

Final Business Case Evaluation Summary

Liverpool Health and Academic Precinct



July 2022

About this report

This report summarises the final business case for the development of the Liverpool Health and Academic Precinct (LHAP).

Liverpool Hospital, in the South-Western Sydney Local Health District (SWSLHD), is a Principal Group A1 tertiary referral academic and research-focused acute hospital.

Realising the Western City envisaged in the 'Metropolis of Three Cities' strategy will require significant investment in the capacity of health services at Liverpool Hospital to support projected population growth. The NSW Government has announced a \$740 million capital project to develop the LHAP. Further funding of \$4 million from SWSLHD for the Australian Cancer Research Foundation (ACRF) Survivorship Research Centre has also been committed.

The LHAP will deliver:

- a new Integrated Service Building (ISB) for:
 - integrated cancer care services
 - women's and children's health services
 - ambulatory and outpatient care clinics
 - additional clinical services, including medical imaging
 - new non-clinical services, including a loading dock and satellite kitchen facilities
- expansion within the existing Clinical Service Building of:
 - the intensive care unit
 - the emergency department
 - operating theatres
 - interventional radiology
 - the surgical day-only and surgical short-stay units
 - new and refurbished non-clinical services including mortuary and main kitchen
- a new Education and Research Hub, with direct connections to the hospital.

In November 2018, a preliminary business case was submitted to an independent review panel facilitated by Infrastructure NSW, the Government's independent infrastructure advisory agency. In 2019, Infrastructure NSW assessed the final business case.

This business case summary has been prepared by Infrastructure NSW in accordance with the NSW Health Facility Planning Process and the NSW Treasury Guidelines for Capital Business Cases, and involved assessment from modelling, engineering and financial experts.

Strategic context

Regional strategic goals

The SWSLHD Strategic Plan 2018 – 2021 outlines a 5-year strategy with a focus on transforming SWSLHD to build on its current achievements and enable continued improvement across all its healthcare services.

SWSLHD's vision is 'leading care, healthier communities.' To achieve this, SWSLHD has identified 6 strategic directions:

- safe, quality care delivered using the latest clinical evidence that reflects consumer experiences and needs
- collaborative partnerships
- our people make a difference
- a healthy community
- a healthcare system for the future
- a leader in research and teaching.

The vision for SWSLHD and Liverpool Hospital is to bring cancer services into an Integrated Cancer Centre that combines inpatient care, ambulatory care, treatment/diagnostics and clinical research.

The establishment of the Liverpool Health and Academic Precinct (LHAP) will provide an environment that fosters leadership at Liverpool Hospital and SWSLHD and supports the Greater Sydney Commission's vision to create an innovation, research, health and advanced manufacturing hub on the periphery of the hospital.

Opportunity to build on world-leading technology and practice

Liverpool Hospital provides high-end technology services, has the only cyclotron in western Sydney and 1 of only 4 Magnetic Resonance Imaging (MRI) Linear Accelerator research facilities in the world.

The hospital has principal tertiary affiliations with the University of NSW, Western Sydney University and the University of Wollongong. It provides an active education program for medical practitioners, nurses and other health professionals, and clinical placements for students.

The establishment of the LHAP will provide an environment that fosters leadership for tertiary and quaternary services at Liverpool Hospital and across SWSLHD. In addition, the new Education and Research Hub (ERH) will enable stronger links to research partners, while the education sub-precinct will support the cross-utilisation of facilities and drive innovation in the delivery of education programs for students and the wider community.

Project need

Growing need for health services in the region

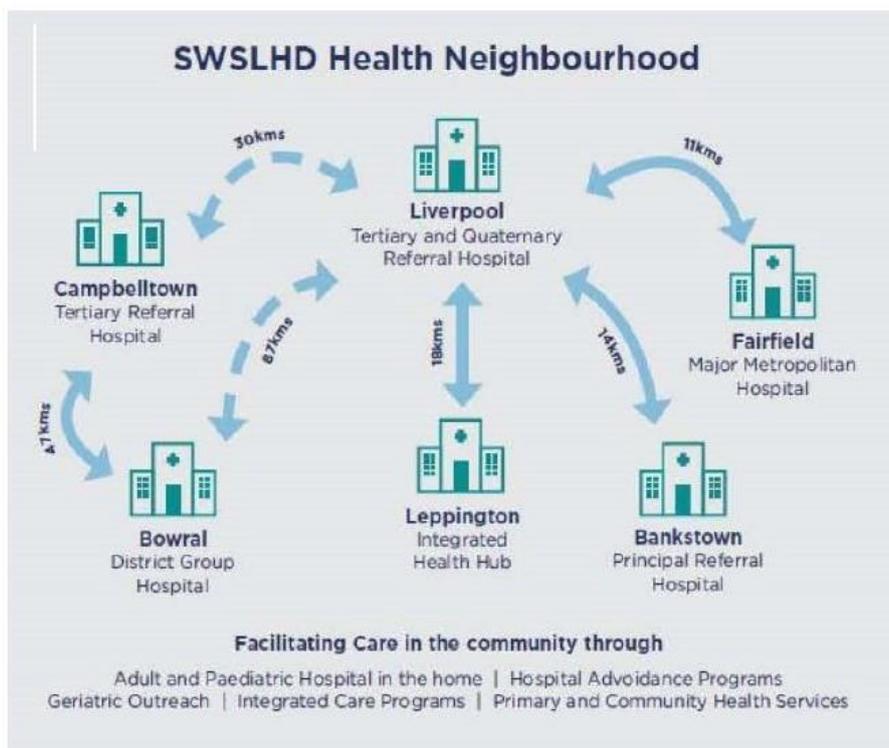
- The population served by SWSLHD will increase from 966,450 in 2016 to 1.285 million in 2031, an increase of 33% with an annual growth rate of 2%. The Liverpool LGA population is expected to grow by 41% by 2031, with an additional 86,950 people – twice the growth rate of the rest of NSW.
- NSW cancer data predicts that by 2031, there will be around 7900 new cases of cancer diagnosed in south-western Sydney per year, with around 2400 residents dying from the disease. This is an increase of just over 60% from 2016 to 2031.
- Major infrastructure projects in the region, such as the Western Sydney Airport and the associated aerotropolis, are expected to see an increase in people working in the region, placing further demand on health services.

These factors result in a projected demand well beyond the hospital's present capacity of 713 beds and ambulatory care facilities.

Liverpool Hospital: part of the SWSLHD Health Neighbourhood

Liverpool Hospital is part of a network of health services within the SWSLHD (Figure 1).

The preferred option proposed by the final business case will ensure that Liverpool Hospital has the capacity to provide accessible services necessary for the future development of the SWSLHD.



Source: CSP, Liverpool Hospital to 2031, V1.9, 30 August 2018

Figure 1: The SWSLHD 'Health Neighbourhood' network

Project objectives and design

Objectives

The project will provide a platform to deliver the best healthcare for the people of south-western Sydney and beyond, and a high-quality built environment that harnesses skills, knowledge and care. It will also:

- increase the acute and subacute overnight bed capacity to meet 2026 demand
- increase the day-only bed capacity to meet 2026 demand
- provide new and expanded cancer services to meet 2026 demand
- provide new and expanded women's and children's services to meet 2026 demand
- consolidate and expand ambulatory and outpatient care services
- expand critical care services for the emergency department, operating theatres, interventional radiology, and the neonatal and adult intensive care units.

Design

The design of the project provides a balanced response to the following planning and design principles and requirements:

- Health Infrastructure NSW systemised design approach
- LHAP masterplan
- LHAP core planning and design principles
- the project's functional and operational briefs.

The 12 core design principles for LHAP are:

- patient focused
- centre of innovation
- beyond 2026
- campus-wide integration
- an anchor for the Liverpool Innovation Precinct
- integrating education and research
- being open
- minimising disruption
- improving circulation and wayfinding
- using existing assets
- core clinical relationships
- value for investment.

The project will target a 5 star rating benchmarked against the Environmentally Sustainable Design Matrix.

Capital Cost

A \$740 million funding commitment by the NSW Government for the LHAP was included in the 2018-19 NSW State Budget. The funding commitment of \$4 million for the Australian Cancer Research Foundation Survivorship Research Centre has been confirmed, and the scope has been included within the project.

Options identification and assessment

For the preliminary business case (PBC), 3 options were developed in order to arrive at a preferred masterplan for the campus:

- Masterplan Option 1: Northern Expansion
- Masterplan Option 2: Southern Expansion
- Masterplan Option 3: Western Expansion.

These options were evaluated against the 12 core design principles, and Masterplan Option 3 was rated most highly against the assessment criteria.

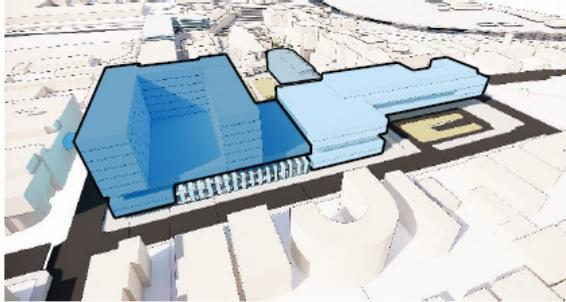
Revised options were then developed post-PBC with the objective of achieving the core planning and design principles within the available budget of \$744 million. The 'affordable' options assessed were:

- Revised Option 1: PBC preferred Masterplan Option
- Revised Option 2: single-stage build
- Revised Option 3: retention of pathology building
- Revised Option 4: 2-stage build
- Revised Option 5: 2-stage build – 2 IPU towers (across Stages 1 and 2).

These options were reviewed with the consideration of key clinical adjacencies, blocking and stacking of the building. **Revised Option 4 (2-stage build) was preferred** as it:

- provides the most clinical scope based on agreed service priorities
- has a reduced number of stages
- allows for more clinical scope by 2023 (Stage 1)
- removes Pathology from early works, reducing escalation costs by incorporating Pathology within the Integrated Services Building
- enables activation of the 2031 Masterplan
- includes program efficiencies when compared with the preliminary business case Masterplan forecast completion.

Option 4: Two Stage Build - PREFERRED



Minor revision to current Masterplan

Two Stage Option (plus refurb works)

- Stage 1 - South Podium
- Stage 2 - ISB Podium & IPU Towers and Refurb Works

Comments

- Stage 1 area increased to reduce project escalation
- Allows early delivery of new build Emergency, Pathology, Birthing & NICU
- Pathology integrated into the main clinical stream of the Hospital
- Repurposes the Caroline Chisholm building for non-clinical usage (admin) therefore reducing project refurbishment cost
- Non-clinic usage of Caroline Chisholm could be relocated in future to allow cost-effective envelope for 2031 expansion
- Reduces the impact and cost of building over the bunkers (NICU no longer placed over the bunkers)

Economic evaluation

As part of the planning due diligence, a review of the project was undertaken in early 2019. This review identified a need to explore options to maintain clinical scope and achieve value for money.

A process to re-align the project with the available capital budget was undertaken through a consultative approach with the SWSLHD and the Liverpool Hospital Executive.

The cost benefit analysis indicates that all options considered for the final business case would generate net benefits in terms of net present value (NPV) and benefit cost ratios (BCR).

Benefits

Revised Option 4 (2-stage build) provides an innovative and efficient solution consistent with the hospital's values to enhance access, equity and operational efficiency. It will deliver an additional 187 hospital beds, 52 more ambulatory care spaces, 32 more cancer treatment chairs, 27 additional emergency and short stay treatment bays, and an additional 8 delivery suites. This option will also provide deliver more clinical scope by 2023 as well as deliver a new pathology service that is located centrally to all critical care services.

Capital cost value of the project

The 'affordable' option cost plan is based on detailed concept design test fits that reflect the revised Schedule of Accommodation. Its estimated total cost (ETC) is \$744m.

Two further cost options were developed for comparison against the 'affordable' option:

- Full Clinical Services Plan (CSP) – November 2018 to 2026
- An extended CSP scope, covering the further investment required to meet the future demand by 2031.

The outcomes of the analysis

A cost benefit analysis (CBA) was developed for the project by the Business Strategy Branch of Health Infrastructure.

The results of the CBA indicate that all options would generate net benefits in terms of net project value (NPV) and benefit cost ratio (BCR).

While the CSP to 2031 option presents the highest BCR of 1.73, the capital cost of this option is not affordable under the current funding envelope.

The 'affordable' option provides capacity to best meet the projected service demand within the available capital budget of \$744 million as well as positive net economic benefits.

A summary of the outcomes is provided below.

Table 1: Summary of incremental results (at 7% discount rate, \$M, 20 years)

	Affordable to 2026	Full CSP to 2026	CSP to 2031
Incremental NPV	\$647.5M	\$660.4M	\$1,462.7M
Incremental BCR	1.56	1.49	1.73

Deliverability

Procurement

Procurement options have been developed based on the capital funding, cash flow drivers, program requirements, site specifics and the scale, risk and complexity of each package of works. There will be 5 packages of work in total:

- Infrastructure works – service diversion/reticulation, civil infrastructure works and ambulance station demolition.
- Early works – new kitchen and mortuary, helipad upgrade, car park P1 and P3 reconfiguration and connection, and temporary distribution centre, retail space, relocation of telephone switch room and education/SIM centre facilities.
- Main works – 2-stage new build (including interface linkages between the existing Clinical Services Building, Caroline Chisolm and construction over the existing radiation oncology bunkers) and refurbishment.
- Multi-storey carpark.
- Education and Research Hub.

The first 4 packages will be procured under a fixed lump sum contract (GC21 Ed.2 with HI Special Conditions). The Education and Research Hub will be delivered as a separate building via a joint venture with education partners.

Timeframe

The infrastructure and early works packages mitigate many of the site and construction risks of the project.

The timeframe for the main works package was scheduled to start in January 2021 and will be completed by June 2026 while the timeframe for the multi-storey car park covered September 2020 to December 2021. The timeframe for the Education and Research Hub is dependent on a third-party agreement.

Key risks and mitigation

A risk management process has been established for the project based on Health Infrastructure's Risk Management Framework. An initial risk workshop with the Liverpool Hospital Executive, Health Infrastructure and the consultant team in May 2018 identified and managed the project's initial planning risks. The risks have been continuously updated and reported throughout the project governance process.

A subsequent risk workshop was held on 17 September 2019 to identify detailed planning and infrastructure risks. These included risks associated with design, program, traffic and transport management planning, operations and workforce. The implementation of mitigation measures has reduced all key risks to 'medium'.

The Infrastructure NSW view

In November 2018, the preliminary business case was submitted to Infrastructure NSW for review. In December 2019, the final business case was assessed by Infrastructure NSW.

The preferred option provides an innovative and efficient solution consistent with the hospital's values to enhance access, equity and operational efficiency. It supports the hospital's commitment to:

- increase clinical capacity to meet population growth/cultural diversity across the age continuum for patients, families, visitors and the local community
- increase emphasis on hospital avoidance strategies
- create collaboration and openness for staff, researchers and educators to incorporate research and education in all services.

The final business case clearly articulates an affordable option to deliver the LHAP.

Infrastructure NSW has found that the need for investment is well articulated through evidence-based scientific studies and demonstrated alignment with Government policies. The options have been well considered and the preferred option is an appropriate response to the service need.