PARLIAMENT OF TASMANIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

Royal Hobart Hospital Short-Term Works Project

Presented to His Excellency the Governor pursuant to the provisions of the Public Works Committee Act 1914.

MEMBERS OF THE COMMITTEE

Legislative Council

Mr Harriss (Chairman)
Mr Hall

House of Assembly

Mr Best
Mrs Napier
Mr Sturges
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INTRODUCTION

To His Excellency the Honourable William John Ellis Cox, Companion of the Order of Australia, Reserve Forces Decoration, Efficiency Decoration, Governor in and over the State of Tasmania and its Dependencies in the Commonwealth of Australia.

MAY IT PLEASE YOUR EXCELLENCY

The Committee has investigated the following proposal:

Royal Hobart Hospital Short-Term Works Project

and now has the honour to present the Report to Your Excellency in accordance with the Public Works Committee Act 1914.

BACKGROUND

The Royal Hobart Hospital (RHH) is part of the Hospitals and Ambulance Services Division within the Department of Health and Human Services. It is the State referral centre for cardio-thoracic surgery, neurosurgery, burns, neonatal intensive care, hyperbaric medicine and high risk obstetrics.

The RHH provides secondary services to the population of Hobart and surrounds, extending to the southern part of the State. All general and specialty medical and surgical services are provided, excluding organ transplantation and spinal and paediatric cardiac surgery. The RHH is the major teaching hospital for the University of Tasmania.

Changing population demographics are placing increasing pressure on the Hospital's service delivery capability. The Hospital's capacity to respond efficiently and effectively to growing demand is limited by a number of factors including staffing levels, equipment availability and accommodation constraints.

The State Government has made a commitment to resolve these issues and to ensure the ongoing viability of the RHH. In support of these objectives, funding has been provided for the Short-Term Works Project to deliver responsive solutions to pressing accommodation needs.

The Project will provide additional operating theatres and support areas and accommodate an expanded and upgraded Neonatal Intensive Care Unit including paediatric ICU beds, as well as provide much needed training facilities and office accommodation to support staffing objectives and to facilitate future upgrade works.
The RHH has provided continuous service from its current site for over 180 years. Some buildings still in use date back to the 1930s, whilst others were built in the 1960s and 1970s.

Major redevelopment works were undertaken in the late 1990s, including the recycling and extension of an existing building to create a new ward block. A decision to lease out the former Queen Alexandra wing – now operated as Hobart Private Hospital – removed some 8,500m² of floor space and negated the gains made from that redevelopment. Consequently, the RHH continues to suffer from insufficient floor space to adequately accommodate its services and to manage the “churn” created by evolving service delivery models and medical technologies.

During 2002, a site-specific Strategic Asset Management Plan (SAMP) for the Royal Hobart Hospital was developed. As with previous attempts to develop a strategic plan for the campus, it was driven by a desire to establish a rational and justifiable program for ongoing development of the Hospital.

A key objective of the SAMP was to provide for the development of a new Emergency Department and Short Stay Unit, and construction of that new 2,400m² facility is now underway.

Treasury guidelines recommend that agencies update strategic asset management plans every two years, and a review of the RHH SAMP has been commenced. Growing recognition of the important role that facilities can play in the attraction and retention of skilled staff, as well as pressing and increasing demands for allocation of space to support service delivery needs, highlighted the need for a major reassessment of the current and future facility needs of the Hospital.

**DEVELOPMENT PLANNING STUDY**

Health Planning consultants Conrad Gargett Architecture of Brisbane were engaged by the Department of Health and Human Services (DHHS) to undertake a two-phase Development Planning Study for the RHH.

Phase A consisted of a preliminary analysis of population trends, service delivery demand, future trends and facility planning issues and options. Within this context, the consultants were required to evaluate options and develop short to medium term facility solutions to resolve urgent accommodation needs and to support current service delivery initiatives.

Phase A of the Study confirmed that the existing Hospital buildings severely constrain efficient service delivery and are not suitable for retention in any long term redevelopment of the RHH campus. The following findings were included:
• Floor plates are unsuitable for replanning for new uses, due to
  o Narrow building envelopes;
  o Close column centres; and
  o Departments acting as through-ways.

• Floor-to-floor heights are restricted, resulting in
  o Prevention of efficient or effective servicing; and
  o Inflexible replanning for different functions.

• Site coverage is inappropriate, as
  o It is not conducive to providing effective functional relationships;
  o It does not provide appropriate amenity;
  o It does not allow for development area; and
  o It restricts servicing.

• Functional Relationships are compromised by existing building fabric, as
  o Areas are difficult to expand;
  o Travel distances are defined by current planning; and
  o Buildings are inflexible for changes of function.

The consultants also identified a number of critical facility needs:
- Provision of office accommodation for medical, nursing and Allied Health staff;
- Increase in Operating Theatre capacity;
- Expansion of the Department of Critical Care Medicine;
- Expansion of Pain Management, Acute Nephrology and Ambulatory Care Units;
- Expansion of the Neonatal Intensive Care Unit and inclusion of Paediatric ICU services; and
- Development of an Adolescent Unit.

**SHORT-TERM WORKS PROJECT**

The Short-Term Works Project is the Government’s response to the Phase A recommendations of the RHH Development Planning Study.

The current proposals are intended to provide quick resolution to facility-related issues which are limiting the Hospital's current capacity to deliver efficient and effective services. The Short-Term Works are intended to provide interim solutions only, with a maximum projected life of 10 years.
Consequently, the Short-Term Works proposed are based on resolution of obvious space constraints and current issues of safety, risk and compliance rather than exhaustive analysis, which will underpin the Phase B Planning Study.

Phase B of the Development Planning Study is undertaking detailed service demand and delivery analysis and economic modelling as a basis for developing sustainable and long-term redevelopment strategies for the RHH.

Initially, the Short-Term Works Project was planned for delivery in two stages, with the first of these being the early completion of two new operating theatres to be located in the Clinical School building. Stage 1 was to be undertaken concurrently with a proposed upgrade of the Clinical School building planned by the University of Tasmania as part of a development program for new and improved facilities for the Faculty of Health Science and the Menzies Research Institute.

The Short-Term Works Project is now proposed as a single stage development, with the additional operating theatres to be included in a new infill building. This change has been prompted by the University’s revised strategic direction for the co-location of the Menzies Institute and the Clinical School, and by the Project Team’s assessment of design and functionality constraints that would be imposed by the existing Clinical School building.

A nine month delay in the completion of the two new Theatres will facilitate greatly improved outcomes and provide necessary time for recruitment of staff and procurement of specialised equipment.

**DEMAND CONSIDERATIONS**

**General**

The whole of life costs of building infrastructure in a hospital environment are a minor part of the overall operational cost, typically six percent, as illustrated below:
To ensure that the RHH building infrastructure has sufficient capacity to support an operational improvement program, construction of additional operating theatres, expansion of the existing Neonatal Intensive Care Unit and addition of a Paediatric Intensive Care facility, as well as other infrastructure improvements, are proposed. These are detailed below.

**Perioperative Unit**

The last major refurbishment of the Perioperative Unit was completed in February 1996 and provided upgraded fittings, services outlets, air-conditioning and floor coverings. Improvements to functionality and amenity included changes to storage facilities, provision of windows in theatres, upgraded communications and works in CSSD.

Recent improvements have included provision of individual air-conditioning control systems to each theatre (in place of the previous “paired” system) and the installation of impact-resistant wall coverings to theatres and high traffic areas.

The main operating theatre complex comprises seven operating theatres, six anaesthetic bays, a 12-bay Recovery Room, five pre-operative holding bays and a number of storage and staff support areas. Currently, one holding bay and two of the recovery bays are used for equipment storage. Recovery bays are also being used for installation of PICC lines and other procedures that take up to three hours.

**Improvement Strategies**

While the provision of fully staffed and equipped additional theatres is an obvious and necessary response to growing waiting lists for elective surgery, there may also be inefficiencies in the Perioperative Unit’s patient and theatre management systems. An Operational Planning Study is in progress and is focussing on improvement of patient flows through the Perioperative Unit, by:

- Simplifying core processes;
- Redefining clinical and administrative roles; and
Improving support technology.

The scope of the study, being undertaken by Melbourne-based JW Group, includes the Day Surgery activity. The outcome of the study is expected to be an Operational Development Strategy for the Perioperative Unit followed immediately by an Operational Improvement Program. Improvement initiatives explored prior to the planning study were aimed at ensuring that disruption to daily surgery lists was minimised and use of available theatres was optimised and included the allocation of a theatre for emergency cases. The scheduling of individual theatres for specific surgical requirements means that the Emergency Theatre does not currently have a permanent ‘home’ and moves between Theatres Two, Three and Four depending on surgical list requirements. While the impact of emergency cases on scheduled lists has been reduced, the Emergency Theatre’s capacity to effectively cater for emergency cases is variable. This creates a number of unnecessary risks which would be resolved by the establishment of a dedicated emergency theatre, appropriately equipped to deal with the widest possible range of emergency cases.

Current Capacity

Of the seven existing theatres, Theatre One is permanently dedicated to cardio-thoracic surgery and is ideally located adjacent to the Perfusion Setup room, which has dedicated storage nearby. Theatre Seven is the only theatre in the suite without an attached anaesthetic bay and, because of this limitation, is used primarily for smaller cases. With one theatre allocated for emergency surgery, there are four theatres available to deal with all remaining elective and non-elective surgery. Of these, Theatre Two is allocated part-time for cardio-thoracic surgery.

As the majority of sessions are half day (210 mins) duration, the seven main theatres are capable of a throughput of 6101 cases per annum during normal working hours.

This theoretical maximum is reduced by unavoidable cancellations resulting from patient health issues and staffing shortages, unpredictable requirements for more than one emergency theatre and shut-downs for planned and unplanned maintenance or infection control requirements. A further limitation is the necessary specialisation of individual theatres for neurosurgery (Theatre Five) and orthopaedic surgery (Theatre Three).

Demand

Theatre demand is created through the elective surgery waiting list and emergency admissions for surgical procedures primarily through the Department of Emergency Medicine.

During the 12 months to September 2005, 7293 new cases were added to the elective surgery list. Of these, approximately 70 percent (5105 cases) were directed to the main Operating Theatre Suite.

The current emergency surgical caseload directed to the main theatres is approaching 2400 cases per annum and the combined annual impact of elective and emergency
surgical case load is almost 7500 cases. This situation is compounded by the 3532 cases currently on the waiting list for elective surgery.

Growth in the elective surgery waiting list is being slowed by the use of weekend and after-hours sessions and by use of private sector providers. However, the use of overtime to reduce waiting lists is not sustainable over extended periods because of the impact on staff (stress, morale, increased sick leave, etc.) and the operating cost, which is also an issue with use of private providers.

While every effort is being made to improve the throughput of existing theatres, the proposed construction of two additional theatres will provide the necessary added capacity to ensure appropriate management of all forms of surgery and reduction of the waiting list. The Government has committed to providing the necessary funding to adequately staff and equip these additional theatres.

Neonatal and Paediatric Intensive Care Units

The Neonatal Intensive Care Unit (NICU) is the only Level III facility of this type in the State and, within very limited space, provides six Neonatal Intensive Care cots, two isolation rooms and a Special Care Nursery with an intended capacity of 10 cots. The facility was last upgraded in the Stage Two Redevelopment of the RHH.

In 2002, the RHH SAMP highlighted facility-related issues including a lack of storage space for equipment and stores, and a need for improved parent and staff facilities. The RHH has not yet been able to address these issues.

The development of a State-wide model for neonatal care was explored in the “Tasmanian Neonatal Care Review 2005” by Dr Peter McDougall, Director, Division of Medicine and Director, Department of Neonatology, The Royal Children’s Hospital, Melbourne. This detailed study generated 80 recommendations on all aspects of neonatal intensive care in Tasmania including service distribution, capacity requirements, staffing and training as well as facility design and operation.

Recommendations one to four covered the need for the service in Tasmania and a State-wide capacity requirement of eight NICU cots logically provided in a single unit to be operated by the RHH. Dr McDougall also recommended the provision of 15 Special Care Nursery Beds at the RHH and further numbers of 17, four and seven for the Launceston General, Mersey Community and the North-West Regional Hospitals respectively.

The RHH NICU has become grossly overcrowded and is dealing with a caseload well beyond its designed capacity, with no provision for dealing with unexpected peaks. Space allocation per cot is vastly below current standards and there is insufficient room to acceptably accommodate parents – who play important roles in the care of their children within the Unit. The two isolation rooms provided within the facility do not comply with current standards, and this is of major concern, given the increasing risk of pandemic illnesses.
The RHH SAMP also identified a number of issues within the Hospital's Paediatric Unit. Again, because of the focus of the SAMP, the issues were primarily space-related and included peak load demand exceeding bed capacity, the lack of a dedicated Adolescent Unit and inappropriate facilities for interviews, stores and equipment, and parent visits.

In 2004, a review of services for the management of critically ill children at Royal Hobart Hospital and the need for a state-wide approach to paediatric care was undertaken by Dr Trevor Duke, Senior Lecturer in Paediatrics and Intensive Care Consultant at The Royal Children's Hospital, Melbourne.

In suggesting a model for Acute Paediatric Services at RHH, Dr Duke found that the relatively small numbers of children requiring these services were insufficient to justify a stand-alone Paediatric Intensive Care Unit (PICU). He recommended the provision of two PICU beds and two Paediatric High Dependency (HD) beds within a combined NICU/HD/PICU.

The desired Short-Term Works Project outcome from these studies is the provision of a combined NICU/PICU as described above, with capacity for 12 beds/cots in a arrangement allowing flexibility between two PIC and two HD beds – with all beds equipped to PICU standards, as well as between the four beds and the eight NICU cots – with capacity to replace cots with beds and vice versa. Two of the beds would be capable of full isolation, but able to be opened up for normal access when appropriate. Expansion of the Special Care Nursery to the recommended 15 beds is also desirable.

**Offices/training rooms**

The primary focus of Hospital facility planning is on the provision of efficient and effective clinical spaces to support Hospital service delivery. Increasingly, however, there is recognition of the important role that office, training and other staff facilities play in the successful recruitment and retention of staff.

The RHH is also acutely aware of the position it holds as a teaching hospital and the obligation to provide a level of access to suitable training facilities for Clinical School students. The Government’s commitment to increased medical and nursing staff levels at the RHH has resulted in increased pressure to provide adequate staff facilities. As a result, the Hospital has been actively investigating and procuring off-site accommodation for RHH support staff whose location on the Hospital campus is not a critical requirement of their roles.

The relocation of RHH staff off-site as a solution is a compromise, with limited overall impact. Similarly, the use of off-site training facilities has restricted potential, as staff members need to be able to respond quickly to medical and surgical emergencies. It is therefore appropriate to provide additional office and training accommodation on-site. Levels One and Two of the proposed Infill building will provide a central and easily accessible location for the required facilities.
**Intensive Care Unit/High Dependency Unit/Cardio-thoracic Intensive Care Unit**

Under the Better Hospitals program, the need to expand the existing Department of Critical Care Medicine (DCCM) has been recognised. Increased bed numbers in both Intensive Care Unit and the High Dependency Unit are required. As with most other clinical areas of the Hospital, there is no free space available to accommodate the required expansion.

A proposal to develop an expanded six bed HDU in the area currently occupied by the Cardio-thoracic ICU (CTICU) and DCCM office and training room facilities requires relocation of these facilities. The CTICU would be increased to four beds and moved to the area vacated by the HDU and would become part of a flexible arrangement with ICU which will have eight beds as well as two isolation rooms. Easily accessible accommodation is required for replacement offices and training room facilities.

Level one of the proposed Infill building will connect to the ICU/HDU via the existing first floor walkway between H and D Blocks, with a second connection possible via the C Block corridor. The Infill building therefore plays a critical enabling works role for this future upgrade.

**Pain Management/Acute Nephrology/Ambulatory Aare**

The Pain Management Unit (PMU) provides outpatient clinics, inpatient consults and theatre procedures. These functions include assessment and treatment of the physical, psychosocial, medical, vocational and social aspects of patients with chronic pain. The PMU is currently located on the fourth floor of the B Block, sandwiched between the Acute Nephrology and Ambulatory Care Units. PMU shares some support areas with Ambulatory Care.

The PMU has experienced rapid growth since commencement in 1998 and increasingly suffers from space constraints identified in the 2002 RHH SAMP. Patient privacy and confidentiality, treatment and consultation are compromised by lack of space as is occupational health and safety for medical staff.

The Ambulatory Care Unit provides services for non-admitted patients undergoing medical or minor surgical procedures. The unit provides services such as injections, drug infusions, insertion of IV catheters for home care and a recovery area for patients who have undergone medical investigations such as coronary angiography. The unit plays a critical role for the Hospital in minimising admissions and the relocation of the adjacent PMU would provide scope for expansion of this important service.

Stage Two Redevelopment of the Hospital included establishment of an Out-Patient Renal Service at St Johns Park and development of the Acute Nephrology Unit at the RHH for treatment of in-patients and acute out-patients.
The annual increase of approximately eight percent in patients requiring Haemo-Dialysis has placed increased pressures on both renal facilities. In the out-patient service, this has been accommodated by increased hours of operation. Home dialysis is also becoming more feasible for some patients.

The Acute Nephrology Unit requires the addition of one permanent bed to ensure optimum utilisation of its existing staff resource and further expansion of the service is required to adequately cater for current in-patient and acute out-patient demand. The provision of additional beds/chairs in co-operation with Ambulatory Care Unit would ensure flexibility to respond to variable demand levels.

The Short-Term Works project proposes the reconfiguration of underutilised space on the third floor of B Block to accommodate PMU and changes to the fourth floor to expand both Acute Nephrology and Ambulatory Care Units.

THE DESIGN RESPONSE

Functional Brief
A preliminary Functional Brief was prepared during the Phase A Planning Study. This brief has been developed through a series of user meetings for both the operating theatre expansions and the Paediatric Intensive Care and Neonatal Intensive Care Units.

This brief will be further developed for Pain Management, Acute Nephrology and for support offices and training facilities.

Design Principles
The following design principles have been derived from planning objectives for the physical solution:

- To address all service plan issues as part of the preliminary brief;
- To provide increased space in the locations that best support hospital functions;
- To minimise the impact on hospital operations by limiting areas to be affected by construction;
- To provide value for money in design and construction; and
- To provide optimum whole-of-life costs in both mechanical and electrical services and in maintenance and staffing.
Building Acts Codes and Regulations
The design and construction of the facilities are required to comply with the requirements and regulations of relevant statutory authorities, including, but not limited to:

- The Tasmanian Building Act 2000;
- The Building Code of Australia, as amended to date and including all relevant Australian Standards nominated in that Code;
- The Tasmanian Workplace Health and Safety Act, as amended to date, and the Regulations under it; and
- The Tasmanian Fire Services Regulations, as amended to date.

The design of the facility is also required to take into consideration the provisions and recommendations of other relevant standards and guidelines, including the AS1428: Design for Access and Mobility.

A Building Surveyor has been appointed to the consultant team to ensure full compliance of the completed facility.

Design Process
The design process focussed on two simultaneous streams:

1. A highly interactive process of option development and review with RHH user groups and DHHS representatives; and
2. A feasibility study of the proposed physical planning solution identified in the Phase A Planning Study.

The resulting preferred option has been presented to key stakeholders and has their support.

Detailed documentation for the preferred option is being developed in close consultation with user groups.

Architectural Design
The general arrangement of buildings on the RHH site is as illustrated below.
Note that:
F Block is the Clinical School Building
G Block is the Hobart Private Hospital

The physical design solution is to provide an Infill Building at the junction of Blocks C and D to support the expansion of theatres on Level Four and the PICU/NICU on Level Three, and to provide space for offices and seminar rooms on Levels One and Two. In order to resolve space issues for Pain Management, Acute Nephrology and Ambulatory Care Units, minor refurbishment work to Block B of the Hospital is also included.
The proposed Infill building generally conforms to the established floor to floor heights of existing Hospital buildings. However, a greater height has been provided to the upper level to allow improved functionality and flexibility for the new Theatres. Circulation systems link directly with the existing stair corridor system eliminating any requirement for additional stairs or lifts.

The Infill Building is designed to allow adjacent Hospital facilities to remain operational during construction. Construction access will generally be provided external to operational areas of the Hospital. A modular façade will link the existing masonry façades of Blocks C and D. The exterior of the Infill building has been designed for rapid construction and minimal impact on Hospital operation.

The final breakthrough between new and existing areas will be managed as a normal refurbishment project with temporary partitions providing a dust proof barrier and noise reduction.

The external elevation of the Infill building responds to the daylight and other functional requirements of the internal planning. High level windows are provided where beds abut external walls and continuous strip windows with a desk height sill are provided to office levels. Generous windows are provided to the two new theatres.

**Level Four**

Level Four of the Infill building will include an emergency theatre suite, to include two operating theatres, each with an attached anaesthetic room and scrub/exit bay. Both theatres will have access to dedicated sterile stock rooms. The existing Recovery room nearby will be expanded to include three additional bed spaces. In the existing building, an enlarged equipment store will be located adjacent to the Emergency Theatre Suite and the Holding Bay will be expanded to hold nine beds. An Interview Room and Porter’s Base will also be included in the plan.

Enabling works in F Block (Clinical School building) will allow for relocation and upgrading of offices and staff amenities areas to facilitate these improvements.

The larger of the new operating theatres will provide much needed additional space for Neurosurgery, which is often an emergency requirement following accident trauma. The other new theatre will provide for a wide range of emergency surgery.

The flexibility of both theatres will be enhanced by the provision of laminar flow air-conditioning – currently only available in the Orthopaedic Theatre. The increased ceiling height will provide for future installation of in-theatre imaging if required.

The new Theatres will be located immediately adjacent to an existing lift which will be refurbished and extended to the Lower Ground floor as part of the new DEM (Dept Emergency Medicine) development. This lift will provide direct access to theatres from DEM and also from the expanded NICU (third floor – immediately below) as well from Maternity and Intensive Care units.
The location and configuration of the Emergency Suite also means that it can operate effectively after hours without the need to access the remainder of the floor. An enlarged Bulk Sterile store in F block will free space in the existing building for a Disposal room and the Orthopaedic store. Relocation of Theatre Seven to a nearby (external wall) location will improve circulation by removing the bottleneck that exists in the central access corridor.

Level Three
The Neonatal Intensive Care Unit will be redeveloped in its existing space and expanded into the new Infill area. Paediatric ICU capacity will be added to the Unit. NICU/PICU bays will be largely located in the new section which will provide natural lighting for patients and staff. Lighting and ambient noise levels will be important design factors, and the recognition and inclusion of parents as major care providers will also be a major influence.

The support areas will be confined to the existing building area, to provide the most cost effective solution. The entry will be relocated to a more central area. The new facility will be designed to coincide as far as the space will allow to all current best practice principles.

Levels One and Two
Levels One and Two of the Infill Building will provide a range of flexible offices and training rooms to accommodate staff recruited under the Better Hospitals program. These will also provide for necessary staff development and support the RHH’s role as a teaching hospital.

Facilities on Level One will also act as enabling works for a proposed future upgrade of the existing Department of Critical Care Medicine.
ENGINEERING SERVICES

Mechanical services

Air-conditioning
Existing chillers and air/water heat pumps have sufficient spare capacity for the new area. A new air handling plant is proposed to be located on the roof of the new Infill Building.

Medical Gases
It is planned to extend from the existing medical gases reticulated system.

Control System
New controls will interlink with existing Building Management Controls.

Codes and Standards
All air-conditioning will be provided in accordance with appropriate codes and standards for each area. New levels will be within acceptable levels for each defined use area.
**Electrical Services**
Initial investigation suggests that the current electrical services have adequate capacity for the new building. However, the main switchboard will need alteration to accommodate new circuits.

The Essential Power Supply to D Block Theatres is the subject of further investigation to establish if a dedicated non-static arrangement should be provided.

**Emergency Lighting/Warning and Intercommunication System (EWIS)**
A new EWIS exit lighting system will be designed to comply with relevant standards and BCA requirement.

**IT/Communications**
The provision of IT services to the new building will require the installation of a new rack and connections. No problems of interconnection are anticipated.

**Master Antenna Television System (MATV)**
The site is currently serviced by an existing MATV system which should be adequate to allow alteration and addition to cater for the proposed works.

**Nurse Call**
The existing system is suitable for extension.

**Hydraulic System**

**Water/Fire**
The proposal is to retain domestic cold water supply from high level tanks to serve all functions.

**Stormwater**
The connection of a new rainwater collection system to existing drainage is appropriate, as the actual collection area will not increase.

**Waste Water Disposal**
The waste water disposal systems that form part of the redevelopment will be connected to existing sanitary stack and work to avoid superfluous vent rises.

**PROCUREMENT**

**Planning and Building Approval**
A development application to the Hobart City Council is required because of the minor change to the building envelope. This submission has been made. Building and plumbing permits will be sought and no delays are anticipated.
**Planning and Design**
Conrad Gargett Architecture of Brisbane have been appointed to provide design and contract administration services for the project, supported by Tasmania based sub-consultants for architectural and engineering services. The team is currently undertaking design and tender documentation in accordance with the program.

**Construction**
The procurement process that has been selected for this project is based on the Managing Contractor – Construction Management model that is widely used for major projects, both in Queensland and elsewhere in Australia.

In this process, the Principal engages design consultants for the first phase of design to establish the design fundamentals (as a preferred response to the client brief) and the limit of cost budget. This work is currently in hand.

The Principal then engages the Managing Contractor to provide input into the design, co-ordinate the production of construction documentation and manage the construction of the project in two stages: design and documentation, followed by construction.

The Managing Contractor is not responsible for the design or the documentation but provides a consultancy service advising the agency’s consultants on construction technicalities, which can be accounted for in the developed design and construction documentation.

There is provision for early works to be undertaken during stage one, thereby bringing forward the commencement of works on the site. Early works are initial works that can be designed, documented and constructed such as site works or demolition.

All the actual construction work is carried out on a package-by-package basis with trade contractors, tendered on an open, competitive basis by the Managing Contractor. The Principal maintains total design and documentation control of quality, aesthetics and utility.

There is greater surety of the budget according to this model, as the Managing Contractor is not entitled to reimbursement of costs associated with design discrepancies. There are extreme access limitations to the site of the works, and the adjoining site through which access could most readily be obtained is already under the control of the contractor undertaking the project for the Department of Emergency Medicine. The Treasurer’s approval is therefore being sought to engage the current DEM contractor Hinman Wright and Manser through a negotiated tender process, where the contractor’s costs of consultant management, site preliminaries profit and attendance will be negotiated. The actual cost of the works will be undertaken by sub-contractors and subject to competitive tender processes.
PROJECT COST

A detailed cost plan is being maintained for the project to ensure that the building and fit-out costs at completion are contained within the capital funding allocation. The current budget for the development is $14.79 million.

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<thead>
<tr>
<th>Item</th>
<th>Estimate</th>
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<tr>
<td>Building (New: 1,280m² Refurb: 1,200m²)</td>
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<tr>
<td>Protection Works</td>
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<td>Site works</td>
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<tr>
<td>Furniture, Fittings and Equipment</td>
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<td>Decanting</td>
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<td>Contingencies (10%)</td>
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<td>Total</td>
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EVIDENCE

The Committee commenced its inquiry on Friday, 9 December last with an inspection of the site of the proposed works. The Committee then returned to Parliament House whereupon the following witnesses appeared, made the Statutory Declaration and were examined by the Committee in public:-

- Dr Peter Leslie, Chief Executive Officer, Royal Hobart Hospital;
- Bruce Wolfe, Director, Conrad Gargett (Architecture) Pty Ltd;
- Roy Cordiner, Consultant; and
- Ken Moore, Program Manager, RHH Development Planning

Overview

Dr Leslie provided the following overview of the project:-

...this is a project about providing space in a very tight hospital situation. Essentially it is a single-stage project, as has been stated, known as the infill building - to give it a name. It is about four levels of construction, the first two
offering flexibility in terms of office space and so forth, but level 3, as the committee
has inspected, providing needed space for a paediatric intensive care area and the
neonatal intensive care area at level 4, giving space to the perioperative unit and
particularly the construction of two new operating theatres and a series of moves
that will give storage space and flexibility for efficient operation in the building.

Design
Mr Wolfe made the following submission regarding the design of the proposed facility:-

... There are six planks, I guess, to what we tried to achieve in meeting the
functional requirement and one is the operational efficiency. There are a number of
demands which we, through a highly interactive process with the staff at the Royal
and other members of the Health department, worked through with a number of
options to get a highly functional outcome. The second plank was looking at impact
during construction and that is part of a brief; trying to get a solution that results
in minimum impact on the rest of the hospital whilst you are addressing the issues
at hand. The third was planning to minimise additional infrastructure needed so
that I guess that flows into value for money but what I mean by the infrastructure,
there are stairs and lifts; if we could possibly use the existing stairs, the existing
lifts, so that we could spend our money on providing additional floor area to satisfy
these demands rather than putting the money into other things that did not.

Amenity was important. The existing hospital of course is not the greatest provider
of amenity for all spaces. Our looking at this infill building is to provide a greater
amenity, to provide better use of natural light and to make a more open plan for the
hospital.

Buildability had its challenges within that site and we would be addressing that
through the way we stage the construction and in fact how we may utilise other
procurement methods.

Value for money: we are looking at a very straightforward construction method
and very economic use of materials and structure, and regarding the whole-of-life
cost, which is perhaps the most important part of costing, we are looking at a long-
life, low-maintenance type of facility and one for which, even though its life may be
limited for other reasons, the cost of running the units, the cost of operating the
building will be as low as we can possibly get it.

If we could look at the functional response to the requirements - and you have all
visited the site ... Level 3 is the first level that you viewed from H Block and then
went to inspect and the existing perimeter of the building follows that line. I am not
sure quite how I am going to refer to that for Hansard but if I can refer to one of the
plans in the submission. The infill building is this portion that obviously enlarges all of their facilities quite considerably and provides a much more open operation. It gives them greater bed numbers in response to the demands that were outlined and more room for each bed which, as you saw from the visit there, is awfully overcrowded at the moment. We are approaching the recommended size for those beds and certainly with the way that they are serviced, they will be a lot more operationally efficient and the whole unit will be much more operationally efficient.

As you can see, by using this area, adjacent to the key services that provide into that area, it becomes at the end of the day a highly efficient planning solution to an operational unit. The staging will become important as we work mainly in the outside area first and then join the two sections together but there will be transitional stages in getting from what they have now to the final solution.

Moving to level 4, the theatre block - that is the area we saw second when we came in through the front reception area. The two new theatres, as part of the infill building, are described in the report as largely for emergency and link very effectively with the upgrade of the facility going all the way down to the new emergency department, thus providing a very focused centre for emergency cover. So the two theatres described, and the preparation areas, are very close to theatre, close to reception and adjacent recovery.

We have additional works to make the existing theatres operate more successfully. As you saw from the end of D Block closest to F Block, there are constrictions for traffic for the movement of trolleys. We are going to ameliorate that by some minor modification works to existing walls, but largely in the relocation of one of the theatres to a position where it doesn’t obstruct the throughput of traffic. We can then utilise the area in F Block for those services that are not clearly highly functional to the theatres - change rooms, offices and meeting rooms. The change rooms may be at a later stage but the meeting rooms, offices and storage, in particular, will move into the top floor of F Block.

The other two levels, levels 1 and 2, which are not shown on this plan but are in the report, being in this area obviously central to the hospital, central facilities are being provided, such as offices and training rooms. The training rooms are sorely needed by all areas of the hospital, as are the offices, both to retain and attract staff.

Basically, it is a plan that concentrates our effort in one area; by stacking the development in four floors we limit the impact to the remainder of the hospital.

Dr Leslie added:-

Perhaps if I can make an emphasis to add to what has just been said, having been to theatre. The proximity of the two new theatres to that link down to the Emergency
Procurement process

Mr Moore made the following submission in relation to the procurement process:

... It is a fairly complicated site to get to so we are proposing a managing contractor model whereby we involve the contractor in the very early stages of the proposal to ensure that its buildability is maximised, that we gain the inputs of the contractor in telling us how he can get materials into the site and so on. As a result of that, we are proposing to access the site via a tower crane, which will be able to lift materials from Liverpool Street, right over C Block - the old original hospital building - into this building site. The managing contractor provides an overall service of, as I have said, managing the contract while the works are done under subcontract arrangements and are tendered in appropriate packages as we progress through the project.

The Committee questioned Mr Moore as to what implications, if any, the erection of the tower crane would have upon the construction of the new Department of Emergency Medicine (DEM). Mr Moore responded:

In the proposed managing contractor model, we have looked at a range of options as to how we might set that up. It is clear that the only way we can do it is by appointing the existing DEM contractor - that is the company contracting for the emergency department - to undertake the managing contractor role. In talking with them about how that site could be accessed, a key factor was to ensure that it didn’t in any way disrupt the completion date of the emergency department. In fact, there is quite a significant window of opportunity for us to install a tower crane on the DEM site and build around it and then take it out again prior to completion of the DEM, so it actually works very well.

Building interface

The Committee questioned the witnesses as to how the proposed new building would interface with the existing buildings and infrastructure. Dr Leslie responded:

A critical relationship exists between an emergency department and the areas of the hospital, such as the operating theatres and the intensive-care ward areas, for critically ill patients who need to be rushed there for definitive treatment. The solution in this plan is the recommissioning of a lift that is already in place and
development of that lift to enable direct access from the basement level, where Emergency Medicine is, up to the operating theatres, and also ready access to the intensive-care ward. That is a critical relationship; it is a time-critical relationship in an urgent medical situation. I think they are very important. There is less of a relationship, obviously, with a neonatal intensive-care ward; that is more related to the midwifery unit, although the paediatric intensive care that we have included in these plans also has an important relationship to Emergency Medicine as well. Other members might like to add to that, but I think this is a critical relationship. If you don't get this right you create problems and complexities, but I think this is readily solved, as you have seen, where that lift is relation to theatres and so forth.

When questioned as to what procedures would be established to deal with the malfunctioning of the recommissioned lift, Dr Leslie responded:-

There are other lifts nearby. You will have noticed that there are the four lifts close by that are regularly used in terms of access from the other floor areas. Other members might like to comment further.

Mr Moore added:-

There are a range of lifts available. There is another large lift in the public area of C block as an alternative, which we actually used today. The new emergency department will also access the lifts in A block and H block, at each end of C block. If your question related to what happens if the lift breaks down with somebody in it, I think the answer is provided with the usual emergency call systems, but I would say that anybody who is being transferred from DEM to theatres would have appropriate monitoring and support systems with them. That is why the lift has to be of a larger size, to cope with the number of people who travel with critically ill patients.

**Short-term works**

The Committee referred the witnesses to the reference in the submission to “short-term” works and sought an explanation as to how such works fitted within the long term planning for the hospital. Mr Moore responded:-

The short-term works project is an outcome of phase A of the Royal Hobart Hospital development planning study, of which Bruce’s company, Conrad Gargett (Architecture), is the lead consultant. That study is looking at the overall long-term needs of the hospital and evaluating a whole range of options for solving those accommodation needs. We realise that it is a major project and it will take some time to resolve in terms of developing appropriate service to the remodel, looking at options, site options and so on. Any new major proposal would take some time to
implement. The hospital has urgent problems, as you are aware, right now and so these are seen to be short-term works in solving the immediate problems as quickly as we can while we are looking in the longer term at more sustainable solutions. The planning study is being done in two phases. Phase A was a very short study with the objective of looking for some quick solutions.

... For phase B, we hope to deliver a report of a general nature in January. It is a very complex subject, as you can imagine. We are just looking at the very broadest aspects of it at the moment and have already seen a need to extend the scope of it somewhat in terms of ensuring absolute efficiency in delivering hospital services and making sure they integrate with other types of health services in the community.

The Committee questioned the witnesses as to what extent either phase A or phase B considered the potential to demolish some buildings and then rebuild on site. Mr Moore responded:-

It is a point well made and certainly Conrad Gargett (Architecture) are looking at those broad options, whether there is scope to make major changes and redevelopment on the existing site or whether there are alternative sites which can offer more effective transitions to a new facility. Clearly, the hospital facilities are aged, inefficient, do not really align themselves with modern hospitals and they do need major redevelopment. We are very constrained by space. If you think of the original C Block building, the 1930s building, it was designed in an era before airconditioning yet its floor-to-floor height is echoed through the whole hospital because the buildings were built to line up. You can imagine, that is not conducive to building flexible facilities which can easily be altered to suit changing technologies and so on.

The Committee questioned Mr Moore as to what consideration the studies have given to the relationship of the hospital with the University of Tasmania Clinical School and the Hobart Private Hospital. Mr Moore responded:-

The relationship with Hobart Private is a critical one on that site, which will need detailed investigation and resolution. The university has its own plans as to its future, which may involve us gaining access to much larger areas of the clinical school building and indeed may involve them eventually exiting that building. That in itself could be an opportunity for demolition and starting from that part of the site or it may provide us with a suitable decanting space to allow us to redevelop in another part of the site. You can imagine, it is a very complex range of options that we are trying to assess and, at this stage, we are probably still at a fairly early stage.

Mr Wolfe added:-
In terms of the actual physical planning, at a very early stage, and in terms of other options analysis there is a lot more work in that area to be done. The statement that you opened with ‘not much room for a footprint’ is one of the biggest challenges in redeveloping the existing site. All the buildings on the site are very heavily utilised so to create a footprint is a very difficult exercise and decanting is an expensive procedure because, if they move out, then you want them to move back in again. Ken alluded to the university building as a building that could be moved out of at some stage and then demolish there. That is quite true, it does allow a footprint, but once again that is a challenge because it is not a very good place for a new building, for the hospital it could be a decanting building and then that would be an additional cost. In short, it is a very complex issue, both building on the existing site and decanting.

...We look at sites beyond the existing campus for possibilities both for decanting or redevelopment.

**Future demand**

The Committee questioned the witnesses as to whether the proposed works will cater for projected demand for the next ten years. Mr Cordiner submitted:

I would say that what has been done is maximising what we can do at the moment on the site. The projections that are being done now in the phase B service study will reveal some more of this and possibly it might result in transition works. In other words, if you took the prison project which started planning in 1999, it will be completed in 2006. There is at least a seven-year time frame to build something, so it could well be that new demands arise which have to be responded to in a similar sort of manner than less urgent works.

(we are taking into account the ageing demographic) and the change in medical practice and technology and all of those things. I think we would say it is a holding pattern until a new direction is decided, and then there is the whole question about how you get from where you are today to where you are going in the future and how many steps you need to take to get there and how affordable it can be within the State context.

I think at the moment the report we are putting up to the department will be an internal report really saying, ‘Look, this is where we’ve got to thus far, could we have some direction?’ - policy direction effectively. At the moment it’s a technical effect.
Patient theatre management system
The Committee sought an explanation of the patient theatre management system proposed to be initiated. Mr Geeves responded:-

There is an IT component but there is also a process-flow component. At the current time patients go through a lot of steps to get into the facility, have an operation and go out again. J.W. Group is a consultancy from Victoria who we have engaged to process, map and redesign some of these processes so that not only do we develop some capacity with the building works, we also develop some efficiencies with the way we work within the building. That is basically what that is. There is some reliance on IT services but a lot of it is just mapping these processes, taking out all the steps that are either a barrier or non-valuing adding and streamlining that process a lot more. We are tackling this issue of getting people through the theatres from two different ways.

The Committee questioned the witnesses as to what ICT infrastructure is proposed to be provided in the works. Mr Geeves responded:-

I think there are two issues there. One is the infrastructure - that is, the fibre-optic cables and things that are put in place. This extension will be appropriately serviced with fibre optic or the high-end copper connections. The other side of it is the software, which is another issue again.

Dr Leslie added:-

... there is less reliance on information systems and technology in an operating theatre, which is a physical procedure environment, than in an emergency department where you are bringing information together. The emphasis of that study is work-flow re-engineering of patterns of how things are done. Certainly the development that we are talking about, the infill building, will enhance that and provide efficiencies which you have been able to see and experience on the tour. We have two separate lines of engagement to provide activity throughput and productivity to theatres, both physically in terms of this project and in re-engineering of the work flows within the space.

Consultation process
The committee questioned the witnesses as to what consultation had taken place with staff, and what was the result of such consultation. Mr Moore responded:-

... It is an ongoing process. These plans before you are subject to minor changes to make sure we make as many people happy as possible. Clearly, a project such as this has inherent compromise. It is not a perfect solution and we have had lots of
feedback. Some of it conflicts, so we have to manage our way through that and get the best result for everybody.

Nothing major is outstanding at this point, as I understand it. There is discussion about how big storerooms are going to be, how they are going to relate, where the door is, minor functional detail issues. We will be resolving there as we work into the room data sheets and every feature in every room will be mapped and specified.

Dr Leslie added:-

Everybody wants as much space as they can possibly get, particularly in a tight hospital setting. The neonatal area has gone through a lot of consultation work by the staff in the area - the medical and nursing staff. There are some compromises and workable outcomes there. I have been impressed from the outside, as the CEO, to see where that has got to. There is a lot of equipment in the theatre and they might like more room for storage and so forth, but I think we have a practical outcome. There is obviously further consultation and refinement required for the details to be completed.

Implications of site constraints
The Committee questioned the witnesses as to what, if any, additional cost was involved in construction on such a constrained site, and particularly, what additional cost was involved in the erection of the tower crane. Mr Wolfe responded:-

... Before the opportunity arose for utilising a crane from the front of the site, from the DEM site, the logistics of building the infill building were very difficult. We would have to gain access via the back of the private hospital and then double-crane equipment, double-crane materials, into an area that is already constrained and then lift. The utilisation of the crane from the front alleviates a lot of those on-costs. Whilst we still pay a premium for building on a very tight site, it is less of a premium than if we had tried to construct it with access from the rear of the site. To actually put a percentage on the cost of building it there rather than on greenfield site is a bit difficult because a lot of the cost is in the way it interfaces with the existing buildings. Tentacles reach out from the planning that we do into the existing buildings. Airconditioning systems don't just stop at the wall; there is a little bit of feed into other areas. When we refurbish on one side of the building there is a bit of refurbishment that has to happen on the adjacent side, so it is a little bit difficult to say what are the impacts of it being in such a tight and crowded site. Certainly there are great advantages in both cost and time in being able to access it from the DEM construction site rather than from the area at the back.
Waiting lists
The Committee questioned the witnesses as to what impact staffing levels had upon elective surgery waiting lists and whether the proposed new facilities would assist in the recruitment of new staff. Dr Leslie responded:

Recruitment is difficult. It is everywhere that you go. With more staff and with re-engineering we believe we can increase throughput in terms of the elective work, so it is really a multipronged attack on activity and throughput and flow both for urgent emergency cases and elective work.

Good new facilities help attract staff to an area. You don't just build it for that purpose alone but good facilities make a good working environment for the team and that will help attract staff in itself.

The Committee questioned Dr Leslie as to whether the new facility would assist the management of surgery cases given the high proportion of emergency work which by necessity takes priority. Dr Leslie responded:

Yes. That will enhance that, partly because of where it is situated, the efficiencies that you will have been able to see right at that front critical point near the lifts. So you can operate the theatre out of hours, in the middle of the night or at weekends as a very efficient unit and also during the work day, when you have elective work going on with the dedicated theatre right there, those cases are able to be more efficiently processed. So it enhances the efficiency by the physical positioning of that emergency theatre.

The Committee questioned the witnesses as to whether the new facility would enable operating theatres to function more efficiently. Dr Leslie responded:

Yes. It opens up one of the blockages that is in the hospital, which is the access to theatres and so forth. It creates a more efficient activity and allows increased flow and throughput in working through the waiting lists.

Elective surgery delivery
The Committee questioned the witnesses regarding the escalation of waiting lists for elective surgery which had escalated by 200 in the last two months. Mr Geeves submitted:

Over the last couple of months it has gone up. Over the last 12 months it was increasing at about 25 to 30 patients a month; a steady increase regardless of what we do at the other end to remove them. I can't quite recall the reason that we had such a big issue over the last couple of months, but all it has done is put 200 on top of the next 24 a month.
Dr Leslie added:-

It has been a step-like rise, for a reason I haven’t been able to ascertain.

The Committee questioned Dr Leslie as to what staff recruitment strategies would be initiated to deliver services if the project was approved. Dr Leslie responded:-

That is obviously important because there’s no point in having a facility if it can’t be used. We are developing strategies for recruitment in advance - at this stage obviously we are talking 12 months ahead - for manning both of those areas. I believe there is medical recruitment continuing in the various specialties. Nursing recruitment is always difficult anyway for specialised areas such as neonatal intensive care because we can’t get staff who are working in a neonatal intensive care area elsewhere in the State; this is the only one here.

… We are developing (opportunities for upgrading skills) so that we can move in that direction. That is being looked at in parallel. You need to prepare for that a year ahead of the added capacity.

… all sorts of strategies are being pursued because nursing staff levels are a problem wherever you go. It is no different here in Tasmania. All of that is moving in parallel and well ahead of time in terms of the building.

Mr Geeves added:-

Discussions are already under way with Deakin University with regard to training theatre staff. There is an ageing population. One of the issues that has been identified is that if we are going to staff the theatres then we need to train people because trained people aren’t available. We are looking at educators and running an in-house course. In the meantime, we are engaging Deakin and various mainland universities to provide us with that level of skill.

The Committee questioned the witnesses as to what impact the new facilities would have upon the waiting lists. Mr Geeves responded:-

Given the current rate of growth and the theoretical throughput, about 1.5 theatres or 1.3 theatres will maintain the waiting list at 3500 ad infinitum, so the additional capacity we get out of the other 0.5 of a theatre will go to reducing that. I can’t tell you either how many years it will take to reduce it to nothing.

… We had a look at the growth of the waiting list as it stands … and we had a look at throughput based on your average case length. It is very variable so it is a little bit
rubbery. However when we did that it appeared we could maintain the waiting list steady, without any growth in the elective surgery waiting list, with 1.5 theatres.

... Hit 3 500 on the list and there it stays. The additional capacity in that other half a theatre or the other half of time available will reduce it, but it is a bit difficult to tell you how much it is going to reduce it by over how long.

When questioned as to whether private providers would continue to be needed, Mr Geeves responded:-

We shouldn't have to. We may occasionally but it should be that the additional capacity you get will allow us to get the waiting list to start moving in the other direction. It is probably not going to move fast but it will start reducing.

Dr Leslie added:-

We should also perhaps go back to the earlier comments that were made about the re-engineering project that is being undertaken in theatre, which is to take our existing resources and improved patient flow in terms of the systems that are better in place there, so this is a two-pronged attack, not just facilities and expansion, but improved efficiency and throughput in the flow.

Mr Geeves continued:-

The review processes are looking at things like patients being ready to go on time at 8.30 am. rather than there being a delay and then somebody falls off the other end or reducing the turnaround time between patients in theatre so for every 20 minutes you save between patients you are going to have another patient onto the end of the list, so it is those kind of things that we are looking at as well.

**Neonatal Intensive Care Unit**

The Committee questioned the witnesses as to the current capacity of the Neonatal Intensive care unit. Dr Leslie responded:-

We have 10 and six and we occasionally try to squeeze more in because they are a bit smaller than adults, but we have also had to use, particularly the other weekend when we were totally clogged, the facilities at Calvary. That is not for the intensive care of course because that is the only paediatric neonatal intensive care area; that is for the special care areas.

Mr Moore added:-

(In the new facility) there are 15 special care nursery beds and 11, which includes the two isolation rooms which can be used multi-purpose.
DOCUMENTS TAKEN INTO EVIDENCE

The following document was taken into evidence and considered by the Committee:

Department of Health and Human Services – Hospitals and Ambulance service
Division Royal Hobart Hospital – Short-Term Works Project, November 2005
CONCLUSION AND RECOMMENDATION

The Committee is satisfied that the need for the proposed works at the Royal Hobart Hospital was clearly established, as current facilities are inadequate.

The Committee considers that the development of the infill building and completion of associated works will provide the infrastructure needed to support the program of improvement being undertaken to ensure that the Royal Hobart Hospital has the resources and capacity to better deliver the standard of service expected by the Tasmanian community.

Accordingly, the Committee recommends the project, in accordance with the documentation submitted, at an estimated total cost of $14,791,000.