in new building
- New build for treatment facilities.
- Services are able to be maintained during refurbishment.
- Refurbishment can be undertaken in multiple stages over an as required time period
- Improves relationship between services provided.
- New facilities mostly not dependant on other stages taking place.
- Provides more compact and efficient site.
- Improves safety and security issues.
- Provides equal access to all buildings.
- Lower cost to refurbish existing buildings into office
| **space.** | • Maintains some existing electrical and electronic building services. |
| **Risks** | • Funding for new build  
  • Deterioration and maintenance costs continue to occur of main Hospital building  
  • Risk of complaint under DDA is all but eliminated  
  • Disruptions to existing electrical and electronic building services during construction  
  • Maintenance costs are retained at the same level due to demolishing redundant building, refurbishing main Hospital and upkeep of new buildings  
  • Facilities do not meet all current codes of electrical and electronic building services requirements |
| **Assumptions** | • Based on visual site inspections and load readings from site.  
  • Based on projections as per Services profile |
| **Criticality** | • Upgrades facilities to current guidelines  
  • ED – high  
  • Maternity – high  
  • Theatres – High  
  • Oral Health - High  
  • Pharmacy – Medium  
  • Wards – Medium  
  • Allied Health - Medium  
  • Staff facilities - Medium  
  • Goods Receiving Store - Medium  
  • Administration Building - Low  
  • Medical Records Store - Low  
  • Laundry - Low  
  • BEMS office - Low  
  • Some building services upgrades are critical - refer main report |
| **Resource implications** | • Maintenance costs reduced in demolishing redundant building, and refurbishing main Hospital  
  • Staff – Better retention due to improved facilities  
  • Higher ongoing maintenance costs of building services with partial upgrades than if whole system was replaced.  
  • The capital cost range for Option 3 is: $33,000,000 to $41,000,000 excluding escalation. |
The cost variance over a 30 year life cycle demonstrates that the option which provides greatest value is Option 2.

**Table 3: Cost Variance**

<table>
<thead>
<tr>
<th>Option</th>
<th>Capital Costs</th>
<th>WoL costs (30 years)</th>
<th>Total cost</th>
<th>% variance over option 1</th>
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<td>65,872,107</td>
<td>69,233,777</td>
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<td>Option 2</td>
<td>34,144,666</td>
<td>76,525,521</td>
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<tr>
<td>Option 3</td>
<td>36,876,410</td>
<td>68,884,518</td>
<td>105,760,928</td>
<td>152.76%</td>
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9 Acronyms and Abbreviations

ACF  Aged Care Facility
AHFG  Australasian Health Facility Guidelines
ARV  Asset Replace Values
AS  Australian Standard
BCA  Building Code of Australia
BEMS  Building and Equipment Maintenance Service
BMS  Building Maintenance System
CCTV  Close Circuit Television
CWMF  Capital Works Management Framework
DDA  Disabilities Discrimination Act
ED  Emergency Department
EWIS  Emergency Wardens Intercom System
FAPA  Filters to Air Conditioning Supply
FFandE  Furniture Fittings and Equipment
FIP  Fire Indicator Panel
GFA  Gross Floor Area
GP  General Practitioner
GST  Goods and Services Tax
HEPA  Type of filter for Air conditioning
ICT  Inter Communications and Telecommunications Cabling
KVA  Kilo Volts Amps
LV  Low Voltage
MATV  Master Antennae for Television
MDF  Main Distribution Frames
MSB  Master Switch Board
MSSB  Mechanical Services Switch Board
PA  Per Annum
PABX  Private Automatic Branch Exchange
PWD  Person with Disabilities Toilet and/or Shower
RA  Return Air
RCD  Residual Circuit Device
UPS  Uninterrupted Power Supply
WC  Water Closet (Toilet)
WOL  Whole-of-Life
10 List of Drawings

Option 1:
A 103 Site Plan - Option 1

Option 2:
A 101 Site Plan - Option 2
D 201 Option 2 and 3 – Main Hospital - Proposed
D 211 Option 2 and 3 – Main Hospital – Emergency Department Expansion - Proposed
D 212 Option 2 – Oral Health and Renal Unit - Proposed
D 220 Option 2 – Theatre - Proposed
D 230 Option 2 – New Ward and Birthing Wing - Proposed
D 251 Option 2 – First Floor – Main Hospital
D 301 Option 2 and 3 – Ward Block - Proposed

Option 3:
A 102 Site Plan - Option 3
D 213 Option 3 – New Oral Health and Renal Unit – Proposed
D 221 Option 3 – New Theatre - Proposed
D 231 Option 3 – New Ward and Birthing Wing - Proposed
D 252 Option 3 – First Floor – Main Hospital - Proposed