

Surgical Procedures Interventional Radiology and Emergency (SPIRE) Centre Project

Business Case

Sensitive: Cabinet



Prepared by:

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ACT
Government

Single Assessment Framework (SAF)

Business Case

Tier 1 (High Risk)

Project Name:	SPIRE
Total Project Value (estimated):	\$543.8m (nominal, P50)
Capital Appropriation Requested:	Capital costs - \$510.1m (nominal, P50) Agency costs - \$33.7m (nominal, P50) Ongoing operations and maintenance cost requirements
Project Stage:	Business Case
Project Value:	\$543.8m (nominal, P50)
Risk Assessment (high/med/low):	Medium to High
Proposed Delivery Model:	D&C or ECI
Requesting Directorate:	ACT Health
Requesting Minister:	Minister for Health
Business Case Advisors:	Internal: IFCW, CHS External: STH (technical), DCWC (capital cost), EY (business case) and RLB (whole of life cost)

NOTE: This template should be completed using the accompanying SAF Business Case Guidance Notes.

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1 Executive Summary

A healthy community is a happy and productive community as the health and wellbeing of an individual can impact all facets of life and ripple through their friends, family and colleagues.

The ACT Government strives to deliver the safest healthcare system in Australia, delivering high-quality, person-centred care that is effective and efficient. ACT Health's vision is 'Your Health – Our Priority' and our aim is to provide access to the right services in the right place, at the right time, by the right person.

ACT Health and Canberra Health Services (CHS) manage the Territory's public health system, providing a wide range of critical services to the community. The Canberra Hospital is a key part of this system, as the largest public hospital and tertiary referral centre in the region, that provides care for more than 500,000 people through a range of services including acute inpatient and day services, outpatient services, women's and children's services, paediatrics and pathology¹. Canberra Hospital has the Territory's largest Emergency Department (ED) and Operating Theatre complex, and is the principal teaching hospital in the Territory, in partnership with the Australian National University (ANU) medical school and other universities in the region such as the University of Canberra (UC).

In response to the forecast increase in demand for health services, caused in part by the Territory and surrounding region's growing and ageing population, the ACT Government is investing significantly in new and expanded health infrastructure through the Building Health Services Program (BHSP).

As part of this program, the ACT Government has committed to the delivery of the Surgical Procedures, Interventional Radiology and Emergency ("SPIRE" or the "Project") project at the Canberra Hospital. SPIRE will deliver new critical and acute tertiary care infrastructure for the Territory and surrounding region, providing high quality, person-centric care in an environment that incorporates the latest advances in technology and Models of Care, improving healthcare outcomes and operational efficiency.

The ACT Government has made a clear commitment to this Project and has undertaken significant analysis of the Project options, including extensive consultation with key stakeholders, including clinicians, to maximise the Project's potential and achieve its objectives.

This Business Case provides an evidence base to support the ACT Government's consideration of the Project, outlining what SPIRE entails, how it will be achieved, the benefits it will realise and its cost to Government.

1.1 Purpose and overview

The purpose of this Business Case is to provide a robust analysis of the options, benefits, procurement approach and risks of the Project. In turn, this Business Case is designed to support the ACT Government in its investment decision making in regards to SPIRE.

The Business Case has been prepared in accordance with The Capital Framework guidance and in conjunction with key stakeholders. It should be noted that a preferred delivery model has not been selected for SPIRE, with both the early contractor involvement (ECI) and design and construct (D&C) delivery models under consideration. Consequently, the analysis contained within the remaining Chapters of the Business Case are agnostic of delivery model, except for Chapter 12 (Timeline) which is based on an ECI approach.

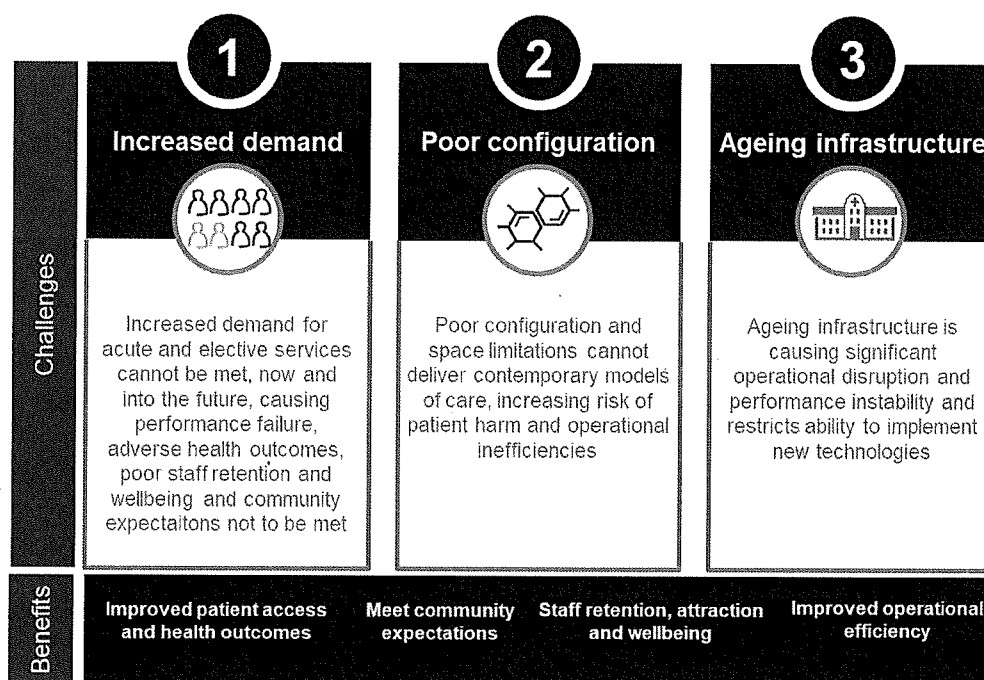
¹ <https://health.act.gov.au/hospitals-and-health-centres/canberra-hospital>

1.2 Need for Investment

While Canberra is considered to have a high-quality healthcare system, additional investment in new and expanded health infrastructure is required to ensure that the ACT Government continues to provide quality care for the community into the future. SPIRE addresses three key challenges that were identified by a range of key stakeholders at an Investment Logic Mapping (ILM) workshop held in 2017.

These challenges – and the consequential benefits that may eventuate – are summarised in Figure 1 and outlined further below.

Figure 1: Challenges and benefits identified in the ILM



Challenge 1: The need to respond to increased demand for acute and critical care services.

Significant population growth in the Territory and surrounding region, coupled with an aging population and growing levels of chronic illness, are placing increased pressure on infrastructure at Canberra Hospital and the public healthcare system across the Territory.

With Canberra Hospital at or nearing capacity in many of its acute and critical care areas, including the ED, ICU and CCU, and demand forecasts to continue to increase, the Territory must invest now in new infrastructure to provide needed capacity and meet staff and community expectations.

✓ **SPIRE will provide the additional capacity needed to meet the growing demand and needs of the Territory and surrounding region.**

Challenge 2: The need to optimise the configuration and design of the Canberra Hospital campus.

The current delivery of services at Canberra Hospital is impacted by the location of services, which in some situations require patients to move considerable distances between buildings (e.g. between the helipad to

the north of the site and the ED in Building 12) to receive the care they need, impacting on patient experience and potentially impacting on patient outcomes.

The disconnect between interrelated services also leads to operational inefficiencies and duplicated infrastructure.

✓ **SPIRE will co-locate key services, supporting enhanced patient outcomes and improved operational efficiency.**

Challenge 3: The need to upgrade and replace ageing infrastructure at the Canberra Hospital.

Many physical assets at the Canberra Hospital are reaching the end of their useful life and as a result, investment will be required to extend the useful life of this infrastructure irrespective of the construction of SPIRE.

While Campus master planning activities are underway and are expected to set the long-term vision for the functioning of the site, in the immediate term SPIRE will demolish two of the Hospital's oldest buildings, with Building 5 and Building 8 over 40 years old, and a two-storey demountable (Building 24)².

✓ **SPIRE will see the construction of modern, purpose built facilities that will enable the use of leading edge technologies.**

Addressing these challenges will help achieve the ACT Government's vision for Canberra with respect to the delivery of safe and effective healthcare for the community.³

1.3 Options Analysis

The ACT Government has considered a number of different options to address the challenges facing the Territory's health system and provide a more modern, person-centric system that provides access to the right services, at the right place, at the right time, by the right person. As set out below, strategic solutions and project solutions were considered for this Business Case in accordance with the Capital Framework.

Strategic Solutions

To help address the challenges facing the Territory's healthcare system, the ACT Government is making a significant investment in new and expanded healthcare infrastructure under the BHSP with the objective of improving the efficiency and quality of healthcare delivery. These projects include:

- SPIRE
- Expansion of Centenary Hospital for Women and Children (CHWC)
- Future Northside Hospital scoping study

² Canberra Hospital Strategic Asset Management Plan, 2017

³ ACT Health Territory-Wide Health Services Strategy 2018-2028

- Additional Walk-in Centres
- Expansion of Clare Holland House

While all these projects have merit and should progress, this Business Case assesses SPIRE given the clear and demonstrable need for additional acute and critical care capacity in the Territory.

Project Solutions

In developing SPIRE, a range of different project and design options have been analysed and assessed by ACT Health and key project stakeholders, including consultations with clinicians. This culminated in the development of three potential project solutions as outlined in Table 1.

Table 1: SPIRE Project Solutions

Option Description	Key Features – Functional Area	Gross Floor Area (GFA)	Estimated Project Outturn Cost (\$m, nominal, P50) ⁴
Option 1 – Base Option	• 136 Total Beds (64 Inpatient Unit beds, 44 adult intensive care unit (ICU) beds, 4 paediatric ICU (PICU) beds and 24 coronary care unit (CCU) beds) • 22 Operating Theatres (OTs) – 20 standard theatres⁵ and 2 hybrid theatres. 4 Interventional Radiology (IR) Suites are included within the OT provision • 108 ED spaces (including 98 ED spaces and 10 mental health short stay unit (MHSSU) beds) • Two (2) Behavioural Assessment spaces and two (2) Forensic Medical Spaces • Provision for 55 Day Surgical Beds, 3 Cardiac Catheterisation Laboratories, 1 Electrophysiology Laboratory, 12 Ambulance bays, central sterilising services department (CSSD) facilities, loading dock and a helipad	32,427 m ²	\$543.8m
Option 2 – Increased ICU and ED capacity	• 148 Total Beds (64 Inpatient Unit beds, 56 adult ICU beds, 4 PICU beds and 24 CCU beds) • 22 OTs – 20 standard theatres⁶ and 2 hybrid theatres. 4 IR Suites are included within the OT provision • 114 ED spaces • 10 MHSSU spaces – co-located with the ED • Four (4) Behavioural Assessment spaces and two (2) Forensic Medical Spaces • Provision for 55 Day Surgical Beds, 3 Cardiac Catheterisation Laboratories, 1 Electrophysiology Laboratory, 12 Ambulance bays, CSSD facilities, loading dock and a helipad	33,594 m ²	\$562.0m
Option 3 – Increased ICU and ED capacity and increased GFA	• 148 Total Beds (64 Inpatient Unit beds, 56 adult ICU beds, 4 PICU beds and 24 CCU beds) • 22 OTs – 20 standard theatres (all theatres fitted out) and 2 hybrid theatres. 4 IR Suites are included within the OT provision • 114 ED spaces • 10 MHSSU spaces • Four (4) Behavioural Assessment spaces and two (2) Forensic Medical Spaces	39,980 m ²	\$663.5m

⁴ Estimated Project Outturn Costs includes decanting and staging costs (noting that these costs are the same for each option)

⁵ Includes 5 of the 20 OTs as shelled theatres

⁶ Ibid.

Option Description	Key Features – Functional Area	Gross Floor Area (GFA)	Estimated Project Outturn Cost (\$m, nominal, P50) ¹
	- Provision for 55 Day Surgical Beds, 3 Cardiac Catheterisation Laboratories, 1 Electrophysiology Laboratory, 12 Ambulance bays, - Increased GFA for CSSD facilities and loading dock - Provision for two (2) helipads - Option 3 also provides for increased medical imaging to support the whole of SPIRE		

The three options above were assessed on the following considerations:

- **Patient and clinical outcomes:** does the project option improve accessibility, cater for increased demand and consider clinical feedback?
- **Alignment with objectives:** does the project option align with publicly committed scope and budget for SPIRE?
- **Functionality:** does the project solution align with the Australasian Health Facility Guidelines (AushFGs) and support improved operational efficiencies?

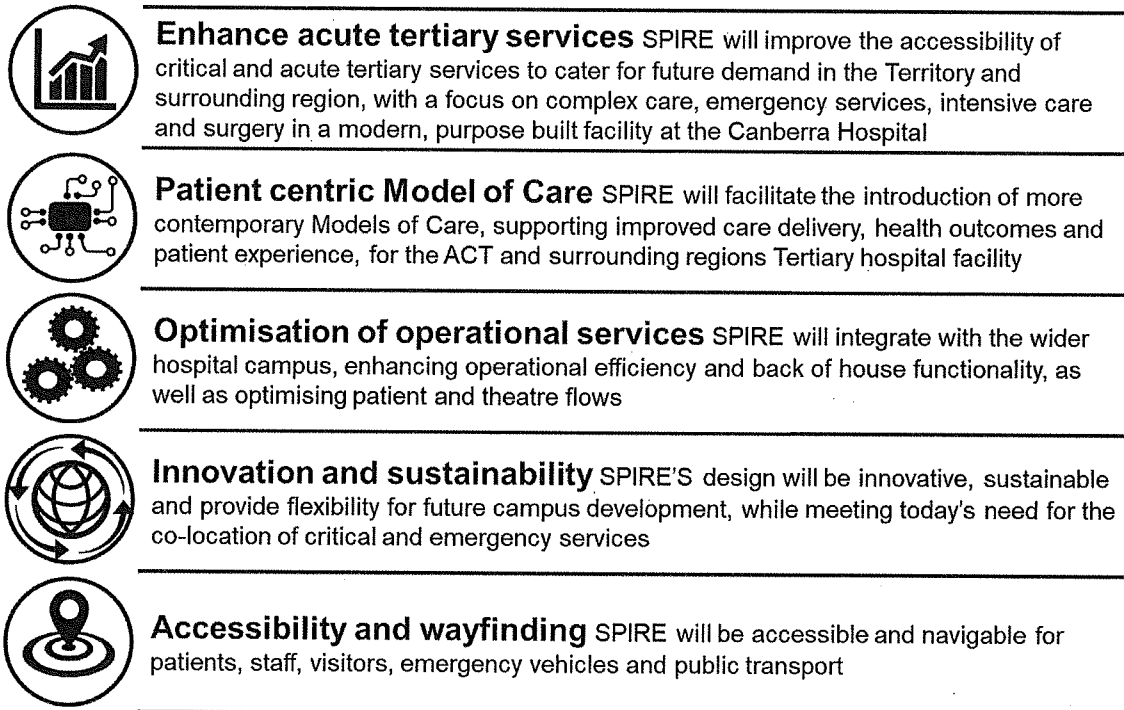
All project solution options considered demonstrate alignment with the AushFGs and an ability to meet and/or exceed the clinical scope for SPIRE as announced by the ACT Government, with Option 1 most closely aligning to the current project budget for SPIRE. Consequently, the analysis contained within this Business Case is predicated on the implementation of Option 1.

1.4 Project Outline

SPIRE will deliver new acute and critical care infrastructure for the Territory and surrounding region, providing high quality, person-centric care in an environment that incorporates the latest advances in technology and Models of Care, improving healthcare outcomes and operational efficiency.

SPIRE's project objectives are detailed in Figure 2.

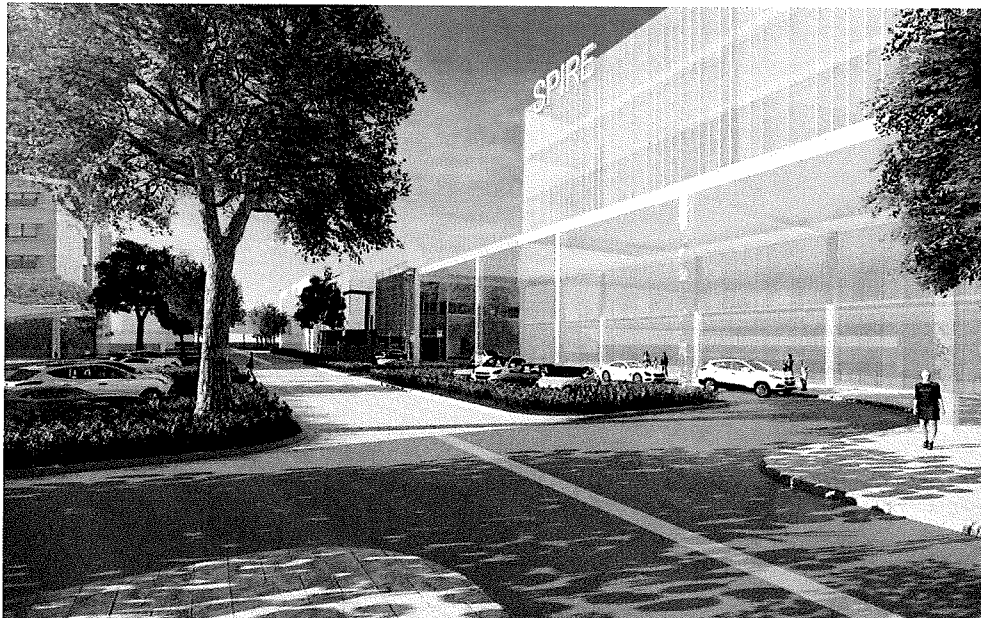
Figure 2: SPIRE Project Objectives



SPIRE will provide an estimated total capital development of approximately 32,427 m² on the site of the existing Buildings 5 and 24 that will be demolished

An indicative visualisation of SPIRE is illustrated in Figure 3.

Figure 3: Indicative visualisation of SPIRE⁷



Note: this image is for illustrative purposes only and is subject to change

The scope of works and scope of services for SPIRE are summarised below.

⁷ STH

Scope of works

- **Decanting and enabling works** – activities relating to the decanting of the departments currently located in Building 5 and Building 24 prior to their demolition (such as the construction and internal fit-out of modular buildings); temporary car parking; and demolitions, utilities relocation and early works to prepare the site for the main construction works
- **Clinical infrastructure** – works relating to the delivery of health infrastructure in SPIRE to accommodate to health services (e.g. ED, ICU and OTs (standard and hybrid))
- **Accessibility infrastructure** – works that enable access to SPIRE for emergency vehicles, service vehicles, staff members and the public (e.g. ambulances bays, helipad and road upgrades)
- **Supporting infrastructure** – works that support the delivery of health services at SPIRE (e.g. loading dock and the Central Sterilising Services Department)

Scope of services

- **Operational and soft facilities management** – activities that will be required to keep SPIRE operating (e.g. clinical services, food services, waste management, security)
- **Hard facilities management** – ongoing repairs and maintenance services required to keep the capital works fit-for-purpose (e.g. buildings and grounds maintenance, pest control)

1.5 Cost, Contingency and Financial Analysis

Estimated total Project Outturn Cost at a P50 level are shown below.

Table 2: Project Outturn Cost (\$m, P50)⁸

Category	Cost (\$m)
Construction (excluding Early Works) ⁹	252.6
Early Works	3.4
Design Fees	26.2
Construction Fees	11.2
FF&E	46.2
ICT	31.2
Artworks	1.6
Raw Construction Costs	372.3
Escalation	48.4
Total Capital Costs	420.8
Contingency	89.3
Total Capital Costs + Contingency	510.1
IFCW Fee - 4%	20.4
ACT Health Management Fee Decanting - 3.85% ¹⁰	1.3
ACT Health Management Fee – Early Works and Main works - 1.45% ¹¹	6.9
ACTIA Fee - 1%	5.1
Government Fees Sub-Total	33.7
Project Outturn Cost	543.8

The indicative Whole of Life Cost (including ongoing operations, maintenance and lifecycle costs) required to support SPIRE for a range of years in the assumed 20-year operating period are in Table 3. These costs are an estimation of the indicative incremental increase in costs to operate and maintain SPIRE.

⁸ The capital cost estimator has used conservative assumptions when estimating the capital costs for each of the options (to reflect the current indicative nature of the designs). These conservative assumptions include a P50 level of inherent risk. It is anticipated that a bottom-up build of inherent risk (at a P90 level) after the early design phase has been completed

⁹ Inclusive of the construction costs for decanting and the main works (i.e. not including early works costs). The real construction cost for the decanting component of SPIRE is \$25.4m (including the temporary car parking structure).

¹⁰ See Project Outturn Cost Government Fees for further information on the percentage of ACT Health Management Fee applied for decanting and main works

¹¹ Ibid.

- The depreciation costs included are for the demountable buildings, the temporary car park and the FF&E associated with other decanting activities. These works are all assumed to be completed in January 2020. No depreciation costs for the main works component of SPIRE are included as depreciation will commence following the completion of construction (i.e. beyond the forward estimates)
- Associated expenses include rental cost for Callum Street, as well as repairs and maintenance costs for decant activities, including the temporary car park, calculated in line with ACT Government policy for 0% in the first year, 1% and 2% thereafter. Expenses associated with the operation of SPIRE will be required to be funded beyond the forward estimates
- As noted above, the Project Outturn Cost and Whole of Life Cost estimates will be refined following the completion of the early design phase and consequently the budget impact will be revised at this time

Table 4: Preliminary financial impacts summary (\$m, P50, nominal)

Financial impact	FY2018/19	FY2019/20	FY2020/21	FY2021/22	FY2022/23	Total
Capital - Main Works	\$4.4	\$12.7	\$33.6	\$110.4	\$140.3	\$301.4 ¹⁶
Capital - Decanting	\$0.9	\$25.0	\$0.0	\$0.0	\$0.0	\$25.9
Capital - Car Park	\$0.3	\$8.9	\$0.0	\$0.0	\$0.0	\$9.2
Offset - Capital	-\$5.7	-\$46.6	-\$33.6	-\$110.4	-\$236.9	-\$433.2
Net Capital	\$0.0	\$0.0	\$0.0	\$0.0	-\$96.6	-\$96.6
Depreciation	\$0.0	\$0.4	\$0.9	\$0.9	\$0.9	\$3.0
Associated Expenses ¹⁷	\$0.0	\$0.0	\$0.2	\$0.4	\$0.5	\$1.2
Offset - HCP	\$0.0	\$0.0	-\$0.2	-\$0.4	-\$0.5	-\$1.2
Net Operating Impact¹⁸	\$0.0	\$0.4	\$0.9	\$0.9	\$0.9	\$3.0

In addition to the offsetting budget appropriation outlined above, in considering funding for SPIRE, the following should be noted:

¹⁶ \$129.6m (nominal, P50) and \$77.6m (nominal, P50) is expected to be expended in 2023/24 and 2045/25 respectively for the Capital – Main Works, with the Project Outturn Cost of \$543.8m (nominal, P50) comprised of Main Works, Decanting and the Car Park completely expended between 2018/19 and 2024/25

¹⁷ This includes rental expenses for Callum Street, as well as repairs and maintenance expenses in line with ACT Government policy of 0% in the first year, 1% in the second year and 2% each year thereafter

¹⁸ Net Operating Impact is the sum of Associated Expenses and Offset - HCP

-
- As SPIRE will provide important acute and critical care services for the broader region, not just the Territory, opportunities for funding from the Australian Government should be explored, potentially through Australian Government Department of Health agreements such as the five-year Heads of Agreement for public hospital funding and health reform
 - Funding opportunities from tertiary education partners in the Territory (i.e. Australian National University, University of Canberra, Australian Catholic University and Canberra Institute of Technology) should be explored. These partners may leverage the facilities at SPIRE to train their students (e.g. nursing placements)

The cost estimations included within this Business Case do not represent a Project budget.

1.6 Economic Analysis

Economic analysis has been undertaken drawing upon:

- Research, designs and data provided by ACT Health, Infrastructure, Finance and Capital Works (IFCW) and the Project's technical advisor
- Analysis of publicly available Territory data
- Consideration of academic research and precedent projects, both nationally and globally

The analysis demonstrates that SPIRE has the potential to generate significant economic value to the Territory through anticipated improvements in health outcomes for the local community and the stimulation of economic activity throughout the construction of the facility.

Near \$741m (real) in gross economic output is expected to be generated throughout the 7 year construction phase consisting of \$372.3m (real) in direct construction activity (raw construction costs) as well as \$368.7m (real) in indirect (or flow-on) activity due to economic stimulation. This is associated with \$271.0m (real) in gross value add and the support of approximately 255 jobs per year (or support of gross 1,784 job years over the 7 year construction period noting one unit is support of one job for one year).

The Project is also anticipated to result in qualitative benefits. These benefits can be broadly categorised into four key outcomes:

1. A healthier community through improved patient access and health outcomes
2. A happier community that has had their expectations met
3. A content workforce with improved staff retention, attraction and wellbeing
4. A sustainable health service model through improved operational efficiency

While the above benefits have not been monetised and quantified, the achievement of these benefits will support the realisation of the ACT Government's vision for the delivery of healthcare services in the Territory and are critical to the future success of the Canberra Hospital and wellbeing of the community.

1.7 Delivery Model

The packaging and delivery model analysis undertaken for SPIRE was undertaken in a consultative manner through workshops with key project stakeholders including ACT Health, CHS and IFCW to determine which delivery models would support the achievement of the Project objectives. The analysis was informed by project opportunities, risks and constraints, including the compressed timeframe for delivery, precedent project procurements and initial market feedback.

Packaging assessment

A packaging assessment was undertaken to assess the appropriate structure for all Project scope components required to deliver, maintain and operate SPIRE as outlined in Section 1.4. This included:

- D&C and capital works components (including demolition works, bulk excavation, main works and modular builds)
- Furniture, fixtures and equipment (FF&E) for SPIRE
- Decanting activities
- Operations
- Soft FM and Hard FM services

The recommended packaging approach for SPIRE is:

- **Package 1: Capital Works – Demolition package** comprising demolition works for Buildings 5, 8 and 24
- **Package 2: Bulk excavation and main works construction package**
- **Package 3: Capital Works – Modular package** in relation to the proposed modular builds
- **Package 4: FF&E medical equipment package**
- **Package 5: Operations package** for services at SPIRE
- **Packages 6 and 7: Soft FM and Hard FM packages**

The key drivers for this packaging structure were:

- To align with the current operations and FM service delivery at Canberra Hospital (where the Territory already provides the majority of operating services)
- To manage and reduce interfaces for capital works and bundle components to de-risk delivery
- To develop a packaging structure that would be attractive to the market.

Delivery model assessment

Six (6) evaluation criteria were developed for the purposes of the delivery model assessment – time to procure, market interest, flexibility, risk, price certainty and innovation and incentive – in accordance with The Capital Framework.

Of significant importance to the Territory was the ability for the model to achieve Territory committed timelines. However, an alternate assessment was also undertaken under which time was of lesser importance relative to risk and price certainty criteria. The change elevated models that could come to market quickly, but also elevated the risk of some models.

Based on an evaluation against the criteria, the recommended delivery model for SPIRE is:

- **Packages 1 and 3: D&C**

- **Package 2:** either an ECI or D&C approach for capital works packages as it allows for more appropriate risk allocation and transfer; and market attractiveness through a combined main works package (inclusive of bulk excavation)

A preferred delivery model approach has not been confirmed for Package 2. It is recommended that a preferred delivery model for this package is confirmed prior to detailed design through the governance structures for the Project, giving consideration to the design, risk and price certainty trade-offs between an ECI or D&C approach.

- **Packages 4, 5, 6 and 7:** FF&E medical equipment, operating services, soft FM and hard FM to be delivered consistent with existing Campus-wide arrangements

The primary drivers behind the delivery model selection for SPIRE include:

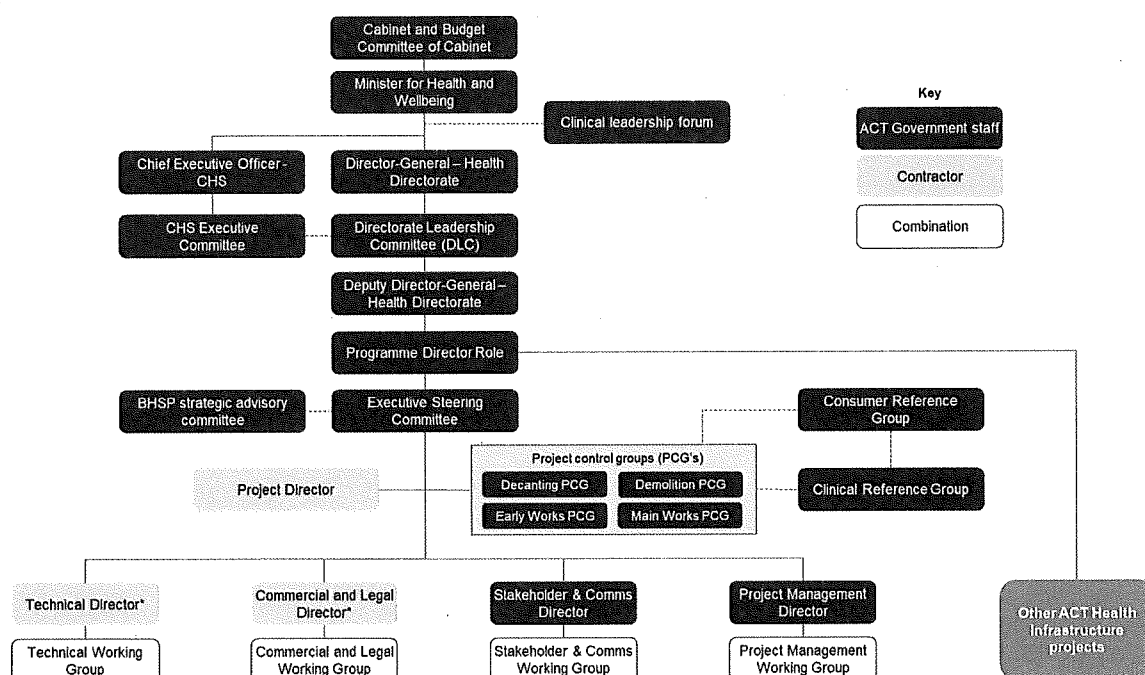
- Timing considerations to support completion of construction by June 2024 wherein the preferred delivery model allows for procurement to take place during detailed design definition
- Appropriate design risk transfer to the Contractors responsible for the delivery and fit for purpose warranties and adequate price certainty with a fixed price contract
- Contractor input into the design process noting that the Territory will retain control over clinical design

1.8 Project Governance

SPIRE will operate within a governance framework that includes cross-directorate executive leadership representation from ACT Health and CHS, with representation from other ACT government directorates in the Executive Steering Committee.

The figure below provides a high-level overview of the governance structure for SPIRE.

Figure 4: Proposed Governance Structure



** The Technical Director and Commercial and Legal Director will likely be contractors initially due to resourcing requirements and capabilities. ACT Health will investigate filling these roles with ACT Government staff members at a later stage of the project*

1.9 Stakeholder Engagement

SPIRE will be delivered in a collaborative and consultative way. Significant consultation has already occurred with key stakeholders at Canberra Hospital (including clinical reference groups) and has commenced with the community and will continue with broader community consultation. The ACT Government, through ACT Health, will maintain a robust stakeholder engagement focus across all Project phases, including delivery. This will be essential to respond to issues likely to arise during the consultation process, including but not limited to:

- Impact of construction at the Canberra Hospital and surrounding infrastructure including Garran Primary and residents on Palmer Street
- Planning approvals associated with SPIRE
- Access, wayfinding and navigation issues at Canberra Hospital for key stakeholders (patients, staff, community) during construction and operations
- Car parking availability and requirements across the campus
- Flight path for helicopters¹⁹ as a result of the helipad proposed for the SPIRE build

SPIRE is a complex project at Canberra Hospital with a significant number of stakeholders due to its scope of services and its geographical location. These include (but are not limited to) clinical staff and health professionals on the campus and throughout the territory; ACT Government directorates; user groups; National Capital Private Hospital; local residents; wider ACT community; Garran Primary School; and professional associations and advocacy groups. A tailored communications and stakeholder engagement approach will be critical to the Project's success and will be achieved by adopting the right mix of engagement techniques across the planning, delivery (including construction) and operations phases of SPIRE.

1.10 Advisor Engagement

A variety of external advisors may be required to support the development of the Project. These advisors may include:

- Clinical and health services
- Commercial, financial and economics
- Legal and probity
- Design and Technical
- Cost estimation

¹⁹ Helicopters in this context refers to emergency air ambulances / rescues.

The expertise and support required from advisors will change as the Project progresses and the Territory's needs change.

1.11 Project Timeline

All indicative dates listed in this Business Case are subject to a number of factors, including Cabinet decisions regarding this Business Case. Key indicative project milestones are outlined in the table below, noting that the indicative timeline contained within this Business Case is based on an ECI approach:

Table 5: Project Timeline

Milestone	Anticipated Completion date
Cabinet approval of SPIRE	April 2019
Early Design complete	July 2019
DA Approval (demolition and demountable works)	July 2019
Commence decanting and staging activities (including demolition)	July 2019
Early works contract award	October 2019
Commence early works	November 2019
PSP (50%)	May 2020
Head Contractor Award	June 2020
DA approval (excavation and groundworks)	October 2020
Substantial completion of early works	December 2020
Construction commencement ²⁰	January 2021
Main works construction completion	June 2024
Commissioning period	Mid-late 2024
Operations Commence	2025

²⁰ Includes main works required for construction – excavation & in-ground works; and all remaining works.

2 Introduction

Key messages

- The ACT Government strives to deliver the safest healthcare system in Australia, delivering high-quality, person-centred care that is effective and efficient. ACT Health's vision is 'Your Health – Our Priority' and our aim is to provide access to the right services in the right place, at the right time, by the right person
- In response to the forecast increase in demand for health services, caused in part by a 28% growth in the Territory's population between 2017 and 2032 (ABS), coupled with an ageing population, ACT Health has developed an ambitious investment programme – the BHSP – to deliver major infrastructure across multiple sites to ensure that it can continue to provide a high-quality healthcare system into the future
- Specifically, over the next decade, ACT Health plans to invest significantly in new and upgraded infrastructure, including the SPIRE centre, the expansion of the CHWC, public hospital infrastructure in the north of Canberra, an expansion to Clare Holland House and the construction of additional Walk-in Centres
- Located at the Canberra Hospital, SPIRE will deliver new critical and acute tertiary care infrastructure for the Territory and surrounding region, providing high quality, person-centric care in an environment that incorporates the latest advances in technology and Models of Care, improving healthcare outcomes and operational efficiency
- The development of the infrastructure solution for the SPIRE centre has been informed by the Territory's policies, strategies and plans, such as the Draft ACT Health Territory-Wide Health Services Strategy 2018-2028, and in the context of previous studies undertaken to progress the project, including the Strategic Business Case completed in March 2018
- This Detailed Business Case (Business Case) provides an evidence base to enable the ACT Government to make an informed investment decision about proceeding with the project

2.1 Purpose and overview

The purpose of this Business Case is to provide a robust analysis of the options, benefits, procurement approach and risks of the Project. In turn, this Business Case is designed to support the ACT Government in its investment decision deliberations in connection with SPIRE.

It has been prepared in accordance with The Capital Framework guidance and in conjunction with key stakeholders.

2.2 Context

The ACT Government strives to deliver a high performing and safe public healthcare system, delivering high-quality, person-centred care that is effective and efficient in line with ACT Health's vision: 'Your Health – Our Priority'. To this end, the ACT Government's aim is to provide access to the right services, in the right place, at the right time, by the right person.

Through ACT Health's BHSP, the ACT Government will invest significantly in new and upgraded infrastructure projects to meet the growing, and changing, healthcare needs of the community, ensuring that high quality and cost-efficient public healthcare services are available to the community. The BHSP's current major projects include:

- SPIRE
- Expansion of the CHWC
- The Northside Hospital Services Scoping Study

- Clare Holland House expansion
- Walk in Centres – Inner North (planning), Weston (in progress) and Gungahlin (complete)

The ACT Government intends to pursue separate infrastructure development processes for each of these projects with this Business Case outlining the case for SPIRE.

Located at the Canberra Hospital on the site of existing Buildings 5 and 24, SPIRE will be a cornerstone facility in critical and acute tertiary care delivery for the Territory and surrounding region, providing high quality, person-centric care in an environment that incorporates the latest advances in technology and Models of Care, improving healthcare outcomes and operational efficiency.

SPIRE will:

- Cater for the increased, and ageing, population in the Territory and surrounding region
- Improve accessibility to acute tertiary services and expand critical healthcare services at Canberra Hospital
- Implement modern health infrastructure to improve operating efficiencies
- Support the introduction of contemporary Models of Care and new technologies
- Integrate with existing facilities at the Canberra Hospital campus

The Territory is making a significant investment in its health infrastructure through the BHSP to support the provision of a healthcare system that promotes quality service delivery, innovation, accessibility, integration and person-centric Models of Care

2.3 The Territory's Public Health System

The Territory's public health system is managed by two organisations:

- The **ACT Health Directorate**, which is responsible for the administration and care of the Territory's health system
- **CHS**, which is responsible for providing publicly owned acute, sub-acute, primary and community based health services

The ACT Health Directorate manages Tier 1²¹ projects, such as SPIRE, with CHS and Calvary Public Hospital Bruce (CPHB) serving as key stakeholders. The ACT Health Directorate also maintains stewardship over several different health facilities across Canberra that provide critical services for Canberra and the surrounding region. These facilities include two acute public hospitals, the Canberra Hospital and CPHB, as well as the University of Canberra Hospital (UCH) and CHWC.

Figure 5 and Table 6 provides an overview of the key health infrastructure in the Territory.

²¹ As defined in the Capital Framework

Figure 5: Existing health infrastructure in the ACT²²

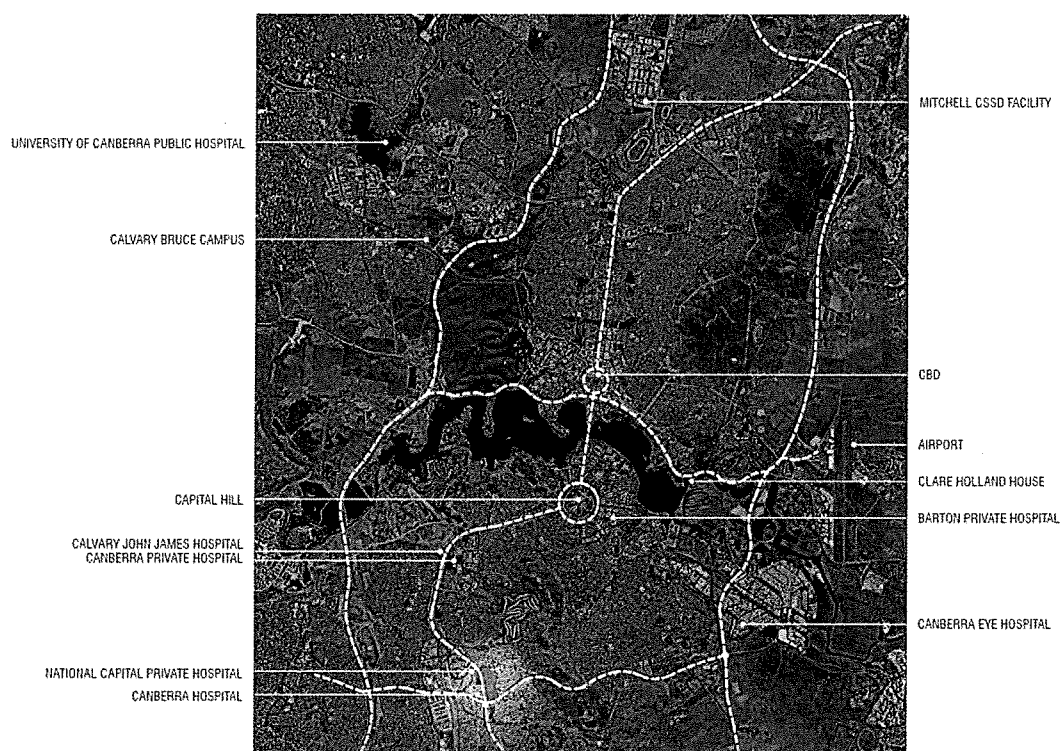


Table 6: Key public health infrastructure managed by the ACT Government

Public health infrastructure	Description
Canberra Hospital	Canberra Hospital is the largest public hospital and tertiary referral centre in the region (see Section 2.4 below for further information)
UCH	UCH is a dedicated and purpose-built rehabilitation facility located on the University of Canberra campus in Bruce. UCH comprises 140 inpatient beds, 75-day places and additional outpatient services
CPHB	CPHB is located in Bruce and provides acute care public health and hospital services (including medical, surgical and maternity services). Additionally, CPHB has a second campus in Barton that hosts Clare Holland House, the Community Specialist Palliative Care Service and the Calvary Centre for Palliative Care Research
CHWC	CHWC is located on the Canberra Hospital Campus and offers a range of services for children and youth, newborn care, maternity and women's health

2.4 The Canberra Hospital campus

The Canberra Hospital is the largest public hospital and tertiary referral centre in the region, providing care for more than 500,000 people through a range of services including acute inpatient and day services, outpatient services, women's and children's services, paediatrics and pathology²³. Canberra Hospital has

²² STH

²³ <https://health.act.gov.au/hospitals-and-health-centres/canberra-hospital>

the Territory's largest emergency department (ED) and operating theatre (OT) complex, and is the principal teaching hospital in the Territory, in partnership with the Australian National University (ANU).

The Canberra Hospital Campus is comprised of 28 buildings with a GFA of nearly 207,000 m², connected by a network of roads, bridges and tunnels, as well as a multi-storey car park and helipad. Figure 6 illustrates the Campus configuration, highlighting some of its key facilities as well as a proposed visual for the location of SPIRE.

Figure 6: Current Canberra Hospital campus with SPIRE²⁴



2.5 SPIRE

2.5.1 Project vision and objectives

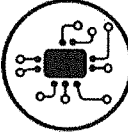
The project vision for SPIRE is:

"To provide high quality medical services to Canberra and the surrounding NSW regions using state-of-the-art facilities for medical practice, teaching, training and research, incorporating the latest advances in technology and health infrastructure, enabling a person-centric model which will maximise patient satisfaction and operational efficiency."

The five project objectives that have been identified for the SPIRE centre are in Figure 7.

²⁴ STH

Figure 7: Project objectives

	Enhance acute tertiary services SPIRE will improve the accessibility of critical and acute tertiary services to cater for future demand in the Territory and surrounding region, with a focus on complex care, emergency services, intensive care and surgery in a modern, purpose built facility at the Canberra Hospital
	Patient centric Model of Care SPIRE will facilitate the introduction of more contemporary Models of Care, supporting improved care delivery, health outcomes and patient experience, for the ACT and surrounding regions Tertiary hospital facility
	Optimisation of operational services SPIRE will integrate with the wider hospital campus, enhancing operational efficiency and back of house functionality, as well as optimising patient and theatre flows
	Innovation and sustainability SPIRE'S design will be innovative, sustainable and provide flexibility for future campus development, while meeting today's need for the co-location of critical and emergency services
	Accessibility and wayfinding SPIRE will be accessible and navigable for patients, staff, visitors, emergency vehicles and public transport

These objectives align with ACT Health's vision – 'Your Health – Our Priority'.

2.5.2 Project summary

SPIRE will comprise the following²⁵:

- **A new and expanded ED** – with 108 spaces, including short stay unit beds, resuscitation bays, dedicated maternity, paediatric and older persons' services, with discrete services also being provided for adults and children
- **Increased capacity within the ICU** – including a 48 bed ICU, with 4 PICU beds
- **Increased OT capacity** – with 22 OTs, including two (2) Hybrid Theatres and four (4) IR Suites, which will incorporate with modern technology, capable of performing complex surgical procedures
- **A CCU**, which is a specially staffed and equipped 24 bed inpatient ward for the support, diagnosis, monitoring and treatment of acute patients with medical or surgical cardiac conditions
- **A range of other facilities**, including:
 - Increased day surgery centre capabilities
 - Enhanced surgical, critical care and imaging facilities
 - 64 Inpatient beds
 - Three (3) Cardiac Catheterisation Laboratories

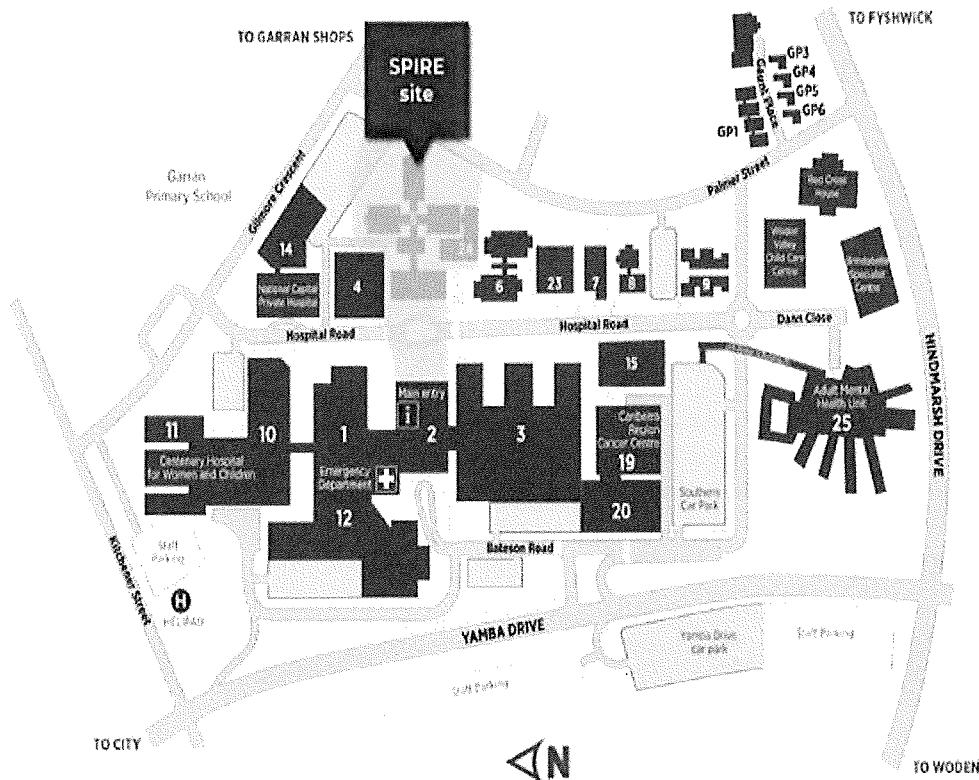
²⁵ This scope is based on Option 1, articulated in Chapter 4; noting that alternate options (Options 2 and 3) comprise a different functional scope

- An Electrophysiology Laboratory
- Provision for 12 ambulance bays; CSSD facilities; a loading dock; and a helipad

For more information on the scope of SPIRE, see Chapter 4.

Figure 8 illustrates the location of SPIRE on the campus. A more detailed overview of the services provided in SPIRE is outlined in Chapter 4.

Figure 8: SPIRE location²⁶



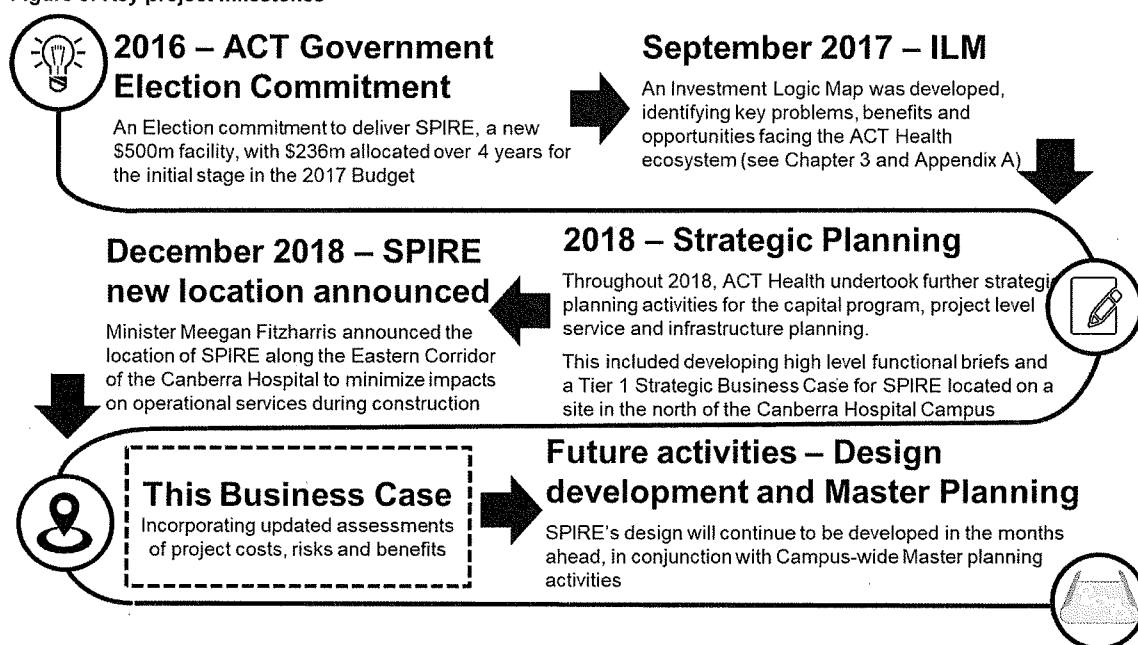
2.5.3 Background and work undertaken to date

Since the ACT Government's election commitment for SPIRE in 2016, extensive work has been undertaken to develop the Project. These activities, analysis and studies have informed this Business Case, as well as ongoing planning and design activities.

Figure 9 provides an overview of the key milestones that have occurred since SPIRE's announcement in 2016. In addition to these activities, significant community consultation has been undertaken (see Chapter 10 for more information).

²⁶ ACT Health website

Figure 9: Key project milestones

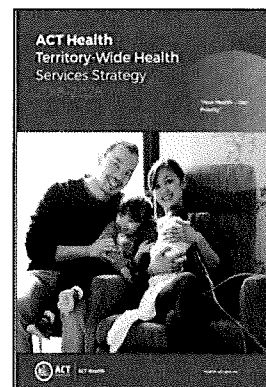


2.6 Policy context

The development of SPIRE has been informed by existing strategic health policies in place for the Territory, and the specific plans in place for Canberra Hospital. Ensuring that the Project is planned and implemented cognisant of the Territory's broader vision for healthcare will help to maximise the Project's benefits.

Relevant policies and reports are outlined in Table 7.

Table 7: Relevant ACT Government policies, reports and plans

Relevant Policies	
ACT Health Territory-wide Health Services Strategy 2018-2028 This Strategy sets the overarching direction and principles to guide the development and redesign of healthcare services across the Territory over the next decade. The following strategic goals are identified: Access: providing the right service, at the right time, in the right place, and by the right team. The key strategies included in this goal are the Territory-wide Health Services Strategy, BHSP (including SPIRE) and the ACT Regional Mental Health and Suicide Prevention Plan Accountability: having robust and transparent decision making that supports the health system. The key strategies included in this goal are the Workforce Strategy, Quality Strategy & Performance, Reporting and Data Management Strategies Sustainability: strategic investment to support health services now and into the future. The key strategies included in this goal are the Research Strategy, ACT Preventive Health and Wellbeing Plan and the Digital Health Strategy. This Strategy identifies SPIRE as one of the key infrastructure and service commitments of the Territory over the next 10 years.	
	

Relevant Policies

ACT Government's 10-Year Health Plan

Announced in the 2017 Budget, the ACT Government's 10-Year Health Plan aims to provide a framework of investment for better healthcare in the ACT.

This Plan sets out major new investments across the following areas:

- **Better health infrastructure** – new investment in projects including SPIRE, CHWC and upgrades to acute aged care and cancer facilities at the Canberra Hospital
- **Better care in the community** – including funding provisions for a new primary healthcare centre for Aboriginal and Torres Strait Islander Canberrans in the Inner South and Walk in Centres across Canberra
- **Prevention** – community and preventative health initiatives (e.g. 'Hospital in the Home')
- **Better Mental Health** – more strategic investments to promote better mental health for Canberrans
- **Supporting our Health workforce** – workforce initiatives to invest in more frontline staff and better training and development programmes



ACT Government 2019-20 Budget Consultation

The 2019-20 Budget Consultation process sought feedback from the community on key budget initiatives and priorities within the Canberra community. Community members, business and local organisations were invited to share their ideas for the 2019-20 Budget via written submissions or an online survey on www.yoursay.act.gov.au.

According to the online survey, health services are the most important area of government service delivery. Additionally, mental health support, alcohol and drug treatment services and aged care services are key areas of importance to the community.



ACT Health's Quality Strategy 2018-2028

This Strategy provides a framework through which the services offered to patients can be improved, focused and measured. ACT Health intends to work on a portfolio of strategic priorities that will improve the safety and quality of care, reduce harm, variation and waste, improve patient experience and ensure that the care the community receives is evidenced based and reliable.

This Strategy highlights the importance of the following:

- **Person centred** – Improve the experience of care
- **Patient safety** – Proactively seek a reduction in patient harm
- **Effective Care** – Best evidence for every person, every time



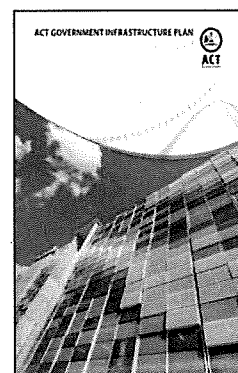
ACT Government Infrastructure Plan 2011-2021²⁷

The Plan defines the key policy and strategic approaches to addressing the development of health infrastructure in the Territory. Infrastructure will be developed in order to:

- Continually meet the growth in demand for health services through extra capacity and by redesigning care delivery systems
- Provide locally based care that meets the needs of the community
- Enhance productivity through a better use of technology and innovative solutions, including different ways of providing care

To achieve these priorities, a comprehensive capital asset development plan will be implemented to ensure the safety, availability and viability of quality healthcare in the Territory, both now and into the future.

In accordance with the objectives of this plan, SPIRE will increase the capacity of ACT Health to deliver modern health services to meet the needs of the community.



²⁷ http://www.cmd.act.gov.au/data/assets/pdf_file/0013/220306/infrastructureplan2011.pdf

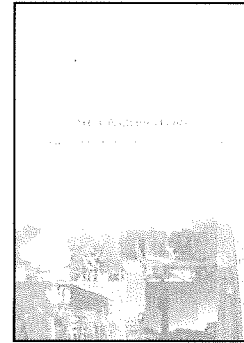
Relevant Policies

The Canberra Plan²⁸

The Plan was launched in 2004 to guide the growth and development of Canberra, aiming to put people at the heart of the ACT Government planning processes. The key priorities in health include:

- Reinforcing the ACT's commitment to delivering the right services, in the right place, at the right time, by the right people
- Ensuring that all Canberrans have timely access to acute and primary healthcare, that focuses on early intervention and prevention and is grounded in the principles of well-being, safety and respectful patient care

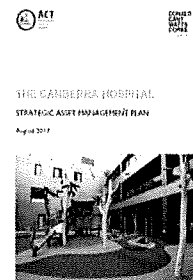
SPIRE will support the achievement of these priorities by increasing the accessibility of acute and critical care at Canberra Hospital and providing the clinical services needed to cater for the Territory's growing population.



The Canberra Hospital Strategic Asset Management Plan (SAMP)

The SAMP is an integral part of the Canberra Hospital's overall strategic management framework, providing strategic guidance on asset management and renewal activities at Canberra Hospital. The key objectives of this strategy include:

- Establishing a strategic framework to inform evidence-based decision making on the management of the Canberra Hospital campus and property (buildings, infrastructure and car park)
- Setting asset management guidelines for asset acquisition, upgrade and divestment, as well as user demand, levels of service, life-cycle management and funding for asset-sustainability
- Facilitating the delivery of the ACT Government's Territory Wide Health Services Framework (see above) to realise its strategic and corporate goals



The ACT Health Sustainability Strategy 2016-2020, the Canberra Social Plan 2011 and the master planning activities for the Canberra Hospital Campus that are currently underway have also provided important policy guidance and context for the design, development and delivery of SPIRE.

2.7 Projects being undertaken concurrently

ACT Health is currently undertaking various infrastructure projects through the BHSP to meet the growing, and changing healthcare needs of the community. Table 8 outlines some of the key infrastructure projects that are currently being undertaken (including projects that are in planning phases) and their relevance to SPIRE. Further information on these projects is outlined in Chapter 4.

²⁸ http://www.cmd.act.gov.au/data/assets/pdf_file/0013/120217/canberra_plan_text_V5.pdf

Table 8: Projects being undertaken concurrently

Description	Relevance to SPIRE
Expansion of Centenary Hospital for Women and Children (CHWC)²⁹ ACT Health and CHS have recently commissioned work on the expansion of the CHWC at the Canberra Hospital, developing designs and a business case for the project. The proposed capital works will include: a custodial birthing suite, additional special care nursery beds, an adolescent gynaecology procedures area, additional inpatient beds for women's and children's service, improvements to clinical areas (such as the High Care Ward) and an adolescent mental health unit	CHWC is being undertaken in parallel with the development of SPIRE and as such, there may be potential interfaces during the design, construction and operations phase that need to be managed. There will be synergies in the stakeholders involved for both projects, and as such coordinated consultation will be required (e.g. during the decanting process). Close management of the projects will help contribute to a seamless integration of the developments to maximise potential benefits and efficiencies at the Canberra Hospital (e.g. better patient flows).
Northside Hospital scoping study To complement the proposed maternity, paediatric, emergency and acute care services to be offered at SPIRE at Canberra Hospital, ACT Health is currently working with CHS and CPHB to explore service and infrastructure options that will provide high quality medical services to residents across Canberra's north and the surrounding regions. Initial scoping studies and planning activities are currently being undertaken for a new Northside hospital facility	Extensive coordination from both project teams and all relevant stakeholders will be required to ensure that the proposed Northside Hospital and SPIRE are well integrated and complementary; working together with other health infrastructure to cater for the increased demand for healthcare services in the Territory. Planning for the Northside Hospital and SPIRE will have to consider Territory-wide health outcomes and priorities to increase accessibility.
Walk-in Centres ACT Health is currently in the processes of developing two Walk-in Centres (in addition to existing centres in Belconnen, Gungahlin and Tuggeranong). A Weston Creek Walk-in Centre is expected to open at the end of 2019 and an Inner North Walk-in Centre is currently in planning with a budget bid for design and construction funding through the 2019-20 budget process.	Developing additional Walk-In centres in different regions of Canberra may help to reduce the demand on the new ED at SPIRE by providing treatment for situations that are not an emergency, complex or life-threatening. The impact of these facilities on forecast ED growth should be considered

²⁹ <https://www.health.act.gov.au/about-our-health-system/planning-future/expansion-centenary-hospital-women-and-children>

Description	Relevance to SPIRE
Expansion of Clare Holland House³⁰ A major expansion of Clare Holland House was announced in September 2018 by the Australian and ACT Governments in partnership with The Snow Foundation. The expansion will comprise a funding partnership of over \$6 million to facilitate an increase in the number of specialist inpatient palliative care beds and improvements and development of administration and clinical space.	Developing high quality and enhanced accessibility for palliative care services may help to respond to increased demand for healthcare services in the ACT and as a result, complement the development and operations of SPIRE.

Additionally, a number of other projects may need to be undertaken as a consequence of SPIRE and general growth in activity at Canberra Hospital (e.g. expansions to the existing kitchen, repurposing of existing facilities). These projects are noted in Section 5.5.

2.8 Other important notes

2.8.1 The Capital Framework

The Business Case has been prepared with reference to The Capital Framework adopted by the ACT Government for assessing capital works funding proposals. Adherence to The Capital Framework is designed to enhance the rigour of the needs analysis, the identification of risks and the assessment of potential delivery models, delivering improved value for money outcomes for the ACT Government.

The level of analysis undertaken for the Business Case is in accordance with the Single Assessment Framework Business Case Tier 1 Template and associated guidance material.

2.8.2 Information sources

This Business Case uses information and analysis from a variety of sources, including information provided by ACT Health, IFCW and a number of ACT Government agencies including Treasury and other third-party materials, such as from market sounding participants (see Chapter 6).

The Capital Framework

The Capital Framework is used by ACT Government Directorates to develop and assess funding proposals for medium to large infrastructure projects. The Framework helps to ensure that ACT Government investments provide maximum benefits to the ACT Government by addressing the right problems, choosing the best value for money investments, delivering investments as planned and realising the benefits the investment sets out to achieve.

The seven-stage Framework includes a 'conceptualise' stage (represented by the ILM) and a 'prove' stage (represented by this Business Case). Other stages relate to the 'procurement', 'implementation' and 'measurement' phases of a project.

The level of analysis undertaken for this Business Case is in accordance with the Single Assessment Framework Business Case Tier 1 Template. In accordance with this template and The Capital Framework, this Business Case conducts a thorough and rigorous assessment of SPIRE to enable the Government to make an informed decision about the proposed project.

³⁰ https://www.cmtedd.act.gov.au/open_government/inform/act_government_media_releases/meeqan-fitzharris-mla-media-releases/2018/major-expansion-of-clare-holland-house

3 Need for Investment

Key messages

- SPIRE will be a transformational project for Canberra Hospital that will support the achievement of broader healthcare objectives for the Territory, consolidating acute and critical care services on Campus and supporting improved operating efficiency and enhanced patient outcomes
- While healthcare services in the Territory are generally high quality, additional investment is required to address current and future challenges as outlined in the ILM undertaken in September 2017
- SPIRE seeks to address three challenges facing the Canberra Hospital and the Territory more broadly, as identified in the ILM:
 - **Challenge 1:** increased demand for acute and elective services cannot be met, now and into the future, causing performance failure, adverse health outcomes, poor staff retention and wellbeing and community expectations not to be met
 - **Challenge 2:** inefficient configuration and space limitations cannot deliver contemporary Models of Care, increasing the risk of patient harm, and operational inefficiencies
 - **Challenge 3:** ageing infrastructure is causing significant operational disruption and performance instability and restricts ability to implement new technologies
- Addressing these challenges will deliver significant benefits to patients, the broader community, the ACT Government and the health industry, with four key benefits identified in the ILM:
 - **Benefit 1:** improved patient access and health outcomes
 - **Benefit 2:** meet community expectations
 - **Benefit 3:** staff retention, attraction and wellbeing
 - **Benefit 4:** improved operational efficiency

3.1 Vision for health services delivery

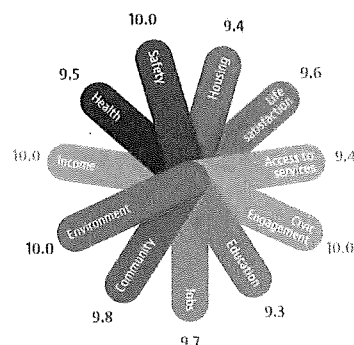
The Territory provides high quality, person-centric healthcare to Canberra's more than 400,000 residents, as well as thousands more in the surrounding region.

While the Territory's health system performs well on a global standard (see box right), current and future pressures are impacting on ACT Health's ability to achieve its objective to provide access to the right services, in the right place, at the right time, by the right person.

OECD Regional Wellbeing Index

According to the OECD Regional Wellbeing Index, Canberra is the best performing Australian capital city in the Health Index (9.5 out of 10).

Canberra rates highly across all other indices, with access to services (9.4), life satisfaction (9.6) and community (social support) (9.8).



Source: OECD Regional Wellbeing Index, available at: <https://www.oecdregionalwellbeing.org>

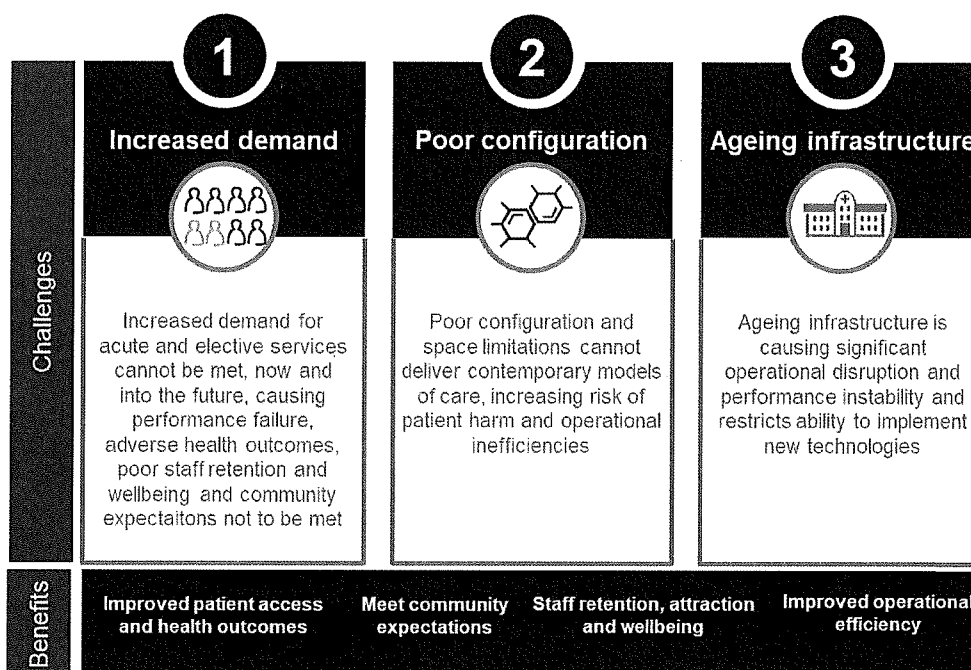
These challenges were explored at an ILM Workshop held in September 2017 and attended by key stakeholders from ACT Health, IFCW and Treasury. An ILM Workshop is a highly focused two-hour workshop led by a facilitator with the following aims.

Figure 10: ILM Workshop aims³¹



The challenges and benefits identified in the ILM are outlined below and detailed further in subsequent sections of this Chapter.

Figure 11: Challenges and benefits identified in the ILM



A copy of the ILM output is contained in Appendix B.

Since the ILM was conducted, the ACT Government has invested in, and committed to, a number of infrastructure upgrades under the BHSP (see Chapter 1). While these projects have addressed capacity constraints in some areas, further investment is required to address the specific challenges outlined in the ILM. As such, this Business Case has drawn on these challenges to support the need for investment in SPIRE.

Addressing the challenges will support the achievement of the Territory's vision for health services and realise significant benefits for the community, Government and the health services industry.

³¹ <https://www.procurement.act.gov.au/about/capital-framework/investment-logic>

3.2 Challenge 1

3.2.1 What is Challenge 1?



Increased demand

Increased demand for acute and elective services cannot be met, now and into the future, causing performance failure, adverse health outcomes, poor staff retention and wellbeing and community expectations not to be met

The Territory currently offers a variety of health services, including acute inpatient and day services, outpatient services, OTs, and two public EDs. However, growing demand for health services is putting increasing pressure on existing facilities. Without additional capacity being provided, this pressure is only set to increase in the future.

Demand for health services is increasing due to three interrelated issues:

- **Population growth:** the Territory and surrounding region's population is growing rapidly
- **An ageing population:** the Territory's growing population is also ageing, further compounding the issue of population growth
- **An increase in chronic disease:** as age and population increase, there is an increased incidence of chronic disease

These issues manifest in increased demand for healthcare services, which is already placing pressure on critical services at Canberra Hospital.

3.2.2 Evidence for Challenge 1

The Territory and surrounding region's population is growing and this is expected to continue

The Territory is growing rapidly, with the annual population growth rate sitting at 1.9% (2017-18, as at 30 Sep 2018), compared to a national annual growth rate of 1.6%³² over the same period. The Territory's current growth rate is second only to Victoria's (2.2%), the highest of the states and Territories³³.

This growth is anticipated to continue, with Australian Bureau of Statistics (ABS) projections estimating that the Territory's population will grow by 28% between 2017 and 2032, increasing from 411,986 people to 531,165 people³⁴ as illustrated in Table 9 and Figure 12. This is the second highest expected growth rate, behind Victoria (31%)³⁵. Similarly, ACT Government population projections also forecast significant growth over this period (growth of 26% between 2017 and 2032).³⁶

According to ABS forecasts, the Territory is anticipated to have the second highest population growth rate at 28% between 2017 and 2032

³² ABS cat. No. 3101.0, *Australian Demographic Statistics*, Sep 2018

³³ *Ibid*

³⁴ ABS cat. no. 3222.0, *Population Projections, Australia, 2017 (base) – 2066 (series b)*, November 2018

³⁵ *Ibid*

³⁶ ACT Government, *ACT Population Projections (2015-2041)*, last updated 26 July 2017

Table 9: ACT Population Growth Summary³⁷

ACT Population Projection					Change from 2017 - 2032	
Year	2017	2022	2027	2032	Total change	% Growth
Population	411,986	455,610	494,613	531,165	119,179	28.9%

Figure 12: Growth in Population by State between 2017 and 2032³⁸

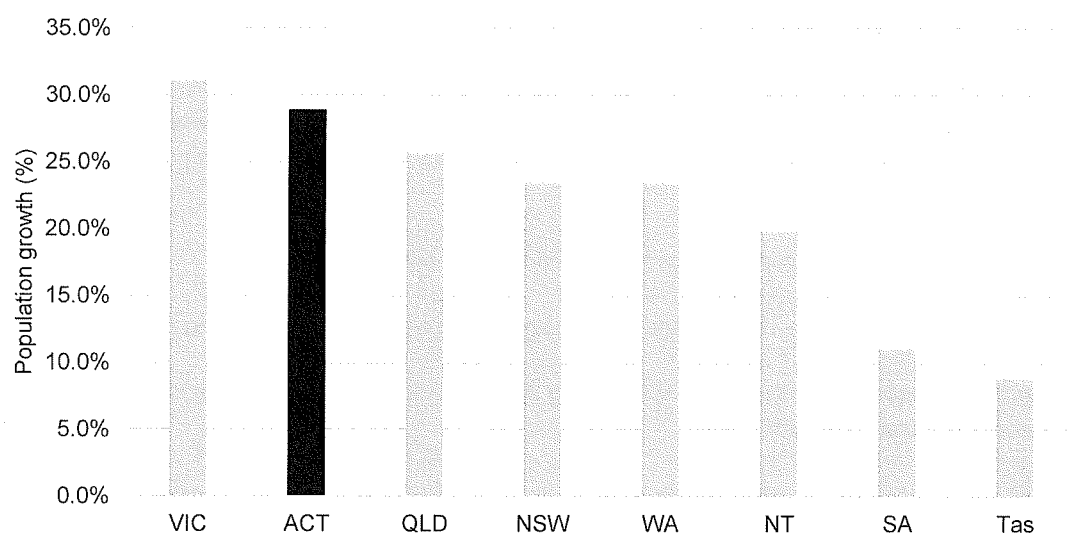
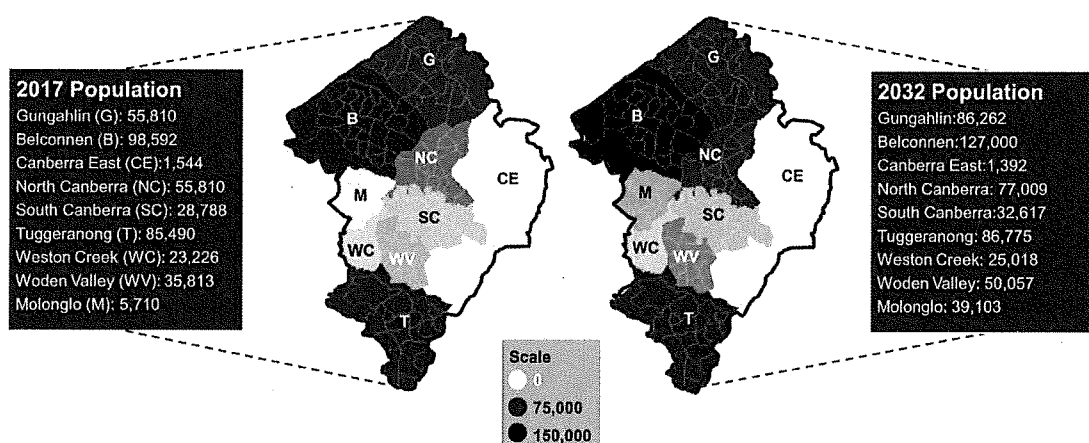


Figure 13 illustrates the estimated distribution of population growth in Canberra between 2017 and 2032. The figure highlights that while most areas of Canberra are expected to grow, Molonglo is expected to experience the highest growth rate (an additional 33,393 residents), primarily due to greenfield developments in suburbs such as Denman Prospect and Coombs.

Additionally, high growth rates are forecasted in the north of Canberra, including Gungahlin (55%), Belconnen (29%) and North Canberra (38%), which underline the importance of future investment in public hospital infrastructure in Canberra's north (as noted in Chapter 1 and 4).

Figure 13: ACT population growth by SA3 region (2017 to 2032)^{39 40}



³⁷ ABS cat. no. 3222.0, *Population Projections, Australia, 2017 (base) – 2066 (series b)*, November 2018

³⁸ *Ibid*

³⁹ ACT Government, *Projections of the resident population 2019*

⁴⁰ The SA3 region of Uriarra / Namadgi is not included in this image as the population is relatively small to the other SA3 regions (approximately 600 people in 2017 and 2032)

In addition, the surrounding region's population is projected to grow, with increased population expected in the four Local Government Areas (LGAs) bordering the Territory:

- Snowy Valleys
- Yass Valley
- Queanbeyan-Palerang Regional
- Snowy-Monaro Regional

The four NSW LGAs surrounding Canberra are expected to grow by 27% between 2016 and 2036

These four LGAs are expected to grow by 27% from 2016 to 2036, from 113,650 people to 144,550 people⁴¹ as outlined in Table 10 and Figure 14.

Figure 14: Forecast NSW LGA population growth (2016-2036)⁴²

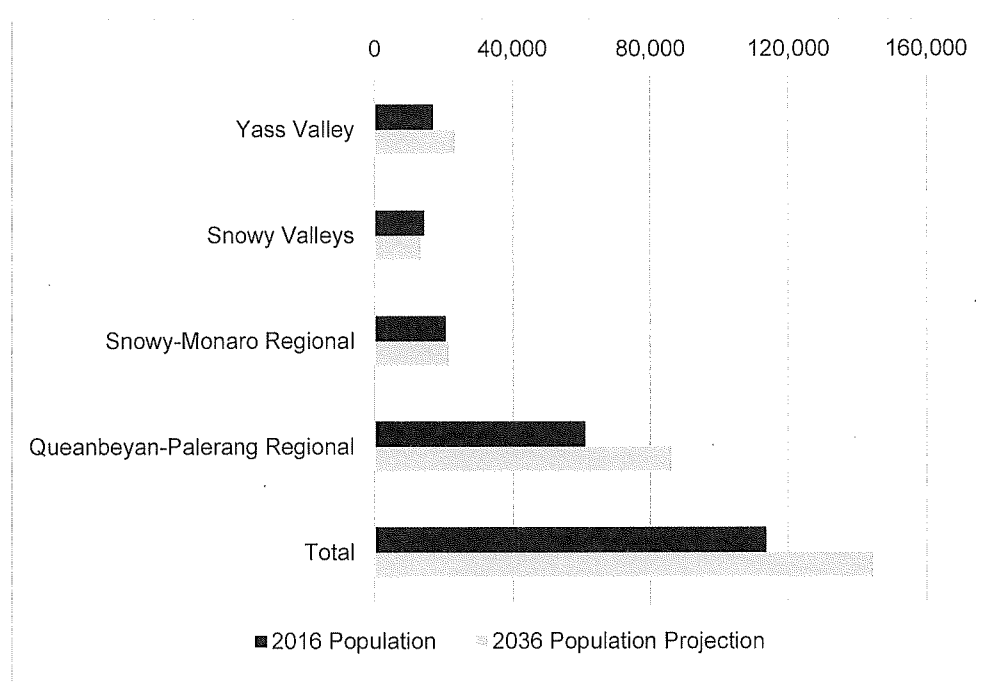


Table 10: Forecast NSW LGA population growth (2016-2036)⁴³

LGA	2016 Population	2036 Population Projection
Queanbeyan-Palerang Regional	61,150	86,200
Snowy-Monaro Regional	20,750	21,550
Snowy Valleys	14,600	13,400
Yass Valley	17,150	23,400
Total	113,650	144,550

In 2018, Canberra Hospital treated 16,648 patients with NSW postcodes, a growth of 19% over the last five years.⁴⁴ Given the Territory acts as a regional referral centre for the provision of public tertiary health

⁴¹ NSW Government, 2016 NSW population and household projections

⁴² NSW Government, 2016 NSW population and household projections

⁴³ NSW Government, 2016 NSW population and household projections

⁴⁴ ACT Health data.

services, this growth is expected to translate into an increase in demand for health services at the Canberra Hospital.

In general, population growth is anticipated to be accompanied by increased demand for health services, including acute and critical care services, which in many instances are already operating at, or near, capacity.

The Territory's population is not only growing, but it is also ageing

An ageing population is anticipated to translate into not only increased demand for public healthcare services, but also a greater demand for more complex health services, including greater chronic condition management and more acute services⁴⁵.

As depicted in Figure 15, the number of people aged 65 and over in the Territory is projected to increase from 51,624 to 78,154 between 2017 and 2032, an increase of 51%⁴⁶. This growth rate, in comparison to the overall growth rate, means that people 65 and over will make up an estimated 14.8% of the population by 2032, compared to 12.5% in 2017⁴⁷.

Additionally, between 2006 and 2016, Canberra's population of people aged 85 and over has almost doubled, growing by 6% per year on average⁴⁸.

Between 2006 and 2016, Canberra's population aged 85 and over almost doubled

This is anticipated to continue, with the number of people aged 85 and over projected to increase by 69% between 2017 and 2032 from 6,160 to 11,269 people⁴⁹. The proportion of people aged 85 and over will also increase in the population makeup, from 1.5% to 2.1%⁵⁰ as depicted in Figure 16.

Figure 15: ACT population aged 65 and over and 85 and over (2017-2032)⁵¹

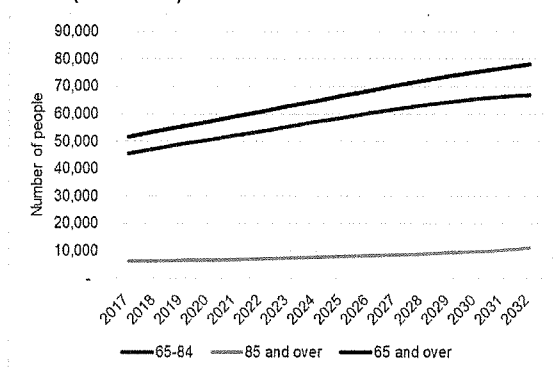


Figure 16: Proportion of ACT population aged 65 and over (2017 and 2032)⁵²

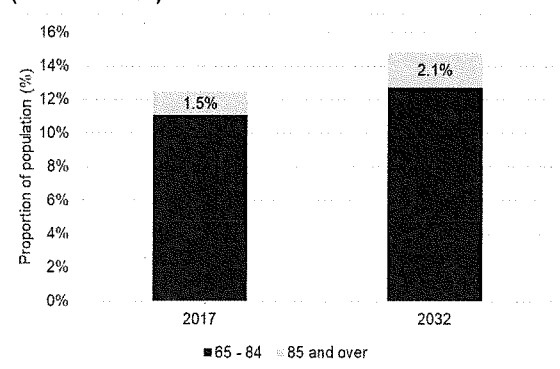


Figure 17 illustrates the estimated change in average age of the Territory's population by SA3 region between 2017 and 2032. It shows that the average population age of all SA3 regions, except for Woden Valley and Weston Creek, are expected to increase. Gungahlin is expected to have the greatest increase in

⁴⁵ Australian Government, *National Strategic Framework for Chronic Conditions 2017*.

⁴⁶ ACT Government, *Projections of the resident population 2019*

⁴⁷ *Ibid*

⁴⁸ ABS census data 2006 - 2016

⁴⁹ ACT Government, *Projections of the resident population 2019*

⁵⁰ *Ibid*

⁵¹ *Ibid*

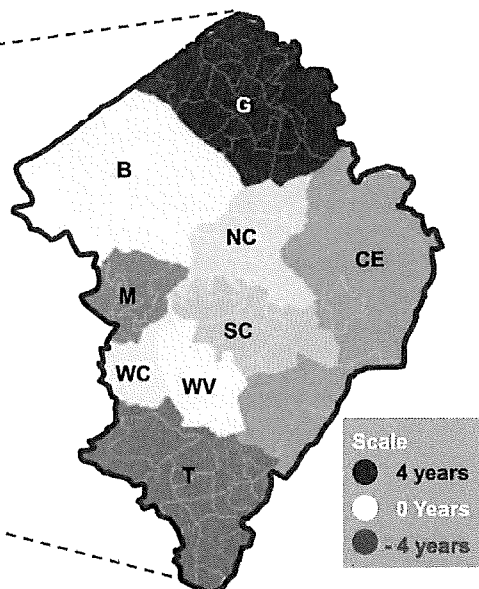
⁵² *Ibid*

population age (4.4 years). In general, the average age of Canberrans is anticipated to increase by 4% between 2017 and 2032.

Figure 17: ACT population average age by SA3 regions (2017 to 2032)⁵³

The average age of Canberrans will increase by 4% from 2017 to 2032

Region (SA3)	2017 Average Age	2032 Average Age
Belconnen (B)	36.6	37.2
Canberra East (CE)	41.6	44.0
Gungahlin (G)	31.4	35.8
North Canberra (NC)	35.6	36.9
South Canberra (SC)	40.4	42.1
Tuggeranong (T)	37.4	40.5
Weston Creek (WC)	40.3	39.3
Woden Valley (WV)	40.2	39.5
Molonglo (M)	29.7	32.5
Canberra (Total)	36.4	37.8



Note: the SA3 region of Uriarra / Namadgi is not included in this image as the population is relatively small compared to the other SA3 regions (approximately 600 people in 2017 and 2032)

A growing and ageing population is expected to result in an increased incidence of chronic disease

In 2017-18, the number of people in the Territory with at least one chronic disease⁵⁴ was over 196,000 people, with over 35,000 of those having three or more chronic diseases⁵⁵.

With an ageing population, an increased incidence of chronic disease is expected⁵⁶. For example, in 2014-15, 87% of people aged 65 and over in Australia had at least one chronic disease, compared with 35% of people under the age of 45⁵⁷.

If incidences of chronic disease continue to increase in the Territory, it will likely contribute to increased demand for health services at the Canberra Hospital.

⁵³ It should be noted that ACT population projections aggregate all residents 85 years and older into a single group (85+). For the purpose of the analysis, all members in this group have been conservatively assumed to be 85 years old. This means that the average age presented in the figure may be an underestimation

⁵⁴ Chronic diseases refer to conditions that contribute to premature mortality and morbidity (including: arthritis, asthma, back problems, cancer, chronic obstructive pulmonary disease, diabetes mellitus, heart, stroke and vascular disease, kidney disease, mental and behavioural conditions and osteoporosis)

⁵⁵ National Health Survey: First Results, 2017-18

⁵⁶ Department of Health, Chronic Conditions, <http://www.health.gov.au/internet/main/publishing.nsf/Content/chronic-disease>

⁵⁷ Australian Institute of Health and Welfare, Chronic Disease, <https://www.aihw.gov.au/reports-data/health-conditions-disability-deaths/chronic-disease/overview>

Critical services at Canberra Hospital are already under pressure, with constraints expected to grow into the future without additional investment

Demand for critical services across the Territory, and particularly at Canberra Hospital, are already placing pressure on existing infrastructure and resources. Key constraints are outlined below.



By 2023-24 it is anticipated that there will be no spare beds for multi-day Patients at Canberra Hospital. By 2026-27 there will be a Territory-wide shortage

As outlined in Table 11, from 2023-24, it is anticipated that there will be no spare beds for multi-day patients at Canberra Hospital. On a Territory-wide basis, there will be a shortage of beds from 2026-27. Without additional capacity, such as through SPIRE and the proposed Northside Hospital, this bed shortage is anticipated to grow into the future.

Table 11: Projected spare capacity for multi-day beds in the Territory (2023-24 to 2031-32)^{58 59}

	Canberra Hospital	CPHB	Territory-wide
Year	Total multi-day beds	Total multi-day beds	Total multi-day beds
2023-24	0	40	40
2024-25	-12	35	23
2025-26	-25	31	6
2026-27	-37	27	-10
2027-28	-51	21	-30
2028-29	-66	16	-50
2029-30	-80	11	-69
2030-31	-94	6	-88
2031-32	-108	1	-107



By 2021-22 bed demand for the CCU will exceed supply

There has been a significant increase in demand for coronary care services, primarily caused by the ageing population, a rise in obesity (the number of obese adults in the ACT is expected to approximately double by 2031-32) and a more sedentary population⁶⁰. This is only expected to increase into the future.

Current CCU capacity at Canberra Hospital is 19 beds, with an additional six at CPHB, providing a Territory-wide CCU capacity of 25 beds.

Projected admittance at both hospitals is expected to rise from 4,408 admissions in 2017/18 to approximately 6,285 admissions by 2031/32, an increase of 42.5%^{61 62}. As illustrated in Figure 18:

- In the immediate term, there is anticipated excess capacity in the Territory-wide number of CCU beds

⁵⁸ As per service and demand modelling through the BHSP Strategy Steering Committee demand modelling work in 2018

⁵⁹ As per ACT Health data 4/9/2017 (as provided also for the prior Strategic Business Case)

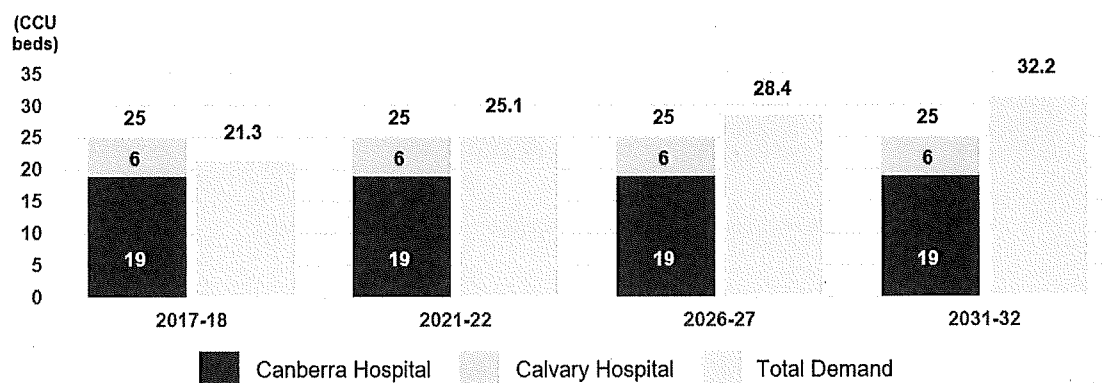
⁶⁰ Heart Foundation (2015) Australian heart disease statistics. Available at: https://www.heartfoundation.org.au/images/uploads/publications/RES-114_Aust_HeartStats_Obesity_supplement.pdf

⁶¹ As per service and demand modelling through the BHSP Strategy Steering Committee demand modelling work in 2018

⁶² As per ACT Health data 4/9/2017 (as provided also for the prior Strategic Business Case)

- By 2021-22, demand is anticipated to outstrip supply and a slight bed shortage is forecast
- Without additional resources, the CCU is anticipated to become increasingly constrained, with a forecast bed deficit of 7.1 beds by 2031-32

Figure 18: Territory daily demand and supply of CCU beds^{63 64}



There is already a shortage of ICU beds

Currently, ICU services across the Territory has capacity for 41 beds, 31 of which are at Canberra Hospital, and 10 are at CPHB.

Admissions at Canberra Hospital and CPHB are expected increase in admissions at both hospitals from 3,165 admissions in 2017-18 to a projected 4,327 admissions in 2031-32, an increase of 37%^{65 66}. As illustrated in Figure 19:

- The ICU's capacity is already strained, with a slight deficit of beds (nearing or at capacity) experienced Territory-wide in 2017-18
- Without additional resources, the ICU is anticipated to become increasingly constrained, with a significant forecast deficit of 19.2 beds by 2031-32

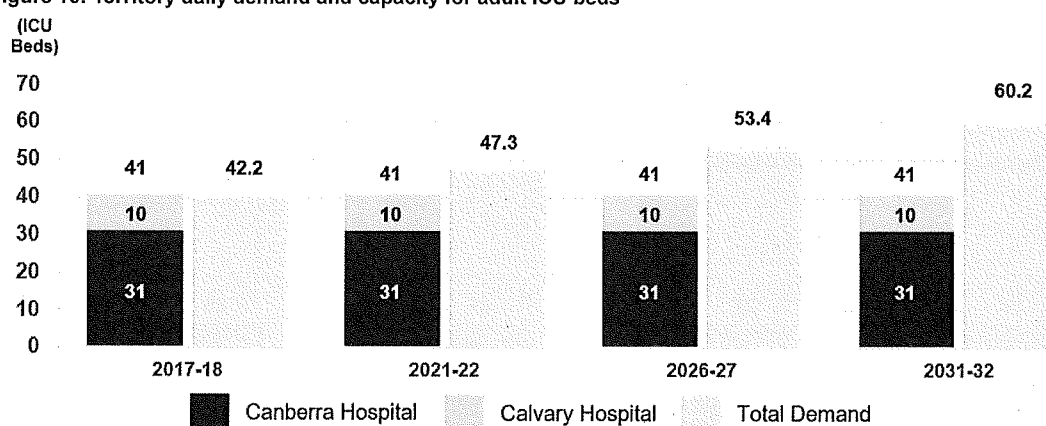
⁶³ As per service and demand modelling through the BHSP Strategy Steering Committee demand modelling work in 2018

⁶⁴ As per ACT Health data 4/9/2017 (as provided also for the prior Strategic Business Case)

⁶⁵ As per service and demand modelling through the BHSP Strategy Steering Committee demand modelling work in 2018

⁶⁶ ACT Health data 4/9/2017 (as provided also for the prior Strategic Business Case)

Figure 19: Territory daily demand and capacity for adult ICU beds⁶⁷⁶⁸



Canberra Hospital does not currently have a Paediatric Intensive Care Unit (PICU)

Even though Canberra Hospital is a Level 5 tertiary hospital, it does not currently have a dedicated and accredited PICU facility. While it is possible that existing ICU beds could be converted into a dedicated PICU, this is not a sustainable measure as it will only exacerbate ICU bed shortages as outlined above. Presently, paediatric services are accommodated in the general ICU, or patients are transferred to Sydney, neither of which provides an optimal outcome for patients. This shortage of PICU beds in the Territory is illustrated in Figure 20.

Figure 20: Territory daily demand and capacity for PICU beds⁶⁹⁷⁰



⁶⁷ As per service and demand modelling through the BHSP Strategy Steering Committee demand modelling work in 2018

⁶⁸ ACT Health data 4/9/2017 (as provided also for the prior Strategic Business Case)

⁶⁹ As per service and demand modelling through the BHSP Strategy Steering Committee demand modelling work in 2018

⁷⁰ ACT Health data 4/9/2017 (as provided also for the prior Strategic Business Case)



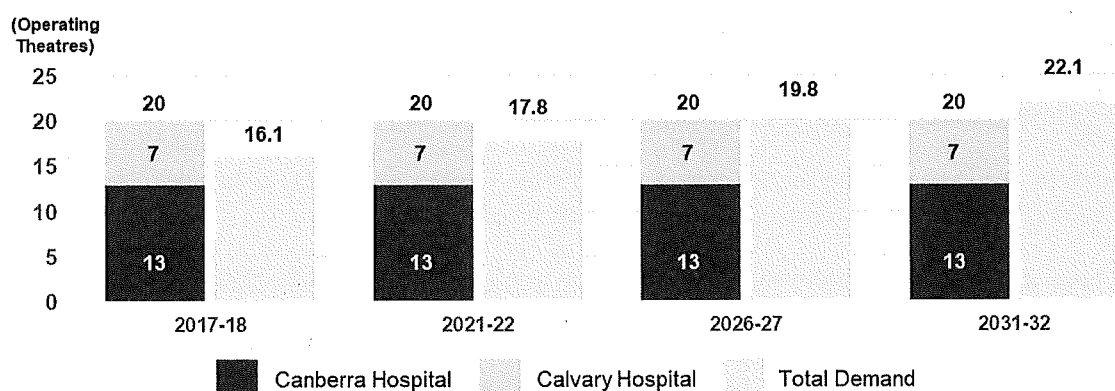
By 2031-32, there is anticipated to be a shortage of OTs

OT activity has significantly increased over the last five years, with growth in activity of nearly 20%⁷¹.

Theatre activity⁷² is anticipated to grow from 18,576 in 2017-18 to 38,258 in 2031-32, an increase of 106%. As illustrated in Figure 21:

- In the immediate term, there is an anticipated excess capacity in the Territory-wide OT capacity
- By 2031-32, demand is anticipated to outstrip supply, with a daily shortage of 2.1 theatres forecasted

Figure 21: Territory daily demand and capacity for OTs^{73 74}



It should also be noted that anticipated increases in demand for OTs will also result in an increased demand for overnight surgical beds. Over the last four years, overnight surgical patient activity has grown by nearly 20%. This growth is expected to continue, reaching an activity level of 26,353 by 2031-32⁷⁵. Should theatre capacity be expanded to meet forecast demand, the number of surgical beds will also need to increase commensurately.



Increasing demands are putting EDs at both Canberra Hospital and CPHB under pressure

EDs are also expected to see increased attendance into the future. Over the last year, the number of presentations to the ED (CHS and CPH) increased to 148,215; a 3% increase on the prior year. As illustrated in Figure 22:

- Attendances at the ED is anticipated to grow by 71.3% between 2017-18 and 2031-32
- ED beds are nearing capacity across the Territory
- By 2031-32, a shortage of more than 57.7 ED beds is forecast

⁷¹ SPIRE Strategic Business Case, 2018

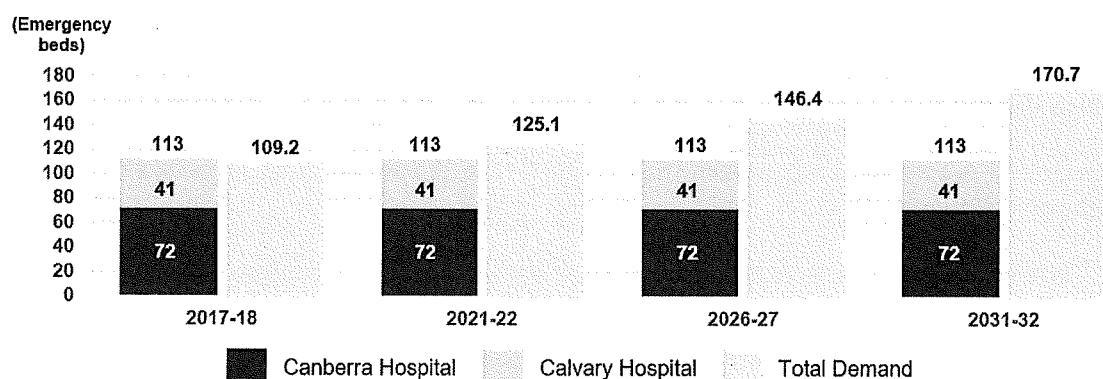
⁷² Activity projections have been calculated based on ACTPAS Admitted Patient data (AIMS version 1.5)

⁷³ As per service and demand modelling through the BHSP Strategy Steering Committee demand modelling work in 2018

⁷⁴ ACT Health data 4/9/2017 (as provided also for the prior Strategic Business Case)

⁷⁵ ACT Health data

Figure 22: Territory daily demand and capacity for ED Beds^{76 77}



The above capacity constraints highlight that without additional investment in critical infrastructure, pressure on the provision of health services will continue to grow.



The Territory's Emergency Departments currently have the second lowest proportion of people seen within recommended timeframes

As noted previously in this Chapter, ED resources across the Territory are already constrained. These constraints are impacting on attendance times to patients presenting at EDs.

Patients in the ED are categorised into triage categories, with each category having a different benchmark for the time in which a patient should be seen:

- **Triage category 1:** need for resuscitation — patients seen immediately
- **Triage category 2:** emergency — patients seen within 10 minutes
- **Triage category 3:** urgent — patients seen within 30 minutes
- **Triage category 4:** semi-urgent — patients seen within 60 minutes
- **Triage category 5:** non-urgent — patients seen within 120 minutes

As shown in Table 12, according to Productivity Commission figures, in 2016-17 the Territory had the second lowest proportion of people seen within the recommended timeframe.

Table 12: Public hospital proportion of ED patients seen within triage category timeframes, 2016-17⁷⁸

Triage Category	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	Aust
1 – Resuscitation	100	100	100	100	100	100	99	100	100
2 – Emergency	81	77	72	80	67	75	77	66	77
3 – Urgent	76	70	60	50	52	57	50	55	66
4 – Semi-urgent	81	73	74	65	69	65	63	58	74

⁷⁶ As per service and demand modelling through the BHSP Strategy Steering Committee demand modelling work in 2018

⁷⁷ ACT Health data 4/9/2017 (as provided also for the prior Strategic Business Case)

⁷⁸ Productivity Commission, Report on Government Services 2018, Chapter 12 Public Hospitals

Triage Category	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	Aust
5 – Non-urgent	94	89	94	92	92	89	91	88	92
Total	81	73	69	64	64	65	62	61	73

In addition, the Territory's EDs' performance have declined with respect to other relevant indicators, such as median waiting time, 90th percentile waiting time, and proportion of patients seen on time.⁷⁹



Median wait times for elective surgery at Canberra Hospital are longer than other comparable hospitals, and the proportion of people receiving surgery in the recommended timeframe is lower

As outlined in statistics published by the Australian Institute of Health and Welfare (AIHW), the percentage of patients receiving elective surgeries across all categories within the recommended timeframe at Canberra Hospital is lower than comparable hospitals nationally, and the median wait times are higher⁸⁰. These statistics also indicate that Canberra Hospital waiting times have lengthened between 2016-17 and 2017-18.⁸¹

Increased attendance at the ED, coupled with the general rise in OT demand as forecast, will likely exacerbate these issues without additional capacity being provided.

As illustrated in Table 13, Figure 23 and Figure 24 below:

- For Category 1 surgeries (surgery recommended within 30 days):
 - The median waiting time at Canberra Hospital was 17 days in 2017-18, an increase from 15 days in 2016-17, and compared to a peer group median wait time of 12 days in 2017-18
 - 91% of patients received surgery within the recommended time in 2017-18 at Canberra Hospital, a decrease from 94% in 2016-17, and compared to a peer group percentage of 93% in 2017-18
- For Category 2 surgeries (surgery recommended within 90 days):
 - The median waiting time at Canberra Hospital was 62 days in 2017-18, an increase from 53 days in 2016-17, and compared to a peer group median wait time of 51 days in 2017-18
 - 72% of patients received surgery within the recommended time in 2017-18 at Canberra Hospital, a decrease from 84% in 2016-17, and compared to a peer group percentage of 85%
- For Category 3 surgeries (surgery recommended within 365 days):
 - The median waiting time at Canberra Hospital was 280 days in 2017-18, an increase from 236 days in 2016-17, and compared to a significantly lower peer group average of 163 days

⁷⁹ Australian Institute of Health and Welfare. Emergency Department Care 2017-18, Australian Hospital statistics.

⁸⁰ Australian Institute of Health and Welfare, Waiting times for elective surgery

⁸¹ Ibid

- 75% of patients received surgery within the recommended time in 2017-18 at Canberra Hospital, a significant decrease from 86% in 2016-17, and compared to a peer group percentage of 91%

Table 13: Elective surgery wait times at Canberra Hospital compared to national peer group (2017-18)⁸²

Year	Surgery category	Median waiting time (days)	Peer group median waiting time (days)	Percentage of surgeries received within recommended time	Peer group percentage of surgeries received within recommended time
2017/18	Category 1	17	12	91%	93%
	Category 2	62	51	72%	85%
	Category 3	280	163	75%	91%
2016/17	Category 1	17	Not available	91%	Not available
	Category 2	56	Not available	81%	Not available
	Category 3	182	Not available	89%	Not available

Figure 23: Median waiting time for the Territory and national peer group by surgery category in 2017-18 (days)

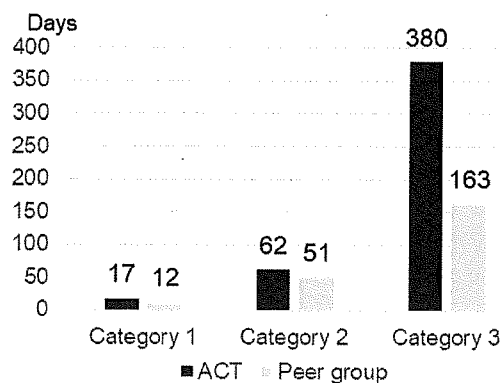
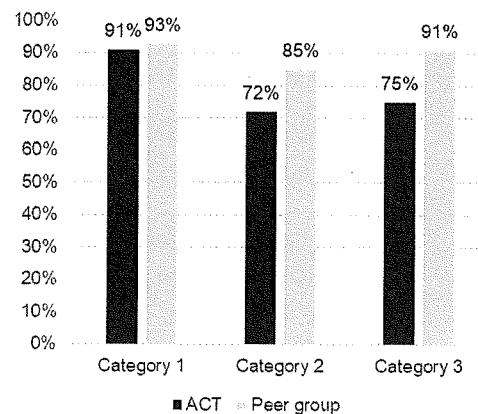


Figure 24: Percentage of surgeries received within the recommended time by surgery category in 2017-18



SPIRE will help meet demand for health services now and into the future:

- ✓ Deliver 24 CCU beds, providing sufficient Territory wide capacity to cater for demand to 2031-32, when combined with the 12 CCU beds intended to be delivered through the Northside Hospital project
- ✓ Deliver 44 Adult ICU beds, providing sufficient Territory wide capacity to cater for demand to 2031-32, when combined with the 12 ICU beds intended to be delivered through the Northside Hospital project
- ✓ Deliver the Territory's first dedicated PICU of four (4) beds
- ✓ Deliver capacity for 22 OTs (both standard and hybrid and including four (4) IR Suites), providing sufficient Territory wide capacity to cater for demand to 2031-32, when combined with the seven (7) theatres intended to be delivered through the Northside Hospital project
- ✓ Deliver 108 ED beds (including 10 MHSSU spaces), providing sufficient Territory wide capacity to cater for demand to 2031-32, when combined with the 77 ED beds to be delivered through the Northside Hospital project

⁸² Australian Institute of Health and Welfare, *Waiting times for elective surgery*

3.3 Challenge 2

3.3.1 What is Challenge 2?



Inefficient configuration

Inefficient configuration and space limitations cannot delivery contemporary Models of Care increasing the risk of patient harm, and operational inefficiency

The buildings on the site of Canberra Hospital were largely constructed between 1969 and 1973. Since that time various expansion activities have been undertaken, with additions and refurbishments being made to the Canberra Hospital Campus over time. Due to the nature of its development, critical and interdependent health services are dispersed across the campus. This has the following impacts:

- **Operating inefficiencies:** lack of a streamlined layout impacts on the efficiency of care delivery and patient and staff flows, as well as the ability to implement enhanced Models of Care
- **Staff and equipment duplication:** staff and equipment are duplicated across Canberra Hospital to allow for accessibility, impacting on operating efficiencies
- **Patient experience:** the disbursed layout impacts on patient experience, with lengthy distances between some key patient centres

3.3.2 Evidence for Challenge 2

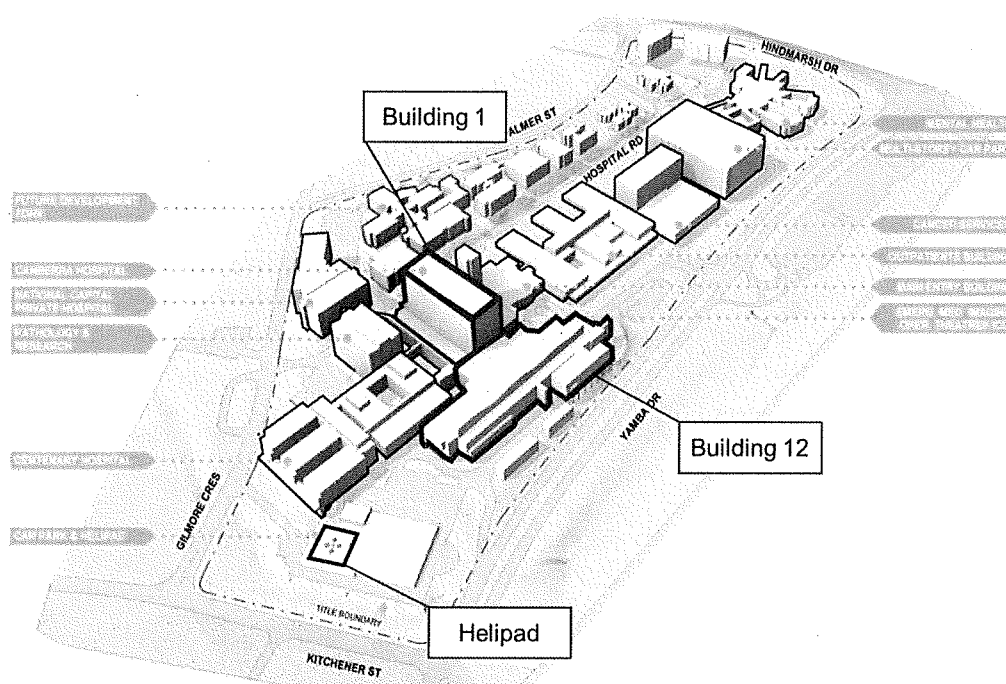
Critical infrastructure at Canberra Hospital is physically dislocated from each other

As noted above, the Canberra Hospital Campus is disbursed, with interdependent services provided from different locations. Figure 25 illustrates the physical separation of interdependent health services, such as:

- Cardiac Catheterisation laboratories are located in Building 1, separated from the ED, OTs and ICU in Building 12
- The helipad is located on the northern part of the site, separated from the ED and OTs in Building 12

Patient access to these services can be time critical and therefore co-location in SPIRE with other complimentary critical care services has the potential to provide significant benefits in healthcare outcomes and operational efficiencies.

Figure 25: Canberra Hospital layout



The Strategic Asset Management Plan found Canberra Hospital buildings' fitness for purpose and functionality is limited for those buildings impacted as part of SPIRE

The SAMP for Canberra Hospital, completed in 2017, assessed the functionality of all Campus buildings, rating their fitness for purpose on a scale from 0 to 5, with 0 being very poor functionality, and 5 being excellent functionality. It assessed buildings using the following criteria:

- **Spatial relationships:** how the shape, size and location of each building supports its intended functions
- **Provision and amenity:** how the services provided and the overall asset support the activities required in that building
- **Environmental comfort:** whether the building has appropriate temperature, acoustics, ventilation and lighting
- **Legislative compliance:** whether the building meets relevant legislative requirements
- **Aesthetics:** whether the building has good or bad design
- **Adaptability:** whether the building could be repurposed for another use

As such, a building's score is dependent on how it connects with other services and enables the provision of service.

The functionality ratings of select Canberra Hospital buildings impacted by SPIRE⁸³ are illustrated in Table 14. This table illustrates:

- Both Building 1 and Building 12 fall below the target functionality rating of 3. These buildings contain main inpatient beds, the ED, OTs, and critical care services
- Both Building 1 and Building 12 do not meet the target score of 3 with scores of just below, and just above 2.5 being received respectively
- Building 5 and Building 24 both fall below the quality target. Building 5 also falls below the functionality target, with Building 24 rating just above the target score

Table 14: Select Canberra Hospital building ratings⁸⁴

Building	Target	Functionality	Quality
Building 1	3	2.95	2.45
Building 12	3	2.75	2.55
Building 5	3	2.55	2.05
Building 24	3	3.05	2.45

A building's functionality and fitness for purpose can impact on workforce attraction and retention, with studies indicating that workplace design can make a meaningful contribution to a hospital's staff retention and wellbeing. The box below outlines the potential impacts of workplace design.



Design Matters for Nurses

A 2015 study* undertaken by HASSELL and the University of Melbourne Health Systems Workforce Unit sought to understand how hospital workplace design affects nurse attraction and retention in Australia and the United Kingdom. It found:

- Hospital workplace design can directly influence how nurses experience their work, and indirectly influence workforce attraction and retention
- Functional design can be viewed as a symbolic expression of the value a hospital places on nurses and consequently may impact on how nurses feel about their workplaces
- Workplace attraction appears to generally relate to the appearance of the workplace, while retention factors relate to how design supports workplace efficiency and effectiveness
- A strong organisational culture appears to have links to enabling the greatest potential for good hospital workplace design

These findings suggest that a workplace design can make a meaningful contribution to a hospital's staff retention performance and wellbeing.

Staff turnover is a potentially significant financial cost for any healthcare system. A separate 2016 study** found that the cost of nurse turnover has been estimated to be up to 150 per cent of a nurses' annual pay (although this varies by the type of job, level of experience and clinical skills). The study also found that the Territory has the highest cost of staff turnover when compared to the NSW and WA healthcare systems.

Sources

* https://www.hassellstudio.com/docs/20160523_designmattersfornurses_e.pdf

** [https://www.collegianjournal.com/article/S1322-7696\(14\)00042-0/fulltext](https://www.collegianjournal.com/article/S1322-7696(14)00042-0/fulltext)

⁸³ Services from Building 1 and Building 12 will be consolidated into SPIRE, while services in Buildings 5 and 24 will be decanted to other parts of the Hospital to allow for those buildings to be demolished and SPIRE constructed

⁸⁴ Canberra Hospital SAMP, 2017 (noting quality ratings are sourced from the status quo option)

The Territory's operating cost for the provision of critical and acute health services is above the national average

While likely impacted by a number of factors (including but not limited to functionality and aged infrastructure (see Challenge 3), Round 20 of the National Hospital Data Collection collated by the Independent Hospital Pricing Authority indicates that the Territory's average cost per activity for acute, ED, and sub-acute activities are above the national average⁸⁵. [REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]

SPIRE will:

- ✓ Support improved operational efficiency at the Canberra Hospital
- ✓ Help facilitate the implementation of contemporary Models of Care at the Canberra Hospital
- ✓ Provide improved functionality for acute and critical care activities at the Canberra Hospital
- ✓ Support broader master planning initiatives for the Canberra Hospital intended to improve integration and efficiencies between interdependent activities

3.4 Challenge 3



Ageing infrastructure

Ageing infrastructure is causing significant operational disruption and performance instability and restricts the ability to implement new technologies

3.4.1 What is Challenge 3?

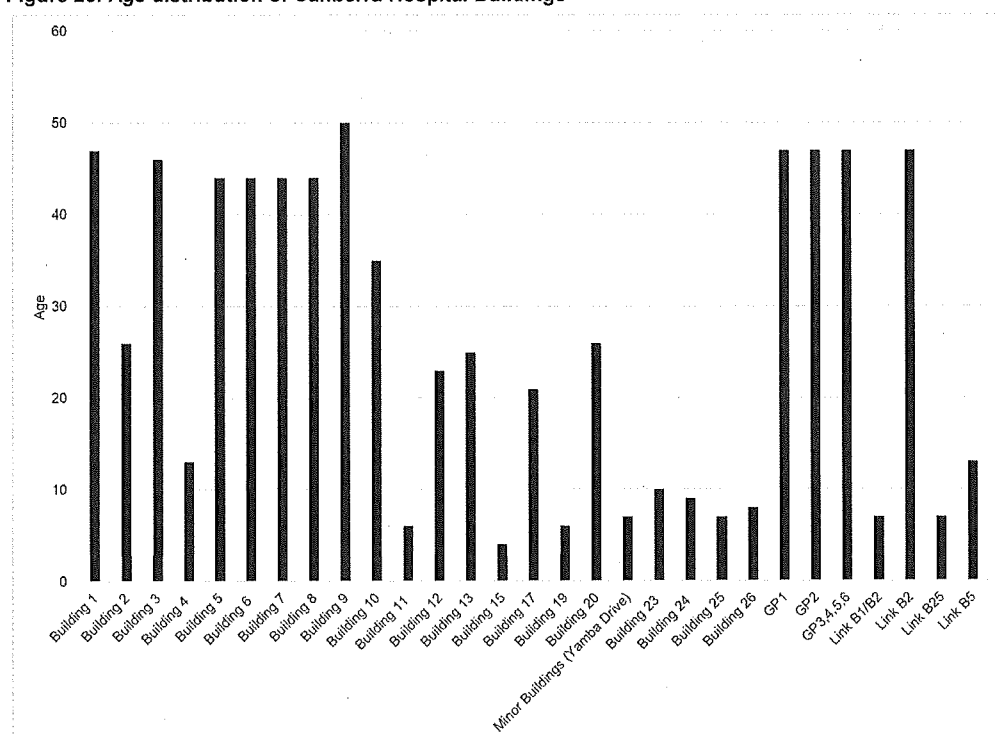
Canberra Hospital is comprised of a number of physical assets, many of which are reaching the end of their useful life.⁸⁷ Canberra Hospital is on the site of original Woden Valley Hospital. Its buildings were constructed between 1969 and 1973, and as shown in Figure 26 below, many buildings on the campus have not been redeveloped since that time and are now over 40 years old.

⁸⁵ Independent Hospital Pricing Authority (IHPA), *National Hospital Cost Data Collection, Public Hospitals Cost Report, Round 20 (Financial Year 2015-16), 2018*

⁸⁶ *Ibid*

⁸⁷ *Canberra Hospital SAMP, 2017*

Figure 26: Age distribution of Canberra Hospital Buildings⁸⁸



Ageing infrastructure may have the following impacts:

- **Technology limitations:** ageing infrastructure limits the ability of Canberra Hospital to incorporate technological upgrades, and in turn the ability to adapt to changes in clinical practice and enhanced Models of Care
- **Increased maintenance costs:** ageing infrastructure is likely to impact on whole of life costs and maintenance requirements
- **Disruptions to service delivery:** increased incidence of reactive maintenance with aged infrastructure disrupts operational activities

Some of Canberra Hospital's buildings are almost 50 years old

3.4.2 Evidence for Challenge 3

Within the next decade, almost one in two buildings at Canberra Hospital will reach their end of life

As illustrated in Figure 27, due to the age of Canberra Hospital's infrastructure, there is limited remaining useful life for many buildings on the campus. Within 10 years, 46% of buildings (13 of 28 buildings) are expected to reach their end of life, and an additional 18% of buildings will require a mid-life refit.⁸⁹

With respect to infrastructure assets impacted by SPIRE:

- **Building 12**, the site of the existing ED, and therefore categorised as 'Critical Asset', will need a mid-life refit to address deficiencies in condition, functionality and Building Code compliance issues

⁸⁸ Canberra Hospital SAMP, 2017

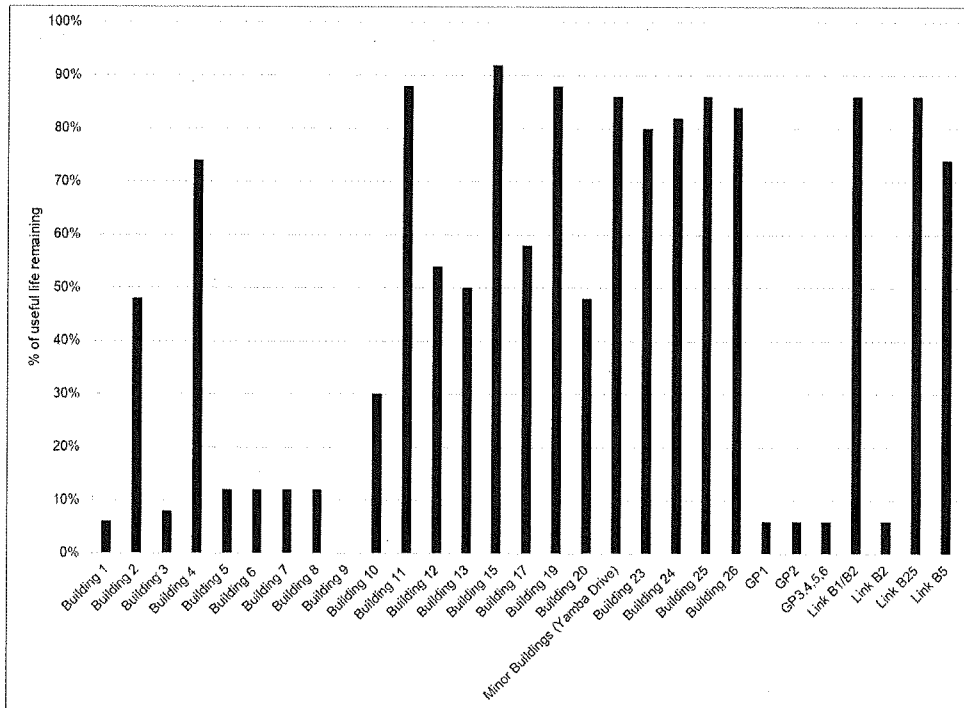
⁸⁹ Canberra Hospital, SAMP, 2017

- **Building 5** has only approximately 15% of its remaining useful life left

Collectively, this means that regardless of the fruition of SPIRE, Buildings 12 and 5 will require refit, refurbishment and investment of funds in the very near future.

The SAMP found that one quarter of Canberra Hospital buildings are in poor condition

Figure 27: Percentage of remaining useful life for Canberra Hospital buildings⁹⁰



Reactive maintenance activities in aged infrastructure are disrupting operational services

As outlined previously (Challenge 2), a number of buildings impacted by SPIRE require maintenance and are not meeting the target condition rating of 3 (fair condition). More generally, the SAMP found that one quarter of Canberra Hospital buildings were deemed to be in poor condition⁹¹. This can lead to operational disruptions, including the closure or cancellation of certain health services.

In addition, to the buildings themselves, some service infrastructure at Canberra Hospital is in suboptimal condition. According to the SAMP, the power supply (main HV feed), sanitary drainage, stormwater drainage, sub-main cabling and fire hydraulics were below the target condition rating of 3 (good condition)⁹².

Many systems are operating at beyond their expected life and are incapable of upgrade

Canberra Hospital currently supports over 250 legacy technology systems, many operating beyond their expected life cycle and upgradability. This ageing technology has the potential to cause operational

⁹⁰ Canberra Hospital, SAMP, 2017

⁹¹ Canberra Hospital, SAMP, 2017

⁹² Canberra Hospital, SAMP, 2017

disruption and performance instability, due to system down-time for maintenance and operating limitations, impacting on operational efficiencies.

An investment of \$90m was made to replace ageing health systems in the 2009-10 budget⁹³. However, a recent review of ACT Health ICT systems found that 94% of government critical systems and 96% of business-critical systems have a risk rating of extreme due to:

- Lack of vendor support
- Aged infrastructure
- Out of date software

94% of government critical systems and 96% of business critical systems have a risk rating of extreme

An evaluation of the Health-e Future Initiative undertaken in 2018 also indicated:

- New technologies have improved workforce practice and productivity, and have benefited under-served communities and populations
- Additional investment is required to fast-track the replacement of legacy technology

Disruptions caused by ageing infrastructure can include unnecessary delays, surgery case cancellations, equipment breakdown and extended waiting times; impacting on operating costs and patient experience.

SPIRE will:

- ✓ Deliver a modern purpose-built facility for critical and acute health services
- ✓ Support the implementation of new technologies and systems
- ✓ Enable the maintenance and refurbishment of ageing buildings at the Canberra Hospital without causing disruptions to critical health services (e.g. ED, ICU)
- ✓ Support improved operational efficiency and the achievement of reduced whole of life maintenance costs

3.5 Do these challenges need to be addressed now?

The three challenges outlined above should be addressed as a priority due to:

- Existing facilities across the Territory will be insufficient to accommodate forecast growth for health services without additional investment; particularly in acute and critical care services such as the ICU, CCU and ED
- Disconnected acute and critical care assets are leading to duplication and increased operating costs
- Aged infrastructure at Canberra Hospital is in need of upgrade, requiring investment to prolong buildings' useful life
- Technology limitations and site functionality constraints are limiting the ability to implement enhanced, person-centric Models of Care; which is a priority of the ACT Government

⁹³ http://www.treasury.act.gov.au/budget/budget_2009/files/press/08_press.pdf

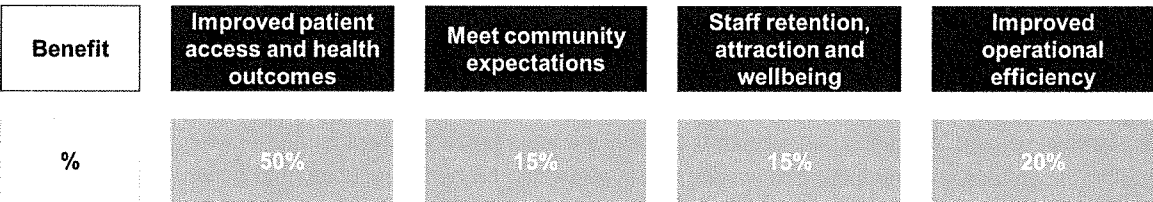
As such, this Business Case recommends that the ACT Government proceed with the planning, procurement and delivery of SPIRE.

3.6 Benefits and alignment with Government policies and priorities

It is considered that addressing the challenges outlined in the sections above will deliver key benefits to the Territory as explored in the ILM in 2017 and depicted in Figure 28. Figure 28 also provides an indicative weighting for each benefit, as identified at the ILM of the relative importance of each of the key benefits.

Achieving these benefits is of significant importance to the ACT Government, aligning with ACT Health’s vision ‘Your Health – Our Priority’ and supporting the achievement of Government objectives to provide access to the right services, in the right place, at the right time, by the right person. Additionally, the benefits align with a number of existing policy documents and strategies as outlined in Chapter 1.

Figure 28: ILM key benefits



A more detailed assessment of the anticipated socio-economic benefits of SPIRE are discussed further in Chapter 6 (see 7.3 for an outline of anticipated socio-economic benefits).

Preliminary Key Performance Indicators (KPIs) to assess the realisation of project benefits were identified in the ILM. These KPIs are outlined in Chapter 7.8.

4 Options Analysis

Key messages

- The ACT Government has considered a range of different options to address the challenges facing the Territory's health system and deliver more modern, person-centric infrastructure that provides the community with access to the right services, at the right place, at the right time, by the right person
- As part of its Territory-wide strategy to improve health infrastructure, the Territory is progressing a number of interrelated projects through the BHSP that together will improve the efficiency and quality of healthcare delivery
- While all of these projects have merit, and should proceed at the appropriate time in line with forecast demand, the clear and demonstrable need for additional acute and critical care capacity in the Territory means that SPIRE should be developed as a priority strategic solution
- In developing SPIRE, a range of different project and design options have been analysed and assessed by ACT Health and key project stakeholders ahead of determining the preferred option. Consultation with clinical staff formed an important part of this process
- Options were assessed on the following considerations:
 - **Patient and clinical outcomes:** does the project option improve accessibility, cater for increased demand and consider clinical feedback?
 - **Alignment with objectives:** does the project option align with publicly committed scope and budget for SPIRE?
 - **Functionality:** does the project solution align with the AusHFGs and support improved operational efficiencies?
- All project solution options considered demonstrate alignment with the AusHFGs and an ability to meet and/or exceed the clinical scope for SPIRE as announced by the ACT Government, with Option 1 most closely aligning to the current project budget for SPIRE. Consequently, the analysis contained within this Business Case is predicated on the implementation of Option 1

4.1 Strategic Solutions

Under the BHSP, ACT Health has developed a significant infrastructure investment program to cater for the growing, and changing healthcare needs of the community to ensure it continues to provide quality care when it is needed, delivered by the right team in the right place in line with its vision; *'Your Health – Our Priority'*.

Together, the implementation of the strategic infrastructure solutions in the BHSP will largely address the challenges outlined in Chapter 3 of this Business Case. As outlined in Section 2.7, the BHSP includes the following major infrastructure projects:

- SPIRE
- Development of a future Northside Hospital
- Expansion of CHWC
- Expansion of Clare Holland House
- Development of additional Walk-in centres

These infrastructure projects will be supported by continued efforts to implement person-centric care which are designed to put people at the centre of decisions to achieve the best outcomes.

The following sections provide a brief description of the potential strategic solutions developed by the ACT Government.

4.1.1 SPIRE

The proposed SPIRE development will integrate a range of medical services (e.g. new ED and ICU) into one facility at the Canberra Hospital. This will enable ACT Health and CHS to deliver high quality medical services to the Territory community and surrounding region.

By co-locating key interdependent acute and critical care services into one location SPIRE will:

- Address capacity existing and future capacity constraints on vital infrastructure, including the ED, Operating Theatres, the ICU, CCU and other facilities, and provide new services, such as the PICU
- Facilitate the implementation of an enhanced Model of Care, new technologies and clinical practice techniques
- Provide opportunities to improve patient experience
- Assist in improving operational efficiency

See Chapter 5 for further information on the scope of the Project.

4.1.2 Northside Hospital

The ACT Government has committed to undertake a scoping study for a future Northside Hospital. The study will explore service infrastructure options, with the aim of ensuring efficient, high quality healthcare services are available to residents across Canberra's north and the surrounding region.

While the scoping study is yet to conclude, indicative analysis indicates that a future Northside Hospital may include the functional areas outlined in the table below. It should be noted that this scope would be subject to further design, consultation and capacity analysis and as such is subject to material change.

Table 15: Indicative Northside Hospital functional areas⁹⁴

Functional area	Capital scope
Inpatient Unit Beds	160
Inpatient Unit Beds (shelled)	64
Inpatient Unit Beds (mental health)	48
Inpatient Maternity Unit Beds	19
Day Procedures Beds / Chairs	33
Total Beds and Chairs	324
CCU	12
ICU	12
Special Care Nursery	12
Procedure Rooms	7
Birthing Suites	8
Operating Theatres	7
Outpatient Consult Rooms	18

⁹⁴ ACT Health data, Draft Northside Hospital Scope, 18 March 2019

Functional area	Capital scope
Emergency Department spaces (incl. EMU and SSU)	77

Note: the table above is indicative and subject to material change

The timelines for the delivery of a future Northside Hospital project are yet to be determined. It should be noted that timelines (inclusive of risks for delivery) will be informed by completion of the scoping study and early feasibility activities.

4.1.3 Centenary Hospital for Women and Children Expansion

In the 2017-18 ACT Budget the ACT Government announced it would invest in the expansion of the CHWC at Canberra Hospital to provide better health services for women and young people. The budget included approximately \$600,000 for feasibility and scoping activities to inform the development of new and expanded services over the next four years.

The expansion will deliver:

- Increased and improved provision of maternity and paediatric high-dependency unit beds
- Increased special care and neonatology beds
- A new gynaecology procedure service for adolescents
- Adolescent mental health unit and associated services
- Additional clinical and non-clinical support services

User group consultation is underway on the design and a Business Case is currently being developed for the approximate \$70m project. It is intended that the expansion will be complete in 2021-22.

4.1.4 Clare Holland House Expansion

Clare Holland House provides important palliative care services for the Territory.

A \$6m expansion was announced in September 2018 by the Australian and ACT Governments, in partnership with The Snow Foundation. The expansion will increase the number of specialist inpatient palliative care beds and upgrade administration and clinical space.

4.1.5 Walk-in Centres

ACT Health is currently developing two Walk-in Centres in Weston and the Inner North, in addition to existing centres in Belconnen, Gungahlin and Tuggeranong.

The Weston Creek Walk-in Centre is expected to open at the end of 2019 and the Inner North Walk-in Centre is currently in planning, with funding for the design and construction currently under consideration by the ACT Government.

4.1.6 Recommended Strategic Solution

While all the strategic solutions identified in the BHSP have merit and are being progressed, the recommended strategic solution explored in this Business Case to respond to the challenges outlined in Chapter 3 is SPIRE. This is due to:

- The clear and demonstrable need for additional acute and critical care capacity in the Territory
- Existing clinical infrastructure is already under pressure, which is only anticipated to increase into the future given the Territory's growing and ageing population
- The health infrastructure at the Canberra Hospital is ageing
- The current configuration of the Canberra Hospital is leading to inefficient operational functionality

Under the BHSP, ACT Health will continue to implement a holistic approach to improve the delivery of health services in the Territory.

4.2 Project Solutions Analysis

A number of different design and project options for SPIRE have been considered and assessed by ACT Health. As part of the early design process, consultation with key stakeholders, including clinicians has been undertaken. This process has culminated in three project options as outlined below, with Options 2 and 3 building on Option 1 by incorporating additional scope elements. In considering the options outlined below it should be noted that refinements may be made as the design and consultation process continue.

- 1. Option 1 (Base Option):** the construction of SPIRE on the site of Buildings 5 and 24, providing for the co-location of acute and critical care services. The scope of this Option includes a variety of clinical spaces (e.g. ED, ICU and CCU etc.), decanting and enabling works (e.g. demolition, services and excavation), accessibility infrastructure (e.g. bridge, tunnel and roads) and supporting infrastructure (e.g. the CSSD and loading dock)
- 2. Option 2 (Increased ED and ICU capacity):** this option provides for all the scope elements included in Option 1 but increases the number of ED spaces and ICU beds. It has been developed based on clinician feedback. The following additions are included in Option 2:
 - 12 additional Adult ICU beds
 - 16 additional spaces in the ED (noting under Option 1, 10 MHSSU beds are included in the 108 ED spaces but in Option 2 10 MHSSU spaces are co-located with the ED but a separate scope item – see Table 16 below)
 - Additional floor space to accommodate the increased ICU and ED clinical scope
- 3. Option 3 (Increased ED and ICU and increased GFA):** this option provides for all the scope elements in Options 1 and 2, but provides additional GFA for support spaces, CSSD and the loading dock. The following additions are included in Option 3:
 - Additional supporting spaces for the ED, medical imaging, ICU, surgery and cardiology
 - Additional supporting spaces for non-clinical support, administration and education and training spaces for SPIRE (estimated at an additional 6,000 to 6,500 of GFA)
 - Additional floor space for the CSSD and loading dock
 - A dual deck helipad
 - The relocation of the 10 MHSSU spaces outside the ED

A breakdown of each option is provided in the table below. Further detail on the options is outlined in Appendix A.

Table 16: SPIRE Project Solutions

Functional area	Option 1	Option 2	Option 3
	Scope	Scope	Scope
Inpatient Unit Beds	64	64	64
Adult ICU Beds	44	56	56
PICU Beds	4	4	4
CCU	24	24	24
Total beds	136	148	148
Operating Theatres (Standard)	20 ⁹⁵	20 ⁹⁶	20
Operating Theatres (Hybrid)	2	2	2
Interventional Radiology Suites	4x Incl. in OTs	4x Incl. in OTs	4x Incl. in OTs
Day Surgical Beds	55 ⁹⁷	55 ⁹⁸	55 ⁹⁹
ED	98 ¹⁰⁰	114 ¹⁰¹	114 ¹⁰²
Behavioural Assessment Spaces	2	4	4
Forensic Medical Spaces	2	2	2
MHSSU	10 (on top of ED spaces)	10 (on top of ED spaces but co-located)	10 (separate from ED)
Cardiac Catheterisation Laboratory	3	3	3
Electrophysiology Laboratory	1	1	1
Ambulance Bays	12	12	12
CSSD	1,074 m ²	1,074 m ²	1,438 m ²
Loading Dock	492 m ²	492 m ²	1,338 m ²
Helipad	1	1	2
Total Build Area (m²)	32,427 m²	33,594 m²	39,980 m²
Total Construction Cost (\$m, nominal, raw)	\$420.8	\$435.6	\$514.5
Contingency (\$m, nominal, P50) ¹⁰³	\$89.3	\$91.5	\$108.1

⁹⁵ Includes 5 of the 20 Operating Theatres as shelled theatres (noting TOC Capital Cost to fitout 5 theatres is ~\$4.9m real)

⁹⁶ Includes 5 of the 20 Operating Theatres as shelled theatres (noting TOC Capital Cost to fitout 5 theatres is ~\$4.9m real)

⁹⁷ Comprising of Stage 2 Day Surgery Unit Beds and Extended Day Surgery Unit Beds

⁹⁸ Comprising of Stage 2 Day Surgery Unit Beds and Extended Day Surgery Unit Beds

⁹⁹ Comprising of Stage 2 Day Surgery Unit Beds and Extended Day Surgery Unit Beds

¹⁰⁰ Does not include 2 x Behavioural Assessment Spaces and 2 x Forensic Medical Spaces. The 108 ED spaces presented to Cabinet in December 2018 included 10 Mental Health Short Stay beds

¹⁰¹ Does not include 4 x Behavioural Assessment Spaces and 2 x Forensic Medical Spaces. Does not include MHSSU Beds

¹⁰² Does not include 4 x Behavioural Assessment Spaces and 2 x Forensic Medical Spaces. Does not include MHSSU Beds

¹⁰³ P50 capital contingency has been calculated for Option 1 by performing Monte Carlo simulations (using @Risk) on the outputs of risk workshops attended by various ACT Government Stakeholders during February and March 2019. The ratio of contingency and raw construction costs for Option 1 was then applied to Option 2 and Option 3 to estimate P50 contingency for

4.2.1 Assessment

To compare the three project options, consideration of a range of factors has been undertaken. These considerations are outlined in Table 17.

Table 17: Project solution considerations

Consideration	Detail
Patient and clinical outcomes	- Will the project solution improve accessibility to acute and critical care services and provide the infrastructure necessary to cater for the forecast increase in demand? - Does the project solution consider clinical feedback at the Canberra Hospital?
Alignment with objectives	- Does the project solution align with the publicly announced budget for SPIRE? - Does the project solution align with the ACT Government's committed scope for SPIRE? - Does the project solution align with the project objectives?
Functionality	- Does the project solution meet the requirements for a sub-acute hospital facility under the AusHFGs? (e.g. Schedules of Accommodation, GFA) - Will the project solution improve operational inefficiencies at the Canberra Hospital and the Territory more generally?

Table 18 provides an assessment of the three project options against the three considerations outlined above.

these options. This is highly indicative and a bottom up assessment should be done for each option as project characteristics are different for each option

¹⁰⁴ Government Fees are calculated on top of the sum of Total Construction Cost and Contingency. Government fees include: a 4% IFCW fee, 1% ACTIA fee, a 1.45% ACT Health Management Fee for the early works and main works component of SPIRE and a 3.85% ACT Health Management Fee for the decanting components of SPIRE (P50 contingency has been split proportionally based off the raw construction costs for each component to calculate the ACT Health Management Fee)

¹⁰⁵ Clinical Costs have been assumed to remain constant across each option as they have been calculated off demand modelling undertaken by ACT Health in 2018 (i.e. the same level of services will be delivered for each option)

¹⁰⁶ FM costs differ for each option as they include costs for the additional scope that is included for Option 2 and Option 3 (with Option 3 having the largest scope of the three options). This additional scope will still incur FM costs independent of the amount of services provided

Table 18: Project solution options evaluation

Consideration	Option 1	Option 2	Option 3
Patient and clinical outcomes	- This option will provide increased clinical infrastructure in key functional areas, including ED, ICU and CCU. However, the clinical space provided is lower than Options 1 and 2 - Infrastructure capacity under this option has been determined based on forecast demand modelling undertaken by ACT Health on a Territory-wide basis	- This option includes additional clinical space when compared to Option 1, notably 114 ED spaces (up from 98 under Option 1) as well as 10 MHSSU beds co-located with the ED, and 60 ICU beds – including 56 adult ICU and 4 PICU beds (up from 48 under Option 1) - Infrastructure capacity under this option has been determined based on feedback from clinicians at Canberra Hospital - For the ED, this option is scoped on forecast demand modelling undertaken by ACT Health on a Territory-wide basis, realigning CHS ED treatment spaces based on a market share analysis of 70:30 - For the ICU, increased ICU beds will allow for greater capacity to provide intensive care to patients, noting that the allocation is over and above the Territory-wide bed projections but has been put forward by clinicians	- This option includes additional clinical space when compared to Option 1, notably 114 ED spaces (up from 98 under Option 1), 10 MHSSU beds and 60 ICU beds – including 56 adult ICU and 4 PICU beds (up from 48 under Option 1) - This option includes a dual deck helipad, as opposed to a single deck helipad. This may provide enhanced accessibility when compared to Options 1 and 2 that include a single deck helipad - From a clinical perspective, this option includes increased treatment space size to support the care of bariatric and infectious patients, dedicated spaces to support high complexity interventions and the use of emergent technology, in situ rehab and treatment spaces, and provision for a SPIRE Medical Imaging Department to support the ED and provide emergent imaging capability to SPIRE - For clinical support areas, this option includes increased storage capacity (to house emergent and evolving technical equipment and store consumables) and the provision of a dedicated infectious zone to enable ongoing functionality of the intensive care areas in the event of an infectious threat - This option includes additional administrative, educational and support areas when compared to Options 1 and 2, potentially providing for improved service delivery - Infrastructure capacity and supporting infrastructure requirements under this option has been determined based on feedback from clinicians at Canberra Hospital
Alignment objectives	- The scope of this option aligns with ACT Government's scope commitments - The funding requirement for the capital cost of this option is broadly in line with budgeted funding allocation for SPIRE (estimated Project Outturn Cost of \$543.8m)	The clinical scope of this option broadly aligns with ACT Government's scope commitments for SPIRE. However, the additional ICU beds are over and above ACT Government's clinical infrastructure commitment for SPIRE	The clinical scope of this option broadly aligns with ACT Government's scope commitments for SPIRE. However, the additional ICU beds are over and above ACT Government's clinical infrastructure commitment for SPIRE

Consideration	Option 1	Option 2	Option 3
	This option would achieve the project objectives	- The funding requirement for the capital cost of this option is slightly more expensive than Option 1 (estimated Project Outturn Cost of \$562.0m) - This option would achieve the project objectives	- However, the additional support and administrative areas exceed the that foreseen in previous commitments - The funding requirement for the capital cost of this option is above the budgeted funding allocation for SPIRE (estimated Project Outturn Cost of \$663.5m) - This option would achieve the project objectives
Functionality	- Co-location of interdependent acute and critical care services may support improved operational efficiencies - This option broadly aligns with the AusHFGs - Under this option the functional area of clinical and support spaces, non-clinical spaces and administration areas are based on AusHFGs and benchmarking. This option does not include specific service requirements as identified by clinicians during clinical engagement sessions	- Co-location of interdependent acute and critical care services may support improved operational efficiencies - As per Option 1, the functional area of clinical and support spaces under this option are based on the AusHFGs and this option does not include specific service requirements as identified by clinicians during clinical engagement sessions	- Co-location of interdependent acute and critical care services and additional support, administrative and educational facilities may support enhanced operational efficiency when compared to Options 1 and 2 - Unlike Options 1 and 2, the functional area of some clinical (e.g. hybrid theatres) and all support areas are in excess of that outlined in the AusHFGs and benchmarking - As per Options 1 and 2, the functional areas of clinical spaces are based on the AusHFGs. This option includes specific service requirements as identified by clinicians during clinical engagement sessions

4.2.2 Base Case

The 'base case' is for the Canberra Hospital to operate under its current operating model with no increased acute and critical care infrastructure as proposed in SPIRE. This option is unlikely to be sustainable in the medium to long term as:

- The demand for acute and critical services in the Territory is expected to continue to grow, putting increased pressure on already constrained health infrastructure
- A large amount of infrastructure at the Canberra Hospital is ageing and will begin to reach the end of its useable life. As such, investment in upgrades will be required in the near term irrespective of SPIRE
- The current configuration of the Canberra Hospital is contributing to operational inefficiencies and impacting on patient experience

See Chapter 3 for further information and analysis on the challenges facing the delivery of acute and critical care services in the Territory. The base case is also considered as part of the economic analysis (see Chapter 6).

4.3 Recommended solution

Based on the above options analysis, this Business Case recommends that SPIRE be progressed as a priority project for the Territory, noting that other health infrastructure projects will also be required to provide a holistic response to increased demand on the healthcare system.

All project solution options demonstrate alignment with the AusHFGs and an ability to meet and/or exceed the clinical scope for SPIRE as announced by the ACT Government, with Option 1 most closely aligning to the current project budget for SPIRE. Consequently, the analysis contained within this Business Case is predicated on the implementation of Option 1.

A detailed description of the scope of works and services under this option is outlined in Chapter 5.

4.4 Treasury review – options analysis

Treasury directorate to sign off that a case for the project is present in the Business Case.

Review 2 (Treasury) Officer Name: _____

Signature: _____

Date: _____

5 Project Outline

Key messages

- SPIRE will deliver new acute and critical care infrastructure for the Territory and surrounding region, providing high quality, person-centric care in an environment that incorporates the latest advances in technology and Models of Care, improving healthcare outcomes and operational efficiency
- In developing the scope for SPIRE consideration has been given to the project objectives, SPIRE's intended operating model and the proposed Model of Care. The design has been iteratively developed through the involvement of technical health infrastructure specialists and project stakeholders, including clinicians. The design outlined in this Business Case is based on a high-level Schedule of Accommodation which will be refined as the Project's design phase continues
- SPIRE will provide an estimated total capital development footprint of approximately 32,427 m² on the site of the existing Buildings 5 and 24 that will be demolished
- The scope of works includes:
 - **Decanting and enabling works** – activities relating to the decanting of the departments currently located in Building 5 and Building 24 prior to their demolition (such as the construction and internal fit-out of modular buildings); temporary car parking; and demolitions, utilities relocation and early works to prepare the site for the main construction works
 - **Clinical infrastructure** – works relating to the delivery of health infrastructure in SPIRE to accommodate to health services (e.g. ED, ICU and OTs (standard and hybrid))
 - **Accessibility infrastructure** – works that enable access to SPIRE for emergency vehicles, service vehicles, staff members and the public (e.g. ambulances bays, helipad and road upgrades)
 - **Supporting infrastructure** – works that support the delivery of health services at SPIRE (e.g. loading dock and the Central Sterilising Services Department)
- The scope of services includes:
 - **Operational and soft facilities management** – activities that will be required to keep SPIRE operating (e.g. clinical services, food services, waste management and security)
 - **Hard facilities management** – ongoing repairs and maintenance services required to keep the capital works fit-for-purpose (e.g. buildings and grounds maintenance)

5.1 Overview

SPIRE will deliver new acute and critical care infrastructure for the Territory and surrounding region, providing high quality, person-centric care in an environment that incorporates the latest advances in technology and Models of Care, improving healthcare outcomes and operational efficiency. In developing the scope of SPIRE, primary consideration has been given to:

- The Project objectives for SPIRE (see Chapter 1)
- SPIRE's intended operating model and the proposed Model of Care
- Feedback received from project stakeholders, including clinicians

The Project outlined in this Chapter is based on a high-level Schedule of Accommodation which will be refined as the design phase for the Project continues and reflects the scope of Option 1 as outlined in Chapter 4. Appendix A sets out a summary of the early concept design that has informed the progress of the Business Case to date.

SPIRE will provide an estimated total capital development footprint of approximately 32,427 m² on the eastern corridor of the Canberra Hospital campus – currently occupied by Building 5 and Building 24. The development of SPIRE will involve the following key works:

- Activity to decant existing departments in Building 5 and Building 24, which will include the demolition of Building 8, the construction of modular buildings, temporary car parking and the relocation of some departments off campus
- Demolition, excavation, and the protection, relocation and provision of in-ground services to prepare the site of Building 5 and Building 24 for the construction of SPIRE
- The construction and fit-out of SPIRE, including connecting infrastructure to other facilities at the Canberra Hospital
- Road upgrades and traffic management activities

The following key ongoing services will be provided as part of SPIRE:

- The ongoing clinical and administration services required to provide medical services to the community
- Soft facilities management (FM) services such as cleaning, waste management and security to ensure the efficient day-to-day operation of SPIRE
- Hard FM, such as building maintenance and grounds maintenance to ensure that the SPIRE building is fit for purpose

SPIRE will deliver:



A boost to the number of operating theatres, delivering more capacity for elective and emergency surgery



More inpatient beds and a larger ICU



A CCU for people requiring high level care for heart conditions



State-of-the-art surgical, procedural and imaging facilities

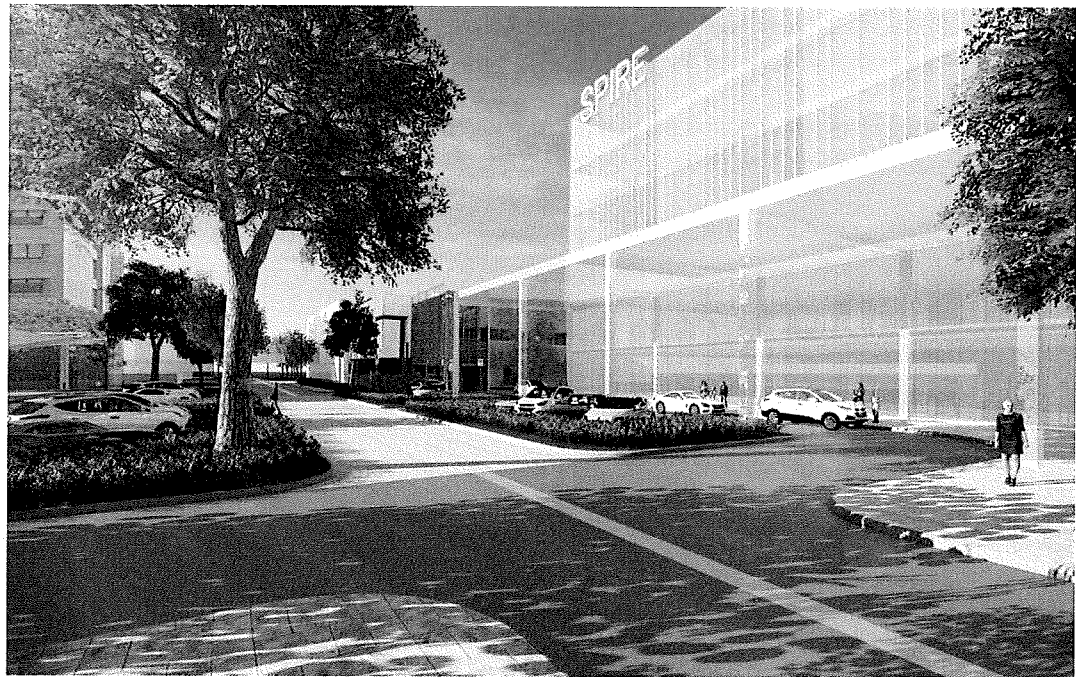


A significantly expanded ED, enabling capacity for specialist emergency health care

A high level, indicative visualisation of SPIRE is illustrated in Figure 29. Figure 30 provides a preliminary overview of the services proposed to be provided on each of SPIRE's floors.

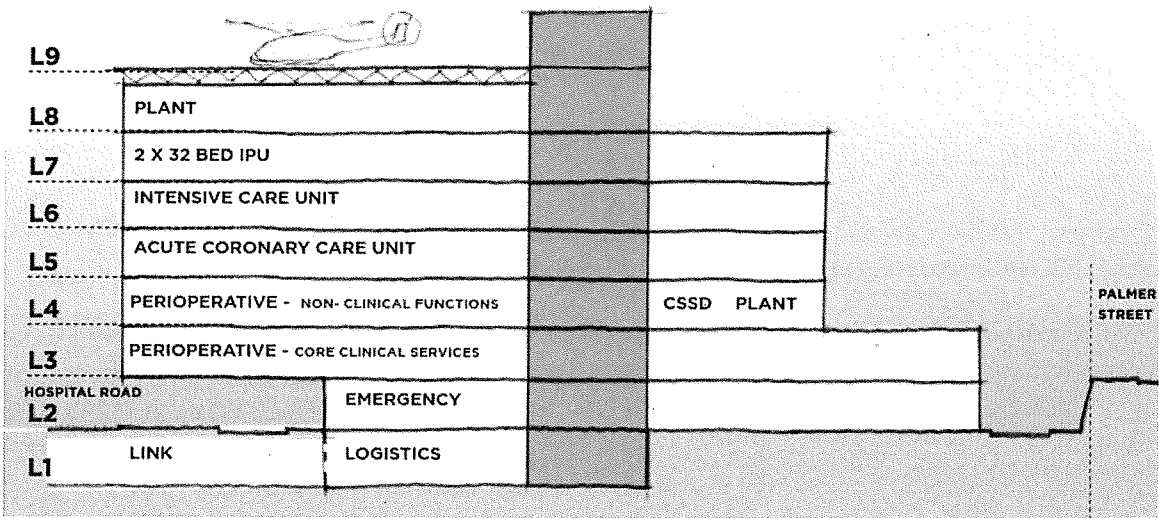
These figures are indicative and subject to material change based on further consultation with Project stakeholders, including clinicians, and ongoing design development.

Figure 29: Indicative visualisation of SPIRE¹⁰⁷



Note: this image is for illustrative purposes only and is subject to change

Figure 30: Indicative SPIRE stack diagram¹⁰⁸



Note: this image is for illustrative purposes only and is subject to change

5.1.1 Scope components

Table 19 provides an overview of the scope of works and scope of services which are further detailed in the subsequent sections of this Chapter. The scope of works and services are subject to material change as the designs for SPIRE are still in the preliminary stages.

¹⁰⁷ STH materials

¹⁰⁸ STH materials

Table 19: Scope of works and services

Project Components		
Scope of Works		
Decanting and Enabling Works ¹⁰⁹	- Decanting - Demolition - Excavation	- In-ground services - Temporary car parking
Clinical infrastructure	- ED - ICU - OTs (Standard and Hybrid) - Cardiac/Coronary Care Unit - Surgical Inpatient Unit	- Cardiac Catheterisation Laboratories - IR Suites - Electrophysiology Laboratory - FF&E
Accessibility infrastructure	- Ambulance Bays - Helipad - Extension to Level 3 Bridge - Service Tunnel under Hospital Road	- Road upgrades - On-site parking (50 spaces) - FF&E
Supporting infrastructure	- CSSD - Logistics	FF&E
Scope of Services		
Operations and Soft FM	- Clinical services - Administration - Sterilising services - Pharmacy dispensary - Stock replenishment - Laundry - Portering / distribution - Food services	- Parking management - Waste management - Cleaning - Pest control - Security - Retail - FF&E
Hard FM	- Building maintenance - Roads maintenance - Grounds and landscape maintenance	- Utilities maintenance - Medical equipment maintenance

5.1.2 Key clinical features

As outlined in Chapter 3, acute and critical services in the Territory are experiencing capacity constraints which are anticipated to continue without additional investment. SPIRE will assist in relieving these pressures by providing additional bed capacity across a number of key clinical areas.

The table below provides a comparison of the existing infrastructure at Canberra Hospital before and after the construction of SPIRE as per the scope for Option 1 in Chapter 4. It is important to note that the net growth in facilities may not always be equal to the amount of facilities built in SPIRE as some of the existing facilities may be repurposed for other functions¹¹⁰.

¹⁰⁹ This includes all works to prepare the site for the main construction works

¹¹⁰ For example, the existing Emergency Department will not operate once SPIRE is operational and may be repurposed for other services

Table 20: Impacts on the Canberra Hospital facilities

SPIRE Functional Area	Existing (no.)¹¹¹	Projected (no.) (SPIRE)	Net Growth	Canberra Hospital Total
Inpatient Unit Beds ¹¹²	515	64	64	579
Adult ICU Beds	31	44 ¹¹³	13	44
PICU Beds	0	4	4	4
CCU Beds	19	24	5	24
Total Beds	565	136	86	651
OTs (Standard)	13	20 ¹¹⁴	7	20
OTs (Hybrid)	0	2	2	2
IR Suites	2	4x Incl. in OTs	4x Incl. in OTs	4x Incl. in OTs
Day Surgical Beds	14	55	41	55
ED spaces (including MHSSU spaces)	72	108 ¹¹⁵	36	108
Cardiac Catheterisation Laboratory	2	3	1	3
Electrophysiology Laboratory	0	1	1	1
Ambulance Bays	8	12	4	12
Helipad	1	1 ¹¹⁶	0	1

5.2 SPIRE and urban design

SPIRE will be constructed on a parcel of land on the existing Canberra Hospital Campus located to the north east, between Hospital Road and Palmer Street on an area of approximately 11,000 m².

The site is located directly opposite the Main Hospital Entry on the current site of Building 5 (a four-storey brick building) and Building 24 (a two-storey demountable). These buildings will be demolished as part of the project and current occupants decanted to alternative accommodation (see Section 5.3.1.1).

The SPIRE building and surrounding precinct will be carefully designed to improve the public experience at Canberra Hospital. A pedestrian plaza, as illustrated in Figure 31, will be created on Hospital Road, linking the Main Hospital Entry to SPIRE, providing an attractive space with tree planting and seating to create a quality public realm for patients, visitors and staff.

¹¹¹ The existing numbers as outlined in this table are based on demand modelling undertaken for the BHSP between July 2018 and September 2018

¹¹² These figures relate to multi-day beds, and exclude same-day beds and sub-acute beds at UCH

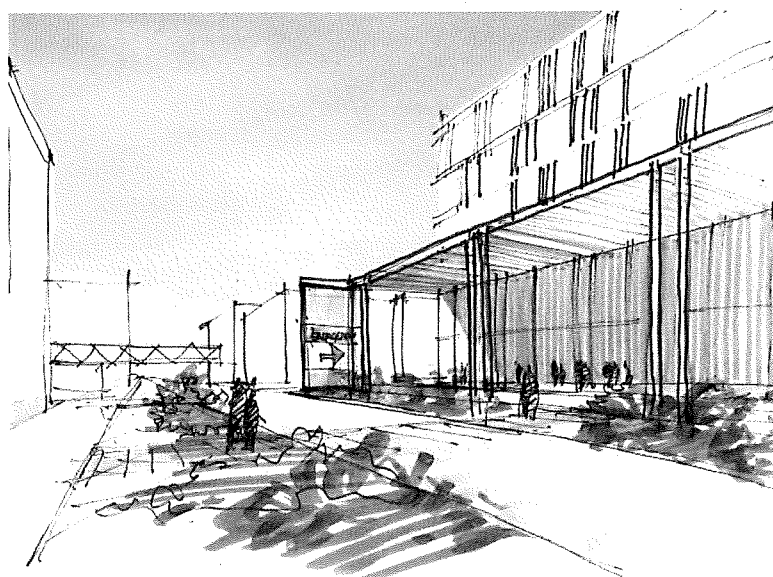
¹¹³ It should be noted that Options 2 and 3 as outlined in Chapter 4 include an additional 12 ICU beds, for a total of 56 beds

¹¹⁴ Includes four (4) IR Suites as noted below

¹¹⁵ ED spaces figure is inclusive of 10 MHSSU beds for Option 1. It should be noted that Options 2 and 3 as outlined in Chapter 4 include an additional 6 ED spaces, for a total of 114 spaces. On top of these 114 ED spaces, 10 MHSSU beds are provided which are co-located with the ED in Option 2 and separate from the ED in Option 3

¹¹⁶ It should be noted that Option 3 as outlined in Chapter 4 include a dual helipad

Figure 31: Indicative forecourt artist impression¹¹⁷



Note: this image is for illustrative purposes only and is subject to change

The design will also be conscious of SPIRE's residential neighbours to the north east, with a focus on effective integration at ground level on Palmer Street and consideration of window placements to minimise overlooking of neighbouring properties. Further information on the urban amenity improvements to Palmer Street that are anticipated as part of SPIRE are outlined in Section 5.3.3.5.

5.3 Scope of works

The scope of works has been separated into four broad categories:

1. **Decanting and enabling works** – activities relating to the decanting of the departments currently located in Building 5 and Building 24 prior to their demolition (such as the construction and internal fit-out of modular buildings), the provision of temporary car parking and activities required to prepare the site for the main construction works
2. **Clinical infrastructure** – works that will be primarily used to deliver health services
3. **Accessibility infrastructure** – works that enable access to SPIRE for emergency vehicles, service vehicles, staff members and the public
4. **Supporting infrastructure** – works that will support the delivery of health services at SPIRE

Each of these categories are discussed in the sections below.

5.3.1 Decanting and enabling works

5.3.1.1 Decanting

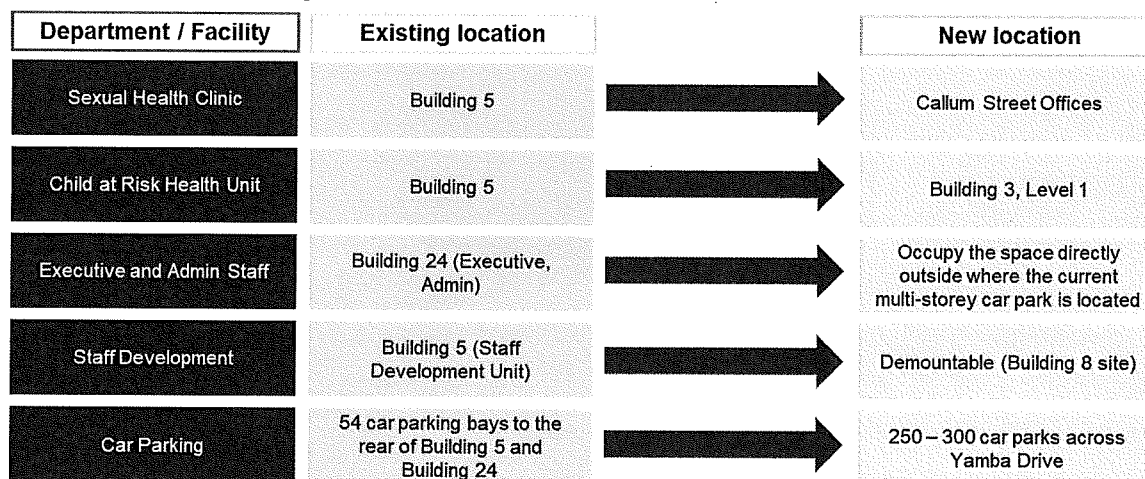
Decanting activities will be undertaken prior to the construction of SPIRE to relocate the current occupants of Building 5 and Building 24. ACT Health has developed the decanting strategy for the Project in consultation with building occupants, CHS and other project stakeholders. This consultation will continue throughout the development of the project (see Chapter 10). The appropriate long-term site for these

¹¹⁷ STH

departments, together with other functions currently located on the Canberra Hospital Campus, will be considered as part of master planning activities which are currently underway.

Figure 32 illustrates the indicative high-level decanting activities that will be undertaken.

Figure 32: High level decanting activities¹¹⁸



Note: further consultation on the decanting strategy for SPIRE is being undertaken by ACT Health and CHS to ensure that it aligns with broader master planning activities that are being developed for Canberra Hospital. As such, the proposed decanting strategy outlined above is indicative and subject to change.

Each of the decanting activities are discussed in the following sections.

Decanting the Sexual Health Clinic

The Sexual Health Clinic is currently located in Building 5. The clinic provides free testing and treatment for sexually transmitted infections and is the Territory's largest HIV outpatient service¹¹⁹.

ACT Health has estimated that the required space for the clinic will be 953 m² (evaluated against the Australian Health Facility Guidelines). Two vacant pods have been identified at offices on Callum Street (i.e. not on the Canberra Hospital Campus) that could accommodate the estimated space requirements.

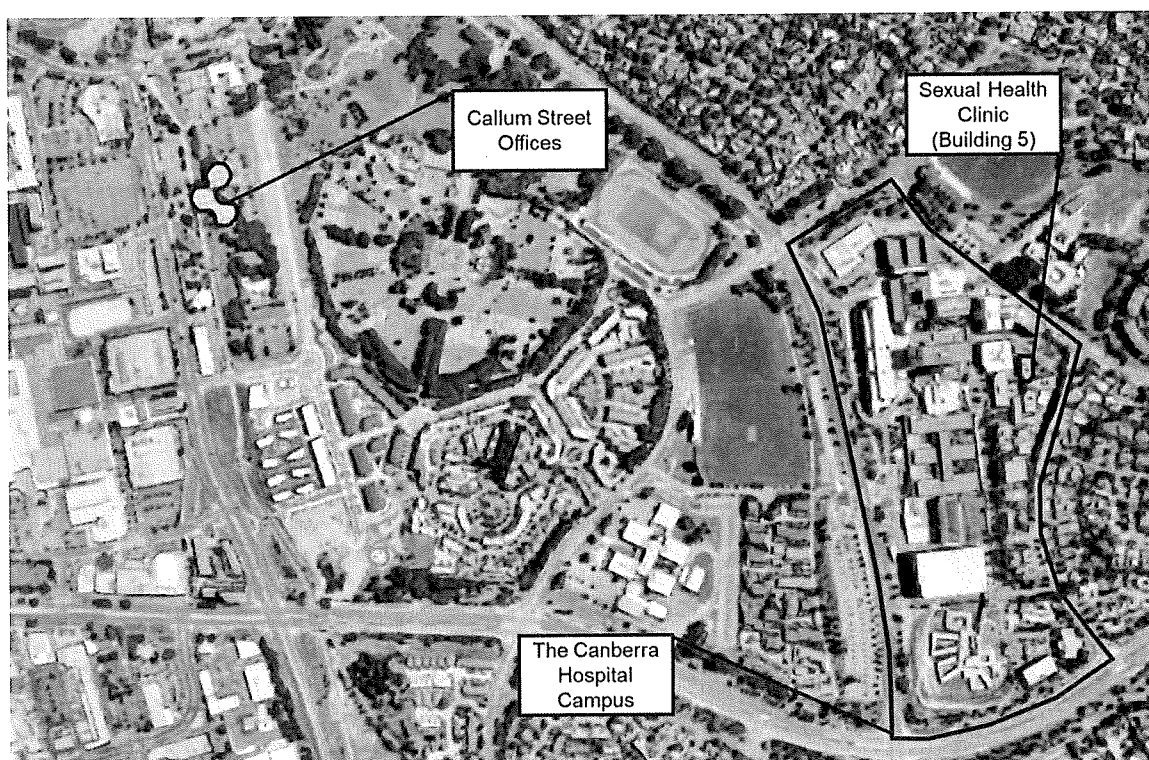
Staff members from the Sexual Health Clinic have toured the proposed site and consider it suitable for the operations of the clinic. However, this will be subject to further design work and staff consultation.

Figure 33 illustrates the existing location of the Sexual Health Clinic in Building 5 at the Canberra Hospital and the proposed decanting location at the Callum Street Offices.

¹¹⁸ On campus residential accommodation currently residing in Building 5 is not included in the decant list, as it is anticipated that this service as a whole will no longer be offered as an onsite service that requires an infrastructure accommodation footprint

¹¹⁹ <https://www.health.act.gov.au/hospitals-and-health-centres/canberra-sexual-health-centre>

Figure 33: Sexual Health Clinic Decanting¹²⁰



Decanting the Child at Risk Health Unit

The Child at Risk Health Unit (CARHU) is currently located in Building 5. The Unit provides medical examinations, health screens, education, consultation and therapy for children and their families (and/or carers) in the Territory with concerns of child abuse and neglect¹²¹.

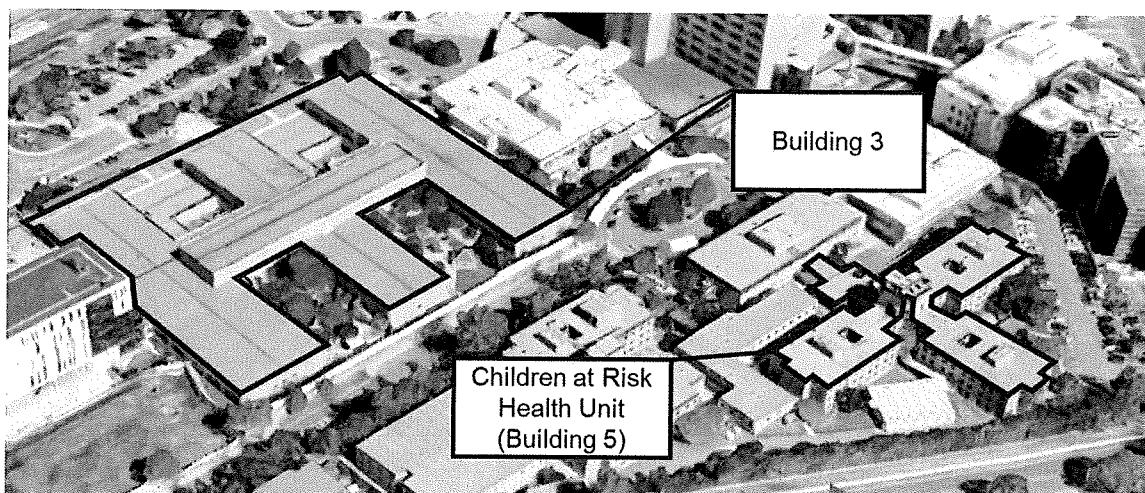
ACT Health estimates that the Unit will require approximately 600 m² of space with a discreet entrance for police and others. It is intended that the CARHU will be relocated to Building 3 Level 1 in the existing administrative area which will be reconfigured to provide appropriate facilities, a discreet entrance, as well as potential access to courtyard space.

Figure 34 illustrates the existing location of the unit in Building 5 and the proposed decanting location for CARHU.

¹²⁰ Google Maps

¹²¹ <https://health.act.gov.au/services-and-programs/women-youth-and-children/children-and-youth/child-risk-health-unit>

Figure 34: CARHU Decanting¹²²



Decanting Executive, Administration and Staff Development departments

There are various Executive, Administration and Staff Development departments that are currently located in Building 5 and Building 24. These facilities are outlined in the Table 21.

Table 21: Executive, Administration and Staff Development facilities in Building 5 and Building 24

Area	Department / facilities
Building 5	• Staff Development Unit • ANU clinical training and research rooms • Training and simulation space for the surgical trainees
Building 24	• Executive administration • Division of Medicine Administration • Communications Team

ACT Health estimates that the Executive and Administration departments will require approximately 924 m² of space and the Staff Development Unit will require 1,400 m² of space.

Two (2) demountable facilities are proposed as new locations to house the Executive and Administration departments and Staff Development Unit respectively. Figure 35 and Figure 36 illustrates the existing location of the Executive, Administration and Staff Development facilities and the site of the proposed demountable facilities (see Figure 35 for the new location for the Staff Development Unit and Figure 36 for the new location for the Executive and Administration department).

¹²² Google maps

Figure 35: Executive, Administration and Staff Development decanting¹²³

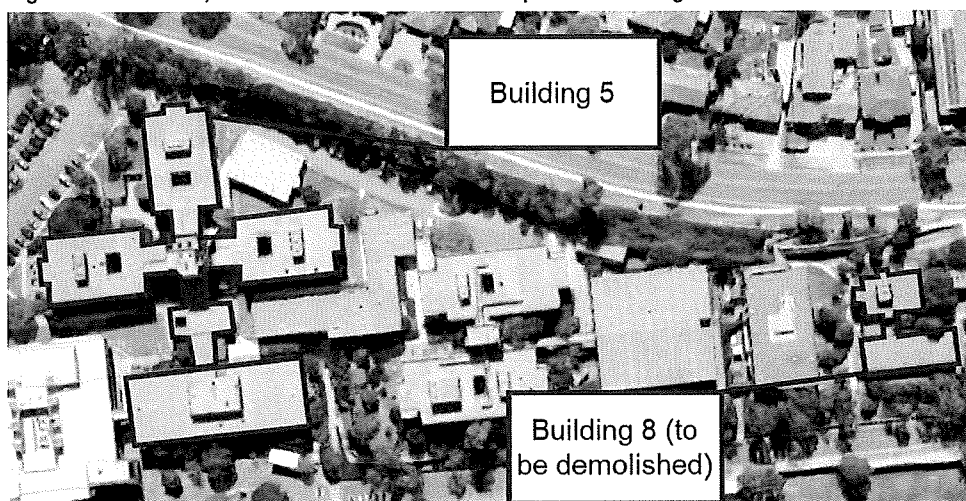
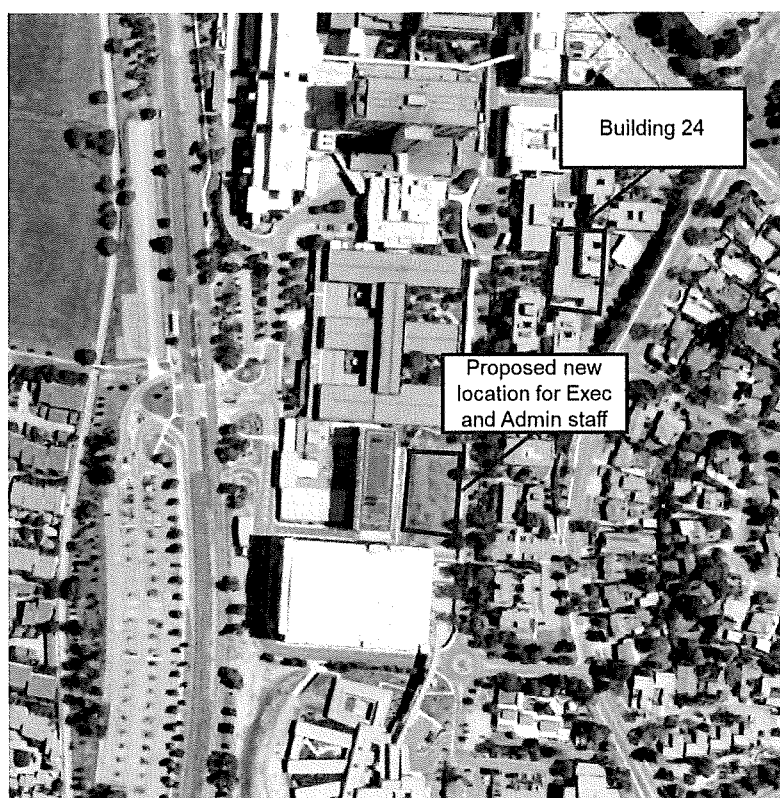


Figure 36: Executive, Administration and Staff Development decanting¹²⁴



Decanting displaced car parks

There are 54 existing car parking spaces to the rear of Building 5 and Building 24. These spaces will be displaced during the construction of SPIRE.

A temporary single-storey parking structure will be constructed across Yamba Drive (i.e. adjacent to but not on the Canberra Hospital Campus) to provide between 250 and 300 car spaces, with the design to be further developed following consideration of this Business Case.

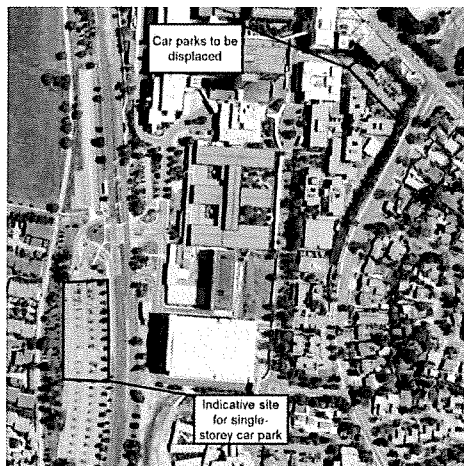
¹²³ Google Maps

¹²⁴ Google Maps

This structure will provide temporary car parking ahead of a whole of campus parking strategy that is planned to be developed during or after the construction of SPIRE. Early advice from technical and planning advisors indicates that this temporary car parking capacity will be a critical component to accommodate anticipated parking requirements in the short term and support planning and development approvals.

Figure 37 outlines the car parks which will be displaced and the proposed location for the temporary parking structure.

Figure 37: Displaced car parks decanting¹²⁵



5.3.1.2 Site preparation, demolition and excavation

Once occupants are decanted from Buildings 5 and 24, the existing buildings will be progressively demolished. Site establishment activities (e.g. fencing of the site) will be undertaken prior to demolition. Following demolition activities, site excavation works will be undertaken.

5.3.1.3 In-ground services

Early works will also include the protection, relocation and provision of in-ground services. This is anticipated to include water, gas, fibre optics and electricity.

5.3.2 Clinical infrastructure

The following sections outline the clinical scope of works that are included in SPIRE. As noted above, the clinical infrastructure scope has been developed based on a high-level Schedule of Accommodation for Option 1 as outlined in Chapter 4. The scope will be refined as Project's design continues to develop.

5.3.2.1 Emergency Department (ED)

SPIRE will include a new ED with 108 spaces¹²⁶, including 7 resuscitation bays, 13 fast track spaces (5 CRs and 8 beds), 34 adult acute beds, 12 paediatric acute beds, 32 Emergency Medical Units (EMU) and 10 MHSSU beds¹²⁷.

SPIRE will provide 108 new ED spaces, an increase of 36 spaces

¹²⁵ Google Maps

¹²⁶ It should be noted that Options 2 and 3 as outlined in Chapter 4 include an additional 16 ED spaces, for a total of 124 spaces (noting that for Option 2, 10 MHSSU beds are co-located with the ED whereas for Option 3, the 124 ED spaces do not include 10 MHSSU beds)

¹²⁷ It should be noted that the ED in Option 3 as outlined in Chapter 4 would not house the MHSSU as a consequence of clinical feedback

The ED will consist of the following functional zones:

- **Entrance/reception:** this will be the main entrance point to the ED for the public. There will be dedicated access points for ambulance entry, retrieval entry, decontamination entry and staff entry
- **Triage and registration:** adults and paediatrics are received and triaged at a single location, after which the patient will be directed to the appropriate stream/sub wait area
- **Assessment and triage:** depending on the results from the Triage phase, patients will be directed to one of the following areas within the ED: Resuscitation, Fast Track, Adult Acute, Paediatrics Acute, ED Mental health, clinical forensic medical service, the women's assessment centre or the short stay unit
- **Short stay unit:** this is comprised of the Adult Emergency Medicine Unit, Paediatric Emergency Medicine Unit, and the MHSSU
- **Support areas:** support areas will consist of special Decontamination units and facilities for Satellite Diagnostic Imaging
- **Amenities:** this will include amenities for staff, teaching & research, patients and visitors
- **Ambulance areas:** Ambulance services will have a separate dedicated entry and will be a self-contained stream outside and adjoining the ED, which will not obstruct access to the main ambulant ED entry. When patients arrive at the ED via ambulance, they will be wheeled into the ambulance trolley bay where they will be triaged and streamed into the appropriate stream (Fast Track, Adult Acute etc.)

5.3.2.2 Intensive Care Unit (ICU)

SPIRE will deliver a new 48 bed ICU consisting of 44 adult ICU beds and four (4) PICU beds.

SPIRE will provide 44 new Adult ICU beds, an increase of 13 beds, as well as the Territory's first dedicated PICU

Figure 38 provides an illustration of an ICU and ICU treatment bay.

Figure 38: ICU and ICU treatment bay



Note: this image is an example image only and the final design is subject to material change

The new ICU will expand current service levels, modernise clinical equipment and infrastructure, address inefficient flows and provide more appropriate storage to reduce occupational injury risk. Like the existing ICU at the Canberra Hospital, the ICU in SPIRE will be staffed by multi-disciplinary and highly skilled nurses, doctors and specialists trained in providing critical care for patients with a variety of medical,

surgical and trauma conditions. Patients are sometimes transferred from the ED to the ICU, if their health is rapidly deteriorating or immediately after surgery.

The 48 bed ICU will include a four (4) bed PICU, which will be a new service for Canberra Hospital. The PICU will provide specialist care for infants, children and young people suffering from serious illness or injury. Other specialist services provided for children will potentially include post cardiac surgeries, ventilation, transplantations, care for High Dependency patients and specialist care for end of life support.¹²⁸

5.3.2.3 Operating Theatres (OTs) – Standard and Hybrid

SPIRE will deliver 20¹²⁹ new OTs and two (2) hybrid theatres, for a cumulative total of 22 theatres.

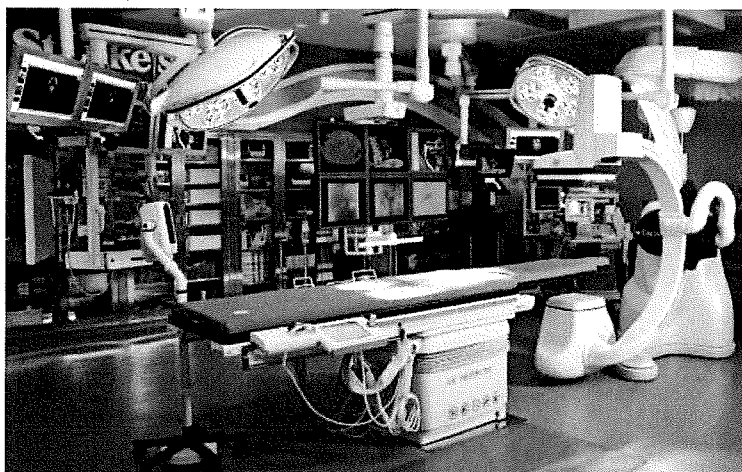
SPIRE will deliver 22 OTs, including two (2) hybrid theatres and four (4) IR Suites, an increase of nine (9) theatres

Five (5) of the 20 OTs will be shelled and fitted out in line with Territory-wide demand and capacity forecasts for OTs at the Canberra Hospital (set out at Chapter 3)¹³⁰. Funding for this will be sought as part of a future Business Case process.

The hybrid theatres will be fitted with modern technology that can perform complex surgical procedures.

Figure 39 displays an example image of a Hybrid Theatre.

Figure 39: Hybrid Theatre¹³¹



Note: This image is an example image only and the final design is subject to material change

5.3.2.4 Interventional Radiology (IR) Suites

Four (4) IR Suites are included in the provision of 20 standard OTs outlined above. Figure 40 displays an example image of an IR Suite.

SPIRE will deliver four (4) IR Suites, an increase of two (2) IR Suites

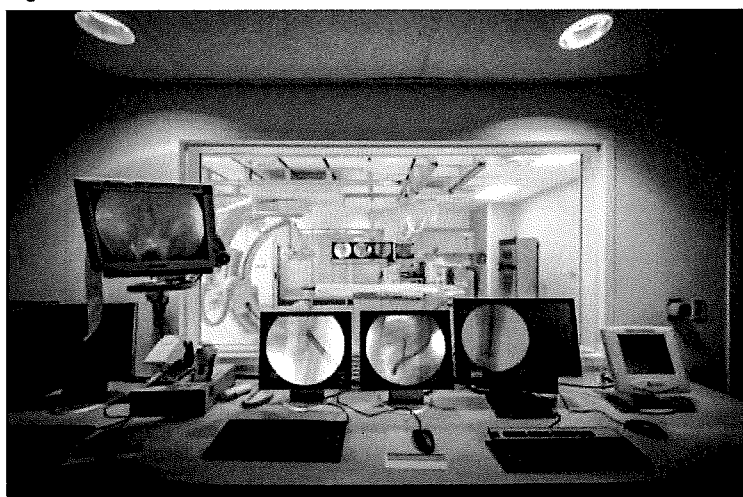
¹²⁸ <https://www.rch.org.au/picu/>

¹²⁹ Includes four (4) IR Suites

¹³⁰ It should be noted that the scope of Option 3 as outlined in Chapter 4 includes the fit out of all OTs

¹³¹ Strategic Business Case

Figure 40: IR Suite¹³²



Note: this image is an example image only and the final design is subject to material change

IR refers to a range of minimally invasive techniques that rely on the use of radiological image guidance such as X-ray, fluoroscopy, ultrasound, computed tomography or magnetic resource imaging. The procedure involves the manipulation of needles and the use of fine catheter tubes and wires to navigate around the body under imaging control. Table 22 outlines some of the conditions treated in IR labs¹³³.

Table 22: IR Suite treatments

Condition	Description
Narrowing of arteries	Interventional radiologists treat this by using balloons to stretch the vessel (balloon angioplasty, PTA) and sometimes metal springs called stents to hold them open
Expanded arteries	Interventional radiologists treat these by relining the vessel with a tube called a stent graft
Haemorrhage	This is often the most common vascular emergency treated by interventional radiologists. It is treated by relining the vessel with a stent graft or by blowing up a balloon in the vessel to stop the bleeding until emergency surgery can be performed
Blood clots in the lung (pulmonary embolism, PE)	Interventional radiologists usually perform two different forms of treatment, placement of devices to capture the blood clots before they reach the lung preventing further pulmonary embolism
Blocked veins	This condition can occur in the context of blood clot in the veins, sometime treated by the injection of blood clot dissolving medicines though a small catheter passed into the vein. Interventional radiologists frequently use a stent to relieve compressed veins in the body
Tumour therapies	These treatments are often intended to kill tumours to prevent them spreading to other parts of the body. Demand for tumour treatments have increased over the years and will continue to do so, as it often leads to improved chances of survival and reduced morbidity
Liver, kidney and other tumours	Radiologists often treat these tumours by using destructive therapies such as ablation or cryotherapy. This treatment is performed and monitored using imaging technology including ultrasound, tomography or magnetic resonance imaging
Uterine fibroids	This is characterised by heavy menstrual bleeding and is treated by interventional radiologists using techniques such as uterine fibroid embolization and chemoembolization

¹³² Strategic Business Case

¹³³ <https://www.bsir.org/patients/what-is-interventional-radiology/>

Condition	Description
Kidney stones	This is characterised by infection and blockage of the kidney and in some instances, can cause irreversible kidney damage. Interventional radiologists treat this using techniques such as nephrostomy and percutaneous nephrolithotomy
Gall stones	Symptoms for gall stone are often characterised by upper abdominal disorders and are often treated by interventional radiologists using techniques such as laparoscopic surgery, endoscopy and placement of catheter tubes/stents in the body

5.3.2.5 Cardiac/Coronary Care Unit

SPIRE will deliver a 24 bed CCU, an increase of five (5) beds

SPIRE will provide a 24 bed CCU to support best practice clinical models for patient flow and movement between services. The facilities provided will include:

- **Multi day beds:** this will provide acute inpatient cardiology beds and an ST-Elevation Myocardial Infarction (STEMI) bed. These beds are cardiac protected and require specialised cardiac monitoring, networked to a central monitoring station
- **Sub-acute beds:** these beds will provide an intermediary space between Acute Cardiology and ward beds. They are cardiac protected and have telemetry monitoring
- **Chest Pain Evaluation Unit:** this unit will be a dedicated area within the CCU used for the evaluation of chest pain, and to initiate treatment under protocol. It will require access to the CCU procedure room for exercise stress testing (treadmill exercise testing) 18 hours per day. They are cardiac protected and have telemetry monitoring
- **CCU Procedure Room:** the procedure room provides internal access for the CCU to dedicated non-sterile procedure spaces (i.e. cardiac ultrasound, stress testing and advanced cardiac monitoring)
- **CCU Clinical Support Area:** this area will serve as the location of staff to support the staff functions within the clinical environment, including central monitoring and a central analysis station

The CCU is a specially staffed and equipped inpatient ward for the support, diagnosis, monitoring and treatment of acute patients with medical or surgical cardiac conditions, which are life threatening or potentially life threatening. The CCU will provide inpatient and ambulatory management of cardiac conditions, such as:

- Acute coronary syndromes including acute ST elevation myocardial infarction management
- Cardiac arrhythmias
- Decompressed acute and chronic heart failure
- Post elective coronary and structural heart interventional procedures including the Intra-Aortic Balloon Pump (IABP) support
- Post cardiac electrophysiology (EP) interventional procedures (includes ablation and cardiac devices)
- Elective Direct-Current Conversion for atrial arrhythmias

- Pericardial Tamponade
- Other conditions such as haemodynamic instability e.g. pericardial tamponade, pulmonary embolism, pulmonary hypertension, infective endocarditis
- Management of bariatric patients with cardiac conditions

5.3.2.6 Surgical Inpatient Unit Beds

SPIRE will deliver 64 inpatient beds

SPIRE will deliver two (2) Surgical Inpatient Units comprising 32 beds each, for a total of 64 inpatient beds. It is anticipated that 60% of inpatient beds will be single rooms with an ensuite, subject to confirmation through the design development process. The single room principal has been indicatively adopted for SPIRE in response to the increasing prevalence of Antimicrobial Resistance (see box below for more information).

Both Surgical Inpatients Units will contain a Close Observation Unit (COU). A COU provides an intermediate level of care between a general ward (i.e. the other beds in Inpatient Units) and an ICU. Each COU will comprise of four beds and two bathrooms and are designed to cater for patients with complex medical and nursing needs that require more frequent observation and monitoring (e.g. infants, elderly patients at a greater risk of fall, and patients who suffer from dementia).

Single room configurations to combat Antimicrobial Resistance

Antimicrobial resistance (AMR) occurs when some of the germs (bacteria, virus, or fungus) that cause infections resist the effects of the medicines used to treat them, leading to treatment failure or the inability to treat the cause of the infection. Any infections that may arise can cause serious harm to society and the patient because it can result longer stays at the hospital, longer recovery periods and the related costs of the above.

Single room configurations have the potential to reduce the likelihood of infectious disease spread and cross contamination between patients.

5.3.2.7 Day Surgical Beds

SPIRE will deliver 55 day surgical beds, an increase of 41 beds

SPIRE will deliver 55 day surgical beds comprising day surgery units (DSU) and extended day surgery units (EDSU).

The DSU will be a flexible area integrated into perioperative services where patients can be cared for within the perioperative environment and be discharged on the day of surgery. Further, the DSU will provide facilities to support the post-operative care of patients undergoing a range of surgical procedures.

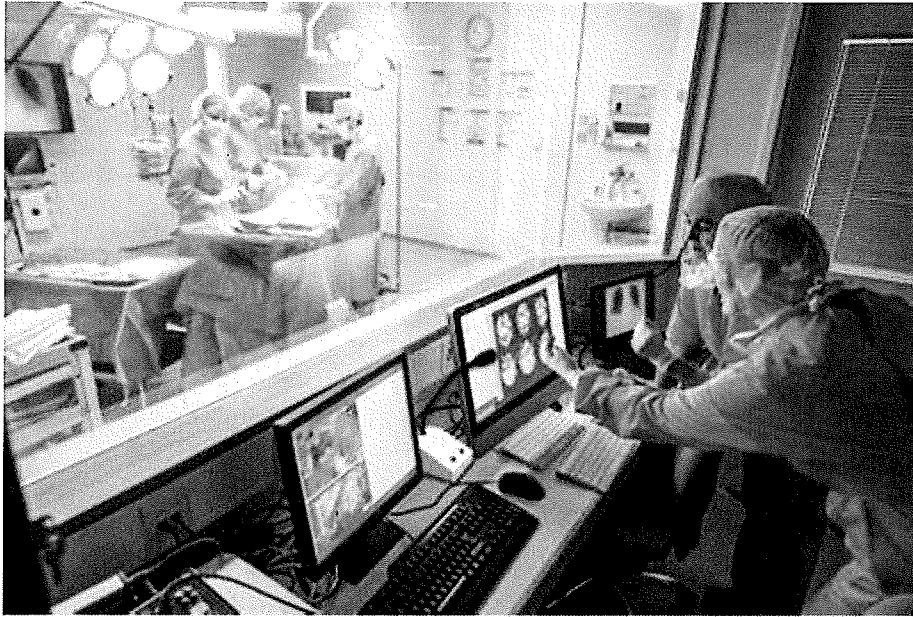
An EDSU will comprise similar functions to the DSU with extended operating hours – 23 hours a day. Bed allocation within the EDSU will be for patients who meet the 23 hour EDSU criteria and do not require admission to an IPU, as they are discharged within 23 hours post operating surgery / procedure.

5.3.2.8 Cardiac Catheterisation Laboratory

SPIRE will deliver three (3) Cardiac Catheterisation Laboratories, an increase of one (1)

SPIRE will deliver three (3) Cardiac Catheterisation Laboratories comprising one (1) hybrid laboratory and two (2) general laboratories. Figure 41 displays an example image of a Cardiac Catheterisation Laboratory.

Figure 41: Cardiac Catheterisation Laboratory¹³⁴



This image is an example image only and the final design is subject to material change

A Cardiac Catheterisation Laboratory is a specialist facility where medical professionals perform minimally invasive tests on patients to diagnose and treat cardiovascular issues. Catheters are often used for diagnosis, as opposed to full surgery employing special imaging equipment to monitor cardiovascular functions of the patient.

Cardiac Catheterisation procedures can be categorised as either diagnostic or interventional. Diagnostic catheterisation involves the insertion of a catheter into an artery (usually in the thigh or the wrist) which is threaded through to the heart. Dye is then injected into the coronary arteries to reveal any blockages. Catheterisation can also be done for myocardial biopsy. Interventional catheterisation includes procedures such as balloon angioplasty, stenting, septal closure, atherectomy and thrombectomy.

5.3.2.9 Electrophysiology Laboratory

SPIRE will deliver one (1) Electrophysiology (EP) Laboratory, a first at the Canberra Hospital.

***SPIRE will deliver Canberra
Hospital's first Electrophysiology
Laboratory***

Cardiac Electrophysiology is a subset of the field of cardiology, which deals with the functions of the heart's electrical systems, in particular the heartbeat's rhythm. Specialist teams comprised of doctors, nurses, cardiac scientists and radiographers perform procedures to treat and diagnose irregular heart beat rhythm patterns (arrhythmia) using computerised three-dimensional mapping systems.

Figure 42 displays an example image of an EP Laboratory.

¹³⁴ Strategic Business Case

Figure 42: Electrophysiology Laboratory¹³⁵



This image is an example image only and the final design is subject to material change

5.3.3 Accessibility infrastructure

The following sections outline the accessibility infrastructure works that are included as part of SPIRE, catering for emergency vehicles, service vehicles, staff members and the public.

5.3.3.1 Ambulance Bays

SPIRE will deliver 12 new ambulance bays that will have direct access to the resus bay, theatres, ICU, PICU, CCU and the other clinician facilities located in SPIRE.

SPIRE will deliver 12 new ambulance bays, an increase of four (4) bays

5.3.3.2 Helipad

A new helipad is planned on the roof of SPIRE and will be supported by a direct 'hot lift' access to facilitate the immediate movement of critically ill and injured patient to the resuscitation bays, theatres and other critical care services.

SPIRE will include a new roof-top helipad

While a single helipad is proposed, future consideration may be given to whether a dual deck should be provided at an estimated cost of approximately \$4m (real) ¹³⁶.

The existing helipad is located near the staff car park, just off Kitchener Street, separated from the ED (Building 12) and other critical care facilities. This results in:

- Long patient flows between the helipad and ED for patients who often require time-critical medical attention
- Patient transfers from the helipad are exposed to external weather conditions like wind, rain, sleet, extreme heat and cold

¹³⁵ Strategic Business Case

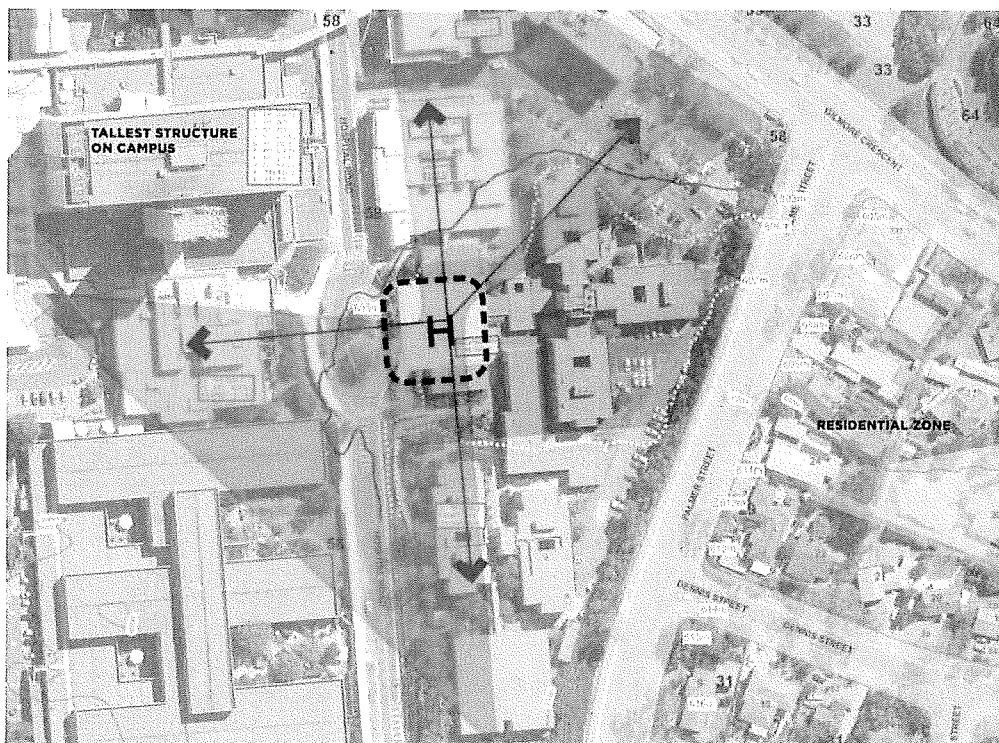
¹³⁶ It should be noted that the scope for Option 3 – as outlined in Chapter 4 – includes a dual deck helipad (included in the cost plan)

The new location on top of the SPIRE will greatly reduce patient transport times to the ED and will also facilitate the rapid deployment of nurses and other medical staff to the patient seeking urgent attention.

Figure 43 outlines the location of the Helipad on SPIRE (with the site of SPIRE being outlined in blue). The red arrows illustrate the indicative flight paths for helicopters approaching and departing the helipad (flight paths are still subject to approval and may change).

The indicative flight path has been designed to avoid flying directly over the residential zone along Palmer Street and the tallest structure at the Canberra Hospital (Building 1), minimising potential disruptions to residents and on the operations of the Canberra Hospital.

Figure 43: Helipad location and indicative flight paths¹³⁷



5.3.3.3 Extension to Level 3 Bridge

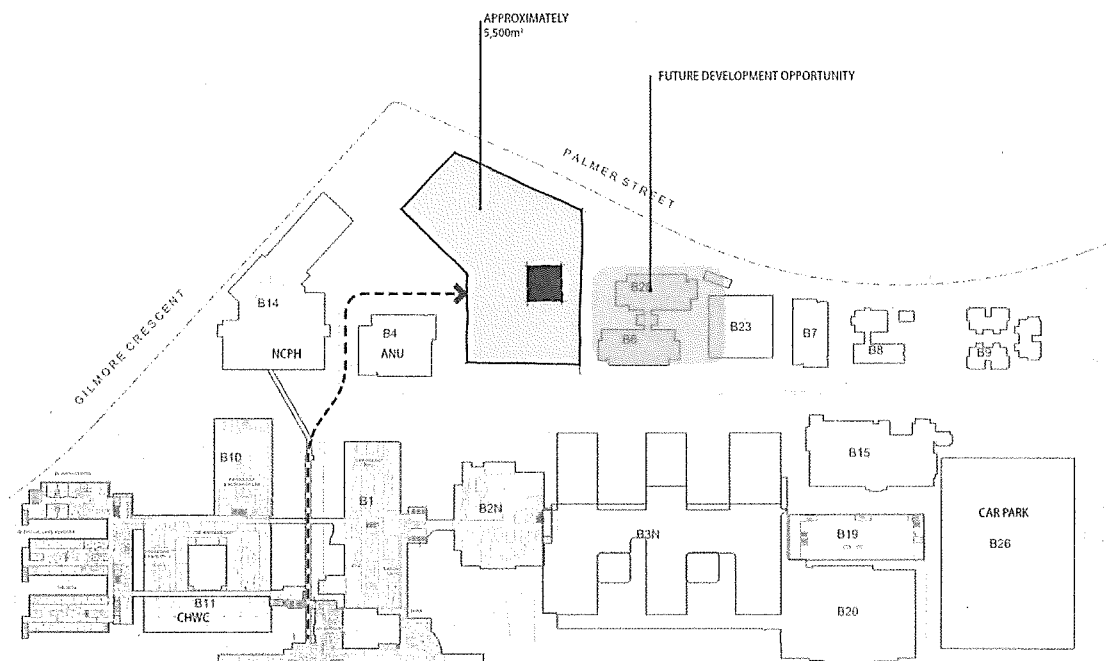
A key design outcome for SPIRE is to provide efficient patient flows from the other facilities at Canberra Hospital. Currently there is an existing a bridge at Level 3 that connects Building 1 with the CHWC and the National Capital Private Hospital (NCPH). While subject to further development and change during the design development process, SPIRE is anticipated to extend this existing bridge and connect it to SPIRE.

Figure 44 illustrates an indicative design of the expansion to the bridge system.

SPIRE is anticipated to include a bridge at Level 3 that connects to Building 1, CHWC and NCPH

¹³⁷ STH, Canberra Hospital Spire Project Executive Planning Team Meeting No1 (March 2019)

Figure 44: Indicative linkages to Level 3¹³⁸



5.3.3.4 Service Tunnel under Hospital Road

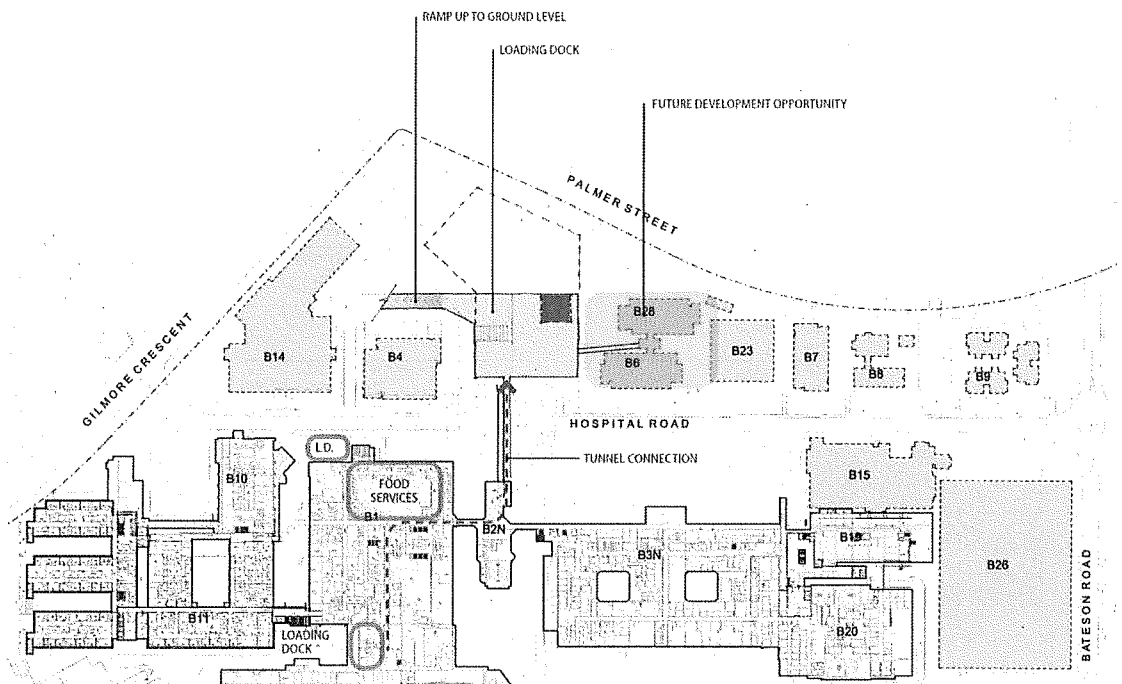
SPIRE will leverage various existing Canberra Hospital back-of-house facilities (e.g. food services, laundry etc.) at the Canberra Hospital to maximise cost efficiencies and avoid unnecessary duplication.

SPIRE is anticipated to include a tunnel under Hospital Road, connecting to Buildings 1 and 2

While subject to further development and change during the design development process, it is anticipated that a service tunnel will be constructed under Hospital Road as illustrated in Figure 45 to provide access for these critical services to SPIRE.

¹³⁸ Ibid

Figure 45: Indicative Internal Linkages - Level 1¹³⁹



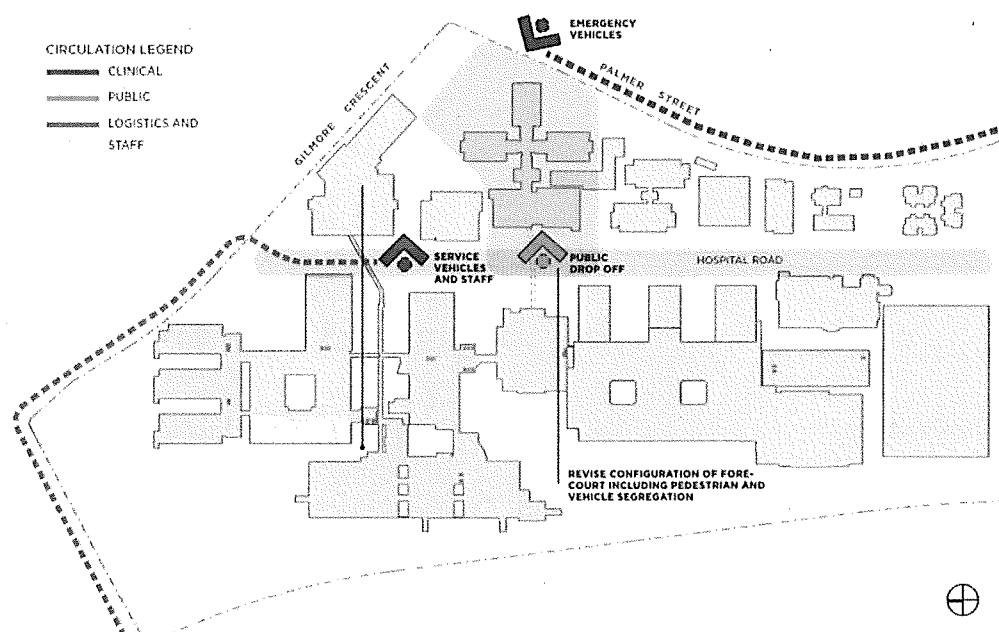
5.3.3.5 Road upgrades

SPIRE's scope includes necessary road upgrades to Palmer Street and Hospital Road to provide access for emergency vehicles, the public, staff and service vehicles. Various accessibility options were considered in the design development and further refinements may be made as the Project's design development process continues. Figure 46 illustrates the indicative road access points.

SPIRE will include upgrades to Palmer Street and Hospital Road to ensure efficient accessibility

¹³⁹ Ibid

Figure 46: Indicative road access points to SPIRE¹⁴⁰



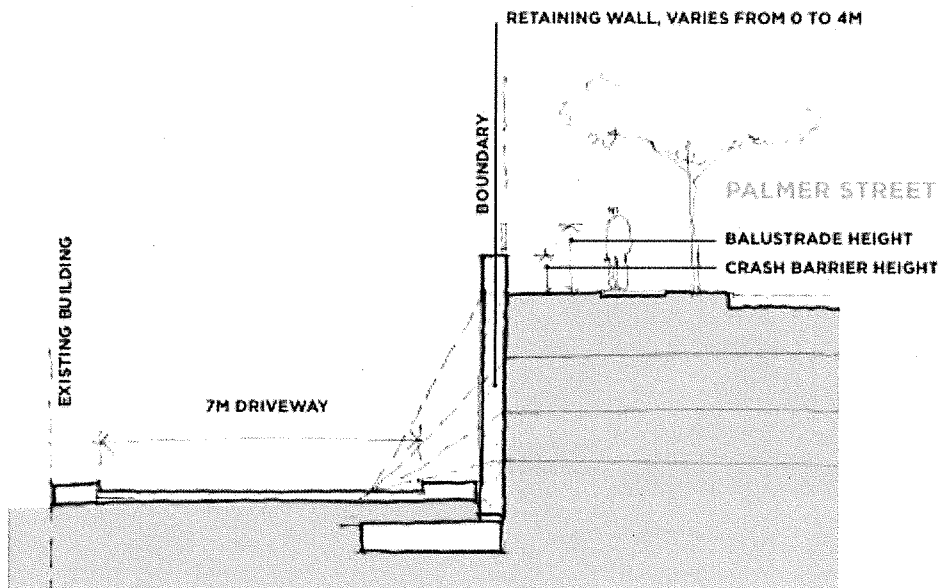
Palmer Street

While there is a southern connection between Canberra Hospital and Palmer Street, currently there is no road access between Canberra Hospital and Palmer Street to the north. Consequently, SPIRE includes to the provision of a road access point to be constructed, with associated upgrades to the existing street to cater for the increase in traffic. A key consideration in the design of the Palmer Street upgrades is to improve the amenity and urban quality of the street.

Figure 47 outlines the indicative interface of Palmer Street and SPIRE. This is subject to more detailed design stages and planning approval.

¹⁴⁰ *Ibid*

Figure 47: Indicative Palmer Street design¹⁴¹



Hospital Road

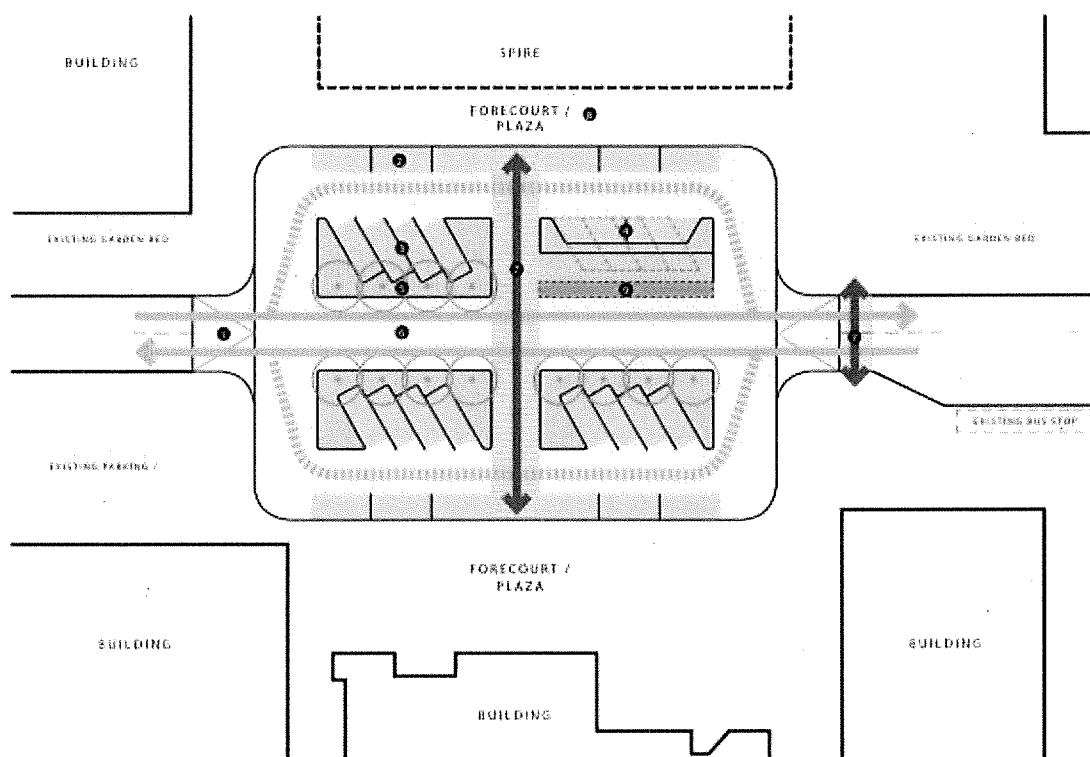
Using Hospital Road as an access point for SPIRE will require significant upgrades to the existing infrastructure due to increased traffic. Indicative upgrades to Hospital Road include:

- Reconfiguring Hospital Road (between SPIRE and the main entry to Building 2) and the surrounding infrastructure (e.g. footpaths, planting and street furniture) into a 'public plaza' to improve urban space and amenity (see Section 5.2 for anticipated urban design outcomes)
- Constructing short term parking bays to enable public drop off to SPIRE and Building 2, ensuring that they are segregated from Hospital Road to improve traffic flows and reduce congestion

Figure 48 outlines the indicative upgrades to Hospital Road. This is subject to more detailed design stages and planning approval.

¹⁴¹ *Ibid*

Figure 48: Indicative Hospital Road design¹⁴²



5.3.3.6 On-site parking

SPIRE will include the provision of 50 on grade parking spaces.

In general, parking at Canberra Hospital is a key issue at the campus to ensure appropriate parking is provided for patients, visitors and staff. As a separate project, a multi-storey car park is being explored. It is likely that this will need to be further developed ahead of obtaining planning and development approvals for SPIRE. Further information on this project is outlined in Chapter 1.

5.3.4 Supporting infrastructure

The following sections outline the supporting infrastructure works that will support the delivery of health services at SPIRE.

SPIRE will include the infrastructure needed to support the relocation of the CSSD from the existing facility in Mitchell

5.3.4.1 Centralised Sterilisation Service Department (CSSD)

As part of the OT complex, SPIRE will include a CSSD of 1,074 m²¹⁴³ to allow for the sterilisation of instruments and equipment onsite, relocating the existing department from Mitchell.

¹⁴² *Ibid*

¹⁴³ It should be noted that Option 3 as outlined in Chapter 4 includes expanded CSSD space, totalling 1,438 m²

The CSSD will primarily serve as a facility for decontamination and the sterilisation of medical devices, management and assessment of sterile instruments for surgical procedures and repairs and maintenance of surgical instruments.

5.3.4.2 Logistics

SPIRE includes a modest loading dock

SPIRE will incorporate a modest loading dock of 492 m²¹⁴⁴ to support the primary functions accommodated within the facility. SPIRE will be substantially serviced from the existing environmental / hotel service functions that use to existing loading dock in Building 1. As outlined in Section 5.3.3.4, a new purpose designed tunnel link is anticipated to be provided under Hospital Road to provide access between the main loading dock and SPIRE.

¹⁴⁴ It should be noted that Option 3 as outlined in Chapter 4 includes an expanded Loading Dock, totalling 1,338 m²

5.4 Scope of services

The scope of services is outlined in further detail below.

5.4.1 Operations and soft facilities management

Table 23 outlines the operational and soft facilities management activities that will be required to keep SPIRE operating.

Table 23: Operations and soft facilities management services

Operations and soft facilities management services	Brief description
Clinical services	• Clinical services for SPIRE, including the ED, ICU, CCU etc.
Administration	• Administrative functions associated with the operation of SPIRE, including: ◦ Admissions ◦ ICT ◦ Human resources ◦ Contract and project management ◦ Recruitment
Sterilising services	• Sterilising services for SPIRE • Movement of sterilised equipment
Pharmacy dispensary	• Pharmaceutical dispensary activities for patients in SPIRE • Movement of pharmaceuticals
Stock replenishment	• Ongoing replenishment of stock, consumables and other materials
Laundry	• Laundry services • Movement of spoiled / clean linen
Portering / distribution	• Movement of patients, specimens, equipment etc. • Movement and unpacking of stock from loading dock
Food services	• Preparation of food services for SPIRE patients • Movement of food services to SPIRE
Pathology	• Pathology services for SPIRE
Parking management	• Parking management activities for the on-grade car park
Waste management	• Waste management and disposal activities • Medical waste management and disposal activities
Cleaning	• General cleaning for all internal areas • Discharge and infection cleaning • External area cleaning
Pest control	• All baiting and infestation treatments
Security	• Onsite security • Mobile security (if required)
Retail	• Operation of retail space

5.4.2 Hard facilities management

Table 24 outlines the ongoing repairs and maintenance services required to keep the capital works fit-for-purpose.

Table 24: Hard facilities management services

Hard facilities management services	Brief description
Building maintenance	- Asset management and planning - All planned and reactive maintenance activities connected to the SPIRE, including: heating, lighting, fire safety stems, air conditioning, lifts and mechanical
Roads maintenance	Maintenance of roads around SPIRE on the Canberra Hospital campus
Grounds and landscape maintenance	Maintenance of landscaping and the grounds around SPIRE
Utilities maintenance	- Management of utilities consumption - Managing plant onsite
Medical equipment maintenance	Maintenance of all medical equipment

5.5 Project Assumptions – dependent and future projects

The development of SPIRE is part of an integrated infrastructure programme commissioned as part of the BHSP. SPIRE, together with the CHWC and potential northside hospital expansion projects, are the priority acute infrastructure projects proposed by the ACT Government (as referenced in Section 2.5.3).

Accordingly, this Business Case has been developed cognisant of the role of other projects in responding to the Territory-wide needs and demand for public health services in the ACT and surrounding regions.

Additionally, the construction and operations of SPIRE is dependent on the following projects under development and/or planned for the Canberra Hospital. The dependent projects listed below are not included in the scope of works and scope of services (and subsequently are not included in the project cost in Chapter 6).

Key scope dependencies and future projects are outlined below. These projects will be considered as part of Campus-wide master planning activities at Canberra Hospital that are currently underway. The master planning process will inform what infrastructure at the Hospital may require upgrading, expansion or relocation etc. This is particularly important noting that within the next decade, almost one in two buildings at Canberra Hospital will reach their end of life

5.5.1 Future projects

Multi-storey car park

As noted above, the project includes the provision of temporary parking of 250-300 spaces as part of the Project's decanting activities (see Section 5.3.1.1). However, the development of a multi-storey car park will be required in the future to cater for increased demand for parking at the Canberra Hospital Campus, partially attributable to SPIRE. ACT Health intends that this project will be developed as part of a separate Business Case following further detailed consideration of Campus-wide parking requirements.

ICT upgrades

ACT Health are separately preparing a business case to invest in improved ICT software, a Digital Health Record, that would enable real time capture and access to historical data. This would ensure that medical professionals in the Territory would have ready access to the information they need on their patients in real time. The business case is seeking a total of \$151.8m between 2019-20 and 2026-27 to procure and implement the new system.

Investment in the Digital Health Record will support the implementation of contemporary Models of Care in SPIRE. For example, digital systems could be used to manage theatre usage instead of using whiteboards (the current method for managing theatre usage at the Canberra Hospital). While this initiative is being pursued on a Territory-wide basis, it will have clear benefits for SPIRE's operation.

Further, having a single integrated system covering the clinical specialities in SPIRE, including theatres, emergency, ICU and critical care will facilitate patient flow throughout the facility, improve patient care and ensure that clinical staff have access to the right information at the right time in a user-friendly manner. This Business Case assumes that the clinical systems required to support SPIRE will be in place (through this project) and does not include funding for such systems.

Ensuring the Digital Health Record is embedded prior to operations will enable SPIRE to be designed for a digital workflow and will ensure that they are future proofed to meet the needs of the ACT community.

Repurposing of existing facilities

The repurposing of existing facilities at the Canberra Hospital (e.g. Building 12) is not included as part of the scope of works. Any costs associated with the repurposing will need to be considered in future business cases associated with the broader master planning process that is underway.

5.5.2 Potential additional SPIRE scope items

A number of additional scope items have been considered during early scoping activities. These items will continue to be assessed as the design process continues.

OTs fit out

The fit out of the five OTs anticipated to cost \$4.9m (real) which are shelled during the construction of SPIRE is anticipated to be required in around a decade in line with demand forecasts. A Business Case for fit out costs for these theatres will be considered at that time.

Fit out of birthing OT

The fit-out of a birthing OT in the CHWC may be required as a result of ongoing consultation with obstetricians and other key stakeholders. This is not included in the scope of SPIRE. If required, it is anticipated that the fit out and additional plant space required in CHW approximately \$1.8m (real).

Provision of two shelled IPUs

Further design consideration will be undertaken on whether an additional two shelled IPUs should be included in the Project scope, at a cost of \$28.8m (real).

Helipad

The scope above includes a single helipad. However, following further design work this scope may be expanded to include a dual deck helipad at an additional cost of \$4m (real).

Support facilities

Given that SPIRE will largely be a replacement of existing critical care services, it is assumed for the purpose of this Business Case that the following facilities will have sufficient capacity to provide services for SPIRE:

- Kitchen
- Pathology
- Pharmacy
- Loading dock

Further investigation as part of master-planning activities will be undertaken on support facilities to estimate the current capacity for these facilities and whether upgrades will be required. This will be informed by broader campus demand future health service demand and capacity modelling.

5.6 IFCW Review - Status of Functional Brief/Output Specification

Sign off that the functional brief/output specifications are sufficiently progressed in order to go to market under the delivery model selected and within the procurement timeline outlined in the Business Case.

Review 1 (IFCW) Officer Name: _____

Signature: _____

Date: _____

6 Cost, Contingency and Funding Analysis

Key messages

- Estimated total Project Outturn Cost (nominal, P50) are \$543.8m (nominal, P50), comprising:
 - \$372.3m in raw construction costs (i.e. cost to construct SPIRE without escalation, contingency and government fees)
 - \$48.4m in escalation
 - \$89.3m in P50 contingency
 - \$33.7m in government fees
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- Following the completion of the early design phase and further development of the Model of Care, ACT Health will develop a refined Project Outturn Cost on a P90 basis and a more detailed incremental Whole of Life Cost Estimate, including a bottom up risk assessment
- The Project Outturn Cost in this Chapter does not represent a project budget

6.1 Introductory notes

The cost estimate contained within this Business Case for Option 1 as outlined in Chapters 4 and 5 is an estimate only, and is based on an indicative Schedule of Accommodation for SPIRE and *not* the final project design (which will only occur following the Project's procurement).

Ultimately it is the market – not the ACT Government – that will determine the cost of the project. This cost will be a function of many factors, including:

- The final project scope and the ACT Government's project requirements during the procurement process
- Market capacity and competitive tension in the bidding process, noting the significant pipeline of health infrastructure projects in planning, procurement and delivery
- The delivery model selected for the project's capital works (see Chapter 6)
- Costs and existing contractual arrangements (as relevant) for the delivery of operations and maintenance activities
- The ultimate allocation of risk between parties and the realisation (or otherwise) of such risks

The cost estimates presented in this Chapter are indicative and subject to further refinement based on further consultation and design. Following the completion of the early design phase for SPIRE, anticipated in mid-2019, a revised Project Outturn Cost and Whole of Life incremental cost estimate will be prepared on a P90 basis.

In general, changes to the project scope, cost allocation and timing for the Project's delivery are likely to impact on the total Project Outturn Cost estimate outlined in this Business Case. Whole of Life costs will be impacted by actual demand and activity for the services in SPIRE.

This Chapter provides an overview of costs in the following categories:

- **Project Outturn Cost:** the estimated capital cost to design and construct the Project. The Project Outturn Cost is divided into direct and indirect costs
- **Whole of Life costs:** the estimated cost to operate and maintain the Project for the operating period of 20 years, including clinical and other operations, as well as hard and soft FM. Whole of Life costs are divided into Whole of Life Operating costs and Whole of Life FM costs
- **Agency costs:** costs anticipated to be incurred by ACT Government to deliver the project

6.2 Project Outturn Cost

6.2.1 Methodology

The estimated Project Outturn Cost in delivering the Project was calculated in two stages:

a) Capital cost estimate

ACT Health engaged a cost estimation firm with experience preparing cost estimates for health projects in the Territory and around Australia to calculate a capital cost estimate. The cost estimate was based upon:

- The preliminary Schedule of Accommodation developed by ACT Health and the Territory's design and technical advisors as outlined in Chapter 4
- Discussions with project stakeholders, including ACT Health, CHS, clinicians and IFCW
- Its market knowledge regarding costs and appropriate benchmarking against similar facilities

It is important to note that the cost estimates in this Business Case remain subject to revision as more detailed levels of design are undertaken for the project and further consultation is undertaken with key project stakeholders, particularly clinicians.

b) Risk (contingency)

A risk (contingency) figure was generated by ACT Health's commercial advisors following:

- Contingent risk identification and quantification workshops attended by ACT Health, CHS, IFCW and their advisors
- Monte Carlo analysis conducted on contingent risk figures generated in a workshop setting
- Consideration of inherent risks which were embedded in the capital cost estimate prepared by the cost estimator to reflect the cost estimation risk on a P50 basis (i.e. inherent risk is included in the raw construction costs and not in the contingency figure presented in the Project Outturn Cost. For more information see Section 1.4)

6.2.2 Project Outturn Cost estimate

The total Project Outturn Cost for SPIRE comprises:

- **Raw construction costs:** the estimated cost to construct SPIRE (excluding contingency, agency and other government costs)
- **Escalation:** based on the assumed project delivery timeline (see Chapter 12)

- **Contingency:** contingency at a P50 level
- **Government fees:** costs such as an IFCW fee, ACTIA fee and ACT Health Management fee

The total Project outturn cost is estimated to be \$543.8m (nominal, P50). A breakdown of the total project outturn cost is outlined in Table 25.

Table 25: Project outturn cost (\$m, P50)

Category	Cost (\$m)
Construction (excluding Early Works) ¹⁴⁵	252.6
Early Works	3.4
Design Fees	26.2
Construction Fees	11.2
FF&E	46.2
ICT	31.2
Artworks	1.6
Raw Construction Costs	372.3
Escalation	48.4
Total Capital Costs	420.8
Contingency	89.3
Total Capital Costs + Contingency	510.1
IFCW Fee - 4%	20.4
ACT Health Management Fee Decanting - 3.85% ¹⁴⁶	1.3
ACT Health Management Fee – Early Works and Main works - 1.45% ¹⁴⁷	6.9
ACTIA Fee - 1%	5.1
Government Fees Sub-Total	33.7
Project Outturn Cost	543.8

The Project Outturn Cost is made up of:

- 68.5% raw construction costs; of which the most significant contributor is the decanting and main works construction costs (i.e. not including early works) that make up 67.8% of raw construction costs. ICT and FF&E costs collectively make up 20.8% of raw construction costs
- 8.9% escalation, based off a yearly escalation rate of 2.6%

¹⁴⁵ Inclusive of the construction costs for decanting and the main works (i.e. not including early works costs). The real construction cost for the decanting component of SPIRE is \$25.4m (including the temporary car parking structure).

¹⁴⁶ See Project Outturn Cost Government Fees for further information on the percentage of ACT Health Management Fee applied for decanting and main works

¹⁴⁷ Ibid.

- 16.4% contingency. This contingency figure is at a P50 level (discussed in further detail in Section 6.4)
- 6.2% government fees; of which the most significant contributor is the IFCW Fee (4% of Total Capital Costs and Contingency)

6.2.3 Profile of Project Outturn Cost

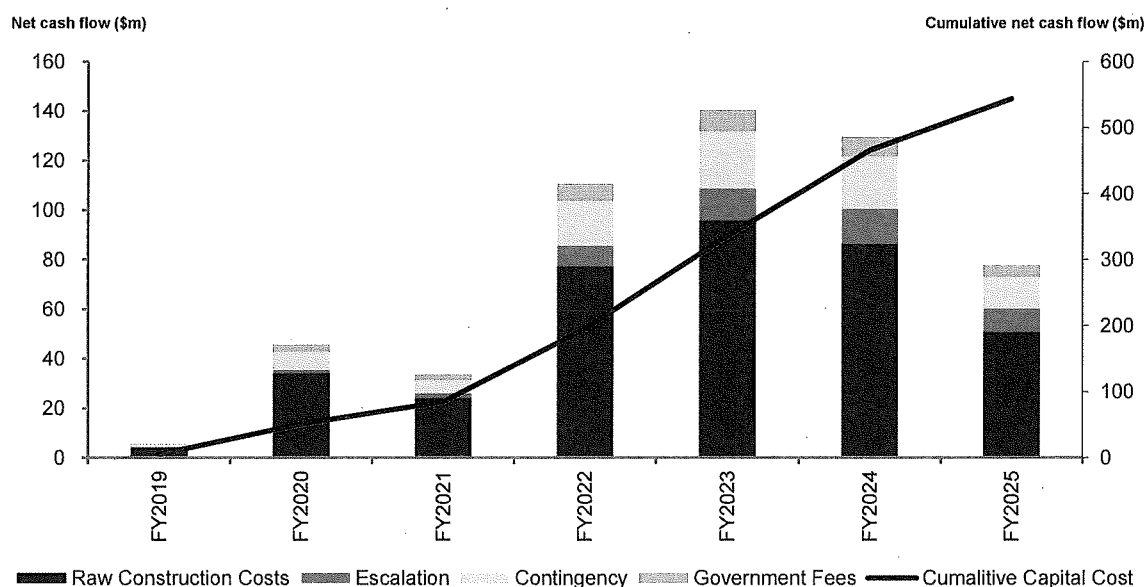
The design and construction of the project is assumed to commence in January 2019 with construction completion in June 2024 and operational commencement in January 2025. For the purposes of this Chapter, the assumed construction timing is presented in Table 26. Information on the indicative project timeline is outlined in Chapter 12.

Table 26: Assumed timeline of costs

Stage	Assumed Start	Assumed end
Design and Construction	January 2019	June 2024
Commissioning	July 2024	December 2024
Operations	January 2025	Ongoing ¹⁴⁸

ACT Health's capital cost estimator provided an indicative construction s-curve as outlined in Figure 49 and Table 27 which breaks down the cost estimate over the design, construction and commissioning periods.

Figure 49: Profile of the Project outturn cost (\$m, nominal, P50)



¹⁴⁸ While O&M costs are ongoing, a year operations and maintenance period is analysed for the purposes of this Business Case

Table 27: Profile of the Project outturn cost (\$m, nominal, P50)

Cost Area	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25	Total Nominal
Construction (excluding Early Works)	0.0	19.9	10.1	71.3	92.8	58.6	0.0	252.6
Early Works	0.0	1.9	1.5	0.0	0.0	0.0	0.0	3.4
Design Fees	4.2	8.0	10.9	3.0	0.0	0.0	0.0	26.2
Construction Fees	0.0	0.6	1.5	3.0	3.0	3.0	0.0	11.2
FF&E	0.0	1.9	0.0	0.0	0.0	14.8	29.5	46.2
ICT	0.0	1.6	0.0	0.0	0.0	9.8	19.7	31.2
Artworks	0.0	0.1	0.0	0.0	0.0	0.0	1.5	1.6
Raw Construction Costs	4.2	33.9	24.1	77.3	95.9	86.2	50.7	372.3
Escalation	0.1	1.6	1.9	8.2	12.9	14.3	9.5	48.4
Contingency	0.9	7.5	5.5	18.2	23.1	21.3	12.8	89.3
Government Fees ¹⁴⁹	0.3	2.8	2.1	6.9	8.7	8.1	4.8	33.7
Project Outturn Cost	5.6	45.9	33.6	110.6	140.5	129.8	77.7	543.8
% of Project Outturn Cost	1.0%	8.4%	6.2%	20.3%	25.8%	23.9%	14.3%	
Cumulative Capital Cost	5.6	51.5	85.1	195.7	336.3	466.1	543.8	

Analysis of the anticipated s-curve for the project highlights the following:

- It is expected that Capital Costs will peak in FY2022/23 at \$140.5m (nominal, P50), making up 25.8% of the Project Outturn Cost
- FF&E, ICT and Artworks costs (i.e. purchase and installation costs) are incurred in FY2019/20 for the fit-out of the decanting buildings and from FY2023/24 to FY2024/25 for the fit-out of the main works
- The 'practical' completion¹⁵⁰ of the main works is expected to occur at 30 June 2024. Costs incurred in 2024/25 reflect the building commissioning costs
- The Project Outturn Cost includes design costs incurred since January 2019 that have already been budgeted. This funding is not being requested through this Business Case (i.e. this section shows the total cost to construct SPIRE and Section 6.5 outlines the funding requested for this Business Case)

6.2.4 Project Outturn Cost Government Fees

The ACT Government will or may incur project related costs which will not be included in the contracted amounts. In this regard:

- The ACT Government will incur costs during the procurement, construction and operational phases of the project which are not passed to third parties (for example, costs associated with independently certifying construction works). Actual ACT Government costs will be:
 - In part influenced by the commercial principles adopted during the procurement process and in accordance with the delivery approach

¹⁴⁹ See Project Outturn Cost Government Fees for more information on the inclusions in Government Fees

¹⁵⁰ 'Practical' completion is commonly defined as when the work is 'substantially complete' and 'reasonably fit for use'. Additional work after 'practical completion' includes the final fit-out of FF&E and ICT and testing for defects and errors.

- Subject to the realisation or otherwise of risk events during the procurement and delivery process
- A function of ordinary budget discussions from year to year. The apportionment of costs as either capital or operating expenditure is subject to future assessment
- These costs will be primarily incurred through an IFCW fee of 4% capital cost (nominal, P50) for the project (\$20.4m). This has been costed in the total Project Outturn Costs
- 1% of capital cost (\$5.1m) (nominal, P50) has been included in the total Project Outturn Costs for the Australian Capital Territory Insurance Authority (ACTIA) Fee
- An ACT Health Management fee has been included for each component of SPIRE. The fee for the main works and early works components of SPIRE is estimated to be 1.45% of the sum of the capital costs and contingency for these components and the fee for the decanting component of SPIRE is estimated to be 3.85% of the sum of capital costs and contingency for decanting
- The ACT Health Management fee assumes a lower percentage for the main works and early works as it is estimated that the increase to ACT Health Management costs are diminishing with increasing capital costs (and main works and early works combined have a significantly higher capital cost than the decanting component). As capital contingency was estimated for the whole of SPIRE (instead of by Project component, see Section 1.4), capital contingency has been split proportionally based on each component's raw construction cost to calculate the ACT Health Management Fee by component (i.e. as decanting contributes to 6.9% of raw construction costs, decanting has been estimated to contribute to 6.9% of contingency)

6.2.5 Project Outturn Cost estimate notes

The following is noted regarding the Project Outturn Cost estimate:

- The table above does not represent a Project budget. It represents an estimate of capital costs based on the preliminary Schedule of Accommodation which is subject to further development and consultation with key project stakeholders, including clinicians. As noted in Section 6.1, a Project budget shall only be finalised following completion of the project's procurement process
- The Project Outturn Cost may be impacted by the Project's delivery model approach. For example, more collaborative approaches (such as an ECI), may include additional margins. The Capital Framework notes that the inclusion of a delivery model contingency of 30% for a Managing Contractor, 50% for an Alliance, 5% for a fixed scope PMA and 40% for an open scope PMA may be appropriate. While the Capital Framework does not reference an ECI, a similar principle would likely apply to this collaborative delivery model approach
- There exist a number of risks and mitigation strategies associated with the project which may impact upon the ultimate project cost
- The expected Project Outturn Cost includes a P50 capital cost contingency. Following completion of the early design phase by ACT Health and its technical advisor, refinements to the capital cost estimate will be undertaken and a P90 estimate presented in mid-2019. The full anticipated risk profile associated with the project is summarised below in Section 6.4, including estimated P50, P75 and P90 contingency estimates
- Any apparent errors in summation are due to rounding

-
- All years in tables and charts are expressed in financial years

6.2.6 Project Outturn Cost estimate exclusions

The Project Outturn Cost outlined in Section 6.2 **excludes** the following costs which may be required to undertake and/or optimise the delivery of SPIRE:

- The construction of a multi-storey carpark, which may be required for planning and development approvals, noting that the project includes 250-300 temporary car spaces as part of the decanting strategy, as well as 50 permanent on-grade car spaces
- Upgrades that may be required to existing infrastructure to cater for general growth at Canberra Hospital, as well as the operation of SPIRE, such as expansion of the:
 - Kitchen
 - Pathology
 - Pharmacy
 - Loading dock, noting that a modest loading dock at SPIRE of just less than 500 m² is included in the project scope¹⁵¹
- Costs to repurpose Building 12, the existing ED, the CSSD facility in Mitchell and other facilities, which will no longer be required as a consequence of the delivery of SPIRE
- ICT software enhancements designed to improve operating efficiencies
- The fit-out cost for the five shelled operating theatres estimated at \$4.9m (real)¹⁵²
- The estimated additional cost of \$4m (real) to construct a dual deck helipad instead of a single helipad for SPIRE¹⁵³
- A birthing operating theatre within CHWC which has been estimated at \$1.8m (real) for fit-out and new plant space
- Road upgrades to Palmer and Gilmore Streets other than as outlined in Chapter 5
- Further design consideration will be undertaken on whether an additional two shelled IPUs, anticipated to cost \$28.8m (real), should be included in the project scope. This is not included at this stage
- Other works on the Canberra Hospital campus that may be beneficial to the project

Further information project interdependencies is outlined in Section 5.

¹⁵¹ Option 3 as outlined in Chapter 4 includes an additional 846 m² for the loading dock at an additional cost of approximately \$3.5m (real)

¹⁵² Option 3 as outlined in Chapter 4 includes the fit-out of these five operating theatres as part of its scope, at an estimated cost of \$4.9m (real)

¹⁵³ Option 3 as outlined in Chapter 4 includes a dual-deck helipad

6.3 Whole of Life Costs

6.3.1 Methodology

ACT Health engaged a Whole of Life cost estimator (separate to the cost estimator that estimated the capital costs) to prepare a Whole of Life Cost estimate for the project, including operating costs (i.e. clinical costs, clinical support costs, non-clinical costs) and FM costs. These costs have been estimated over an assumed operating period of 20 years, however it should be acknowledged that these costs will be ongoing into the future. The cost estimate was based upon:

- The preliminary Schedule of Accommodation developed by ACT Health and the Territory's design and technical advisors as outlined in Chapter 4
- Operating model and utilities information provided by ACT Health
- Discussions with project stakeholders, including ACT Health, CHS, clinicians and IFCW
- Its market knowledge regarding costs and appropriate benchmarking against similar facilities

In considering the Whole of Life Cost for the project, it should also be acknowledged that:

- From an operating perspective, SPIRE will replace some existing Canberra Hospital facilities (e.g. ED and other services in Building 12), and in other cases, expand or offer new services not currently provided. As such while the project will have an additional operating cost, this may be partially offset by operating costs from existing activities. The Whole of Life Cost estimate seeks to estimate the difference between Option 1 and the 'base case' (as defined in Chapter 5). This means that only services which are being expanded due to SPIRE will be captured in the Whole of Life Cost (and not the services which are simply transferred to SPIRE)
- From a maintenance perspective, SPIRE will demolish aged assets (Buildings 5, 24 and 8). Additionally, Building 12 will be able to be repurposed (noting that the cost of repurposing this building is not included in the Project Outturn Cost). As such while the project will have an additional maintenance component, this may be partially offset by maintenance costs for existing facilities that will no longer be required. These existing maintenance costs have not been able to be estimated for the indicative Whole of Life cost
- SPIRE may result in operating and maintenance efficiencies by creating a purpose-built, modern building, with interdependent critical and acute services co-located. These efficiencies have not been estimated in the indicative Whole of Life Cost
- The Model of Care to be implemented in SPIRE is currently being developed but is not finalised. Material changes to the Model of Care may impact the estimated Whole of Life expenditure

Combined, these factors make it challenging to estimate Whole of Life costs for the Project without a detailed assessment of current state costs against those proposed for this project. It should also be acknowledged that cost estimates in this Business Case remain subject to revision as more detailed levels of design and consultation are undertaken for the project with key project stakeholders, particularly clinicians.

Any material changes to the project scope may have a material impact on the Whole of Life Cost outlined in this section. It is anticipated that Whole of Life expenditure will be refined once the Models of Care have been finalised and the early design phase is complete (see Section 1.4).