

# IPSWICH HOSPITAL REDEVELOPMENT STAGE 1A BUSINESS CASE/COST BENEFIT ANALYSIS SUMMARY

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| <b>PURPOSE OF THIS DOCUMENT</b> | This document provides an overview of the Ipswich Hospital Redevelopment Stage 1A Detailed Business Case. The primary objective of this document is to outline the economic analysis undertaken and the key outcomes.   |
| <b>STATUS</b>                   | This summary was prepared based on the contents of the detailed business case presented to the Building Queensland Board in Q2 2019. The information presented may be subject to change as the proposal progresses through future stages of development, delivery and operations. |

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## 1 SUMMARY INFORMATION

|                          |   |                                  |
|--------------------------|---|----------------------------------|
| PROJECT NAME             | Ipswich Hospital Redevelopment Stage 1A                       |                                  |
| LOCATION                 | South East Queensland   |                                  |
| PROPOSAL OWNER           | West Moreton Hospital and Health Service<br>Queensland Health |                                  |
| PROPOSED DELIVERY AGENCY | Queensland Health   |                                  |
| P90 COST ESTIMATES       | <b>NOMINAL<sup>1</sup></b>                                    | <b>PRESENT VALUE<sup>2</sup></b> |
| CAPITAL COST             | \$178 million   | \$157 million                    |
| INCREMENTAL ONGOING COST | \$266 million <sup>3</sup>                                    | \$102 million                    |
| NET PRESENT VALUE        |   | -\$207 million                   |
| BENEFIT COST RATIO       |   | 0.20                             |

## 2 PROPOSAL OVERVIEW

West Moreton Health is the fastest growing hospital and health service in Queensland. The region is experiencing rapid growth with the population forecast to more than double from 286,000 to 587,600 by 2036. The community is culturally, economically and geographically diverse, with lower social determinants of health than the Queensland average, resulting in proportionately higher acuity, burden of disease and health care demand.

Ipswich Hospital is the primary hospital for the West Moreton Health catchment and provides services at Clinical Services Capability Framework (CSCF) levels 4 and 5. West Moreton Health services are predominantly delivered at Ipswich Hospital and Ipswich Health Plaza (community health services).

West Moreton Health has undertaken significant work to assess and plan suitable development and service delivery options to ensure the continuation of quality health service delivery in the West Moreton community, including:

- West Moreton Strategic Plan 2017–21: The Strategic Plan underpins all other studies undertaken by West Moreton Health. It is aligned to broader Queensland Government objectives and assesses non-infrastructure options to address the projected demand curve.
- West Moreton Health Master Plan: The plan identifies a preferred configuration of facilities to support the future service needs of the West Moreton Health catchment and includes a series of site and facility specific master plans, including the Ipswich Hospital site and its surrounds. All business case analysis has therefore been undertaken in the context of the broader West Moreton Health Master Plan and the site-specific master plan.
- Preliminary business case (2017): The preliminary business case recommended a staged approach to the redevelopment of the Ipswich Hospital Precinct and identified Stage 1A as the preferred option.

<sup>1</sup> Nominal capital cost estimates are undiscounted.

<sup>2</sup> Present value cost estimate discounted at 7 per cent.

<sup>3</sup> Nominal ongoing operating and maintenance costs (O&M), undiscounted.

Commencing with Stage 1A, the phased approach facilitates a measured strategy to build capability and capacity to address current and future shortfalls in service provision while ensuring future master planned flexibility to respond to emerging issues. While not directly addressing the full extent of current and future service demand, Stage 1A is considered a critical enabler for the master planned future development of the Ipswich Health Precinct (both acute and community health) and is consistent with the West Moreton Health Master Plan, the Ipswich Hospital component of which was independently peer reviewed as part of the detailed business case.

The primary scope of Stage 1A includes:

- new 50-bed secure mental health unit
- MRI Suite
- community health precinct.

The detailed business case for Stage 1A was developed in accordance with Building Queensland's Business Case Development Framework and the Queensland Government's Project Assessment Framework.

Building Queensland led the development of the detailed business case which was supported by West Moreton Health and Queensland Health. A project steering committee consisting of representatives from West Moreton Health, Queensland Health, Building Queensland, Queensland Treasury and Department of the Premier and Cabinet provided strategic advice and direction to the project.

### 3 SERVICE NEED

Demand pressures on existing West Moreton Health services are significant. In 2017–18, Ipswich Hospital had 60,933 admissions, accounting for over 90 per cent of the total activity across the West Moreton Health community. In the same timeframe, there were 83,988 presentations to emergency departments at West Moreton Health facilities, equating to more than 230 patients per day. Health service demand in West Moreton Health currently outpaces clinical supply both in terms of capacity and capability, resulting in increased waiting times and a third of residents needing to seek health services outside of the catchment.

In addition to the increasing gap between health demand and clinical supply and population growth, factors impacting the delivery of health services within the region include:

- existing facilities, both at the hospital itself and the Ipswich Health Plaza, are ageing and are not appropriate for contemporary health service models
- the location and capacity of current services limits West Moreton Health's ability to commission or directly deliver the bulk of public health care for the communities within its geographic boundaries, resulting in a low self-sufficiency rate of 66 per cent, compared to the Queensland average of 82 per cent
- gaps in key clinical infrastructure prevent the provision of efficient and contemporary models of care based on national and international best practice.

With such challenges facing its health users, West Moreton Health's current capacity and clinical capability shortfalls constrain its ability to provide timely, accessible, high quality and efficient health care. As health demand outpaces clinical supply, patients experience increased waiting times.

This section documents the service needs to be addressed noting that the project is the first stage of a broader, phased approach to address the service needs of the West Moreton Health catchment over the next 15 years.

### 3.1 MRI

Ipswich Hospital Medical Imaging services are currently provided at a CSCF Level 4 and include General Radiography, Mobile Radiography, Computerised Tomography (CT) Scanning, Ultrasound, Fluoroscopy, Operating Theatre Radiography, Colorectal Scanning and Dental Imaging. There is currently no on-site provision of Magnetic Resonance Imaging (MRI), Bone Densitometry, Nuclear Medicine and Positron Emission Tomography.

When patients require scans for diagnostic purposes, they have two options: an MRI or a CT scan. While both scans can be useful for certain diagnostic procedures, CT scans expose the patient to a dose of radiation, while MRIs do not.

Most patients requiring MRI services are transported to external private providers within the region. External services operate from 8 am to 4 pm Monday to Friday. Patients requiring scans outside of these hours are transferred to other Queensland Health facilities including Princess Alexandra Hospital and Logan Hospital. Intensive Care Unit patients requiring scans are also transported to another Hospital and Health Service.

### 3.2 Mental health

The existing mental health buildings do not reflect contemporary models of care and cannot accommodate projected service growth. In terms of drivers of mental health, the West Moreton Health population is one of the state's most disadvantaged communities, with some of the highest rates of prescription medication usage in Queensland and an elevated rate of male suicide. Acute services have experienced rapid growth and are expected to increase by approximately 22 per cent between 2021–26. Mental health services at Ipswich Hospital are, and will continue to be, delivered at a CSCF Level 5.

The mix of people admitted to an acute mental health inpatient service is expected to change over time and the service model will need to be flexible to cater for varying needs. Overall it is anticipated that the acuity, severity and complexity of the illnesses presented to mental health services will increase. To be effectively managed in open space environments, consumers with significant behavioural issues also require additional staff and resources. As such, there will be a greater need for approaches which separate people who are at different stages of recovery.

### 3.3 Community health services

The Ipswich Health Plaza, located 10 minutes north of Ipswich Hospital, currently accommodates many of the West Moreton Health Community Health Services but it cannot cater for future growth projected for these services. The Health Plaza location also presents challenges for staff and patients having to provide or seek care across the hospital campus and the Health Plaza.

A wide variety of community health services are located at the Ipswich Health Plaza, which is situated in the Ipswich central business district, one kilometre from the Ipswich Hospital campus. The community health services are distributed throughout the Plaza in disparate sections alongside specialist outpatient services. Due to the design of the building, which was previously a shopping centre, there is no central admission area or main entrance. Community health services delivered here include:

- cardiac rehabilitation
- diabetes drop-in clinic
- chronic conditions and specialist outpatients
- sexual health
- child development services

- child/family health
- child/youth mental health service
- integrated mental health
- breast screening
- community based rehabilitation team
- alcohol and other drugs service.

## 4 OPTIONS ASSESSMENT

The preliminary business case revisited and reconfirmed a range of infrastructure and non-infrastructure-based options previously investigated in the Master Plan. A multi-criteria analysis resulted in four shortlisted options plus a base case. An options evaluation process was then undertaken. It included use of an initiative profiling tool and business case workshops and consultation to shortlist two options from an original list of five. The shortlist was further evaluated through a 'preferred option workshop' and tested for consistency with key stakeholders, the West Moreton Health Board and Executive.

The options evaluation process resulted in the recommendation of a preferred option for the redevelopment of Ipswich Hospital.

## 5 BASE CASE

The base case is the benchmark against which the reference project<sup>4</sup> is assessed and provides decision makers with information of what situation will exist in the absence of the proposed investment. The base case was modelled on a whole-of-life basis and includes all expected impacts, costs and benefits.

Under the base case the projected population forecasts continue to place increased pressure on the ageing facilities at Ipswich Hospital and Ipswich Health Plaza. The gap between health demand and clinical services supply will continue to increase. West Moreton Health currently operates at a self-sufficiency level of 66 per cent, compared to a Queensland average of 82 per cent. This means that currently a third of residents seek appropriate health care outside of the local catchment, which consequentially also impacts service delivery capacity in the broader health network.

In the absence of the project proceeding, the current challenges facing West Moreton Health can be expected to increase in proportion with projected population increases and reflective of local demographic health needs and requirements.

The total cost of the base case over the 30-year evaluation period trends upwards. The total P90, risk adjusted nominal cost of the base case is \$60.61 million, comprising entirely of recurrent operational costs.

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<sup>4</sup> In the context of an economic analysis, a reference project represents an indicative investment proposal which addresses the identified service need. While the reference project may be subject to change during the detailed design process, it provides a reference point to assess the potential costs and benefits of the infrastructure proposal.

The base case scope includes:

- Mental health: The 44-bed Mental Health Unit is located on Chelmsford avenue adjacent to the Ipswich Hospital and connected via a covered link bridge. Built in 1997, the Mental Health Unit is aged and is not capable of supporting contemporary models of care. The unit generally operates at 100 per cent capacity. When the unit is at capacity, overflow patients are accommodated on surgical or medical wards under supervision. Over the projected demand period, overflow patients will increase in number, reducing capacity of the surgical and medical wards at Ipswich Hospital.
- MRI: There is currently no provisioning of MRI services within the Ipswich Hospital. Inpatients are transferred to local private hospitals at cost to the health system and outpatients have to seek MRI at other public hospitals, use private service providers or have CT scans.
- Community health services: Community health services are provided at multiple sites, primarily Ipswich Health Plaza and Ipswich City Plaza, which creates service inefficiencies. Ipswich Health Plaza is an ageing repurposed shopping centre located above Ipswich train station and does not support the delivery of contemporary health services models.
- Car parking: There are 555 bays at Ipswich Health Plaza and 752 at the Ipswich Hospital main campus.

## 6 REFERENCE PROJECT

The reference project which has been the subject of the analyses in this detailed business case comprises:

- a new mental health facility with 50 beds for adult acute and older persons
- an MRI suite including co-location of two CT scanners
- purchase and refurbishment of Ipswich City Council facilities to provide new facilities for community health and administration functions
- upgrades to the existing at-grade car parks off Roderick St, Limestone Street and Foote Lane.

To facilitate this redevelopment the following activities are included in the scope:

- development of a link bridge connection between the new mental health facility and Ipswich Hospital
- demolition of the existing acute mental health facility, enabling the next stage of development on the site, a proposed acute services block
- acquisition and repurposing of the Ipswich City Council buildings as follows:
  - Hayden building: Ground floor, level 1 and level 2 clinical space, level 3 and level 4 administration
  - Administration building: clinical services
  - Library: demolition
  - Humanities: demolition.

See Figure 1 for reference project scope.

Figure 1 Reference project scope



## 7 METHODOLOGY

The economic analysis comprises a cost benefit analysis, based on the principles of welfare economics, which considers the project from a community perspective and identifies the cost and benefits which are both internal and external to West Moreton Health, including government organisations, private sector enterprises, individuals and the environment.

A number of sources and guidelines were referenced to develop the cost benefit analysis for the project, including:

- Cost Benefit Analysis Guide: Supplementary Guidance, Building Queensland (2016)
- NSW Health Guidelines for the Economic Appraisal of Capital Projects (2011 and current redraft)
- Project Assessment Framework: Cost-benefit analysis, Queensland Treasury (2015)
- An Economic Assessment of Healthcare Capital Investment, World Health Design (2013).

The cost benefit framework is based on an annual discounted cash flow model with an evaluation period of 30 years from the beginning of capital investment. This evaluation period aligns to that used in the financial analysis, consistent with Building Queensland’s Business Case Development Framework.

Table below summarises the costs and benefits that are included in the cost benefit analysis.

**Table 1** Overview of costs and benefits

| COSTS                                 | BENEFITS  |
|---------------------------------------|---|
| <b>QUANTIFIED AND MONETISED</b>       |   |
| Capital costs                         | Patient health gains  |
| Asset maintenance costs               | Productivity and efficiency (incorporated in operating costs)                             |
| Recurrent (operating) costs           | Reduction in radiation when moving from CT to an MRI                                      |
| Residual asset value                  | Reduction in travel costs associated with MRI transfers (incorporated in operating costs) |
| <b>NOT QUANTIFIED</b>                 |   |
| Lost productivity during construction | Workforce—sustainability, staff retention, attraction, morale                             |
| Service disruptions                   | Safety—reduced clinical errors  |
| Noise and air pollution               | Patient and carer travel time and cost savings  |
|                                       | Environment supportive of health and wellbeing  |
|                                       | Amenities/green space   |
|                                       | Environmental   |
|                                       | Enables subsequent stage of development on the site                                       |

## 8 DEMAND FORECASTS

West Moreton Health is experiencing rapid growth and its population is projected to increase by 112 per cent to 593,000 by the year 2036. In relative terms this increase is the fastest projected growth of any hospital and health service in Queensland. Current and projected growth is most pronounced in the Ipswich and Ripley-Springfield catchments. With relative demand growing faster than in other South East Queensland Hospital and Health Services, projected demand shortfalls will become critical in the immediate future without pre-emptive action.

To conduct the economic assessment for this project, the following demand forecasts were required:

- surgical separations in the base case and project case
- number of mental health overflow patients in the base and project case
- estimate of the share of surgical patients who would have received treatment elsewhere in the absence of treatment at Ipswich Hospital
- percentage reduction in burden of disability due to treatment.

Unit values for the above items were sourced from:

- West Moreton Health Ipswich Hospital specific data
- Queensland Government Statistician’s Office 2018 population projections.

Ipswich Hospital data was used whenever available. When unavailable, values from NSW Health Infrastructure Guidelines were used.

## 9 COST BENEFIT ANALYSIS RESULTS

Table 2 summarises the key cost benefit analysis results for the reference project.

**Table 2** Cost benefit analysis results

| COST BENEFIT ANALYSIS RESULTS                        | PRESENT VALUE (\$MILLION, ROUNDED) | % OF TOTAL |
|--|------------------------------------|------------|
| TOTAL monetised benefits                             | \$52.3                             | 100%       |
| Capital costs P90                                    | \$157.4                            | 61%        |
| Operating and maintenance costs                      | \$101.7                            | 39%        |
| TOTAL costs  | \$259.1                            | 100%       |
| Net present value (without wider economic benefits)  | -\$206.9                           |            |
| Benefit cost ratio (without wider economic benefits) | 0.20                               |            |

| PARAMETER                       | VALUE   | SOURCE  |
|---------------------------------|---|---|
| Discount rate                   | 7%  | Cost Benefit Analysis Guide: Supplementary Guidance, Building Queensland (2016)                 |
| Price year                      | 2019  | Project Assessment Framework: Cost-benefit analysis, Queensland Treasury (2015)                 |
| Evaluation period               | 30 years<br>Construction 2019–2023<br>O&M MRI starting 2020<br>O&M MHU starting 2021  | Cost Benefit Analysis Guide: Supplementary Guidance, Building Queensland (2016)                 |
| Indexation                      | Capital costs were escalated in real prices while ongoing costs were assumed to increase at the rate of inflation (i.e. no real increase)   | Cost Benefit Analysis Guide: Supplementary Guidance, Building Queensland (2016)                 |
| Unit costs and parameter values | No real price escalation was applied to any of the unit values. The primary unit value used to monetise benefits relates to the value of a life and the value of a life year, neither of which is expected to be impacted outside of inflation. | NSW Health Guidelines for the Economic Appraisal of Capital Projects (2011 and current redraft) |

## 10 SENSITIVITY ANALYSIS

Sensitivity analysis identifies key economic risks within the conducted analysis. It examines how much the results deviate consequently from changes in proposal driver/s, or combinations of drivers.

The sensitivity analysis for the project is summarised below:

**Table 3** Sensitivity analysis results for reference project

| SENSITIVITY SCENARIO                            | P90 COSTS               |                    |
|---|-------------------------|--------------------|
|   | NET PRESENT VALUE (\$M) | BENEFIT COST RATIO |
| Baseline  | -206.9                  | 0.20               |
| <b>Discount rates (central case: 7%)</b>        |                         |                    |
| Lower at 4%                                     | -212.4                  | 0.32               |
| Higher at 10%                                   | -190.7                  | 0.15               |
| <b>Project costs</b>                            |                         |                    |
| -20%  | -258.7                  | 0.17               |
| +20%  | -155.0                  | 0.25               |
| <b>Project benefits</b>                         |                         |                    |
| -20%  | -196.4                  | 0.24               |
| +20%  | -217.3                  | 0.16               |
| <b>Project costs, Project benefits</b>          |                         |                    |
| +20%, -20%                                      | -269.2                  | 0.13               |
| -20%, +20%                                      | -144.6                  | 0.30               |
| <b>Health benefits key assumptions</b>          |                         |                    |
| <b>Proportion of patients treated elsewhere</b> |                         |                    |
| Proportion of patients treated elsewhere (100%) | -247.0                  | 0.05               |
| Proportion of patients treated elsewhere (50%)  | -166.7                  | 0.36               |
| Proportion of patients treated elsewhere (25%)  | -126.6                  | 0.51               |
| Proportion of patients treated elsewhere (0%)   | -86.5                   | 0.67               |
| <b>Change in health outcomes</b>                |                         |                    |
| Improvement in health outcomes: 10%             | -220.2                  | 0.15               |
| Improvement in health outcomes: 20%             | -193.5                  | 0.25               |
| Improvement in health outcomes: 30%             | -166.7                  | 0.36               |
| Increase in risk of cancer due to CT: doubled   | -206.9                  | 0.20               |

## 11 SOCIAL IMPACTS

Although an enabling project, the Social Impact Evaluation finds that the reference project will achieve several positive social impacts, most notably:

- decreased requirement to transfer patients to neighbouring Hospital and Health Services for services resulting in improved self-sufficiency (additional mental health beds, MRI and improved ambulatory services)
- increased clinical capability (MRI)
- improved health outcomes as a result of improved clinical spaces and opportunity to introduce new models of care and improved health services
- improvements in staff retention and attraction
- increase in capacity of the surgical ward
- improved consumer, carer and staff experiences
- more appropriate separation of adult and child ambulatory services
- opportunity to reduce emergency department waiting times for mental health patients and associated improvement in safety risk, first responder waiting times and ambulance ramping
- reduced risk of public nuisance with the relocation of ambulatory services away from the train station
- travel cost savings able to be invested in clinical services
- reduced transfers and transports.

Several potential negative impacts have been identified which are summarised below together with suggested mitigations:

- Hospital access and possible service interruptions are expected during construction of mental health facilities and relocation and refurbishment of ambulatory services. Impact can be mitigated with appropriate strategies around traffic flow management, special access for first responders, and communication to patients, staff and the public.
- For the new Community Health Precinct, there will be short-term negative impacts during construction and from changes to service location which will impact patient access (which may be mitigated with effective communication and appropriate signage/wayfinding support) and medium-term negative impact resulting from the continual impact of ageing facilities. The reference project provides for a refurbishment of already aged local council buildings; however, the negative impact of refurbishment will be realised sooner than new, purpose build facilities.

## 12 PROJECT IMPLEMENTATION

The delivery model analysis demonstrates that the project should be delivered as three separate packages: Mental Health, Community Health Precinct and MRI.

The Mental Health and the Community Health Precinct packages were evaluated against three procurement models (Construct Only, Design and Construct and Managing Contractor).

The MRI project component was evaluated separately. Due to the specialised nature of the MRI procurement and the limited range of MRI providers the project team conducted a market sounding with key MRI providers to help inform the procurement options for this project component. The MRI package is being delivered as a turnkey solution as an early works package in order to meet the requirements of the Australian Government MRI licence.

The primary conclusion drawn from the analyses is that the MRI and MHU components of the reference project should progress with the community health component (and associated car park) subject to further investigations. Specifically, the analyses concluded that:

- the MRI component addresses the service need and presents value for money
- the new MHU, including the link bridge between the hospital and the unit, addresses the service need for adult and older persons mental health services, presents value for money, will be able to respond to future demand growth, meets the election commitment, increases capacity in surgical and medical wards by reducing the number of overflow patients in the forward demand period and enables future stages of the hospital redevelopment to be progressed
- refurbishment of the Ipswich City Council buildings is not currently a viable option for the development of an integrated community health facility as the condition of the buildings is not suitable for the delivery of clinical services and requires significant investment including substantial upgrades to enable them to:
  - effectively support contemporary models of care
  - meet building code compliance requirements
  - potentially remove duplication of services.
- further investigations should be undertaken to consider how to best provide community health services, noting West Moreton Health's commitment to non-infrastructure service delivery and its out-of-hospital care strategy
- upgrades to the existing at-grade car parks off Roderick St, Limestone Street and Foote Lane are not required without the move of the community health services to the Ipswich City Council buildings. The Health Plaza car parks will also remain at the disposal of West Moreton Health until the community health services strategy is resolved. Subject to resolution of these matters, land will become available for additional at grade car parking.

The risk adjusted capital costs (P90 nominal) for the recommended scope be progressed immediately totals \$97 million.

An adjusted benefit cost ratio was developed on the recommended scope, which considers only the project elements which provide quantifiable benefits and removes the enabling components. The adjusted benefit cost ratio has been calculated at 0.29.