Preliminary Infrastructure Planning Study for Thursday Island Hospital

Volume 1 of 2

June 2010

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About this Study

The Preliminary Infrastructure Planning Study for Thursday Island Hospital was commissioned by Queensland Health through the Project Services Department of Public Works on 24 March 2010. This study investigates future infrastructure for Thursday Island Hospital based on the options endorsed by Queensland Health’s Integrated Policy and Planning Executive Committee on 15 March 2010.

This Preliminary Infrastructure Planning Study was undertaken from 24 March 2010 to 30 June 2010 and was prepared by GHD and sub-consultants under the direction of Queensland Health’s Planning and Coordination Branch. Every effort has been made by GHD 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 Thursday Island’s Hospital’s future service provision.

Assumptions

The study has been prepared on the basis of available information both written and verbal that was provided prior to, during and post the site assessments. Information included:

Service profile information provided by Queensland Health Department of Policy and Planning. The study has been informed by:

- Hub and Spoke Definition Paper - March 2010
- Thursday Island Hospital Service Profile - May 2010
- Thursday Island Hospital registers and data including but not limited to – Asbestos Registers, Asset Registers, OH&S Registers, Incident forms and Maintenance Registers
- Verbal feedback from hospital staff and management teams during site assessments.
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1. Executive Summary

This study has been prepared in order to provide Policy, Planning and Asset Services in Queensland Health with a summary of the key infrastructure issues and their impact (if any) on service delivery at Thursday Island Hospital. Information on the hospital will cover infrastructure actual and potential risks, general condition, functionality, and service profile requirements. Information contained in this study is to be used as a guide to assist key decision makers with the determination of prioritisation for infrastructure renewal at this site.

The infrastructure assessment involved the onsite assessment of all nominated structures (as determined by Queensland Health and documented in the Terms of Reference paper dated May 2010), the interviewing of key hospital and district staff and the reviewing of relevant documentation as it was made available. Considerations such as, existing staffing models and the recruitment and retention of staff were considered when formulating options. This study does not reflect on funding models, the adequacy of supply of medical equipment or supplies, or the systems and processes implemented for health service delivery. Further, where infrastructure and operational risks were identified, GHD did not investigate mitigation strategies deployed or planned to manage risk impact.

The GHD team of consultants included a Clinical Health Planner, Architect, Mechanical and Electrical Engineer, Civil and Hydraulic Engineer, Structural Engineer, Building Certifier and a Quantity Surveyor. Analysis of the collective findings from each discipline formed the basis of the Option Analysis for Thursday Island Hospital. Options were discussed and developed in consultation with Queensland Health Policy Planning and Asset Services and hospital staff. Options have been developed to mitigate or reduce actual or potential infrastructure risks and to facilitate functional relationships between service departments in order to meet service profile obligations.

Thursday Island Hospital was constructed in 1997 in response to growing demand for health services to the region. The 30-bed hospital is located on a coastal headland and is continuously exposed to strong southerly winds and salt sprays. Materials used for construction have failed to stand up to the harsh coastal conditions, and subsequently corrosion and deterioration of materials has now compromised the building’s strength, durability and safety.

Option 1: ‘Status Quo’ addresses the serious risks around infection control, fire safety and occupational health and safety at both the hospital site and the Primary Health Centre. Option 1 only addresses the actual or potential serious risk issues, and non-compliance to relevant building codes, Acts and/or Legislation. It does not address the overall operational functionality of the campus or the general condition and/or defects of the internal environment. Option 1 does not enable the existing infrastructure to comply with the Australasian Health Facility Guidelines. The cost estimate for Option 1 total $12 million.

Option 2: ‘Refurbishment’ is a refurbishment of the most ‘at risk’ infrastructure concentrating on addressing the risks identified in Option 1 as well as a number of the operational deficiencies throughout the campus. This includes refurbishments for the provision of Isolation rooms to the general ward, refurbishing the Operating Theatre (to repair flooring), extending Medical Records and Pathology. The Primary Health Centre in Douglas is also refurbished to reallocate storage areas and staff work stations. Option 2 does not address the limitations of existing structures, the extensive presence of corrosion in the existing materials and the large number of the internal defects. Option 2 does not enable the existing infrastructure to comply with the Australasian Health Facility Guidelines across all departments. The cost estimate for Option 2 total $21 million.

Option 3 is a full staged rebuild of the entire hospital campus with priority (stage 1) given to essential services of Emergency Department, Operating Theatres, X-ray, Maternity, General Wards, Pharmacy, Pathology and Medical Records. It is proposed the redevelopment would
Involves decanting of the existing administration services, the kitchen, kiosk, laundry, services and storage sheds into demountables until stage one of the constructions is complete. The new development is co-located to the new Chronic Disease Centre and is constructed out of materials suitable for a coastal environment. This Option also includes the refurbishment of the Primary Health Care building to alleviate storage and overcrowding issues. Option 3 would comply with the requirements of the Australasian Health Facility Guidelines across all departments. The cost estimate for Option 3 total $93 million.

For all options presented, critical consideration is given to the mitigation of actual or potential risks and the non-compliance to Building Codes, Legislation and Best Practice Guidelines. There are varying degrees of advantages and disadvantages with all Option strategies, however, only Options 2 and 3 addresses functional arrangements within departments in order to positively impact on operational efficiency and staffing models.

Staff accommodation is considered and costed separately to the refurbishment of the existing hospital infrastructure however it is discussed in line with the Options. It is proposed that the additional accommodation be constructed on the Greenfield land as detailed in the Concept Drawings. Information on the number and type (one or two bedrooms) of dwellings has been provided by Queensland Health. Cost estimates for additional accommodation for the Thursday Island campus total $55 million.

Conclusions reached on the basis of this study should recognise the limitations inherent in such a study, including the limited field inspection time and the basic design analysis completed. Any funding decisions using the order of costs expressed in this study should include for an appropriate contingency given the level of detail informing those estimates.
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

The Thursday Island Hospital is located within the Torres Strait and Northern Peninsula Area between Cape York Peninsula and the border of Australia and Papua New Guinea. The District comprises of 18 inhabited islands and five communities located in the Northern Peninsula Area of Cape York.

Figure 1 Thursday Island Site Locality Plan


The District has two rural Hospitals, one located on Thursday Island and one in Bamaga in the Northern Peninsula Area. There are also Primary Health Centres in both Thursday Island and Bamaga which serve as a base for outreach teams. A great challenge for the District is the geography and disbursement of the population across the Torres Strait Islands, expanses of sea and the wet seasonal patterns. Public transport to the outer islands of the District is limited to light aircraft and ferry services (Queensland Health, Planning and Coordination Branch, Policy Planning and Asset Services, Thursday Island Draft Service Profile, 2010: 10).

In 2008, the estimated District resident population was 10,849, with sixty four percent of the District population residing outside the Thursday Island and inner island group. Issues with registration and census collection in this District are well documented and population numbers are likely to be underestimated (Queensland Health, Planning and Coordination Branch, Policy Planning and Asset Services, Draft Service Profile, 2010: 8). The below table details the population projections for the catchment up to the year 2021.
Table 1: Thursday Island Hospital catchment estimated resident population and projections by age range for the Statistical Local Area of Thursday Island and Districts, 2008-2021 (Queensland Health, Planning and Coordination Branch, Policy Planning and Asset Services, Thursday Island Draft Service Profile, 2010: 8).

<table>
<thead>
<tr>
<th>Age Group</th>
<th>2006 (V2008)</th>
<th>2011</th>
<th>2016</th>
<th>2021</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14</td>
<td>3699</td>
<td>3757</td>
<td>3862</td>
<td>3810</td>
<td>3%</td>
</tr>
<tr>
<td>15-49</td>
<td>5363</td>
<td>5244</td>
<td>5143</td>
<td>5267</td>
<td>-2%</td>
</tr>
<tr>
<td>50-69</td>
<td>1421</td>
<td>1552</td>
<td>1799</td>
<td>1963</td>
<td>38%</td>
</tr>
<tr>
<td>70+</td>
<td>366</td>
<td>376</td>
<td>531</td>
<td>809</td>
<td>121%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>10,849</td>
<td>10,929</td>
<td>11,473</td>
<td>12,028</td>
<td>11%</td>
</tr>
</tbody>
</table>
3.2 Thursday Island Hospital Site

Thursday Island Hospital is located on a coastal headland. The site is on a 5 hectares land parcel with 0.815 hectares currently utilised for the existing campus. There is 1.5 hectares of Greenfield land available for development.

**Figure 2 – Thursday Island Site Plan**

The entrance of the hospital is accessed by Victoria Parade and Douglas Street as is the Emergency Department, and the Administration building. The general wards, Operating Theatre, and Maternity suites are located behind, open to coastal views. The Morgue, Maternity Hostel and Maintenance sheds are positioned adjacent to the hospital. Staff accommodation is in short walking distance to the hospital. Thursday Island Hospital has 1.5 hectares of available Greenfield land adjacent to the existing infrastructure. The Primary Health Care Centre is located in Douglas Street (not visible on above site photo).
3.3 Thursday Island Hospital Building History

There have been a number of different hospital building configurations on this site. The current Thursday Island hospital was built in December 1997 to meet the increasing needs of the district. Below is a timeline of hospital developments and extensions on this site.

Figure 3 Thursday Island Building Development History
3.4 Existing Built Environment

The hospital is a steel structure with fibrous cement sheeting. The roofing material is Colorbond Custom Orb as are the sunhoods. The total area of hospital 5650m² and the ancillary buildings (two sheds and Maternity Hostel) are in total 520m². Materials used for construction have failed to stand up to the harsh coastal conditions. Corrosion and deterioration of materials has now compromised the building’s strength, durability and safety.

3.5 Thursday Island Hospital Maintenance Issues

The ongoing maintenance concerns reported by the staff are prevalent across many of the departments. Concerns include:

- Generally across the Thursday Island Hospital Campus
  - corrosion structural steel
  - failing air conditioning units due to corrosion
  - constant presence of mould throughout the hospital
  - poor condition on internal surfaces (floor rotting, walls and ceilings in poor condition due to water damage and presence of mould)
  - faulty nurse call bell system in general wards
  - corrosion of copper waste pipes
  - corrosion of railings
  - corrosion roof sheeting and roofing screws
  - poor external water drainage
- Specific to Primary Health Building:
  - corrosion of roof sheeting and gutters
  - corrosion of copper waste and water services
  - poor site drainage
  - water ingress during wet periods causing damage to ceilings.

3.6 Thursday Island Hospital Development Proposals

An integrated Chronic Disease Centre is currently in planning for Thursday Island and is expected to be completed by 2012. The centre will be co-located with the Thursday Island Hospital and will accommodate services relating to the prevention and management of chronic diseases such as diabetes, renal and heart disease. It is also proposed to accommodate some administration services from the hospital and the Primary Health Centre.

3.7 Site Constraints

There are a number of site constraints that require consideration when analysing a way forward for the Thursday Island Hospital site. These include:

- Highly exposed coastal position that experiences high winds and continuous exposure to southerly winds and salt sprays.
- Access to the site for building supplies and the resourcing of labour and building materials.
- The extensive presence of corrosion present in the existing steel building materials and roofing.
- The poor condition of the ceilings, walls, due to water damage.
- The poor condition of flooring materials that do not meet strength or deflection requirements.
- Disability access to and within the site is inadequate and requires reconfiguration to address access and safety concerns.
• Compliance to fire standards, building codes and the Australasian Health Facility Guidelines is inadequate across the site and requires refurbishment to bring to required standard.

3.7.1 Heritage Issues
After searching the National or State Heritage Registers it was found that there are no buildings on the Thursday Island Hospital campus site that are listed on either of the registers.

3.7.2 Town Planning / Designation Issues
After searching the Department of Infrastructure and Planning’s community infrastructure database it was found that Thursday Island Hospital is currently undergoing designation for community infrastructure managed by Project Services. Proposals for development or redevelopment on this site will not require Town Planning advice to consider if a ‘Material Change of Use’ is occurring as a result of the proposed development (Project Services, Information ‘Kit’ for the Infrastructure Renewal Project for Rural and Remote Projects, (IRPRRA), April 2010).

3.7.3 Indigenous Community Considerations
To ensure Queensland Health’s ongoing positive relationship with the Indigenous Communities of this region (in line with the Guidelines for the Planning and Design of Primary Health Care Facilities in Indigenous Communities), it is critical that strategies are developed to enhance the capacity of Torres Strait Islander Communities to participate in any future planning processes for the hospital.
4. Thursday Island Hospital Health Service

4.1 Design and Functionality of Current Facility

Thursday Island Hospital was constructed in December 1997. The campus is the main referral hospital for District residents, providing health services to approximately 10,849 people (2008 ERP), and is the base for the District’s administration positions and support functions. The hospital has a 30 bed general ward which contains two monitored beds and four paediatric beds. There is an eight bed maternity unit and an emergency department service. (Queensland Health, Planning and Coordination Branch, Policy Planning and Asset Services, Draft Service Profile, 2010: 10).

Buildings were designed fit for their purpose at the time of their construction, however, over time the deterioration of building materials has impacted on functions of many of the departments. Some areas within departments have been designated alternate use (for example, two beds in general ward are not utilised due to water damage of ceilings causing OH&S risks, and bathrooms used for offices). It is commonly found across the campus that building structures, designs and layouts do not meet the Australasian Health Facility Guidelines requirements causing a number of operational inefficiencies and functional relationship issues. Operational inefficiencies are detailed in Section 4.3 below, however, it is to be noted that across all departments the general condition of internal finishes, the condition of services, and the disability access is considered to be poor.
4.2 Thursday Island Hospital Future Health Services

Information on current and future bed requirements has been determined by Queensland Health’s Policy Planning and Asset Services and is documented in Queensland Health, Planning and Coordination Branch, Policy Planning and Asset Services, Draft Thursday Island Service Profile 2010. An extract from the Service Profile identifying current and future bed requirements for Thursday Island Hospital is below.

The following table shows current and future bed requirements for Thursday Island 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). Two sets of projections are shown:

At Queensland Health endorsed statewide bed planning occupancy rates

At 70 per cent occupancy rate, as rural hospitals usually manage inpatient services at lower annual occupancy rates than metropolitan services, to accommodate peaks in occupancy when specialists visit.

Table 2: Current and future bed requirements for Thursday Island Hospital (Bed projections)

<table>
<thead>
<tr>
<th>Category A: Beds</th>
<th>Projection 1: Occupancy Rate 2011/12</th>
<th>Endorsed Occupancy Rate 2016/17</th>
<th>2021/22</th>
<th>Projection 2: Occupancy Rate 2011/12</th>
<th>70% Occupancy Rate 2016/17</th>
<th>Rate 2021/22</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A1. Overnight Beds</strong></td>
<td>85%</td>
<td>12.3</td>
<td>13.0</td>
<td>13.9</td>
<td>70%</td>
<td>15.0</td>
</tr>
<tr>
<td><strong>A2. Same Day Beds</strong></td>
<td>0</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>A3. Bed Alternatives</strong></td>
<td>0</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total overnight beds</strong></td>
<td>36 multi-purpose beds</td>
<td>21.3</td>
<td>22.4</td>
<td>23.7</td>
<td>25.1</td>
<td>26.2</td>
</tr>
<tr>
<td><strong>Total same day beds</strong></td>
<td>0</td>
<td>0.5</td>
<td>0.7</td>
<td>0.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stage 2 recovery bays (chairs)</strong></td>
<td>0 (transferred to ward beds, could accommodate ward beds)</td>
<td>minimum to meet demand for day surgery lists</td>
<td>minimum to meet demand for day surgery lists</td>
<td>minimum to meet demand for day surgery lists</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Antenatal Day Assessment Unit chairs</strong></td>
<td>0 (use ward beds for day pregnancy assessment)</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Current</td>
<td>Projection 1: Rate</td>
<td>Endorsed Occupancy Rate</td>
<td>Projection 2: Rate</td>
<td>70% Occupancy</td>
<td>Rate</td>
</tr>
<tr>
<td>------</td>
<td>---------</td>
<td>-------------------</td>
<td>-------------------------</td>
<td>-------------------</td>
<td>---------------</td>
<td>------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2021/22</td>
<td>2021/22</td>
<td></td>
<td>2021/22</td>
</tr>
<tr>
<td>Chemotherapy chairs/trolleys (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>0 chairs (no visiting oncologist)</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td></td>
</tr>
<tr>
<td>Renal Dialysis chairs/trolleys (self care) (renal dialysis benchmark currently being finalised TBA)</td>
<td>0? TBC</td>
<td>No change</td>
<td>(9 TBC chronic disease centre)</td>
<td>(12 TBC chronic disease centre)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Department chairs/trolleys (For admitted patients that require a brief period of observation. Not counted in overnight beds and not considered as short stay beds)</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>Part of ED treatment space numbers, see category B.</td>
<td>Part of ED treatment space numbers, see category B.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total bed alternatives</td>
<td>0</td>
<td>TBC</td>
<td>TBC</td>
<td>TBC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals for Category A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total A1 Overnight beds</td>
<td>36 multi-purpose beds</td>
<td>21.3</td>
<td>22.4</td>
<td>23.7</td>
<td>25.1</td>
<td>26.2</td>
</tr>
<tr>
<td>Total A2 Same day beds</td>
<td>0</td>
<td>0.5</td>
<td>0.7</td>
<td>0.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total A3 Bed alternatives</td>
<td>0</td>
<td>TBC</td>
<td>TBC</td>
<td>TBC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total beds</td>
<td>36</td>
<td>21.8 minimum</td>
<td>23.1 minimum</td>
<td>24.6 minimum</td>
<td></td>
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<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>Category B: Emergency Department treatment spaces*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency bays (observation areas) for Triage Categories 1–3</td>
<td>2 (1 resuscitation cubicle with two trolley spaces for Triage Category 1–3?)</td>
<td>1 resuscitation cubicle with two trolley spaces for Triage Category 1–3</td>
<td>1 acute cubicle with two trolley spaces/observation beds for Triage Categories 2–3</td>
<td>No change</td>
</tr>
<tr>
<td>Consultation rooms for Triage Categories 4–5 (excludes treatment, plaster and eye rooms)</td>
<td>2 (TBC by District)</td>
<td>(TBC by District)</td>
<td>(TBC by District)</td>
<td>(TBC by District)</td>
</tr>
<tr>
<td>Total emergency treatment spaces</td>
<td>4</td>
<td>TBC</td>
<td>TBC</td>
<td>TBC</td>
</tr>
</tbody>
</table>

Category C: Operating/Intervention Rooms

using Victorian Benchmarks

<table>
<thead>
<tr>
<th>Item</th>
<th></th>
<th>2011/12</th>
<th>2016/17</th>
<th>2021/22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical imaging</td>
<td>TBC</td>
<td>1 x-ray room</td>
<td>1 ultrasound</td>
<td>No change</td>
</tr>
<tr>
<td>Operating Theatre – major (1100 overnight surgical separations per theatre)</td>
<td>1 major theatre</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td>Operating Theatre – minor (1900 same day surgical separations per theatre)</td>
<td>1 stress test room</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td>Stage 1 recovery (less than 4 theatres): Requires 2 recovery bays per Operating Theatre</td>
<td>0 (should have two per theatre – space is available for them)</td>
<td>2 recovery bays per theatre</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td>Treatment procedure rooms/delivery suites (250 births per room &lt; 300 separations) + antenatal consultation room</td>
<td>2 delivery rooms</td>
<td>1 delivery room with second delivery room to be used as antenatal procedure room.</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td>Item</td>
<td>Current number</td>
<td>2011/12</td>
<td>2016/17</td>
<td>2021/22</td>
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<tr>
<td>----------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Maternity/women’s health/gynaecology consultation rooms + antenatal consultation room</td>
<td>TBC</td>
<td>3 consultation rooms</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 child-friendly waiting room</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 multipurpose staff/antenatal/postnatal education room</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well Baby nursery cots (1 nursery cot per 3 obstetric beds)</td>
<td>2 cot spaces +</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td></td>
<td>1 resuscitation bay/cot for back transfers/low risk qualified babies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category D: Consultation/Treatment/Procedure Rooms</td>
<td>TBC</td>
<td>7</td>
<td>0 change</td>
<td>No change</td>
</tr>
<tr>
<td>Multipurpose consultation rooms (ambulatory care), includes specialist and general practice, excludes Emergency Department activity</td>
<td></td>
<td></td>
<td></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>TBC</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>
4.3 Infrastructure Gaps

The following information summarises the functionality of each of the departments and highlights the deficiencies that contribute to the inefficiency of the department. The ‘non-compliance’, ‘lack of’ or ‘inadequate provision’ statements are in reference to one or more of the following: Australasian Health Facility Guidelines | Building Codes of Australia | Schedule of Australian and New Zealand Standards | Infection Control Best Practice Guidelines | Medical Records – Management and Disposal Guidelines | Fire Act | Occupational Health and Safety Act | The Privacy Act 1988 | The Drug and Poisons Act 1981 | Disability Discrimination Act (Commonwealth).

4.3.1.1 Emergency Department
- Inadequate provision of security for medical equipment
- Inadequate provision of security for security medical records
- Lack of storage
- Inadequate provision for patient observation
- Inadequate disability access
- Lack of privacy
- Lack of consulting rooms
- Obstruction of corridors
- Overcrowding of work areas
- Inadequate ambulance access
- Inadequate nurse call system
- Insufficient supply of medical gases to treatment beds
- Inadequate number of power outlets

4.3.1.2 Outpatient Department
- Inadequate security for medical equipment
- Obstructed patient observation due to layout of department
- Lack of storage
- Inadequate disability access
- Inadequate number of consulting rooms
- Lack of consult room for mental health patients
- Inadequate air conditioning system
- Inadequate earth leakage protection
- Inadequate nurse call system
- Inadequate number of power outlets
- Compromised Infection control – no provision of an isolation room
- Inadequate patient waiting area

4.3.1.3 Medical Records
- Insufficient storage
- Overcrowding of work area
- Inadequate earth leakage protection
- Inadequate flooring for weight of compactus
- Compromise staff safety – risk of injury moving compactus due to weight
- Inadequate provision of air conditioning

4.3.1.4 Entry Foyer/admin
- Inadequate disability access
• Lack of seating
• Toilet amenities inadequate – no disability access
• Inadequate earth leakage protection

4.3.1.5 X-ray
• Overcrowding of work areas
• Lack of storage
• Inadequate provision of air conditioning
• Inadequate earth leakage protection
• Inadequate number of power outlets
• Flooring inadequate for heavy loads

4.3.1.6 Dental
• Overcrowding of work areas
• Lack of storage
• Inadequate layout
• Inadequate provision of air conditioning
• Inadequate number of power outlets

4.3.1.7 Operating Theatre
• Inadequate condition of air conditioning unit
• Flooring inadequate – vibrates during surgery
• Not enough power sockets
• Lack of Storage
• Lack of Privacy – patients
• Inadequate filtration to air conditioning unit – theatre
• Compromised Infection Control – air quality and inadequate pressure
• Inadequate number of power outlets
• Inadequate tearoom for staff
• Inadequate office space
• Over crowding CSD department
• CSD – Dust and debris particles discharging from air conditioning unit
• Inadequate patient waiting area – pre operative

4.3.1.8 Maternity
• Overcrowding of work areas
• Lack of storage

4.3.1.9 Pharmacy
• Overcrowding of work areas
• Inadequate storage
• Inadequate layout and space
• Inadequate earth leakage protection
• Flooring inadequate for heavy loads
• Extensive presence of mould on ceiling
• Inadequate condition of air conditioning unit – water leakage on ceiling

4.3.1.10 General Wards
• Inadequate provision of security for staff
Inadequate provision of security for medical records
- Lack of storage
- Obstructed patient observation to monitored beds
- Inadequate disability access
- Infection control – incorrectly configured ventilation system to isolation rooms
- Lack of privacy for patients and staff
- Obstruction of corridors from equipment and supplies
- Overcrowding of work areas
- Inadequate nurse station for staff
- Inadequate nurse call system – nil fitted to the monitored beds
- Inadequate number of fire detectors fitted
- Insufficient supply of medical gases to treatment beds
- Inadequate air conditioning to wards
- Inadequate earth leakage protection

4.3.1.11 Administration
- Inadequate storage
- Inadequate office space
- Overcrowding of work areas
- Inadequate air conditioning
- Inadequate earth leakage protection
- Inadequate power outlets

4.3.1.12 Secondary Storage Medical Records
- Inadequate number of fire detectors
- Lack of storage
- Inadequate access to records – poor retrieval
- Occupational risk accessing highly stacked records

4.3.1.13 Primary Health Care Centre – Douglas Street
- Overcrowding of work areas and waiting areas
- Inadequate air conditioning provision
- Inadequate provision of privacy
- Inadequate work stations
- Lack of storage
- Inadequate disability access
- Inadequate provision of security for medical equipment
- Inadequate earth leakage protection
- Inadequate number of power outlets
5. Inspection Studies

5.1 Method

The campus assessment of Thursday Island Hospital was undertaken on the 14 to 15 April 2010. An entry meeting was conducted with local and district staff prior to the assessment of the site and infrastructure. A site orientation tour was conducted with local and district health managers followed by a detailed inspection of each area within every building including the off-site Primary Health Care Building located in Douglas Street. Hospital staff were questioned on service issues related to their work area. Feedback to key district and site personnel on the team’s findings was provided in the exit meetings held prior to the departure of the hospital.

The GHD team of consultants covered the areas of Clinical Health Planning, Architecture, Mechanical Engineering, Electrical Engineering, Civil Engineering, Structural Engineering, Hydraulic Engineering, Building Certification and Quantity Surveying.

Analysis of the collective findings from each discipline formed the basis of the Option Analysis for Thursday Island Hospital. Options were discussed with key personnel from Project Services, Queensland Health – Policy Planning and Asset Services, District Hospital Managers and onsite Managers for client and stakeholder input. Options have been developed to mitigate or reduce actual or potential infrastructural risks and to facilitate functional relationships between service departments in order to meet service profile obligations.

5.2 Exclusions

- Auditing and inspections were only sufficient for a general overview and impression of the hospital, facilities, departments and individual areas, supported by general discussions with staff.
- No in-depth testing or analysis of the design and functionality, materials and finishes, medical flows, drawings and site plans, compliance and impression of findings.
- No removal of linings and ceiling tiles, access hatches, furniture, storage items to obtain behind impressions.
- Inspection sufficient for a general overview of site and building services condition only.
- No testing of services or materials was undertaken.
- No linings were removed or buried services excavated during the inspection. Only existing visible services were examined.
- Elevated services (eg, contained within ceiling spaces) were only inspected from ground level or other safe vantage points.
- No calculations or design were undertaken to verify capacities, equipment sizing, etc.
- No interruption of the system operation was undertaken for the inspection. All items were inspected while working in their normal operation.

5.3 Overlap

Overlap in issues identified by GHD primarily pertained to the areas of fire safety, infection control, disability access and occupational health and safety. The overlap of issues have been recognised and accounted for in the cost for rectification.

5.4 Current Site and Infrastructure Condition

5.4.1 Clinical

Thursday Island Hospital is situated on an exposed coastal site and as a result the condition of buildings and services are extremely poor presenting a number of serious risks issues to
Compromised operational flow for the delivery of medical and clinical services in the Emergency Department and Primary Health Care Centre due to:
- the layout of existing structures compromising unobstructed patient observation, for example, the Emergency Department and the monitored beds in the general ward
- the lack of disability access to toilet amenities
- the overcrowding of work areas, in particular Pathology, Pharmacy, and the Primary Health Care Centre.

Inadequate storage across all service areas within Thursday Island Hospital leading to risks in safety for staff and to breaches of legislation. Areas compromised for storage space include Medical Records, General Ward, Pharmacy, Pathology, Operating Theatre and the Emergency Department.

Inadequate secondary storage for medical records (currently stored in shipping containers).

Inadequate provision of a nurse call system in general ward and in particular for the monitored beds.

Compromised ability to maintain effective infection control practices in relation to the ventilation systems in the Isolation room (general ward) and the Operating Theatre.

5.4.1.2 Architectural
- The layouts of various departments and their individual areas present some operational inefficiency in particular to availability of storage areas for medical equipment and/or supplies and the lack of disability access and fire egress.
- The condition of internal finishes is extremely poor. This includes flooring materials, condition and integrity of walls and ceilings surfaces.
- Many of the departments are experiencing infrastructure defects that are impacting on work flow. For example water ingress impacting on number of beds available for use, areas of flooring that are water damaged and unsafe for holding heavy equipment, the isolation room incorrectly configured, ventilation systems inadequate for isolation room and operating theatre, and unsuitable flooring material in the operating theatre causing disruption to work flow due to vibration movements.

5.4.1.3 Structural
- General degeneration of building structures around the site.
- Floors are lacking capacity for strength and deflection for the allocated use, in particular the X-ray department, Pathology and the Operating Theatre.
- Water is entering the building due to waterproofing issues from poor original construction, where roof flashings and seals were not completed adequately. Original seals around wall panels are now not performing well.
- Water damage too many of the ceilings has caused large mould growth in various departments around the hospital (this has occurred due to poor vapour barriers being applied to the insulation and in some areas poor installation of the insulation materials).
- Severe corrosion on all the structural steel on the southern sides of the hospital which is exposed to the southerly winds. If corrosion continues handrails will eventually no longer be capable of supporting people using the ramp, and the roof members are likely to break away in moderate storms.
5.4.1.4 Mechanical

- No provision of an isolation room fitted with an ante room and negative pressure air ventilation for patients presenting with contagious/infectious diseases.
- No air conditioning is provided in some key areas. Currently the Operating Theatre is at negative pressure. Positive pressure is required to prevent ingress of contaminated air from areas outside the Operating Theatre.
- Generally the filtrations of the air conditioning systems are of poor quality. HEPA filter quality is required to be maintained to ensure clean air only enters the Operating Theatre.
- Ventilation system to CSD - sterilizing, preparation room, clean up rooms. Filter material is taped over the external face of the supply air registers to catch debris that is coming down supply air ducts. Contamination of the sterile instruments may result.
- Ventilation system to the recovery area has filter material taped over the external face of the supply air registers to catch debris that is coming down supply air ducts.
- Water damage is evident to many of the ceilings around the supply air registers as well as some general ceiling areas in the wards and administration areas.
- The nurse call system is generally unreliable across the hospital campus; there is no provision of a nurse call system for the monitored beds.

5.4.1.5 Electrical and Communications

- Majority of the electrical distribution switchboards for the hospital are not fitted with earth leakage protection and there is inadequate supply of power outlets to the site.
- The MATV system does not operate effectively when video conference is being used.
- There is no provision of an emergency evacuation system.
- Deterioration of external electrical equipment including lights, speakers, fans, fire detectors, etc.
- Insufficient switch socket outlets provided in several areas has resulted in the use of power boards.
- Primary Health Centre has inadequate earth leakage protection for the power circuits (with the exception of the treatment rooms).
- There is no provision of a call centre for the monitored beds in the general ward.
- Inadequate nurses call system (regularly playing up and is not reliable).
- Insufficient number of smoke detectors is installed to areas of the hospital as required by the BCA and AS 1670.

5.4.1.6 Hydraulics

- Tap ware and associated services are in average to poor condition and generally lack maintenance. No Queensland Health recommended water saving (flow restrictors) devices are fitted.
- Corrosion of roofing material presenting an ongoing maintenance issue.
- Generally poor external surface drainage, causing pooling of water under the building in some areas.
- Two existing pillar hydrants in the area of the accommodation blocks are incorrectly placed (too close to buildings).
- Access to external hydrants is non-compliant.

5.4.1.7 Building Certification

- There are numerous fire separation issues prevalent on the hospital site. For example, the General Ward and Operating Theatre have a number of unprotected penetrations through the walls.
• Generally the fire and smoke doors that have been provided do not comply with relevant standards. Smoke doors are not fitted with smoke seals to all sides of both door leaves.

• Exit doors have incorrect labelling.

• The Primary Health Care building has had an additional office and a record storage shed erected to the rear compromising the fire integrity of the entire complex by encouraging the spread of fire from the rear property boundary. A fire wall between any structures must be less than 3m from the boundary.

• Disabled access to the buildings (both the Thursday Island Hospital and the Primary Health Centre) is generally poor, and not in accordance with relevant standards.
6. Current Risks

6.1 Building Viability

The buildings that make up the Thursday Island Hospital campus are considered to be at risk due to extreme corrosion caused by coastal conditions. Existing buildings are not constructed with materials suitable for withstanding coastal environmental conditions (high winds and salt sprays) and as such, failure of materials are presenting a large number of building code non-compliance as well as health and safety and infection control risks that include:

- Severe corrosion on all structural steel on the southern sides of the hospital which is exposed to the predominantly southerly winds.
- Corrosion of mechanical services (e.g., air conditioning units) causing inadequate air conditioning and ventilation provision.
- Moisture intrusion into internal structures (ceilings, walls, flooring) causing water damage, mould growth, corrosion and rotting of materials.
- Compromised deflection/vibration/strength to flooring materials across the hospital in general.

The GHD team of consultants identified a number of extreme, high and medium rated risks using the AS/NZ 4360 Risk Management Framework (refer to Volume 2). Risks are directly related to the condition of the services and existing infrastructure. Risks are actual and potential and are impacting on the following areas:

- **Compromised Patient Care** - issues compromising overall patient care include:
  - poor layout of existing departments
  - lack of disability access
  - deficiency in storage areas
  - inadequate security for staff, patients and visitors, equipment and medical records
  - inadequate provision of privacy
  - compromised ability to maintain effective infection control practices (lack of isolation rooms, incorrect configuration of ventilation systems in the Operating Theatre and CSD and poor condition of general surfaces).

- **Fire Risks** – across the hospital campus there are numerous fire separation issues in the existing infrastructure. Generally dimensions of exits do not comply with relevant standards and there are insufficient numbers of fire and smoke detectors installed. Overall, disability access is non-compliant to building code requirements and some evacuation pathways do not lead to desired assembly areas.

- **Risk of Accidents** – staff, patients and visitors are at risk of sustaining an injury as a result of an accident due to one or more of the following:
  - failing condition of existing infrastructure (including inadequate ventilation systems)
  - poor disability access
  - inadequate provision of suitable storage areas for medical equipment and supplies
  - inadequate security for staff
  - poor configuration of existing departments
  - overcrowding of work areas.

- **Infection Risks** – best practice in infection control is compromised due to:
– lack of correctly configured isolation rooms (as per AHFG) - Emergency Department and Medical Ward
– poor quality of ventilation systems in the Operating Theatre and Central Sterilizing Department

• **Security Risks** – staff, patients, visitors and medical equipment are exposed to security risks due to:
  – inadequate provision of security and monitored surveillance systems across the site (including staff car parking areas)
  – lack of secure storage for medical records and for medical equipment

• **Health and Safety Risks** – health and safety issues are present due to:
  – the failing condition of existing infrastructure (including inadequate ventilation systems)
  – poor disability access
  – inadequate provision of suitable storage areas for medical equipment and supplies
  – inadequate security for staff
  – the poor configuration of existing departments
  – and the overcrowding of work areas.

• **Disadvantage to persons with Disability** – non compliances to building codes and standards in relation to disability access include:
  – inadequate configuration of toilet amenities
  – inadequate access within and outside the campus
  – inadequate dimensions of corridors and exits
  – inadequate provision of car parking areas suitable for disabled persons.

• **Staff, Patient and Visitor Dissatisfaction** – factors contributing to staff, patients’ and visitors’ dissatisfaction include:
  – poor condition of the existing infrastructure
  – overcrowding of staff work areas and patient waiting areas
  – inadequate configuration of the service departments (in particular: Emergency Department, Outpatients Department, Medical Ward, Medical Records, Operating Theatre, CSD and the Primary Health Centre)
  – inadequate provision of security for staff; patients, visitors and equipment
  – inadequate provision of safe and secure parking areas
  – poor disability access across the site.

• **Excessive Running Costs** – ongoing repair and maintenance costs are directly related to harsh coastal conditions and the ongoing need to replace corroded building materials.

• **Failure of Building Services Systems** – mechanical and electrical (for example, ventilation systems and nurse call systems) services are deteriorating and are impacting on staff and patient safety in terms of the provision of a secure and safe environment.

• **Legal Action Risks** – potential risk of personal injury and/or adverse medical condition to staff, patients or visitors related to:
  – failing infrastructure and inadequate ventilation systems to isolation rooms
  – poor disability access
  – high fire dangers.
7. Options

7.1 Staff Accommodation

Queensland Health provides housing to staff who deliver essential services to rural, remote and regional centres. Thursday Island Hospital currently utilises 71 units of accommodation to provide appropriate, safe and secure housing for rural and remote officers.

The provision of appropriate, safe and secure staff housing in rural areas is broadly acknowledged as a vital element in the ongoing attraction and retention of staff and the provision of safe and sustainable health services.

In relation to Thursday Island Hospital site, the provision of appropriate housing has been flagged as an essential element to ensure the ongoing viability of the health service.

As a result all options (Option 1 through to 3) detailed below include the provision of an additional 56 housing units of accommodation. Housing accommodation for Thursday Island Hospital includes:

The footprint allowance and costing for the additional 56 units (including the replacement of substandard accommodation) has been based on accepted standards for Queensland Health staff housing (recently constructed at Roma).

The staff accommodation has been reviewed with a total provision of 9,000m² of accommodation over a period extending to 2013 has a broad order of costs of $55 million.

7.2 Option 1 – Status Quo

For Thursday Island Hospital Option 1 addresses the serious risks around fire, infection control and occupational health and safety. Option 1 only addresses the actual or potential serious risk issues, and non-compliance to relevant Building Codes, Acts and/or Legislation. It does not address the overall operational functionality of the campus or the general condition and/or defects of the internal environment. Option 1 does not address the infrastructure’s non-compliance to the Australasian Health Facility Guidelines or the Clinical Services Capability Framework V3 requirements.

7.2.1 Scope of this Option

Option 1 involves the rectification of the existing non-compliance to Building Codes, Standards, Acts or Legislation. This will involve reviewing services (e.g. air conditioning) and undertaking structural reconfiguration to ensure general safety and disability access.

7.2.2 Area of Concern - Fire Risk

- Install a fire evacuation system.
- Fit more fire detectors, evacuation speakers and smoke detectors throughout the hospital.
- Replace fire hoses and locate fire hose reels in appropriate and compliant areas of hospital.
- Relocate external hydrants to ensure they are 10m clear of the buildings they protect.
- Relocate the two existing pillar hydrants in the area of the accommodation blocks (too close to buildings).
- Review access to external hydrants to ensure compliance.
- Create fire separation throughout the hospital.
- Address the following - the ward and theatre areas of the hospital have a number of unprotected penetrations through the walls or cables passing over the walls and
many of the fire door and smoke door sets do not have sequencers fitted to permit proper closing of the doors to ensure spread of fire and smoke is prevented.

- Repair fire detector in the communication room.
- Repair external electrical fire equipment – lights, speakers, fans, fire detectors.
- Install appropriate fire doors - fire doors have been compromised with the installation of glass viewing panels (unnecessary as the doors are held open on magnetic latches).
- Smoke doors are required to be fitted with smoke seals to all sides of both door leaves.
- Review all walls within the hospital to ensure a fire rating level of not less than 60/60/60.
- Primary Health Care (Douglas Street) - install a fire wall between any structure less than 3m from the boundary.
- Primary Health building (Douglas Street) - provide matrix for fire indicator panel.
- Fit non-combustible linings to electrical cupboards and switchboards throughout the hospital.
- Label the fire and smoke doors in the ward areas.
- Install fire hose reels appropriately.
- Replace Exit Door signage from emergency department waiting room area.
- Install Exit Signs to the doors leading from the administration area into the open covered area to indicate an alternative path of travel.
- Remove plastic tape from the fire detector in the communication room adjacent to the nurse station.

### 7.2.3 Area of Concern - Infection Risk

- Provide an isolation room fitted with an ante room and negative pressure air ventilation for patients presenting with contagious/infectious diseases.
  - Ward I – This ward has been converted locally from a standard 1 bedroom ward to an isolation ward that is used for patients that require ‘respiratory precautions’ (i.e. tuberculosis). The ward does not comply with the requirements for a respiratory type isolation ward (Type 5) as identified in HB260. No outdoor air has been provided and there is no separate exhaust system. The room has not been upgraded to provide negative pressure in this ward. No anteroom has been provided as recommended in HB260 and air will escape into the hospital’s corridor when entering and leaving the room. Some air may also enter the corridor via the cross talk air transfer system. This present setup will place staff and other patients at risk.
  - Ward J – This 1 bedroom ward was provided in the original hospital design as a standard isolation room (Type 4 under HB260) for isolation of patients with infections transmissible by means other than the airborne route. The ward is not set up as required for a respiratory isolation room and has no anteroom provided as required in HB260. Airborne particles from the room can enter the hospital’s corridor when the ward’s access door is operated if the ward is to be used for patients requiring ‘respiratory precautions’ (i.e. tuberculosis).

- Upgrade the Primary Health Building - the overflow relief gully is not the required 100 mm below the lowest fixture, allowing for backed up sewage to make its way into the building.
- Upgrade ventilation system to Operating Theatre - currently at negative pressure and not at positive pressure as required by AHFG guidelines.
- Upgrade ventilation system to Operating Theatre - HEPA filter units appear to be from original installation and have not been replaced.
- Upgrade and/or replace ventilation system to Operating Theatre - the air conditioning unit/system for this area is in extremely poor condition due to severe corrosion.
- Upgrade the airconditioning unit to prevent vibration of the unit being transferred to the ductwork and then to the building.
- Upgrade ventilation system to CSD.
- Upgrade ventilation system to the recovery area of the Operating Theatre.

### 7.2.4 Area of Concern - Health and Safety Risks

- Review floor capacity across the hospital to ensure adequacy for heavy loads.
- Repair dampness/mould and rot in the underside of ply floor sheeting.
- Review and replace polycarbonate roofs on decks of accommodation blocks as they are not designed to withstand high wind events.
- Replace structural steelwork to roof awning and handrails at ramp on southern side of the pavilion – adjacent to operating theatre and maternity.
- Repair turret roof steelwork.
- Replace corroded roof screws.
- Replace all ramps of the Maternity Hostel - widespread rot of timber in all three ramps around the building, in particular, on the western side where toe boards have completely rotted away.
- Repair rot in verandah floor joist in the Administration Pavilion.
- Replace corroded roofing over the Emergency Department area.
- Repair corrosion to steelwork of entry awning.
- Repair the severe corrosion of structural steelwork roof awning and handrails at ramp on southern side of the pavilion (adjacent Operating Theatre and Maternity).
- Replace steelwork to ramp on southern side of hospital.
- Replace roof with galvanised steel and a conventional eave with a lining and facia to protect the structural steel from the wind.
- Replace all hand railing with stainless steel stanchions.
- Address water damage across various departments within Thursday Island Hospital. Moisture is entering flooring from:
  1. Condensate pipes passing through the flooring but not being insulated at the point where they pass the ply. Large amounts of water form on the condensate pipes due to high humidity (Ref Photo 21 and 22 – in Vol. 2 of 2).
  2. Condensate forming on the mechanical ductwork within the ceiling space running down the inside of the internal walls and into the flooring. (refer to Mechanical Engineers study for more information on this mechanical ventilation problem).
  3. Water entering building due to waterproofing issues from poor original construction, where roof flashings and seals were not completed adequately. Original seals around wall panels are now not performing well.
  4. Water entering through splits in vinyl flooring. Vinyl is splitting at the junction of ply panels where slight movement occurs. Conventional practice is to lay hardboard under the vinyl to prevent this problem however this was not done in the original construction.
  5. Address water damage to many of the ceilings causing large mould growth in various departments around the hospital (This has occurred due to poor vapour barrier being applied to the insulation and in some areas poor installation of the insulation materials).

### 7.2.5 Area of Concern - Compromised Patient Care Related to Infrastructure Inefficiencies

- Provide stable flooring in the Operating Theatre. Isolate the mechanical ductwork from the floor in the Operating Theatre.
• Provide increased storage throughout the hospital to alleviate congested work areas. Considerations for external storage for supplies to be increased.
• Provide clear observation (through possible installation of CCTV) of the monitored beds in the General Ward from nurses' station.
• Install CCTV cameras into the resuscitation room and emergency department.
• Review the nurse call system and reinstall if necessary to the resuscitation room and emergency department, and monitored beds in the General Ward.

7.2.6 Area of Concern - Disadvantage to Persons with a Disability
• Refit door mechanism to the glass door in the hallway to the administration offices.
• Refit patients' bathroom facility to meet building code requirements.
• Relocate light switches to meet building code requirements.
• Primary Heath Care building – refit ramp handrails.
• Provide Braille/tactile signs to all toilets throughout both buildings (hospital and Primary Health).
• Provide disability car parking.
• Provide tactile ground surface indicators to the top and bottom of the ramps to the Primary Heath Care building.
• Provide tactile ground surface indicators to the edge of the road way on the open covered area side to warn pedestrians that they are approaching a vehicular pathway.

7.2.7 Area of Concern - Failure of Building Service Systems
• Provide earth leakage protection for the ward areas, administration areas, kitchens, etc. Body protection/earth leakage protection has only been provided to Theatre, Emergency Department and Maternity.
• Review/repair MATV system - does not operate effectively when video conference is being used.
• Repair deterioration of external electrical equipment. This includes lights, speakers, fans, fire detectors, etc.
• Insufficient switch socket outlets provided in several areas resulting in the use of power boards (Hospital and Primary Health Care Centre).
• Primary Health Centre - install earth leakage protection for the power circuits (with the exception of the treatment rooms, for which if has only recently been installed).
• Install a call centre for the monitored beds in the general ward.
• Repair nurses call system (regularly playing up and is not reliable).
• Replace water damaged ceilings.
• Repair refrigeration system - the fins for the condenser coils on many of the units have corrosion in varying stages.
• Repair/replace ventilation system - the corrosive environment is causing corrosion of the scroll fan for the centrifugal fans for the condenser air and for the supply air systems.
• Repair/replace ventilation system to the ward rooms served by airconditioning unit -14 wall split units. The ceiling areas around the supply air registers are moist with water dripping off the ceiling. Staff clean the mould from these areas on an ongoing basis.
• Review ventilation system – for drainage issues in the ceiling mounted fan coils for airconditioning units 12 and 13. The safe trays do not drain resulting in ceiling damage.
Figure 4 – Thursday Island Option 1
7.2.8 **Capital Cost**

The immediate concerns for Thursday Island Hospital as noted in Option 1 have been costed individually to arrive at a broad order of costs totalling $11.6 million inclusive of allowances for constructing in a remote regional location. This estimate of costs takes into account provision for decanting, furniture, fittings and equipment etc. A detailed breakdown is included in the appendix. A significant amount of this cost is related to rectification works caused by the corrosive environment combined with some works to the Primary Health Centre on Douglas Street.

7.2.9 **Whole of Life Costs**

Option 1 primary focus is to rectify access, security and infection control, though rectification works to the existing façade, flooring, mechanical plant and roof are included in this option to prolong the life of the building and reduce maintenance costs. These are intermediate measures and complete maintenance schedule needs to be undertaken in conjunction with qualified maintenance personnel to carry out the maintenance. GHD understand at the time of writing this report, this hospital was employing certified maintenance personnel to prepare maintenance plans and carry out scheduled maintenance activities.

7.2.10 **Advantages**

The advantages of this option are that the serious risks identified in the assessment of the campus would be mitigated and/or reduced to a safe level.

7.2.11 **Disadvantages**

The disadvantages of Option 1 are that the option does not address the operational flow issues or the inefficiencies in the functional arrangements of the departments. It does not alleviate staff dissatisfaction with overcrowded work areas nor will it address the ongoing maintenance issues associated with ongoing deterioration of existing structures. Option 1 does not ensure the buildings compliance with the Australasian Health Facilities Guidelines.

7.3 **Option 2 – Refurbishment or Expansion at Existing Site**

7.3.1 **Scope of this Option**

*Option 2* is an extension of Option 1. It includes a refurbishment of the most ‘at risk’ infrastructure concentrating on addressing the risks identified in Option 1 as well as a number of the operational deficiencies throughout the campus.

- Construct new accommodation and car parking facilities for staff.
- Reconfigure general ward and adjacent corridor to provide two isolation rooms that are fitted with negative pressure and anterooms (to accommodate patients with infectious airborne diseases such as Tuberculosis and as recommended in Building Code: HB260) and two standard isolation rooms (Type 4 under Building Code: HB260) for isolation of patients with infections transmissible by means other than the airborne route.
- Remove ply flooring and replace with fibros-cement sheeting and upgrade structure of operating suite to eliminate vibrations from air conditioning equipment below.
- Medical Records Department – construct an extension to the building to increase record storage for the department.
- Refurbish all the areas of the hospital to bring them up to a clean and modern standard and to create more areas for storage across all of the departments.
- Construct a purpose built medical records archive room with compactus. Utilise existing containers currently housing records for spare storage to eliminate storage issues in some of the areas through the hospital.
- Extend pathology into adjacent storeroom and therapies work room to eliminate overcrowding in pathology unit.
- Extend therapies work room to compensate for loss of areas as a result of pathology extension.
- Refurbish the waiting room area and provide for extra storage in the Primary Health Care Building.
Figure 5 – Thursday Island Option 2
7.3.2 Capital Cost

Option 2 costings provide expansion of services in some areas such as pathology and medical records and could easily be an extension to the scope of works for Option 1. The broad order of costs for this option inclusive of works in Option 1 is $21 million. This estimate of costs takes into account provision for decanting, furniture, fittings and equipment. A detailed breakdown is included in the appendix.

7.3.3 Whole of Life Costs

Option 2 has minor extensions and additions to the existing hospital which may have little effect to the existing recurrent costs. Immediate concerns to whole of life costs were addressed in Option 1 such as rectifying mechanical plant, corroded building components and failed flooring.

7.3.4 Advantages

Option 2 will address the departments that are most at risk and compromised by the existing infrastructure. It will reduce risks to staff, patients and visitors and will provide some relief to general efficiency throughout the departments (Emergency, Operating Theatre, Medical Ward). There will be some impact on the departments (with minor decanting, in particular the Operating Theatre), during the refurbishment, but it is expected that services will be able to be continued out of majority of the departments through securing the work area for safety.

7.3.5 Disadvantages

Option 2 will not resolve all functional inefficiencies across the departments and therefore does not allow for cost effective staffing models. It does not address the ongoing maintenance issues associated with ongoing deterioration of existing structures therefore continued increases are anticipated as the building continues to deteriorate. Option 2 does not address the overall functional limitations and overcrowding of work areas in existing structures, the extensive presence of corrosion to existing steel structures and the large number of the internal defects across the campus. Option 2 does not ensure the building’s compliance with the Australasian Health Facilities Guidelines.
7.4 Option 3 – Significant Redevelopment

7.4.1 Scope of this Option

Option 3 is a full rebuild of the entire hospital campus with priority given to essential services of the Emergency Department, Operating Theatres, X-ray, Maternity, General Wards, Pathology, Pharmacy and Medical Records. It is proposed that the building be constructed to join onto the planned Chronic Disease Unit and to be constructed out of materials that will withstand the environmental impact of the southerly winds and salt water. The new hospital will provide for a 30 bed General Ward, two Operating Theatres (Major and Endoscopy), two Maternity Delivery Suites and 8 bed Maternity Ward, Emergency Department with triage and outpatient consulting rooms, as well as the general services of Pathology, Pharmacy etc. It is proposed that the rebuild would include the following stages:

- Temporary decanting of administration, kitchen, laundry, pharmacy, kiosk, and building services.
- Demolish existing structures of administration, kitchen, sheds, maternity hostel, and laundry.
- Rebuild new hospital – includes all clinical/medical facilities.
- Move into new hospital.
- Demolish existing hospital structure.
- Construct administration block, kitchen, and laundry.
- Move into new administration area, kitchen, and laundry – remove demountables from site.

It is proposed that the Primary Health Care Building undergo a full refurbishment of the interior to address the issues of overcrowding, fire safety and lack of storage. The Chronic Disease Building is intended for completion in 2012 and is to absorb some of the services that are currently provided in the Primary Health Centre.
Figure 6 – Thursday Island Option 3
7.4.2 Capital Cost

Option 3 provides for an all new facility, constructed on the current brownfield site where adjacencies can be maintained and decanting simplified, providing approximately 7,100m$^2$ of new facility. The broad order of costs for this option is $93 million and includes for the refurbishment of the Douglas Street primary health centre. This estimate of costs takes into account provision for construction in remote regional area, staging, decanting, furniture, fittings and equipment. A detailed breakdown is included in the appendix.

A review of the location and factors affecting construction of this size facility in remote locations such as Thursday Island has been taken into account. A review of local suppliers and the skilled labour force in the area has been undertaken. Apart from a concrete batching plant and a few electricians and plumbers, all materials would be shipped onto the island and all labour would require support from mainland cities. It is envisaged a Tier 1 contractor would be required to deliver a project of this complexity with various forms of procurement to be considered for a remote but important facility.

7.4.3 Whole of Life Costs

The new facility should be designed with Green Star developments at the time of construction and it would be anticipated the all new facility should take into account the conditions that affect buildings on Thursday Island. It was observed at the time of inspection that a combination of southerly winds and salt water create a highly corrosive environment for building materials and plant and equipment on this site. The last redevelopment of this hospital did not adequately address the environmental impact and a thorough examination of material selection, availability of maintenance personnel and availability of equipment spare parts should be undertaken during the design process.

7.4.4 Advantages

Option 3 will provide for better management of the hospital’s ongoing operating expenditure through reducing energy, staffing, and maintenance requirements. It will improve the overall efficiency and safety of health service delivery to the Thursday Island, surrounding services and outreach regions and will be a positive influence in attracting medical staff to the region. The new hospital would meet Australasian Health Facility Guidelines requirements.

7.4.5 Disadvantages

Option 3 is the highest capital investment and will require significant upfront financial commitment. There will be disruption in workflows, in particular to the administration, kitchen and stores departments where decanting would be required. There may also be some disruption due to noise during certain phases of construction.
### 8. Options Analysis

#### Table 3: Options

<table>
<thead>
<tr>
<th></th>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Option features</strong></td>
<td>Address risks identified during site assessment</td>
<td>Undertake refurbishments to mitigate risks and to improve functionality of the ‘at risk’ departments</td>
<td>Rebuild of entire hospital campus on adjacent Greenfield land</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>To mitigate actual and potential risks associated with infrastructure at Thursday Island Hospital.</td>
<td>To mitigate risks and to improve service delivery out of the most ‘at risk’ departments in Thursday Island Hospital.</td>
<td>The existing hospital infrastructure is considered in parts to be structurally unsound and as such is a liability in regards to ongoing maintenance and associated infrastructure risks.</td>
</tr>
<tr>
<td><strong>Benefits</strong></td>
<td>Staff, visitor and patient safety around the Fire, Occupational Health &amp; Safety, Infection Control, and Disability Access risks.</td>
<td>Staff, visitor and patient safety, improved functional arrangements of ‘at risk’ departments – the refurbished infrastructure will comply with Australasian Health Facility Guidelines.</td>
<td>To provide better management the hospital’s ongoing operating expenditure through reducing energy, staffing, and maintenance requirements. Compliance to Australasian Health Facilities Guidelines.</td>
</tr>
<tr>
<td><strong>Risks</strong></td>
<td>This option does not address ongoing expenditure for maintenance of failing infrastructure nor does it address the functional arrangements of the departments.</td>
<td>Disruption to service delivery due to minor decanting of departments during refurbishment. This option does not address ongoing expenditure for maintenance of failing infrastructure nor does it address inefficiencies in functional arrangements across all departments.</td>
<td>High capital investment and will require significant upfront financial commitment.</td>
</tr>
<tr>
<td><strong>Assumptions</strong></td>
<td>Existing Infrastructure is does not comply with the Australasian Health Facility Guidelines.</td>
<td>Existing Infrastructure does not comply with the Australasian Health Facility Guidelines.</td>
<td>Existing Infrastructure is does not comply with the Australasian Health Facility Guidelines.</td>
</tr>
<tr>
<td><strong>Criticality</strong></td>
<td>Critical – in order to comply with building codes, to maintain effective infection control, to provide disability access, to provide a safe environment for staff, patients and visitors.</td>
<td>Critical – in order to comply with building codes and the Australasian Health Facility Guidelines, to maintain effective infection control, to provide disability access, to provide a safe environment for staff, patients and visitors.</td>
<td>Critical – in order to comply with building codes and Australasian Health Facility Guidelines, to maintain effective infection control, to provide disability access, to provide a safe environment for staff, patients and visitors.</td>
</tr>
<tr>
<td><strong>Total Resource Implications</strong></td>
<td>$67 million</td>
<td>$76 million</td>
<td>$148 million</td>
</tr>
</tbody>
</table>
9. Acronyms and Abbreviations

Throughout this study various terms, definitions and abbreviations are used in relation to findings and are contained in the following list:

- CSD – Central Sterilising Department
- CCTV – Closed Circuit Television
- AHFG – Australasian Health Facility Guidelines
- SSO – Switch Socket Outlets
- HEPA - High Efficiency Particle Filter
- BCA - Building Codes of Australia
- MATV – Multiple Access Television