Detailed Business Case for the New Dunedin Hospital project

9 July 2020

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Abbreviation	Stands for
ASB	Acute Services Building (also called Inpatient building)
ASC	Ambulatory Services Centre (also called Outpatient building)
Accord	Construction Sector Accord
Commission	New Zealand Infrastructure Commission - Te Waihanga
CSB	Clinical Services Building
DBC	Detailed Business Case
DHB	District Health Board
ECE	Early Contractor Engagement
ECI	Early Contractor Involvement
EOI	Expression of Interest
EY	Ernst & Young
FF&E	Furniture, Fixtures and Equipment
GETS	Government Electronic Tender Service
HIU	Health Infrastructure Unit
IBC	Indicative Business Case
ICT	Information and Communications Technology
ITU	Infrastructure Transactions Unit
Ministry/MOH	Ministry of Health
NDH	New Dunedin Hospital
PPP	Public Private Partnership
RCP	Resource Coordination Partnership
RFP	Request for Proposal
RMA	Resource Management Act
Rules	Government Procurement Rules
SDHB	Southern District Health Board
SoA	Schedule of Accommodation
SPG	Southern Partnership Group

Document controller and authorities

This document is prepared by consultants Sapere Research Group.

The DBC is managed by a Steering Group made up of the Ministry of Health and Southern District Health Board (SDHB). The Southern Partnership Group (SPG) provides assurance to the Ministers of Health and Finance. Cabinet is responsible for ultimately approving the Detailed Business Case.

Executive Summary

This Final DBC applies the standards and requirements set out under the Treasury's BBC guidelines and the standards and requirements advanced by the New Zealand Infrastructure Commission.

The purpose of this Final DBC is to update stakeholders on the considerable progress towards building the New Dunedin Hospital (NDH) and to ask consent for the Ministry of Health (the Ministry or MOH) to:

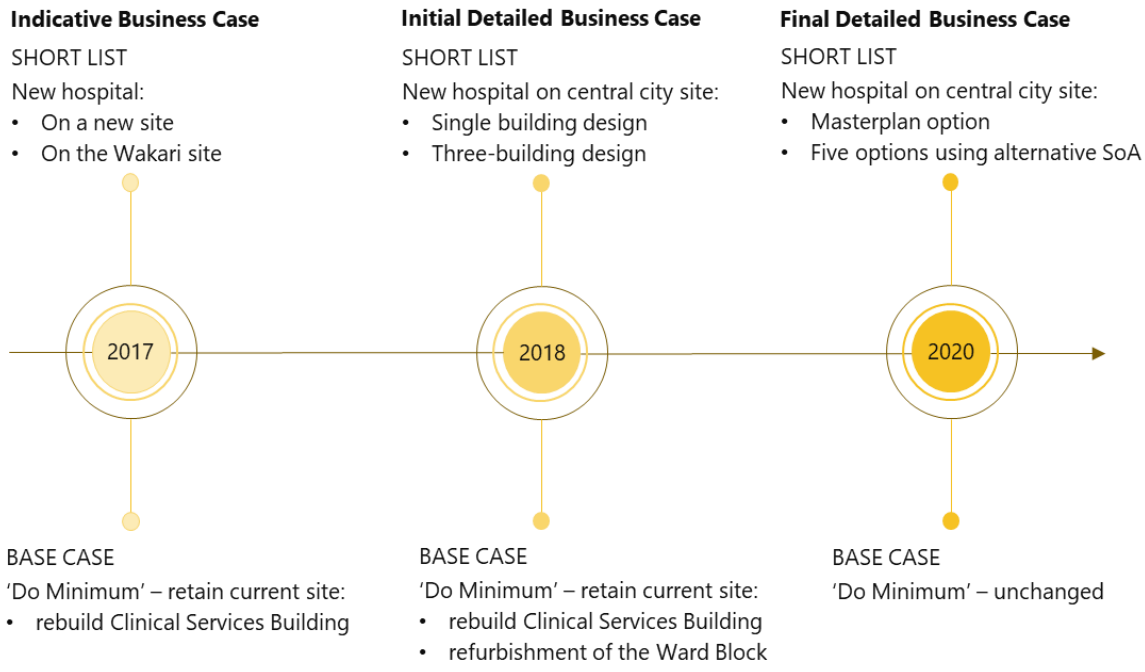
- agree Option 5 as the preferred option
- note the capital envelope of $1.40 billion will be exceeded (the current estimate is $1.47 billion)
- agree the construction of the Outpatient building subject to approval of an Implementation Business Case to Cabinet by May 2021
- agree a final project budget be determined as part of approval by Cabinet of a separate Implementation Business Case for the Inpatient Building by November 2021
- provide funds for the continuation of design, project management and delivery of early works packages for both buildings through to December 2021

The Ministry and SDHB highlight again the parlous state of the existing clinical services block and ward block that currently house Dunedin's tertiary hospital. The Clinical Services Block (CSB) is beyond repair, out of date and may fail at any moment due to:

- a deteriorating environment that is eroding quality of care, creating safety risks and potential harm and causing distress to patients and staff
- inflexible and inappropriate care facilities that restrict service capacity, cause delays and increase outsourcing costs
- care facilities that cannot absorb innovations, preventing efficiency gains and care improvements.

There has been considerable progress including a ministerial decision to build on the city site, acquisition of the required land and establishment of Dunedin based Ministry design and construction team, appointment of a design team and project managers, letting of a contract for demolition and ground works, and continued strengthening of the SDHB programme management office.

This Final DBC sets out in the Strategic and Economic Case including a near to final Schedule of Accommodation and a proposed two building construction on two sites. The size of the hospital has transitioned from just under 93,000m^2 plus an energy centre in the 2017 Indicative Business Case (IBC) and now to just under 89,000m^2 in the latest iteration of the Schedule of Accommodation. This final Schedule of Accommodation has been critiqued by both the Ministry of Health and SDHB leadership and has been reviewed independently and has been critiqued by SDHB Clinical Leadership Group (CLG).



Source: Sapere

Option 5, a two-building option, has been selected after a robust process of management, clinical and governance review. Two buildings allow for stronger separation of planned versus unplanned patient flows. In Option 5, the Outpatient building is provided earlier, allowing much-needed day surgery theatre suites, meaning improved and advanced systems resilience.

NDH will be constructed as two buildings linked by a bridge. The Gross Floor Area (GFA) of the buildings based on the most recent iteration of the Schedule of Accommodation are set out below.

Table 1 Gross floor area of buildings

Component	Gross Floor Area (square metres)
Inpatient building	73,567
Outpatient building	14,806
Link bridge	621
Total	88,994

Source: Schedule of Accommodation version 3.1

We seek consent to increase the funding envelope [redacted] *as the cost of Option 5.* Withheld under Section 9(2)(i)

There are two procurement approaches for the two buildings respectively.

1. We propose Construction Management for the Outpatient building. This approach provides for a combination of rapid progress and cost control. *The Ministry seeks approval to appoint a Construction prime contractor and delegation to let contracts for technical services and sub-trades within the construction budget of* [redacted] Withheld under Section 9(2)(i)

2. We propose Early Contractor Engagement (ECE) is adopted as the contractual strategy for the more complex and larger Inpatient building. It is critical that we get the construction input of the prime contractor during design so the contractor fully understands what they have to build. *The Ministry seeks approval to appoint a construction contractor using the ECE strategy, which will happen in 2021.*

We have learnt from previous construction experience and the industry accord. This is reflected in the decision to adopt ECE rather than Design and Build. We have closely reviewed past New Zealand health and other construction experience and have received in-depth comment from our Technical Reference Group. A series of other improvements have been implemented:

- Time will be taken to complete *full design* before proceeding to pricing so full documentation will be available to bid on.
- The construction contractor will be paid to participate in the collaborative design phase.
- Key design risk areas such as those of earthquake restraint, passive fire safety and integration of decisions about clinical equipment are recognised and included in the construction programming, with responsibilities assigned within the construction team.
- There will be a great deal of focus on standardisation of design and the jump-off point for the Outpatient building will be the plans for the now complete Canterbury DHB Outpatient building.
- Contracts will be based on industry standards, technical clauses kept to a minimum, and with a fair risk allocation in line with the Construction Accord.
- The MOH Dunedin based Programme Director is progressively making appointments to the design and construction team, so there is strong client-side input.

The SDHB's financial position remains precarious but is improving. With the current funding package, [redacted] There will be deficits arising following the commissioning of the Inpatient building that will need to be addressed by the SDHB over the years. There is considerable positive cash-flow post commissioning. Withheld under Section 9(2)(i)

The project is critically important to Dunedin City as well as to the southern health system. There will be associated workforce and town planning projects catalysed by this investment. The project is working through SPG to ensure that the wider social and economic benefits are captured with a close focus on construction workforce development, job creation, integration with city planning and decarbonisation efforts. The University of Otago and the Otago Polytechnic intend to use the NDH as a catalyst for further development of its health courses as well as partnering on an Interprofessional Learning Centre and tertiary health training precinct.

There are three critical dependencies for SDHB in achieving the systems wide benefits including implementing the NDH successfully:

- A Primary and Community Care Strategy and Action Plan ensuring the objective of reducing medical admissions is achieved.
- An IT Strategy has been developed. Detailing and implementing this strategy is imperative for the success of NDH. The hospital is predicated on continuing efficiencies in treating patients in the right place, at the right time, as well as continuing improvements in staff productivity. A digital hospital must be implemented.

- A Workforce Transformation Strategy to ensure that all clinicians work to the top of their scope, support implementation of new models of care and that they are structured around the needs of the frail elderly patient. The Interprofessional Learning Centre is a strategic asset in this transformation and must be completed before the Inpatient building as it houses SDHB's training and simulation services.

The signed off costs or benefits of achieving these dependencies are not included in this business case.

A fourth critical dependency is the ability of the Ministry to staff up, on the ground, with the requisite design and construction expertise. This expertise is now established with a series of appointments of staff and contractors. The Ministry (and SDHB's) joint project office is now in place, working alongside, and co-located with, the SDHB's PMO for the wider health system change.

Project governance continues in its current form with SPG having a role in reporting to Ministers and working across other sectors, as well as reviewing and approving this Final DBC and other accountability functions. SDHB's Clinical Leadership Group is consulted on all matters that might impinge on clinical activity. SPG is extending its effort to ensure both the tertiary sector and Dunedin City are well placed to take advantage of this significant, 10-year, construction project.

This DBC does not meet all Treasury requirements and an Implementation Business Case for December is scheduled. That Implementation Business Case will benefit from further design work enabling:

- a further price and quantity estimate based on a 100 per cent complete Concept Design
- project assurance
- further Quantitative Risk Analysis
- a confirmed procurement plan following market engagement.

Strategic Case

1. Introduction and background

1.1 Project title

The project title is "**New Dunedin Hospital**" and in acronym form "**NDH**".

1.2 Project background

The Project is being managed by the Ministry of Health (MOH) and is being delivered on behalf of and in partnership with the Southern District Health Board (SDHB).

In August 2017 the Government approved the Indicative Business Case (IBC) and gave endorsement to the Southern Partnership Group (SPG) to proceed to the Detailed Business Case (DBC) for the full facility replacement of Dunedin hospital, located on a new site within the city. Dunedin Hospital is the main referral hospital for the SDHB offering a range of clinical, clinical support and non-clinical services.

In May 2018 the site for the NDH was announced; the site spans two central city blocks in close proximity to the existing hospital and University of Otago Medical School. The site is bounded by Cumberland Street to the west, Castle Street to the east, Hanover Street to the north and Stuart Street to the south. The two city blocks are bisected by St Andrew Street.

The Government has purchased all of the southern block, previously occupied by the Cadbury factory. This purchase included a mostly vacant site to the east of Castle Street, previously used as car parking for the Cadbury factory, with some existing low-level masonry buildings in poor condition. There has been further acquisition of all of the land South of the Aurora substation. The southern boundary of the NDH site on the Cadbury block is adjacent to a notable heritage building currently occupied by the Otago Daily Times.

Figure 1 New Dunedin Hospital aerial of site location (indicative locations only)

When the NDH is complete, it will be a key enabler for SDHB's continued provision of high-quality health services throughout the Southern health system, which operates across the lower South Island, and will be a key urban landmark for Dunedin that supports the city's long-standing relationship with health and health education in the province.

1.3 Services in and out of scope

The table below summarises the scope of the NDH.

Figure 2 New Dunedin Hospital Services in Scope

Front of House	**Inpatient Units (Overnight)**	**Back of House**
Main entrance	Intensive Care Unit including Medical & Surgical HDU	Building and Property
Multi Faith	Inpatient Units: Medical/ Surgical/ Oncology & Haematology	Food Services
Public Amenities	Inpatient Unit: Cardiac/CCU/ Medical/ Surgical	Orderlies, Linen, Waste & Mail Centre
Retail-FOH	Inpatient Unit: MAPU -Medical/Surgical	Procurement & Supply
Ambulatory	Inpatient Units: Rehabilitation/ Medical with shared therapy zone	Security
Front of House -ASC	Inpatient Unit: OPMH/ Medical	Administration
Retail	Inpatient Unit: Children's with Paediatric Assessment & Day Unit (PADU)	Administration -Clinical
Specialist Outpatient Clinics	Maternity Unit with Birthing and Day Assessment	Administration -Hospital Executive /Support Services
Day Medical and Procedures Unit	Neonatal Intensive Care Unit	Hospital Operations Centre
Medical Physiology Labs -Respiratory, Sleep, Neuro	Same Day Units	Information Services
Medical Physiology Labs -Cardiac	Acute Renal Unit	Clinical support services
Medical Physiology Labs -Vascular	Inpatient Unit: 23 hour	Medical Imaging Department
Pathology	Primary Birthing	Mortuary
	Day Medical Unit	Nuclear Medicine
Emergency Department	Transit Care	NZ Blood Service
Heliport	**Operating, Interventional and Procedure Units**	Pathology (3rd party provided 24/7 core lab service)
Emergency Department (incl. SSU)	Integrated Operating and Interventional Perioperative Service	Pharmacy
Emergency Psychiatric Service	Day Procedures Unit	Clinical Engineering, Technology and Equipment
Car parks	Sterile Services Unit	**Staff resources**
250 car parks[1]		ILC/ Professional Development Unit including library
		Staff Amenities

[1] The total number of car parks that will be provided will be determined by the design and consenting process, The SDHB is working on a car parking plan.

Source: Revised SoA and Capacity, Project Steering Group, October 22, 2019

Out of scope services are large services at SDHB's second major site, Wakari, such as mental health buildings or services housed in facilities close by but not in the existing Clinical Services Block or Ward Block. The cancer service will continue to operate in its current facility and will be re-located in time. Orthotics and Prosthetics will be located off-site but nearby. Services such as community mental health and intellectual disability services are tentatively proposed to be in community care hubs but remain out of scope of the new build project. The new hospital build is reliant on this development occurring by the time the new hospital is commissioned and the SDHB will determine if any separate business cases are required by the SDHB for these hubs.

Figure 3 New Dunedin Hospital Services out of Scope

Service	Status at 22/10/19 (Project Steering Group records)
Ambulatory Breast Care including BreastScreen	Off-site Pacific Radiology Service 3 party provider - Supported by CLG but yet to be agreed
Community Care Hub based Ambulatory services	Off-site -Agreed
Sexual Health	Off-site -Agreed
Urgent Care Centre	Off-site -Agreed
Orthotics and Prosthetics	Out of Scope -Agreed
NZ Artificial Limb Service	Out of Scope -Agreed
Renal Home Training Unit	Out of Scope -Agreed
Administration Clinical and Corporate Information Management	Off-site -Agreed
Central Intake Service (ref. FDB C 24.14.3)	Off-site -Agreed
Information Services	Partially off-site -Agreed
Transport	Off-site -Agreed
Building and Property	Partially off-site -Agreed
Procurement & Supply	Partially off-site -Agreed
Additional carparking	SDHB to develop transport plan
Creche	SDHB to develop childcare plan
Infrastructure Central Energy Plant	Including in engineering allowance -Agreed
Mental health services	
Gibson Day Unit (Older persons' mental health)	Out of scope - Agreed

Source: Revised SoA and Capacity, Project Steering Group, 22 October 2019

1.4 Purpose and structure of this document

This DBC follows the IBC 2017 endorsed by the SPG and members of SDHB's executive and approved by Cabinet on 31 July 2017.[2] The IBC provides a full description of the investment objectives, including the existing arrangements, business needs and proposed measures to track performance against.

This Final DBC provides further recommendations on the investment options for the NDH. All major government-financed capital projects in New Zealand must follow the standards and processes required by the Better Business Case model (BBC). This DBC applies the standards and requirements set

[2] CAB-17-MIN-0397

out under the Treasury's BBC guidelines[3] and the standards and requirements advanced by the New Zealand Infrastructure Commission.[4]

This DBC revises each of the BBC model's five business case chapters (Strategic Case, Economic Case, Commercial Case, Financial Case and Management Case). It:

- revisits the problem definition and investment objectives
- updates the Strategic Case, to reflect the confirmed site for the NDH and to incorporate additions to SDHB's strategies (including the primary and community health strategy, ICT Strategy, workforce strategy) and other developments (including the Construction Sector Accord and local labour market initiatives)
- undertakes more detailed analysis of the economic costs, benefits and risks of the Initial DBC (2018). The analysis updates the risk and uncertainty quantification
- provides a more detailed Commercial Case including a contemporary market sounding, procurement plan, risk allocation, and contracting and payment approach
- develops and details the necessary planning, management and governance arrangements for the successful delivery of the project
- updates the financial forecasts with strengthened assumptions including: updated capacity estimates including demand modelling updates for Intensive Care and High Dependency units (ICU/HDU), Radiology, Emergency Department (ED), theatres and 23-hour Ward;[5] updated operating model assumptions; updated Baseline Annual Plan; updated capital management plan; and overall cost efficiency review.

This DBC seeks approval to proceed to the next stage in the project to appoint a prime Contractor and proceed to detailed design and construction.

1.5 The New Zealand government is committed to wellbeing

In 2019 the Government issued its first Wellbeing Budget. The five Wellbeing Budget priorities show that investments by the New Zealand Government are judged according to a broader definition of success—not just the health of our finances, but also of our natural resources, people and communities. The themes of sustainability and broader goals are echoed in numerous government policies such as *Capital as a Game Changer,* the *Whole of Government* approach, the concept of *Social Procurement*. This policy push encourages/permits a less transactional and more holistic approach to infrastructure.

Meanwhile, all government investments are required to demonstrate fiscal responsibility, good asset management, good capital allocation, more efficiency/standardisation in hospital design, and be part of an orderly capital works queue. With the establishment in 2019 of the Infrastructure Commission, there will be more attention given to co-ordinating, developing and promoting an approach to

[3] New Zealand Treasury Better Business Case Guidance <treasury.govt.nz>
[4] New Zealand Infrastructure Commission ITU Guidance <infracom.govt.nz>
[5] Destravis (2019)

infrastructure that improves the well-being of New Zealanders. Proposals for health infrastructure like this DBC for the NDH must be linked to current and expected levels of service and service demand and must demonstrate improved outcomes within the New Zealand health sector.

In other words, while there is an emphasis on well-being, there is still an emphasis on demonstrating improved efficiency and value-for-money. This emphasis is further charged by the need for economic recovery and the role that the construction activity will provide to Dunedin City.

1.6 Wellbeing and the importance of the project from the perspective of Dunedin and the South Island[6]

The construction of NDH is more than just a capital project and more than an opportunity to transform the southern health system. For local governments and for the public it is a chance to rethink other aspects of Dunedin's infrastructure, and to secure social and environmental gains. SDHB and other major influencers in Dunedin have gathered together to offer leadership and guidance to ensure the full range of well-being objectives and opportunities are realised.

In late 2017, at the request of the Minister of Health, a Local Advisory Group was established to progress these ideas. It comprises councillors and officials from the Dunedin City Council and the Otago Regional Council, senior representation from Ngāi Tahu, the New Zealand Transport Agency, the Otago Chamber of Commerce and others from time to time. It is chaired by the chair of the Southern Partnership Group.

There are multiple projects at differing stages of development, and we set out details in the Management Case around Workforce Central (a skills hub co-located with the SDHB Project Management Office and the Ministry design and construction team). The expected indirect, or wider impacts include the following:

- Development of a larger and better skilled local construction workforce.
- Providing opportunity for a cohort of young people, Māori and Pasifika peoples, women entering construction, people wishing to re-engage or retrain post-COVID, people exiting gaol or serving probation, people with disabilities, people returning from out of region or from offshore.
- Provision of construction industry jobs and training helping to address local and national labour constraints and to reduce the number of people who are unemployed or not in school or vocational training.
- Leveraging opportunity for development of Dunedin's housing stock and therefore an opportunity for some urban renewal and further training opportunities.
- As a catalyst for debate on whether or how to change the one-way arterial route through the city with opportunity for more pedestrianisation. Health sciences education and health design education

[6] Text provided by Hon Peter Hodgson, Chair of SPG and LAG

1.7 Synergies with health education and research organisations

An Interprofessional Learning Centre (ILC) will be established at the northern end of the new hospital campus, adjacent to the Outpatients building. The ILC will house the professional development unit, and the simulation technology needs of three institutions – the SDHB, Polytechnic and University.

The project budget allows for a $17m contribution to an Interprofessional Learning Centre (ILC) which will be a joint development with SDHB and the University of Otago. This will not be the full cost of the ILC and it will be the subject of a separate business case. There is increasing understanding of the need for this integrative interprofessional training and its benefits at all levels, undergraduate, post graduate and practising clinicians.

A further initiative is a Bachelor of Health Design hosted probably by the Otago Polytech. It would embrace elements of design, health planning, engineering, quantity surveying, project management and the like, all with a distinct health sector flavour. This will take advantage of hospital construction and teaching skills onsite, leveraged through procurement, and assisting with closing a known skills gap in health design.

1.8 Key developments since the Indicative Business Case

The IBC approved by Cabinet assumed a 93,000m^2 building with a further 3,500m^2 for the Energy Centre. The facility would have 427 beds and be commissioned by February 2027. The Government has made decisions since the IBC that have led the project forward and re-defined the strategic boundaries. The Minister of Health, the Hon Dr David Clark, announced on 4 May 2018 that the hospital will be built on the site indicated in Figure 1.

The Minister has emphasised that there will be no public-private partnership (PPP) arrangements. This DBC has not, therefore, further assessed the option of building a new hospital on the Wakari site. Similarly, no further exploration of the PPP option has been undertaken in the Commercial Case.

An Initial DBC (2018) for the build of the NDH was submitted to the Southern Partnership Group. That version was incomplete; it was awaiting a site master plan and a concept design.

The NDH site master plan was signed off in January 2019, and work is underway to complete a concept design by August 2020. The Schedule of Accommodation (SoA) has more recently been developed, reviewed and further developed.

The design team responsible for the work in 2018 has subsequently been replaced with another design team. That design team has reworked options for the stack and block resulting from the revised Schedule of Accommodation. SPG reviewed five options including a single building or two building option and recommended a two-building option. Subsequently, the recommended option was endorsed by the Minister of Health in consultation with the Minister of Finance. The cost of this two-building option is above the Cabinet agreed budget of $1.40 billion and we seek to extend this agreed budget to $1.47 billion in this DBC.

Other key developments include changes to the project governance arrangements within the Ministry of Health, the release of SDHB's Primary and Community Health Strategy, Digital Strategy and Workforce Strategy. Service forecasts (projected volumes) have been revised for ED, ICU/HDU, Radiology; and theatre projections have been updated.

The Construction Sector Accord between Government and the construction industry was signed in April 2019 to strengthen the partnership between government and industry. There have been on-going discussions about how the hospital build could support labour force development and achieve other local development goals, as well as health training objectives.

In 2019, A new independent infrastructure body, the New Zealand Infrastructure Commission - Te Waihanga, was established. The role of the Infrastructure Commission is to ensure that New Zealand gets the quality infrastructure investment needed to improve our long-term economic performance and social wellbeing.

A final and notable change was the Government's first Wellbeing Budget in 2019. This budget utilised the Treasury-developed Wellbeing Framework, which emphasises the multidimensional nature of wellbeing. All business cases for infrastructure projects are now required to evaluate the project's impact on wellbeing dimensions. Health is one of 12 wellbeing domains in the framework.

2. Revisiting the case for change

2.1 Introduction

The IBC set forth a compelling case for the rebuild of Dunedin Hospital city campus. The Strategic Case focussed on the condition of the existing clinical facilities as well as the projected unsustainable service demand associated with an increasing aging population. Together, these conditions impede the SDHB's ability to deliver on the Government's strategic objectives.

This part of the DBC confirms and updates the IBC's Strategic Case.

2.2 The problem definition

The problem definition has been revalidated by the NDH Project Steering Group.[7]

The problem is:

- a deteriorating environment is eroding quality of care, creating safety risks and potential harm, causing distress to patients and staff
- inflexible and inappropriate care facilities restrict service capacity, cause delays and increase outsourcing costs
- care facilities cannot absorb innovations, preventing efficiency gains and care improvements.

2.3 Strategic objectives

The NDH Project Steering Group has endorsed the IBC investment objectives for inclusion in the DBC.

The five investment objectives for the DBC are:

- ability to adapt – to create responsive infrastructure and capability that supports disruptive health system change
- optimise use of total health system resources
- to reduce non-value-added time by 80 per cent to create a seamless patient journey
- to improve the patient and staff experience
- to reduce the risk of harm to 'acceptable standards'.

[7] The Management Case outlines the governance structure. The Steering Group report is made up of Ministry of Health and DHB representation and report through to the Southern Partnership Group.

2.4 Strategic context

2.4.1 The hospital is an essential part of the region's health

Dunedin Hospital is not only important for Dunedin, it is important for the region. The hospital provides tertiary services for the whole of the SDHB population. In 2016/17, one-third of inpatient events were patients from outside Dunedin City. This proportion has not changed since the IBC and is a key aspect underpinning the service demand forecast.

Although there is a network of rural hospitals throughout the Southern district, Dunedin Hospital provided the majority of 2016/17 inpatient events for people living in Clutha (64% of Clutha volumes), Central Otago (58%), and Waitaki (51%). Thirty per cent of inpatient volumes for Queenstown-Lakes residents were provided by Dunedin Hospital.

2.4.2 The New Zealand government is committed to the NDH

Since the IBC was approved by Cabinet, the Government has made several commitments to the NDH.

- It has committed to the central Dunedin site (rather than Wakari) and has purchased most of the site.
- It has committed to beginning construction of the NDH within the Government's first term and demolition has commenced.
- It made a commitment in Budget 2019 (announced in May 2019) to set aside a 10-year funding package for the NDH of $1.4 billion. This funding was couched as a "central component to the Government's infrastructure package in Budget 2019" and was brought forward to "close the infrastructure deficit and stimulate the economy against a backdrop of a volatile international economy").[8]
- It committed to fund the rebuild out of the Government's capital funds, and to not utilise a public-private partnership funding arrangement.
- The newly established New Zealand Infrastructure Commission has listed NDH as one of New Zealand's largest infrastructure projects.[9]

2.4.3 The hospital's clinical buildings remain uneconomic to renovate or refurbish

The critical clinical buildings are not economic to renovate or refurbish, and unsuitable to modern models of care.[10] The Clinical Services Block cannot be repaired and is a serious risk of failure

[8] Treasury publications. Wellbeing Budget 2019. <treasury.govt.nz>

[9] The formation of the NZ Infrastructure Commission affects the process for the DBC, as a major project of the size of the NDH invokes obligations to consult with the Infrastructure Commission and involve it in the assessment of the business case and advice to Ministers. In contracting new public infrastructure, it is now compulsory to use any standard form documentation developed by the Infrastructure Commission as the basis for any infrastructure contract, and consult with the Commission over any material proposed modifications.

[10] The building assessment reports referenced in the IBC have not been updated for this DBC; there is no change to the condition of the buildings.

The design and configuration of the hospital's existing clinical buildings impede the delivery of efficient, patient-centred models of care. The IBC provided numerous examples relating to design, layout and flow of the Clinical Services Block and Ward Block that directly impact on service delivery. Services have also lost training accreditation due, in part, to the condition of the facilities.

The IBC concluded that the inflexible and constrained nature of the current facilities directly leads to increased costs, reduced service capacity, reduced productivity and poorer patient outcomes. The IBC also describes how the condition, design and layout of the buildings pose safety risks to both staff and patients in the form of adverse events relating to delirium, infections and falls.

Clinical Services Block

The Clinical Services Block (CSB) is at the end of serviceable life and is uneconomic to repair or refurbish compared to the cost of a new facility. The CSB is the most critical clinical building on the Dunedin City campus and houses pathology and blood services, the ED, operating theatres, day surgery, outpatient clinics, laboratories, central sterile services, radiology, fracture clinic, physiotherapy and the mortuary.

The poor condition of the CSB is problematic.

- It is not IL4 compliant – in a significant earthquake the hospital maybe damaged to the point it would be unusable.
- Numerous areas and building components have asbestos that would incur increased costs to remove for a refurbishment.
- The building has concrete spalling and water ingress through the roof and walls.
- Windows, floors and ceilings need replacing.
- The building needs a general refurbishment throughout.
- The building layout and configuration is not suited to modern models of care either as an acute services building or a ward block.

Given the CSB is at the end-of-service life, ongoing repair and maintenance costs will continue to escalate if it is kept in service. The practical logistics of decanting the CSB to renovate it would be both difficult ("possibly impractical"[11]) and would add significant expense.

The Ward Block

The Ward Block is regarded as being relatively solid and seismically safe, yet the 2017 Beca report raised numerous issues with its performance and composition. Issues include asbestos, concrete spalling and general maintenance issues. The Ward Block's layout and configuration hinders efficient and modern models of care.

Like the CSB, renovation and refurbishment of the Ward Block would cause significant disruption to services (e.g. relocating stair wells to outside the building). The Ward Block would be nearing 50 years

[11] Beca (2014)

old at the time of any development. The Ward Block is uneconomic to renovate and would likely cost more than a new build.[12]

2.5 Unsustainable demand for hospital services in Dunedin

Service demand forecasts have been revised in 2018 and 2019. The revised forecasts still show unsustainable volumes.

The IBC provided a forecast of activity by department across the Dunedin and Wakari hospitals. The forecasts provide a picture of what future discharges, caseweights, bed days, and outpatient volumes in Dunedin and Wakari would look like if services are delivered under the current model of care, at current intervention rates, as the population changes.

> The IBC provided a clear prediction that the average complexity of a case will increase across the hospital, and that there will be substantial pressure upon bed capacity if current models are continued.
>
> This has not changed. Without new hospital beds, there is unsustainable demand for hospital services in Dunedin.
>
> Dunedin Hospital currently has 364 physical overnight beds. If the services continued to be provided as they currently are; the hospital would need 451 beds by 2033, and 513 by 2043.[13]

2.6 The NDH provides a unique opportunity to respond to future health needs

Dunedin Hospital will continue to provide tertiary and secondary services to support a range of health needs for neonates, infants, children, adults and older persons. Dunedin Hospital will accommodate patients on a planned and unplanned basis requiring access to complex assessment, diagnostic and interventional technology.

Patients who can be safely treated in the community setting will be supported through a shift towards better integration of tertiary, secondary, primary and community services and increased uptake of technologies such as telehealth. This will be of particular benefit to care coordination for the older person.

For patients requiring access to typical clinical services, discussions to date have been centred around the patient journey, the relationships among the services and how, as a collective, care can be delivered in the right place at the right time by the right people. The hospital as a facility needs to

[12] Proj-X (2017)
[13] Jacobs, Johnstaff, CCM Architects. 2018. The New Dunedin Hospital Project DBC Bed Modelling Report (August 2018).

provide adequate space to support administration, teaching and research by SDHB staff. Strong ties with the university will be maintained.

2.7 Revisions to the demand model, and subsequent rescope of facility requirements

The revised demand forecasts include:

- updated baseline service volume data and population projections
- modified efficiency assumptions in the service demand model
- new modelling of ED/theatres/ICU/HDU/23-hour ward and imaging.

Aside from a revised demand forecast, there have also been other changes that affect the estimate of facility requirements. These include:

- changes to hospital scope
- revision of non-clinical space
- re-estimation of fit of space in the block and stack.

The various changes that have been made are described below.

2.7.1 Updated baseline

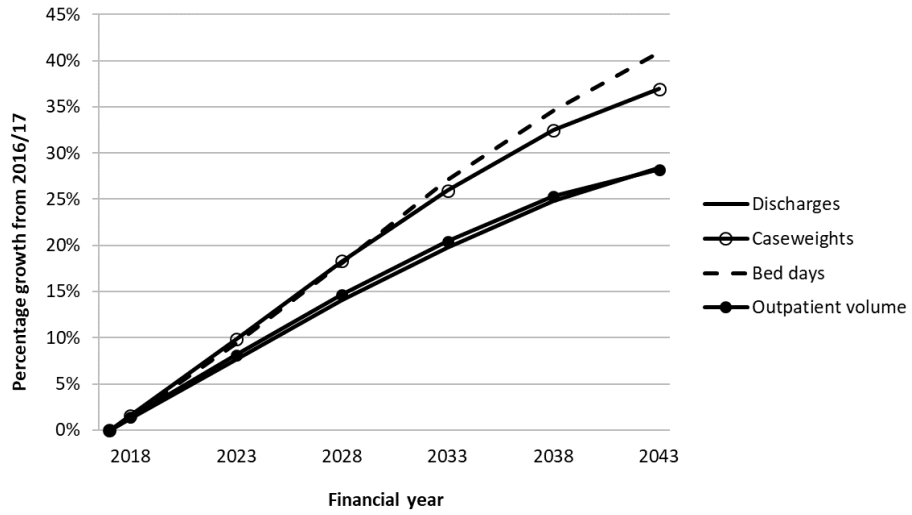
The IBC forecasts applied 2014/15 baseline data, which is now out-of-date. The baseline was reset and forecasts were updated for the initial DBC (2018) to reflect the latest year of hospital activity (2016/17) and latest population projections available at the time. The result of changing the baseline was an approximate 7 per cent bed day saving.[14]

The graph below shows (revised figures for) the increase in service demand as a result of demographic change. The increase in demand is shown as a percentage from the 2016/17 baseline, with discharges, caseweights, bed days and outpatient volumes modelled.

The increase in discharges remains substantial at 28 per cent by 2042/43 but increases in caseweights and bed days are greater. These reflect the current age distribution of the more complex, higher caseweight inpatient events, and their length of stay, and the impact that the ageing population will have upon the need for services if current models of care continue. As outlined in the IBC, the clear message is that the average complexity of a case will increase across the hospital, and that there will be substantial pressure upon bed capacity, under existing models.

[14] By changing the base line year, there is a ~7% bed day saving for two reasons: 1. Medical bed days decreased as planned under bed day saving programme, and 2. fewer elective cases than planned (electives were adjusted in the modified forecast to account for this). The demographic growth path in the base forecast is essentially the same as the IBC (i.e. ~35% bed day growth between FY17 and FY38), meaning the updated population projections have made little difference.

Figure 4 Percentage increase in services driven by demographic change



Source: Sapere

Under current models of care, outpatient events are also expected to increase substantially. If there is a shift in the setting of provision of some services, from inpatient to outpatient areas, then there will be added pressure upon outpatient capacity. This implies a strong need to review existing outpatient care models, and to scrutinise the need for all the existing outpatient attendances across the hospital, as well as the potential to provide some of that care in other settings, including primary care.

As with the forecasts for the IBC, older persons' rehabilitation and general medicine see the largest growth in bed days while orthopaedic surgery will be the most expensive in terms of caseweights.

2.7.2 The service forecast driven by demographic change is adjusted to reflect reorganisation of health service delivery

The SDHB is changing the current environment for service delivery. It is making changes to reduce avoidable hospital admissions, reduce length of stay, improve patient flows and provide care for people in the community where appropriate. The SDHB has identified a number of initiatives to improve patient flow, patient outcomes, staff and patient experience and at the same time reduce hospital demand.

The SDHB has identified key activities, and further developed planning with the development of a Change Management Programme. The Management Case outlines the programme in more detail, however the following key activities underway are fundamental to improve patient flow, patient outcomes, staff and patient experience and at the same time reduce hospital demand.

- Development of a Primary and Community Care Strategy and Action Plan 2017 that focusses on the following key domains:
    - support consumers and whānau to self-care
    - support development of health care homes
    - development of community health hubs

    - create locality networks to better coordinate care.

- Development of the Valuing Patient Time Programme
- Development the Southern Health Workforce Strategy
- Development of the Southern Health Digital Strategy
- Further localisation of priority Health Pathways
- Activity across the hospital focussing on patient flow (e.g. red to green) and the introduction of a generalist model of care
- Activity to prioritise services and conduct an end to end system review centred on patient flow
- Plans for Māori health and strengthening equity across the Southern health system
- Development of an Asset Management Plan
- Development of a Fiscal Sustainability Plan.

These initiatives align to the strategic directions outlined in the New Zealand Health Strategy.

- People-powered
- Closer to home
- Value and high performance
- One team
- Smart system.

While changes to hospital demand will, to a significant extent, be driven through changes in the way the workforce is organised and services delivered (including the setting), the state and layout of existing facilities clearly impedes the introduction of new, more efficient and effective patient centred models of care. More-over, COVID-19 has given impetus to changes in practice such as telehealth which are ill-supported in current facilities. All of these changes will be underpinned by digital technologies and IT.

Scenarios were used in the IBC to assess the impact that the improvements outlined above would make on service demand. Benchmarks from other hospitals were applied to justify the modelling assumptions. These demand scenarios were updated in 2018 using an extensive review process.[15]

[15] For the DBC (2018), assumptions about how service demand could be modified were re-visited through an engagement process with the DHB. This process included meetings with:
• DHB executive and operational leads (at either end of the engagement process)
• Specialist Services management
• Strategy, Primary and Community management and direct reports
• Executive Leadership Team
• Clinicians from Radiology and Intensive Care
• Service managers and clinicians focussed on theatre modelling
• Clinical Leadership Group.
Update and assurance meetings were held with the Facilities Redevelopment Executive (FRE) and Ministry of Health during the process.

2.7.3 Modified efficiency assumptions in the service demand model

Several scenarios have been modelled to assess the impact that improvements would make on demand for the NDH's services and beds.

The modified service demand model takes, as its starting point, the basic forecast that reflects change in population size and age structure (this is the forecast shown in Figure 4). From this starting point, some 'modifiers' are applied that assume a percentage change in volume that may be achieved incrementally from 2018/19 onwards. The result is a modified service demand. Efficiency assumptions are relative to forecast growth and are not absolute reductions.

The process of applying an efficiency assumption paid close attention to uncertainty in both population projections and efficiency targets. In a number of services, the SDHB considered a range within which efficiency gains may be achieved. Table 2 sets out the modified service demand assumptions from the initial DBC (2018).

Table 2 Modified service demand assumptions

Specialty	Low efficiency assumption	High efficiency assumption
Emergency Department (ED)	Hold attendances flat for 10 years	
Medicine (excluding cardiology, renal, oncology and elective gastro)	15% lower intervention rate 20% lower ALOS; **or** 30% lower intervention rate with no ALOS reduction	30% lower intervention rate 20% lower ALOS
Rehabilitation	Halve the forecast growth	Hold bed days flat
Surgical specialties	Originally, 3% p.a. growth in elective discharges in Orthopaedic and General Surgery, subsequently modified with clinical engagement and regional benchmarks	
	10% lower ALOS	15% lower ALOS
Theatre	A 10-14% increase in time required by 2043 due to modelled 'growth in care' for elderly patients (from a base driven off the modified surgical discharge forecast) Throughput of 1000 operations per operating room per year (from the current average of 770 per operating room per annum)	
Intensive Care Unit (ICU)	4% p.a. increase in ICU hours over 10 years	
Radiology	10% p.a. increase in magnetic resonance imaging (MRI) and computed tomography (CT) over 10 years	

Source**:** Jacobs, Johnstaff, CCM Architects. 2018. The New Dunedin Hospital Project DBC Bed Modelling Report (August 2018).

2.7.4 There is a shortfall between the projected demand for beds and Dunedin hospital's supply

The projection of bed demand—with the high efficiency assumption—was signed off by the SPG as part of the initial DBC (2018).[16] For DBC (2019) Destravis undertook a review of the 2018 bed modelling report prepared by Jacobs, Johnstaff and CCM Architects. A series of four meetings were

[16] Jacobs, Johnstaff, CCM Architects. 2018. The New Dunedin Hospital Project DBC Bed Modelling Report (August 2018).

held between April and July 2019, with participation from Destravis, Jacobs, MOH, SDHB and Sapere. It was agreed at this group that the general bed modelling remained appropriate and did not need to be revisited.

2.7.5 New modelling of ED/theatres/ICU/HDU/23-hour ward and imaging

This DBC relies on updated modelling of ED/theatres/ICU/HDU/23-hour ward and Imaging (Destravis, December 2019). SDHB and MOH governance has reviewed, informed and approved this modelling and the treatment space and capacity projections.

2.7.6 Similar projected floor area, differently organised

The overall gross floor area of the NDH will represent a quantum area based on benchmarks comparing other health infrastructure projects in Australia and New Zealand (Christchurch Acute Service Building and Burwood). The gross floor area for these facilities was developed in accordance with the Australasian Health Facility Guidelines (AHFG).[17]

The gross departmental floor area of most functional planning units (services / departments and units) varies to existing with some being larger and others smaller. The current fragmentation of services across multiple buildings provides an opportunity for tighter spatial planning, more purposeful accommodation arrangements and better adjacencies to reduce wasted travel time.

A rebuild will provide an opportunity to plan more shared areas between units and reduce duplication of space, equipment and building services. It is envisaged that inside the departments the spaces may appear larger to the user, not only because many rooms are currently undersized (e.g. theatres), but also because there is an opportunity to introduce new approaches to storage, workspace design, staff stations and staff amenities. Evidence based design principles will mean there is more natural light; external views and the inclusion of nature through planning and organising interiors to create a positive experience for patients and staff.

2.8 Site selection and acquisition

Since the IBC, considerable work has also been undertaken to understand the site which was subsequently selected. The site has given rise to additional costs which were not factored into IBC estimates, and have increased the original cost estimates by over $100m. They include: [redacted] to mitigate flooding impacts; site decontamination costs of [redacted] additional in-ground costs of [redacted] to address geo-technical issues; and unbudgeted land costs of [redacted] (as the land costs had been assumed to be cost-neutral from sale of the land the SDHB currently occupies). A level of service change is that the construction is confirmed to be 5-star Green Star environmental rating.

Withheld under Section 9(2)(i)

[17] The AHFG briefing documents are not prescriptive and ask planners to apply the guidelines within the context of a project and the occupants of the facility. The latest revisions make reference to local jurisdictional requirements and models of care which may provide the same space but planned differently across projects.

The NDH has been designed to be as compact as practicable, and with adjacencies that ensure operational efficiency. A smaller hospital would not meet the foreseeable needs of the district; a larger hospital would represent a misallocation of capital. Importantly the NDH will be designed for flexibility and for some easy and immediate expansion. It has been sited for ready expansion later in the century if necessary.

2.9 Benefits that will be realised

This Strategic Case has highlighted that future service demand will be both clinically and financially unsustainable using the current set of facilities. A well designed, fit for purpose hospital is one of many enablers required to deliver more modern models of care and improve the effectiveness and efficiency of services across the local health care system.

There are therefore benefits that can be directly attributed to an investment in a new hospital development in Dunedin, such as theatre productivity improvements, while other benefits such as reduced admissions will largely depend on wider system improvements and investment in primary and community care. There is a complex interplay of hospital based clinical services, particularly services for the frail elderly, and the organisation and management of community and primary care. For example, shorter length of stay may arise in part because of improved discharge processes, but also because better theatre design and flow results in patients spending less time waiting in beds for surgery.

The Strategic Case for building a hospital is to provide a secondary/tertiary component to the health system for the local population. This strategic rationale is front and centre and is recognised in the Benefits framework we outline below.

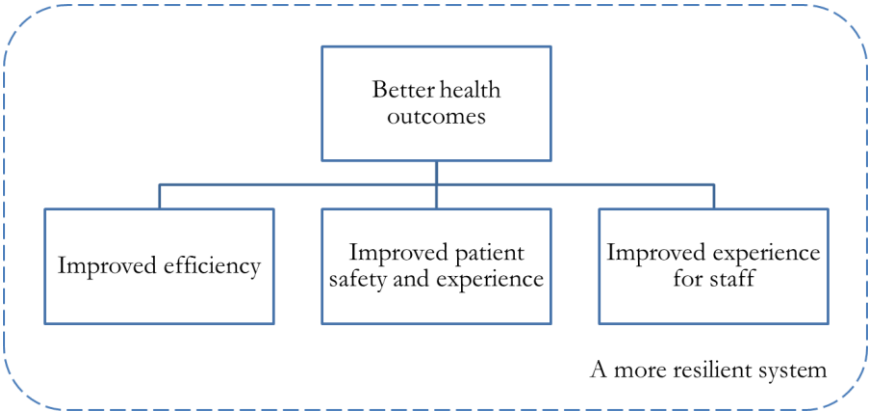
2.9.1 The expected benefits of NDH

A framework of the potential benefits from NDH has been used to form the comparisons contained in the Economic Case. This framework emerged out of two workshops in which stakeholders from SDHB and the Ministry of Health reassessed the work done in the IBC. The framework comprises five categories of benefit.

- **Improved efficiency:** a better internal layout (adjacencies and sizing of spaces), a reduction in unnecessary delays, a shorter average length of stay means more can be done with a given amount of resources than would otherwise be the case, enabling more services to be delivered in a given period and better health outcomes.
- **Improved patient safety and experience:** reductions in avoidable patient harm (e.g. via better ward design) improve patient safety and contribute to patients having better health outcomes. Patients and their families have an improved experience of care in the new hospital, contributing to more engagement and improved patient recovery.
- **Improved experience for staff:** staff have an improved experience of their workplace, contributing to more engagement, fewer absences and improved staff retention rates, lower turnover and better staff recruitment, thereby supporting the delivery of care.

- **Better health outcomes:** better health outcomes for patients is the overarching benefit. The other categories of benefit – i.e. more care being delivered more efficiently, improved quality and an improved experience for patients, families/whānau and staff, while important, collectively contribute to improved health outcomes.
- **A more resilient system:** a new hospital brings benefit in the form of greater resilience to the local health system, allowing the above benefits to be realised. Resilience means many of the risks inherent in the current building and through the short-to-medium term during the base case 'do minimum' option would be avoided. There would also be better connectivity, including digital connectivity, with the wider SDHB health system. These benefits are discussed in more detail below.

Figure 5 Framework of expected benefits from NDH



Source: Sapere

These benefits are explored in the Economic Case. Consideration was given to the education and research benefits, but this was not seen as material to discriminating between options – with the focus of all options now being on a central site, rather than an option of a geographically separate site.

2.9.2 Investment logic

An Investment Logic Map (ILM) was prepared for the IBC (attached in an Appendix). There is a high degree of congruence between the Benefits Framework and the ILM so to include it would be repetitive.[18]

[18] 'Better patient outcomes' in the ILM equates to 'better health outcomes' in the benefits framework. The ILM KPIs of reduced hospital acquired infections and fewer falls are covered under the under the benefit category of 'improved patient safety and experience'.
'Improved user experience' in the ILM covered satisfaction of patients and family, and of staff, which are categorised in the benefits framework as 'improved patient safety and experience' and 'improved experience for staff'. The ILM KPIs of increased patient satisfaction, increased family satisfaction, increased staff satisfaction and lower staff turnover are included under their respective benefit categories.
'Increased productivity' in the ILM included KPIs for improved patient flows, reduced DNA rates, reduced ASH rates and reduced operating costs. This benefit broadly equates to 'improved efficiency' in the benefits framework.
'Sustainable health services' in the ILM can be broadly equated to the 'a more resilient system' in the benefits framework. The ILM KPI of improved financial operating position is addressed as part of the Financial Case. The KPI of improved productivity

The purpose of an ILM is to reconcile the benefits framework with the problem definition. NDH is being built to address the three key problems in the Problem Definition set out in section 2.2. The resolution of these problems is central to the investment logic and the realisation of benefits.

- A deteriorating environment is eroding quality of care, creating safety risks and potential harm, causing distress to patients and staff.
- Inflexible and inappropriate care facilities restrict service capacity, cause delays and increase outsourcing costs.
- Care facilities cannot absorb innovations, preventing efficiency gains and care improvements.

2.10 Agreed investment objectives

The Project Steering Group has endorsed the IBC's investment objectives for inclusion in the DBC. The five investment objectives for the DBC remain as follows:

1. Ability to adapt – to create responsive infrastructure and capability that supports disruptive health system change;
2. Optimise use of total health system resources;
3. To reduce non-value-added time by 80 per cent to create a seamless patient journey;
4. To improve the patient and staff experience; and
5. To reduce the risk of harm to 'acceptable standards'.

These investment objectives are outlined further below.

Table 3 Investment objective 1

Investment Objective One	Ability to adapt - to create responsive infrastructure and capability that supports disruptive health system change
Existing Arrangements	There are a number of factors that hinder the rollout of more modern models of care required to improve efficiencies and the effectiveness of hospital services. These include the design, configuration and condition of the existing infrastructure. Further, due to the current state of the buildings the hospital system has limited resilience to major events.
Business Needs	Need to design hospital infrastructure that can flex to accommodate future changes in technology, service models and capacity. Hospitals need to be patient centric in design (human design) and resilient to future changes and events including pandemic outbreaks in disease and catastrophic disasters.
Possible Measure	Ability to flex to upper and lower forecast limits

measures (FTEs or beds per capita) is addressed via other measures in the 'improved efficiency' category of the benefits framework.

Table 4 Investment objective 2

Investment Objective Two	Optimise use of total health system resources
Existing Arrangements	For a number of reasons patient flows through the hospital are largely inefficient, with inconsistent high variability processes and pathways, interrupted care, repetitive and duplicated effort, all resulting in delays to providing timely access to quality health services. Services are not always provided in a timely manner leading to increased length of stay. There are recognised workforce capacity constraints, e.g. across many allied health specialities. There is inadequate investment in innovative models and tools to optimise use of resources, and insufficient uptake of tools where these have been introduced (e.g. HealthPathways).
Business Needs	Encourage and reward staff innovation and flexibility as a mindset. Introduce lean methodology into service design and extend where this has been implemented (e.g. Productive Series) to increase efficiencies over time. Implementation/extension of HealthPathways and other similar tools. Workforce planning - looking for roster efficiencies, extending workforce to work under full scopes and possible labour substitution (e.g. Physician Assistants). Enable an aspirational zero cancellation target for procedures. Co-ordination of surgical lists and theatre capacity, with ICU and bed capacity. Live within our means.
Possible Measure	Acute bed days, ED admissions, ALOS, readmissions Conversion to surgery rate from elective referrals Increased patient experience Proportion of patients that return to previous circumstances Residential care rates for over 75-year olds Revenue exceeds expenses (no deficit) No deferred maintenance

Table 5 Investment objective 3

Investment Objective Three	To reduce non-value-added time by 80% to create a seamless patient journey by 2027
Existing Arrangements	Poor flows, constrained by current layouts Interrupted care Unnecessary and repeated testing Need for staff work-arounds Split-site hospitals Referrals in from rural providers poorly coordinated leading to inefficiencies
Business Needs	24/7, 365 days a year services where appropriate Lean productivity concepts used as a model to reduce process delays and handovers The right person gets right services at right time and the right place

	Efficient flow from admission to discharge
Possible Metrics	Reduced cancellation rates for operations Reduced outpatient non-attendance rates (DNAs) Reduced avoidable delays Reduced waiting times

Table 6 Investment objective 4

Investment Objective Four	**To improve the patient and staff experience**
Existing Arrangements	Poor staff morale and engagement. Poor working environments. Lack of privacy for patients. Cancellations, delays and unnecessary testing. Unnecessary steps/ interrupted patient flows.
Business Needs	Enhanced community confidence in the SDHB. Staff experience is improved A hospital consistently scoring either at, or above, the national average on patient experience surveys. Enhanced patient, family and staff satisfaction.
Possible metrics	Patient experience surveys Staff engagement surveys Cancelled/postponed operations and outpatient appointments Wordle comments

Table 7 Investment objective 5

Investment Objective Five	**To reduce the risk of harm to 'acceptable standards'**
Existing Arrangements	Delays and interruptions in timely care. Workarounds with the potential for additional risk of harm. Physical facilities and building services that are neither fit for purpose nor compliant.
Business Needs	Enable the elimination of 'never' events of harm (events that have the potential to cause serious harm, which is wholly preventable e.g. wrong site surgery). Zero falls (with harm).
Possible Metrics	Hospital acquired infection rates Falls rates Staff harm rates Adverse events (HQSC) Medication reconciliation (HQSC)

Hand hygiene (HQSC)

Surgical safety checklist (HQSC)

2.11 Constraints and dependencies

The business case is subject to the following constraints and dependencies.

The three main dependencies are the responsibility of the SDHB, being implementation of three linked strategies; the Digital Strategy, the Primary and Community Healthcare Strategy and the Workforce Strategy. Of these, the Primary and Community Healthcare Strategy is underway and SDHB is progressing work on the Digital Strategy and Workforce Strategy. Each of these are critical to the success of the southern health system let alone the successful commissioning and operation of the NDH.

Dependencies will be carefully monitored as the NDH is planned and built.

Table 8 NDH constraint management

Dependency	Management strategy
Digital Strategy SDHB is investing in information technology to enable implementation of a digital hospital, and innovations to support modern health care delivery (e.g. patient portals, telehealth). IT is a key enabler of benefits from the Dunedin Hospital redevelopment and expected productivity gains will not be achieved without the success of this strategy	The Digital Strategy for SSDHB is the subject of a separate business case.
Primary and Community Healthcare strategy The SDHB is embarking on a primary care strategy that will see primary care and secondary care working proactively to manage patients in their homes rather than in the hospital.	This strategy is being implemented and is managed as part of business as usual for the SDHB.
Workforce strategy SDHB has undertaken a workforce strategy indicating the types of changes that it might need to make with its workforces.	This strategy is being implemented progressively and the SDHB recognises that it needs more focus on this work and has recently appointed a project manager to its PMO.

Key constraints are set out in the table below.

Table 9 NDH constraint management

Constraint	Management strategy
Budget	We seek an increase in this constraint to $1.47 billion.

<table>
<tr><th>Constraint</th><th>Management strategy</th></tr>
<tr><td>A capital investment budget cap of $1.4 billion upper limit was set by Cabinet when the Indicative Business Case was approved.</td><td></td></tr>
<tr><td>Building site
A central building site has been confirmed, and a site purchased (Cadbury Factory and Wilsons Parking Building). The suitability of the site is still being evaluated.</td><td>The site risks are evaluated in the Commercial Case and quantitative risk assessment (QRA).</td></tr>
<tr><td>Expertise
Availability of construction expertise at critical points of the redevelopment.</td><td>The expertise risks are evaluated in the Commercial Case and quantitative risk assessment (QRA).
There has been considerable investment in the Ministry of Health team and its advisors.
<table>
<tr><th>Role</th><th>Consultant</th></tr>
<tr><td>Project Manager</td><td>Resource Co-ordination Partnership Limited (RCP)</td></tr>
<tr><td>Design Manager</td><td>RCP</td></tr>
<tr><td>Architect & Health Planner</td><td>Warren & Mahoney/HDR</td></tr>
<tr><td>Building Services Engineer</td><td>Beca Limited</td></tr>
<tr><td>Fire Engineering and Fire Protection</td><td>Beca Limited</td></tr>
<tr><td>Structural & Civil Engineer</td><td>Holmes Consulting</td></tr>
<tr><td>Traffic Engineer</td><td>Novo</td></tr>
<tr><td>Town Planner</td><td>Boffa Miskell</td></tr>
<tr><td>Property & Building Survey Services</td><td>WSP Opus</td></tr>
<tr><td>Site Clearance and Demolition Works</td><td>Ceres NZ LLC</td></tr>
</table></td></tr>
<tr><td>Business as usual
The hospital must continue to deliver full clinical services while the NDH and new models of care are built and introduced.</td><td>SDHB is cognisant of the need to keep momentum for business as usual and business development initiatives while delivering the build and delivering change programs.</td></tr>
<tr><td>Constraints on SDHB staff and leadership
The SDHB will be expected to deliver transformational change. There will need to be both funding and workforce capacity to support new models of care.</td><td>The SDHB's executive leadership team has been restructured, with improved strategic capacity.</td></tr>
</table>

Economic Case

3. Introduction to the Economic Case

This section outlines the purpose of the Economic Case for New Dunedin Hospital (NDH) and recaps how the options have evolved.

3.1 Purpose of the Economic Case

The Economic Case revisits and updates the Initial Detailed Business Case (DBC) for NDH, of July 2018 and documents the analysis of the costs, benefits, and risks of the short-listed options. It includes the following sections.

- *An overview of the short-listed options and options assessment process*
- *An economic cost benefit analysis, with an assessment of non-monetary benefits*
- *An assessment of risk and uncertainty.*

3.2 Recap of the evolution of the options

This section documents the development of the short-listed options across the Indicative Business Case (IBC) of May 2017, the Initial DBC of July 2018, and this Final DBC (May 2020).

3.2.1 Indicative Business Case

The IBC for NDH identified the base case as being a 'do minimum' rather than a 'do nothing' approach, as the critical conditions in the Clinical Services Building (CSB) mean that it is at the end of its serviceable life. The 'do minimum' scenario provided for the replacement of the CSB, using existing infrastructure, and minimising capital expenditure so that the Dunedin Hospital city campus is kept at a point at which it is just serviceable. The purpose of this counterfactual base case is to highlight the marginal impacts of building a new hospital as opposed to continuing along the same course.

The IBC considered a long list of options against the agreed investment objectives and critical success factors and short-listed two options to be taken through to a DBC:

- a new hospital on a new site, and
- a new hospital on the Wakari site.

3.2.2 Initial Detailed Business Case

The Initial DBC focused on the option of a new hospital on a new site, following the Government announcement that a central city site had been purchased, which effectively ruled out a new hospital on the Wakari site. The preliminary Schedule of Accommodation (SoA) provided for 402 inpatient beds and 18 theatres by 2033 with the ability to add 10 ICU beds and an additional theatre by 2043. Two sub-options were identified with respect to the configuration of the new hospital:

- a single building to house all facilities and services, or
- three separate buildings, with the majority of services housed in an acute building, supported by an ambulatory care building and a building for non-clinical support services.

The 'do minimum' base case was updated to include a major programme of refurbishment for the Ward Block, in response to building assessments identifying numerous issues that would require significant ongoing expenditure, for example, concrete spalling and the presence of asbestos. The DBC analysis focused on comparing the option of a new hospital on a new central city site with the 'do minimum' base case, while noting reservations about feasibility of that counterfactual, given the difficulties of decanting from buildings while rebuilding on a constrained site. The results of the cost benefit analysis indicated that a new hospital build would be preferable over the base case.

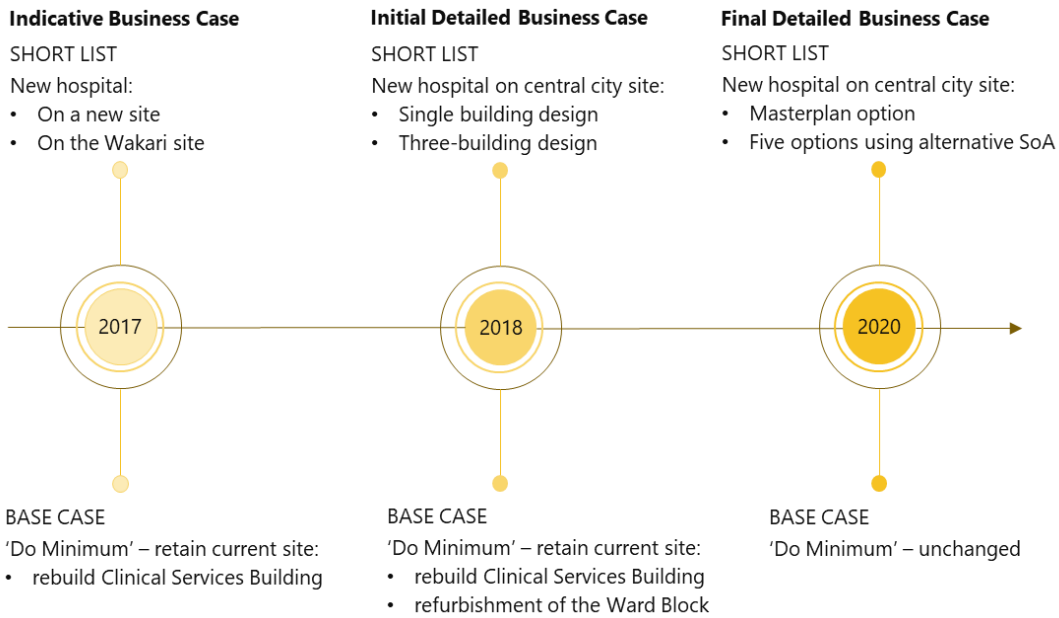
3.2.3 Updated information on short-listed options

The development of short-listed options since the Initial DBC has included the following steps.

- An options assessment process was held over August to October 2018 to develop the principles and priorities for the Site Master Planning process. The resulting two-building design, known as the masterplan option, had a gross floor area (GFA) of 104,880m^2. The cost was estimated at [redacted] higher than the budget cap of $1.400 billion set for NDH. Withheld under Section 9(2)(i)
- An alternative 'first principles' SoA was developed. Following internal review, this process confirmed that a clinically functional hospital with a smaller GFA could be delivered, within the high efficiency, medium growth parameters set.
- Five design options were prepared to demonstrate that the alternative SoA could be efficiently translated into a single building on one site. The Southern Partnership Group (SPG) requested further options, based on the Site Master Planning concepts, be included in the options analysis. The five options were then assessed by the Project Team and by SPG.

The timeline below summarises the evolution of short-listed options considered in the business cases.

Figure 6 Evolution of short-listed options considered in Indicative and Detailed Business Cases



Source: Sapere

4. Options assessment

This section outlines the short-listed options and assessment process to identify a preferred option.

4.1 An initial masterplan option proved unaffordable

A site selection process, undertaken by the Ministry of Health, resulted in the selection and purchase of two city blocks, bounded by Cumberland Street, Hanover Street, Castle Street, and the Otago Daily Times Building, for the purpose of building a new hospital in Dunedin. An options assessment process was held over August to October 2018 to develop the principles and priorities for the Site Master Planning (SMP) process. A Preliminary Site Masterplan Report was prepared in February 2019 as an input into the Detailed Business Case for NDH.

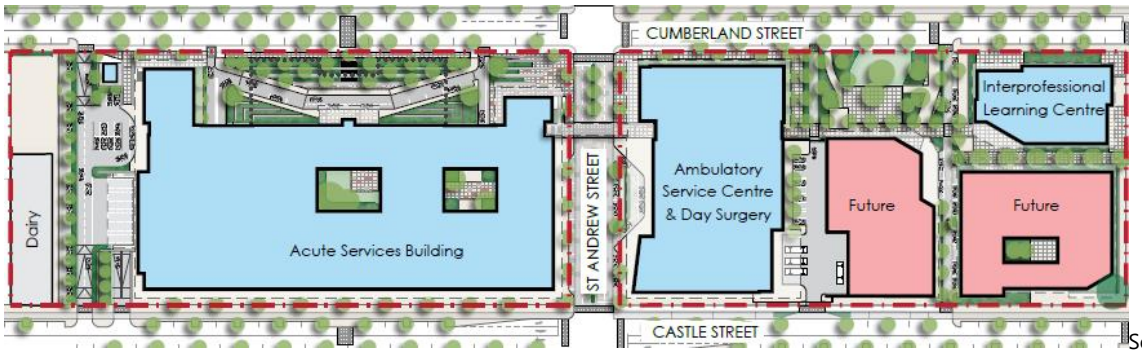
The site masterplan focused on defining the preferred location an Acute Services Building (ASB) and the Ambulatory Services Centre (ASC) on the site, as the significant built forms of the project, as being located on either side of St Andrew Street, connected by bridge link across the road. The proposed design of splitting the hospital activity across two buildings and two blocks was driven by the need to:

- provide expansion space to both the acute and ambulatory buildings, and
- reduce height and scale to improve the relationships of these large buildings with their neighbours and limit the negative effects on the urban environment.

Nine options were ranked in the site masterplan selection process, comprising arrangements of buildings across the two blocks. The preferred option was a three-building design with a GFA of 104,880m^2, across two blocks, including a site-wide Central Energy Plant. The ASC (24,264 sqm) was designed for consultations, treatments, day surgery, procedures and diagnostic services (including imaging). The ASB (74,960 sqm) would provide acute specialist services, emergency intervention, diagnostic services, acute and elective surgery, medical and surgical inpatient care, paediatric and maternal inpatient care, and related clinical and non-clinical support services. Medical imaging for unplanned presentations was located in the ground floor Emergency Department, with an assumption that inpatients would access the imaging on this level. The two buildings would be linked by bridges.

A single building option on the (Cadbury) block to the south did not make the short list, given considerations of height and urban form, and flexibility for future expansion.

Figure 7 Indicative preferred preliminary site masterplan



Source: "New Dunedin Hospital Preliminary Site Masterplan Report", 4 February 2019

The site masterplan option for NDH was delivered in December 2018. The cost of this option was subsequently estimated by a quantity surveyor as being [redacted] including provisions for escalation costs [redacted] and a contingency [redacted][19] [20] Being higher than the budget cap of [redacted] set for NDH, it was apparent that the masterplan option would need careful consideration, and close consideration of value would be required. Withheld under Section 9(2)(i)

4.2 A stable Schedule of Accommodation

Consequent to the IBC, a Schedule of Accommodation (SoA) was developed with input from three cycles of engagement with users[21]. Following confirmation of the cost estimate, the Ministry of Health commissioned an external peer review of the SoA by a health planner. The resulting report identified opportunities to deliver a functionally more efficient hospital which would, in that planner's opinion, materially reduce the floor area, without compromising the operations of the hospital.

An alternative 'first principles' SoA was then developed, with input from the SDHB Chief Medical Officer, and presented to the Steering Group in October 2019.[22] Initially referred to as a "strawman", this alternative SoA was required to accord with a set of project givens, prepared by the SDHB Project Management Office (PMO) and Ministry project team and endorsed by SPG (see text box below).[23] The objective of this desktop exercise was to demonstrate that the needs of the NDH could be developed within the budget cap of $1.400 billion, as per the project givens. However, the work remained site agnostic and was not fully aligned with SDHB models of care.

Following internal review, this process confirmed that a functional hospital could be delivered with a GFA of less than 86,000m^2, within the high efficiency, medium growth parameters set. A key underlying assumption to the SoA, however, was the construction of a single building to maximise operational efficiencies and to avoid unnecessary duplication of furniture, fixtures, and equipment (FF&E) requirements.

This SoA had a GFA of 82,700 sqm, or approximately 20 per cent smaller than that of the masterplan option. Consultation with the Clinical Leaders Group (CLG) led to capacity being adjusted in certain areas for risks associated with delayed access during periods of peaks in activity, limited access to other tertiary facilities and to better reflect modern benchmarks for a regional tertiary hospital.

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[19] Produced by Rider Levett Bucknall in September 2019 for financial modelling purposes, based on SoA version 8 and known and likely costs at the date of estimate.
[20] The cost was cited as being [redacted] in a memo to the Southern Partnership Group from the Southern Steering Group, New Dunedin Hospital, dated 22 August 2019
[21] Capacity requirements are defined in:
• The New Dunedin Hospital Project Detailed Business Case Bed Modelling Report (Jacobs, Johnstaff, CCM Architects, Version 4.0, August 2018)
• A series of demand modelling papers for ICU/HDU, Radiology, ED, Surgical Services, and 23-hour Ward (Destravis, July 2019)
• A further updated demand modelling paper titled Consolidated Bed and Treatment Space Report (Destravis, December 2019).
• A Schedule of Accommodation Version 1.0. This version is being checked for implications from COVID including supporting growth of telehealth.
[22] "New Dunedin Hospital Revised SoA and Capacity", considered at Project Steering Group, 22 October 2019
[23] Memo to Southern Partnership Group from Project Steering Group, 22 August 2019

The resulting SoA provides for 416 inpatient beds (include ICU beds) with the ability to expand some critical areas.[24] It includes 16 theatres (of which 4 are same-day theatres) in 2033, with the option of commissioning four additional theatres when required. The initial capacity was aligned with the bed modelling exercise, which was challenged and reviewed by SDHB clinical staff during 2018, 2019 and 2020 resulting in recommendations for additional capacity.

The SoA has the following features.

- Provides for greater integration and reduces some duplication of spaces.
- Aligns staff support spaces with functional units.
- Adopts capacity numbers arising from the demand modelling commissioned, with CLG adjustments.
- Uses Australasian Health Facility Guidelines (AusHFGs) as the key facility planning modules, and appropriate facility benchmarks where there was no applicable AusHFG.
- Provides collaborative workspaces to support an increasingly flexible and mobile workforce.
- Shell space to 2043 for ICU, Medical Imaging & Operating spaces.
- Greater numbers of admission avoidance or short stay beds consistent with modern models of care.

NDH Project Givens for developing an alternative Schedule of Accommodation (October 2019)

1. The total project budget (i.e. inclusive of land, demolition etc) cannot exceed $1.4b. Additions to project scope during design planning that adversely impact budget will be offset by commensurate trade-offs elsewhere.
2. The buildings will be delivered on:
    a. November 2023 (Stage 1 ASC);
    b. November 2024 (Fit out);
    c. November 2028 (ASB).
3. The new hospital will deliver operational efficiencies in line with those in the Indicative Business Case and Initial Detailed Business Case.
4. There will be operational changes in parallel in order to deliver an efficient and high-quality service.
5. The Australasian Health Facility Guidelines (AusHFGs) will be incorporated into the functional design briefs, unless there is a sound rationale for departing from them which is dictated by a preferred model of service delivery.
6. Delivery of NDH will be supported by the implementing the goals in the Southern Primary & Community Care Strategy and Action Plan 2018 – 2030.
7. The technology needs of NDH will be met through the Southern Health Digital Strategy and subsequent implementation plans subject to appropriate funding sources being identified outside of this programme.

Source: "New Dunedin Hospital Revised SoA and Capacity", Project Steering Group, 22 October 2019

[24] Increased from 411 to 419 beds in 2043 in subsequent update to Southern Partnership Group, 29 October 2019

There were further iterations as the block and stack was developed. Importantly, the Ministry of Health and SDHB team focussed on enough expansion for those services that can only be offered in a hospital. In particular:

- there is room for expansion of ICU beds from 30 to 40
- the number of theatres has been increased to surgical theatres and interventional labs of 24, four of which will be shelved for future demand
- there is some future expansion for high tech imaging.

We set out existing capacity and future capacity in the table below. The Ministry and SDHB caution against direct comparison as rooms and their uses will vary. For instance, an existing operating theatre is much smaller than a new one and has less and sometimes no perioperative space. Modern treatment focuses less on medical beds and more on patient flow, from the front door of the hospital if not beyond, with a different mix of rooms and beds on the patient's in-hospital journey.

Table 10 Inpatient unit overnight bed supplied capacity

Ward	Current	NDH
Maternity	21	24
Neonatal	19	22
Self-care, transitional beds	4	12
Paediatric	19	16
Medical / Surgical (includes Medical HDU)	227	246
Mental health services of older people	12	21
Rehabilitation	34	40
Intensive care, HDU surgical	16	40 (incl 10 built shell)
Total	**352**	**421**

Table 11 Operating theatre requirements

Operating theatres	Current	NDH
Acute and elective	9	15 (incl 4 built shell)
Same day	2	5
DSA / angiography	1	2
Cardiac catheter laboratory	1	2
Endoscopy rooms	3	4
Total	**16**	**28**

Table 12 Same day and ambulatory rooms

	Current	NDH
Same day/bed equiv.		
Acute dialysis unit	10[25]	8
Day medical	5	16
Day surgical	11	27
Day recovery	17[26]	22
23-hour unit	0[27]	20
Birthing rooms	7	10
Maternity assessment unit	4	7
Paediatric assessment unit	5	4
Paediatric day unit	2	4
ED bays	31	53
Emergency psychiatric	5	5
Ambulatory rooms		
Clinic consult rooms	n/a[28]	64
Specialty clinic rooms	n/a	20
Procedure rooms	1	4
Medical physiology labs	24	29
Transit care	0	12

Table 13 Imaging requirements

Modality	Current	NDH
MRI	1	3
CT	1[29]	3
Ultrasound	4	6
Fluoroscopy	1	1
OPG/cone	0	1
General x-ray	6	8
Mobile x-ray	7	6
Mobile image intensifiers	3	4
Mammography	3rd party	0
SPECT CT	1	1

[25] SDHB operates a world class home dialysis training model – this is community based (although currently at the hospital) and of a sufficient size so as to reduce the requirement for acute beds.
[26] Dedicated day recovery is currently only provided in the Endoscopy suite. Dual clinic/interventional spaces are used by other services to support day procedures (e.g. radiology).
[27] The 23 hour unit is a new model of care that will seek to get greater efficiency from operating theatres and inpatient beds
[28] Unable to determine current number of functioning clinic consult rooms and speciality clinic rooms as outpatient activity occurs in a variety of spaces including dedicated outpatient clinic rooms plus offices.
[29] A second CT scanner is primarily used as a treatment planning scanner for Southern Blood & Cancer which is out of scope of NDH project.

DEXA	1	1
PET CT	0	1

The conclusion is a reasonably stable Schedule of Accommodation.

Clinical review was a crucial part of the changes leading to this SoA and identified critical missing space. Now, with further discussion and with the selected two-building option, GBA is 88,994m2 and an estimated cost of [redacted] This Version 1.0 Schedule of Accommodation provides the core clinical capacity recommended by clinicians as being enough on opening and until approximately 2038, with some limited room for expansion, with shell space included in the interventional floor, ICU and for one high tech imaging modality. For many clinical services, this SoA meets the clinical capacity demand currently predicted by Ministry of Health modelling until 2043. This Version 1.0 underpins the costing provided for the block and stack and property options. Withheld under Section 9(2)(i)

4.3 Five short-listed options

The initial scope for the architects (Warren and Mahoney and HDR) was to demonstrate that the alternative SoA could be efficiently translated into a single building on one site (initially ignoring site-specific issues), while maintaining the previous preferred functional adjacencies identified in the previous concept design phase. The proposed block and stack drawing set, reflecting the GFA in the SoA, was then shared with the SDHB PMO to understand further refinements and to identify points requiring resolution. Feedback was included in the subsequent block and stack, which was then presented to the Steering Group and SPG in November 2019. SPG requested further options, based on the site masterplanning concepts, be included in the options analysis.

Five design options were developed, and they are outlined below. They are essentially variations on two design options:

- A single building integrating acute and ambulatory services, but sited on different locations across the two city blocks (referred to as the "Cadbury" and "Wilson" blocks); and
- Two buildings where there is a separation of ambulatory and acute services.

Baseline option – Inpatients on Cadbury, Outpatients (incl. Day Procedures) on Wilson's Block

The site masterplan preferred option was included as a baseline option for comparative purposes. The first building to be delivered would be the Outpatient building at the southern end of the Wilson's site. Day Procedures would be fitted out whilst Outpatients would be left as cold shell. The staged fitout enables the earliest delivery of day procedures. Inpatients is built last on the northern end of the Cadbury's site including two bridge links across St Andrew Street at two levels.

An area for development of future buildings as part of a wider health precinct exists at the northern end of the Wilson's block. This could include a Southern Blood & Cancer Centre (SBCC), a Translational Research Centre (TRC) and Inter-professional Learning Centre (ILC).

Option 1 – Single site on Cadbury's Block, early Day Procedures at northern end

The option first delivers an Outpatient building at the northern end of the Cadbury's site. Day Procedures would be fitted out whilst Outpatients would be left as cold shell to enable earliest delivery of Day Procedures. An Inpatient building is delivered last with large floor plate connections to Day Procedures/Outpatients at three levels.

The Wilson's site would be retained entirely for future buildings (which could be staged in a more open campus-like environment as opposed to the higher density Cadbury's site) and with link bridges across St Andrew Street. This option can also include SBC, TRC, and ILC.

Option 2 – Early Day Procedures integrated with Inpatients on Cadbury's Block; Outpatient building on Wilson's Block.

This option first delivers a Day Procedures building at northern end of Cadbury's site. The Outpatient building would follow on the Wilson's site with bridge links across St Andrew Street to Day Procedures. Inpatients is built last with large floor plate connections to Day Procedures at 3-4 levels.

Most of the Wilson's site would be retained for future buildings, (which could be staged in a more open campus-like environment as opposed to the higher density Cadbury's site) and with link bridges across St Andrew Street. This option can also include SBC, TRC, and ILC.

Option 3 – Single site on Wilson's Block, early Day Procedures at southern end

The option involves the delivery of an Outpatient building at the southern end of the Wilson's site. Day Procedures would be fitted out whilst Outpatients would be left as cold shell to enable earliest delivery of Day Procedures. Inpatients would be built last with large floor plate connections to Day Procedures/Outpatients at three levels.

The Cadbury's site would be retained entirely for future buildings (which could be staged in a more open campus-like environment as opposed to the higher density Cadbury's site) and with link bridges across St Andrew Street. This option can also include SBC, TRC, and ILC.

Option 4 – Single building straddling St Andrew Street, early Day Procedures on Wilson's Block

The option has the Outpatient building being delivered first at the southern end of the Wilson's site. Day Procedures would be fitted out whilst Outpatients would be left as cold shell to enable earliest delivery of Day Procedures. Inpatients is built last with large floor plate connections to Day Procedures/Outpatients at 3 levels across St Andrew Street.

The top two thirds (approximately) of the Wilson's block and southern half (approximately) of the Cadbury block is left available as a future development area for SBC, TRC, TLC or other buildings.

Option 5 – Baseline option, but "appropriately" reduced, consistent with the alternative SOA

This option is the same as the baseline option in terms of building configuration, location and staging, but is scaled appropriately to the alternative SoA. It results in GFA reduction of approximately 12,000m^2 from the baseline option, but an increase of approximately 3,000m^2 relative to the one-building options.

As with the baseline option, it leaves the remainder of the Wilsons block available for future development including a TRC, ILC and SBC.

The layout of these five options, together with the baseline (masterplan) option, are illustrated in the diagrams over the page. In each case, the Cadbury block is to the south (left-hand block) and the Wilson's block is to the north (right-hand block).

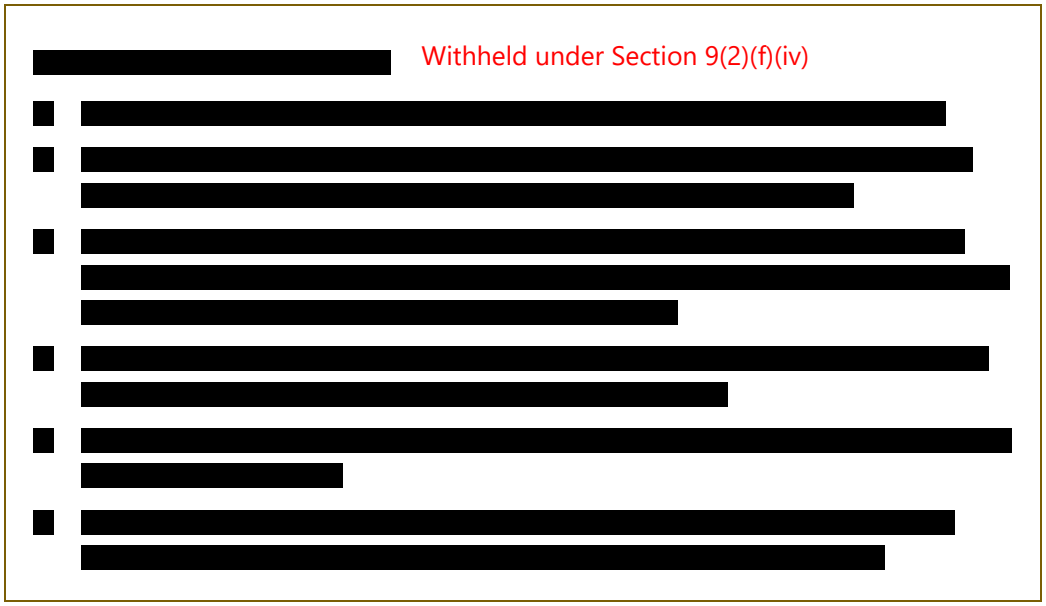
Figure 8 Layout of NDH options across Cadbury and Wilson blocks

Source: Design Reset Evaluation Report, 13 December 2019 Revision 2.3

4.4 The options assessment process

An initial evaluation of the design options against weighted criteria was conducted in November 2019. This evaluation included a comparison against the baseline option, as identified in the Preliminary Site Masterplan. After feedback from the Steering Group and the SPG, some changes were made to the evaluation criteria and scoring, and an additional option was scoped and included in re-evaluation.

The options were evaluated by members of the Project Team, reflecting a range of perspectives and skillsets. There were six weighted criteria which were designed to capture the most critical factors for delivering a successful project. Each criterion had a description of what was sought from a design option in order to score highly, with defined thresholds for scoring differentials.



The evaluation team, after both the initial evaluation and subsequent re-evaluation, ranked Option 1 (i.e. single site on Cadbury's Block, early Day Procedures at northern end) as the preferred option. Figure 9 below shows the scoring results of the revised evaluation.

- Option 1 scored consistently highly against all six criteria, while the other options were more varied in their scoring. Options 1 had scores ranged from 5-8, while other options had a wider range of scores.
- Option 1 scored highest on the criterion of affordability (cost) and, in the view of health planners, offered the best level of clinical integration, while also providing scope for expansion and precinct integration across the northern (Wilson) block.
- The evaluation judged that each of the other design options had critical weaknesses (primarily on cost or programme) that ultimately affected their viability.

Among the two-building options, Option 5 was ranked highest, in third place. While scoring less well on the higher weighted criteria of affordability (cost) and design principles, Option 5 scored better than Option 1 on criteria of future expansion/precinct integration, consentability and buildability.

Figure 9 Revised Evaluation Panel Scoring (weighted) across six criteria Withheld under Section 9(2)(f)(iv)

	Cost	Design	Expansion	Consent	Programme	Construction	Total	Rank
Baseline	[redacted]							6th
Option 1								1st
Option 2								4th
Option 3								5th
Option 4								2nd
Option 5								3rd
Key:	compromised	marginal	good	excellent				

Source: Design Reset Evaluation Report, 13 December 2019 Revision 2.3

The affordability/cost criterion was an influential factor in results, with the overall ranking of each option following its ranking on affordability/cost. To provide more background detail, Figure 10 compares the options in terms of estimated cost and GFA.

- Although all five design options are smaller in size than the baseline option, only Options 1 and 4 are lower than the Government's budget cap of $1.400 billion for NDH.
- Option 1 is the most affordable option, with an estimated cost of [redacted], or [redacted] lower than the baseline option.

Figure 10 Comparison of design options by gross floor area and estimated cost Withheld under Section 9(2)(i)

Source: adapted from Design Reset Evaluation Report, 13 December 2019 Revision 2.3

4.5 A preferred option emerges

The results of the option evaluation exercise were presented to the Project Steering Group and SPG in December 2019. The Project Steering Group endorsed the recommended option (Option 1), subject to it being capable of delivery before 2030.

At the SPG meeting, a number of concerns were raised about Option 1. The SPG discussions focused on the pros and cons of a single building versus two buildings, which had been a central consideration during the development of the site masterplan.

- The impact of NDH, as the largest building in Dunedin, being built right against the heritage precinct on Stuart St with consequential shading of heritage building under Option 1.
- Construction timeframes were a particular concern, given the urgent need for additional day surgery capacity at SDHB. The two-building option was rated as having major advantages in terms of time and ease of construction, with the ASC (i.e. outpatients) being delivered faster than under Option 1.
- Distance to the University of Otago and connectivity to the current hospital, with respect to a single building on the Cadbury block is to the south.
- It was noted that Option 5 scored highest, or equal highest, on four out of the six criteria used in the evaluation of options. Option 5 received a higher score than Option 1 on with respect to future expansion (i.e. future proofing), consentability and buildability. It was acknowledged that Option 1 would be lower cost to construct and operationalise.

[redacted] Withheld under Section 9(2)(f)(iv)

Subsequently, Ministry of Health officials and the chair of SPG met with Ministers, where it was concluded that Option 5 would be the option taken forward into concept design. It was noted through these discussions, however, that, if the design was to meet the minimum clinical requirements identified in the Schedule of Accommodation, this preferred option could not be brought within the $1.4 billion budget cap.

In effect, Option 5 has been identified as the option that provides best value for money when consideration and weight is given to wider impacts, namely, urban context, project certainty and timeliness for delivery of service capacity. The judgment is that those benefits outweigh the marginal cost, in addition to the $1.4 billion envisaged for NDH.

The design team has progressed Option 5 into the initial stages of concept design. While issues regarding consenting and programme time have been satisfactorily resolved, the total estimated

[30] Minutes of Southern Partnership Group Tuesday, 17 December 2019

project cost for Option 5, as prepared by quantity surveyors in April 2020, is [redacted] than the $1.4 billion cap. Withheld under Section 9(2)(i)

4.6 Factors contributing to a higher cost

The quantity surveyors benchmarked the total estimated project cost for Option 5 against three major health facility projects recently delivered in the South Island, namely, Burwood Hospital and the Christchurch Hospital outpatient building and acute services building. This benchmarking exercise concluded that NDH would be relatively more expensive than those projects on a cost per square metre basis. The following factors were identified as contributing to NDH having a higher cost per square metre.[31]

- NDH is essentially a campus project and so has a higher requirement for central plant, whereas the benchmark projects relied on existing or separately procured boiler plant and other site infrastructure.
- The ground conditions are considerably worse at the Dunedin site and the associated piling and flood mitigation requirements for NDH are considerably higher than those of the benchmark projects.
- The disposal of excavated contaminated ground in Dunedin is an expensive issue.
- There is a commitment to achieving a 5 Green Star rating for NDH which, for example, means additional investment in facades, although this may potentially be offset with lower operating costs over the long term.

[31] Rider Levett Bucknall (RLB) *Detailed Business Case estimate – Cost Commentary*, April 2020

5. Economic assessment of the options

The economic assessment takes the form of a cost benefit analysis of the preferred option, identifying the incremental costs and benefits relative to the "do minimum" base case. These impacts are *quantified in monetary terms, to the extent possible, to determine* the net benefit of a new hospital. The focus is on the preferred option because the information that informs the benefits modelling is not sufficiently fine grained to support a comparison among short-listed options.

Some benefits, although not easily quantified and monetised, are of considerable importance and so these have been canvassed and described in qualitative terms. These benefits need to be considered alongside the quantified results of the cost benefit analysis. A more resilient local health system and the reduced risk of service value may be the most important benefit of all, while the options value of the including space for future expansion is also likely to be of significant value in the longer term.

There are core interdependencies relating to workforce transformation and an ICT project that are necessary for unlocking the benefits. The focus here is on the building costs, whereas a programme business case will be developed to evaluate the combined costs and benefits across these projects.

5.1 Approach taken for a cost benefit analysis

The approach to this cost benefit analysis has been informed by the New Zealand Treasury guidance.[32] This section provides a summary of the approach, with more detail on the estimation of costs and benefits being included in Appendix B.

The estimation of the incremental costs includes the following considerations.

- The incremental costs are based on the difference in capital expenditure to be incurred under the preferred option (cost estimate including contingencies, excluding escalations) and the base case, in which the CSB is demolished and replaced and the Ward Block undergoes a major refurbishment. The logistics of decanting the CSB would be difficult and add cost uncertainties beyond those allowed for here. Allowances are also made for life cycle capital maintenance costs and the economic cost of raising additional revenue via taxation.
- A new hospital is likely to realise significant efficiencies, some of which will materialise as a reduced average length of stay and higher throughput and these efficiencies are dealt with in the benefit analysis. Beyond that, a simplifying assumption is that the operating cost of the hospital would not be materially different under the base case and new hospital options.

The incremental benefits were developed for the Initial DBC for the option of a new hospital on a city site, which was an early concept design of what became the masterplan option. The approach has

[32] New Zealand Treasury (2015) *Guide to Social Cost Benefit Analysis* https://treasury.govt.nz/sites/default/files/2015-07/cba-guide-jul15.pdf

been to analyse the service forecasts prepared for the new hospital and to compare them with the counterfactual service forecast in the absence of a new hospital. The following benefits are apparent.

- **Efficiency gains** – the forecast reductions in the average length of stay that will allow a given volume services to be delivered for fewer resources than would otherwise be the case.
- **Patient time savings** – the value of avoided patient time in hospital, from a shorter stay.
- **Additional services** – significantly more elective surgery is forecast to be delivered over the medium-to-long term as a result of the additional capacity (theatres and beds).

Given there is an element of judgment involved in attribution to a new hospital build, the approach has been to select a conservative central attribution assumption and then to sensitivity test by selecting a lower assumption. The table below outlines these attribution assumptions for each category of benefit modelled.

Table 14 Attribution assumptions used for benefit categories

Benefit	Central assumption	Lower assumption
Efficiency gains – attribution to the new hospital option		
Acute medical – avoided case weights	20% of the forecast intervention rate decrease and 80% of the forecast ALOS reductions are attributed to the new hospital.	10% of the forecast intervention rate decrease and 50% of the forecast ALOS reductions are attributed to the new hospital.
AT&R – avoided bed days	20% of the forecast bed day reduction is attributed to the new hospital.	10% of the forecast bed day reduction is attributed to the new hospital.
Elective and acute surgery – avoided case weights	80% of additional surgery being forecast is enabled by efficiency gains. 50% of these volume gains are attributed to the new hospital.	80% of additional surgery being forecast is enabled by efficiency gains. 25% of these volume gains are attributed to the new hospital.
Patient time savings – attribution to the new hospital option		
Acute medical – bed days avoided	80% of the forecast bed day reduction is attributed to the new hospital.	50% of the forecast bed day reduction is attributed to the new hospital.
AT&R – bed days avoided	20% of the forecast bed day reduction is attributed to the new hospital.	10% of the forecast bed day reduction is attributed to the new hospital.
Elective and acute surgery – avoided bed days	same as the low range	80% of the forecast bed day reduction for current surgical volumes is attributed to the new hospital.
Additional services – attribution to the new hospital option		
Elective surgery – additional services (value in exchange, based on case weight value)	20% of the additional surgery forecast is enabled by the capacity of the new hospital. 50% of these gains are attributed to the new hospital.	20% of the additional surgery forecast is enabled by the capacity of the new hospital. 25% of these gains are attributed to the new hospital.

5.2 Results – a new build is likely to offer a net benefit

The cost benefit analysis suggests that the preferred option for NDH would deliver a net benefit to society, relative to the 'do minimum' base case in which the existing hospital campus is retained with the replacement of the CSB and a major programme of refurbishment for the Ward Block.

The central modelling scenario is designed to be realistic about costs and is fairly conservative in relation to the expected benefits. The central scenario offers a net benefit (present value basis) of $70 million. The benefit-cost ratio is 1.5, which means that the incremental benefits are 1.5 times the incremental costs (i.e. 50% higher). These results are shown in Table 15. The costs and benefits shown are incremental, relative to what would occur in the base case (in present value terms).

Two additional modelling scenarios are also presented, to test the impact of costs being higher or benefits being lower than in the central scenario.

- The 'higher cost' modelling scenario allows for the cost of the new hospital to be 10 per cent higher than the estimate used in the central scenario, as a counter to any optimism bias that may be present in the central scenario. Under this assumption, the benefit-cost ratio for this scenario would be 0.8, which means that the incremental benefits would be equal to 80 per cent of the incremental costs.
- The 'lower benefit' modelling scenario uses the low assumptions with respect to the expected benefits being attributable to the new hospital. The logic is that more of the benefits, arguably, might be achieved through a combination of other projects, such as changes to models of care and ICT improvements projects. The benefit-cost ratio for this scenario is 0.8, which means that the modelled incremental benefits would be equal to 80 per cent of the incremental costs under these more conservative assumptions.

Overall, it is not unreasonable to conclude that the option of a new hospital would bring a material net benefit to society. While the results of scenarios tested here show a benefit-cost ratio ranging from 0.8 to 1.5, it must be acknowledged that there are considerable benefits that do not readily lend themselves to being monetised and included in this analysis. These non-monetised benefits, such as patient safety, staff satisfaction and the benefit of improved system resilience, with an associated reduction in the risk of service failure, are explored below.

Table 15 Cost benefit analysis – results by option with low and high assumptions

Measure (present value basis)	Central scenario	Higher cost scenario	Lower benefit scenario
Incremental costs ($m)	137	259	137
Incremental benefits ($m)	207	207	115
Net benefit ($m)	70	-52	-22
Benefit-cost ratio	1.5	0.8	0.8

Source: Sapere

5.3 Some expected benefits not readily monetised

The modelling in the cost benefit analysis focused on the benefit category of improved efficiencies and the capacity to deliver more health care services than otherwise. However, there are likely to be other material benefits arising from a new hospital and these are arranged in the benefits framework, developed with internal stakeholders in workshops for the Initial DBC (see Strategic Case). There is a sound basis for expecting benefits to flow from a new hospital, with respect to improved patient safety and experience, improved experience for staff and better health outcomes, although these are not readily monetised. Table 16 lays out the rationale for these expected benefits.

Table 16 Non-monetised benefits and rationale approach

Benefit category	Elements and rationale
Improved patient safety and experience	• Lower rate of patient falls reduced – design improvements in the facility reduce the risk of falls and fall-related injuries (e.g. type of flooring, design around the bed and the way to patient bathroom) as well as enabling equipment and procedural changes contribute. • Lower rate of hospital acquired infections – infection reductions may be where some of biggest quality gains are. In terms of attribution, a move to more single patient rooms would contribute up to 50 per cent of the gain, or even higher. • Lower rate of pressure injuries – pressure injuries are affected by having sufficient space around beds to enable staff and hoists to move the patient. The right beds need to be purchased too. • Improved satisfaction survey results from patients and families / whānau – new facility design that provides for more space for families to visit patients, including more single stay rooms available to patients (social and therapeutic outcomes). Other environmental benefits could include more suitable lighting and reduced noise. These benefits could also occur via other changes to services and staff culture, which in turn, were enabled by the new facility.
Improved experience for staff	• Improved satisfaction survey results from staff and a lower rate of staff turnover – arising from new facility design that provides better working conditions that enable staff to do their job. These changes increase staff satisfaction and lead to staff being more likely to stay (reduced turnover). The culture survey results generally point to the building as being important. • The fact that Dunedin Hospital has lost accreditation on a number of services is significant and has implications for attracting and retaining staff.
Better health outcomes	• Shorter waiting times – significantly more elective surgery can be delivered, thereby improved access and reducing waiting times, all else being equal. • Lower 28-day emergency readmission rate, where the patient has an emergency readmission within 28 days of original discharge. There is room for material improvement, as HRT data shows SDHB result for year to June 2017 is 10.8 per cent. SDHB has consistently been in bottom quartile among peers • Lower in-hospital mortality rates – some improvement in-hospital mortality rates, comparatively, would be expected. ICU data may be one area to benefit.

Source: adapted from the Initial Detailed Business Case (2018)

5.4 System resilience may be the most significant benefit

Significant service failures generally arise through some combination of limits to workforce capacity, funding constraints and inadequate facilities interacting with growing demand.

5.4.1 Service failure is a risk under current conditions

One of these factors – inadequate facilities in the form of space constraints, inefficient layout, and poor working conditions – is clearly already present at Dunedin Hospital. In turn, the poor condition of the buildings results in pressures on the other factors of workforce capacity (e.g. a struggle to retain or attract staff) and funding (e.g. financial pressures from maintaining aged buildings).

The base case option of a 'do minimum', involves a major refurbishment of the ward block and the demolition and new build of the CSB. This would involve a period of change in terms of the location and delivery of all hospital services. There would be some on-going uncertainty with progressive and phased decanting of the ward block and the CSB and, likely, some disruption to service delivery with increased reliance on outsourcing to ensure service continuity.

The costs of a service failure could include direct financial costs to SDHB to find alternatives for patients needing treatment, costs to patient wellbeing, the opportunity cost from resources used to respond to immediate crises, a loss of accreditation status and reputational harm.

5.4.2 A new hospital means a more resilient local health system

A new hospital could be expected to significantly reduce the risk of service failure – by addressing the key risk factor of the inadequate facilities. Much of the service failure risk inherent in the current buildings at Dunedin Hospital and through the short-to-medium term during the base case 'do minimum' option would be avoided. In turn, this means that the risk of flow-on costs to the wider health system, would be avoided.

A new hospital also offers greater resilience to the SDHB health system. This means that the SDHB health system is better able to respond to future growth in demand for case and to any sudden shocks to the system, such as the additional burden from a pandemic. This will be achieved through the design of standardised, flexible spaces that can adapt to surges and different clinical uses, with the building being adaptable to the separation of flows and modern flexible ventilation systems.

Finally, system resilience would be improved because a new hospital offers more flexibility in its design, and so better able to adapt to new technologies and innovations in the delivery of care.

5.5 Mapping benefits to wellbeing domains

The benefits included in the cost benefit analysis and qualitative narrative can also be viewed from a wellbeing perspective and mapped to relevant domains in the Treasury's Living Standards Framework.

Health is the primary wellbeing domain, with the benefits identified above largely being about more people getting access to care, or sooner than otherwise would the case.

Important secondary wellbeing domains are **Time Use** and **Jobs and Earnings**. The positive impacts are from patients (and their families) spending less time in hospital, on average, to receive an episode of care than otherwise, as a result of efficiency gains that enable a shorter (or avoided) length of stay. This means a reduced loss of leisure time for patients and family, and for those in employment, a reduction in the loss of work time and productivity.

5.6 Acknowledging wider impacts from a local perspective

From a local perspective, we earlier highlighted in the Strategic Case the importance a number of visible impacts from the building of a new hospital in Dunedin. These indirect, or wider impacts include opportunities for workforce development, economic impetus from construction spend and related activity including spending by workers, and other amenity benefits to the city. These catalytic effects are dramatically more important in the recovery phase post COVID-19 and the project timetable and construction approach has been amended substantially with those benefits in mind.

6. Assessing risk and uncertainty

The Treasury Better Business Case DBC guidance states that "all estimated benefits, costs and timeframes are subject to risk and uncertainty, which can influence the choice of the preferred option."[33] This section deals with measurement of risk; management of that risk is in the Management Case.

This guidance also requires a quantitative risk analysis (QRA) to be conducted to assess the costs of large high-risk infrastructure projects, such as the proposed New Dunedin Hospital. Due to the level of design detail available for cost estimates, a QRA would provide wide ranges that would likely not be useful. Therefore, it has been agreed that a QRA will not be included in this version. A full QRA will be undertaken for the upcoming implementation business case, when more detailed designs will be available (and therefore cost estimates more certain).

The nature of these risks includes the risk of delayed decision-making, the cost of escalation due to a project taking longer and higher than anticipated supplier pricing.

This section sets out the background to the upcoming QRA. It discusses optimism bias and variation spend analysis of previous projects, considers risks due to external factors (especially considering the potential impacts of COVID-19) and describes the results of previous risk workshops. It also outlines our proposed approach the QRA for the implementation business case.

6.1 Learning from previous projects

While risk analysis is used to estimate the impact of future uncertainties, it is useful to look back to previous projects and experiences to help inform the likely bounds. For example, Macdonald's (2002) study suggests that optimism bias estimates for capital expenditure are likely to range between 2 per cent for standard building projects with effective risk management through to 51 per cent for non-standard buildings where risk is managed poorly. In a recent example of a hospital build, the estimated variation spend for the Christchurch Acute Services Building (ASB) is approximately 14 per cent (as a proportion of contract value as at March 2020).

United Kingdom procurement projects

A study of large public procurement projects in the UK showed significant optimism bias. Optimism bias is the tendency for a project's costs and duration to be underestimated. This study advises projects to consider capital expenditure optimism bias in the range of 4 per cent and 51 per cent for non-standard buildings, and between 2 per cent and 24 per cent for standard buildings. The level of optimism bias to be considered regarding the duration of works was also larger for non-standard buildings compared to standard buildings. When assessing optimism bias, Her Majesty's Treasury of

[33] New Zealand Treasury (2019). Better Business Cases: Guide to developing a detailed business case.

the United Kingdom recommends starting with the higher bound and decreasing it as appropriate based on risk mitigation strategies.[34] This guidance is referenced to by The Treasury in New Zealand.[35]

A summary of the optimism bias ranges from this study are presented in Table 17. The high bounds represent potential optimism bias for projects without effective risk management and poor scope definition. The low bounds are set at levels of optimism bias to aim for, at contract award, where there is effective risk management.

Table 17 Suggested optimism bias ranges to be used for infrastructure projects[36]

Project type optimism bias ranges (%)	Capital Expenditure		Works Duration	
	Low	High	Low	High
Standard buildings	2	24	1	4
Non-standard buildings	4	51	2	39

Source: Adapted from Table 2, Review of Large Public Procurement in the UK (2002), Mott Macdonald

Table 18 presents the causes of optimism bias found in the Macdonald study. It highlights the significant risks of construction cost over-runs and project delays that can arise as a result of client specific factors (e.g. inadequacy of the business case), disputes and claims at the procurement stage of the project, and external influences (e.g. economic conditions).

[34] Her Majesty's Treasury of the United Kingdom (2018). The Green Book: Central Government guidance on appraisal and evaluation.

[35] New Zealand Treasury (2019, August 6). Techniques to Quantify Risk and Uncertainty. https://treasury.govt.nz/information-and-services/state-sector-leadership/investment-management/better-business-cases-bbc/bbc-methods-and-tools/techniques-quantify-risk-and-uncertainty

[36] Standard buildings included general hospitals not requiring special design considerations. Non-standard buildings included specialist hospitals or buildings requiring special design considerations such as space constraints or complicated site characteristics.

Table 18 Average recorded optimism bias for UK building projects

Risk area contributions to optimism bias (%)		Capital expenditure		Works duration	
		Non-standard buildings	Standard buildings	Non-standard buildings	Standard buildings
Procurement	Complexity of contract structure		1		2
	Late contractor involvement in design	2	2	5	4
	Poor contractor capabilities	9	5	9	5
	Dispute and claims occurred	29	16	10	11
Project specific	Design Complexity	1	3	4	7
	Degree of Innovation	4		3	<1
	Other		8		3
Client specific	Inadequacy of the Business Case	34	35	42	32
	Large Number of Stakeholders			8	
	Funding Availability				2
	Project Management Team	1	2		4
	Poor Project Intelligence	2	<1		<1
	Other	<1	2		6
Environment	Public Relations	2			
	Site Characteristics	2	1	10	5
	Permits / Consents / Approvals		<1		<1
	Other		3		4
External influences	Political				9
	Economic	11	13		
	Legislation / Regulations	3	7	9	5
	Other		2		

Source: Adapted from Table 7, Appendix F, Review of Large Public Procurement in the UK (2002), Mott Macdonald

The study calculated the optimism bias of final costs and duration, compared to those estimated at the equivalent level of a detailed business case (excluding any contingencies). The author also found similar capital expenditure optimism bias in other data sets compared to the equivalent of the implementation business case stage. While comprehensive, the study is based on projects over the 20 years prior to 2002, and notes that there had been a trend of reduced optimism bias in the latter projects studied. However, we note that Her Majesty's Treasury of the United Kingdom continues to use these bounds in their assessment of optimism bias, and The Treasury of New Zealand references this guidance when describing optimism bias.

Christchurch Acute Services Building

As a recent example of a large hospital project, the Christchurch Acute Services Building was originally due for completion in 2018 and, two years on, is still not complete. Variation spend to March 2020 was approximately [redacted] on a contract value of approximately [redacted] To date, this equates to an additional spend of approximately 14 per cent. Withheld under Section 9(2)(i)

Figure 10 breaks this down by cause. It also compares a similar analysis completed in 2018. In 2018, programme issues were not a significant cause of variation spend. However, since the previous analysis, there have been significant costs in this area.

Figure 11 Christchurch Acute Services Building - proportion of variation spend by cause
Withheld under Section 9(2)(i)

Source: RLB analysis

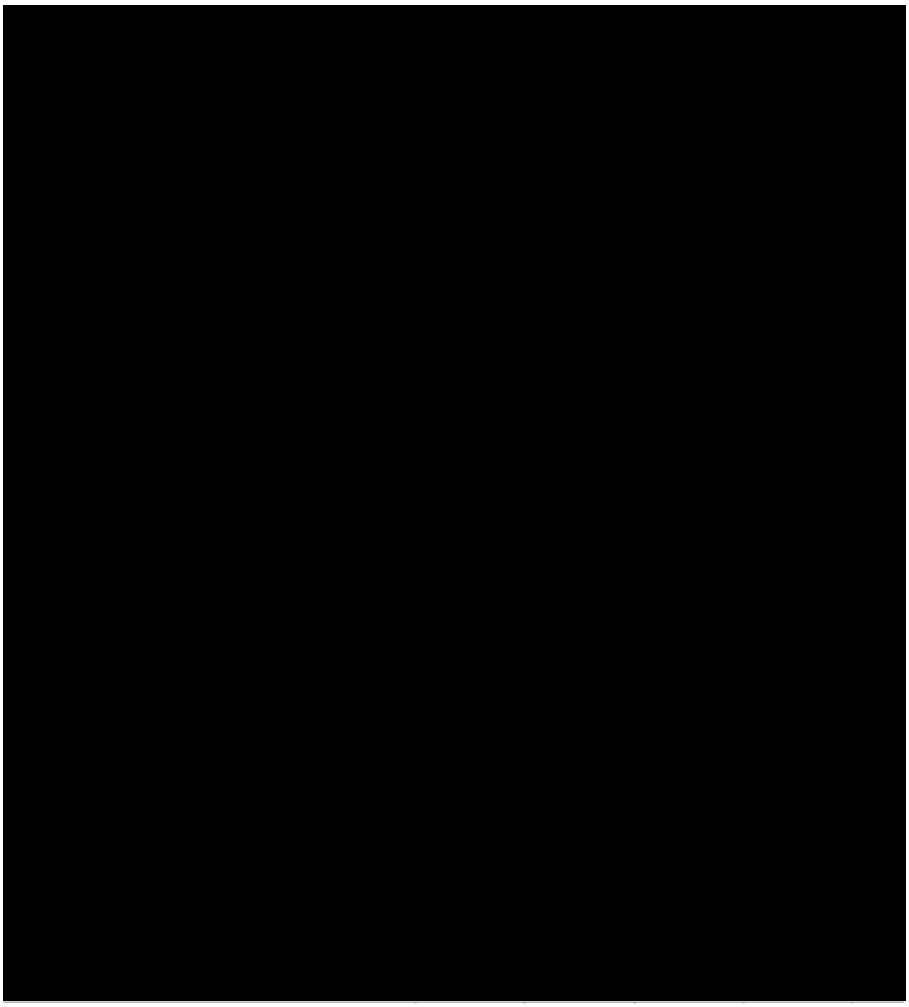
It is expected that some of the risk of programme issues that occurred in Christchurch have been or are looking to be mitigated for the NDH project. These include:

- design and coordination of passive fire systems via one contractor (the flow-on effect of the Grenfell Towers fire has caused some delays for the ASB)
- integrated design for the New Dunedin Hospital, compared to some isolated design for the ASB
- procurement of FF&E through the Ministry and ensuring early inclusion in the programme may simplify and de-risk the possibility of delays compared to the ASB project
- potential to standardise the design of rooms and prefabrication.

The other major area of variation spend has been in design error or omissions. This area made up a similar proportion of variation spend in both the 2018 and current analyses. Based on discussions in risk workshops, around 30 per cent is considered normal. However, potential areas that may help mitigate these risks for the NDH project include:

- learning from the seismic design of the ASB project
- potential to standardisation the design of rooms and prefabrication.

Figure 12 Christchurch Acute Services Building – proportion of variation spend by element



Withheld under Section 9(2)(i)

Source: RLB analysis. Percentages in brackets show the variance compared to the initial estimated cost

Figure 12 shows the variation in spend by element for the ASB, as estimated in April 2020. This shows a similar picture regarding programme issues. While relatively small as a proportion of all variations, elements such as security, plumbing and communications had large variations relative to their original estimates. Based on discussions at the risk workshops these areas can often be underspecified, especially early in the design phase.

Some general risk mitigation strategies for NDH could be based on projects that went well. The risk workshop attendees assessed some elements that have helped previous projects. These included:

- longer involvement by architects, which allowed for more detailed design and drawings for construction
- decreasing likelihood of client changes by managing clinical input. Strategies could include:
    - decreased clinician involvement after concept design
    - restriction of revisiting designs.

We also understand that, due to delays in the commissioning of the Christchurch ASB, Canterbury SDHB has also incurred additional operating costs. These include increased staffing costs (due to additional employment to staff the higher capacity hospital) and increased use of private providers for surgeries due to lower capacity, as well as cancelling and rebooking of others. There is a risk of similar additional costs if delays in commissioning of the NDH were to occur. A long delay may also increase the required spending to keep the current hospital operational.

6.2 Project environment risks

There are many typical risks for large construction projects regarding the project environment such as:

- availability and access to construction resources
- changes in legislation and regulations
- changes in macroeconomic effects such as fluctuation in the exchange rate.

The COVID-19 pandemic has potentially exacerbated some of these risks. It has also added additional risks such as the potential for closure of construction sites. The overall impact of the pandemic for the NDH project is difficult to determine, however, we believe that it is likely to increase the uncertainty, but not necessarily in one direction.

Availability of resources

Unemployment levels have risen, with forecasts showing the unemployment rate close to 10 per cent by the end of 2020.[37] This could potentially increase the availability of unskilled workers for labour. On the other hand, the ability for people to move domestically and internationally may be more limited, decreasing access to the right people with the right skills.

With economic stimulus, there may be more competition for the same labour and workforce across New Zealand. This may decrease the likelihood of the workforce being willing, and able, to move to Dunedin to work on the hospital. There may also be more local competing construction projects, such as the announced construction of a new ACC office building.

Travel restrictions, new competing projects and delayed existing projects may also result in delayed access to required equipment and construction materials.

[37] New Zealand Treasury (2020, May 1). Weekly Economic Update – 1 May 2020. https://treasury.govt.nz/publications/weu/weekly-economic-update-1-may-2020-html

Health and safety requirements

Requirements in the pandemic environment such as physical distancing, sanitary measures, personal protective equipment may increase construction duration. This could be from decreased construction efficiency from having less people on site, more administrative time, and decreased ability for multiple different teams and people to be working in the same area. This could lead to increased cost as well as time until commissioning.

Site closure risk

COVID-19 may also increase the risk of site closures. This could be due to a further COVID-19 'wave' occurring during the construction period causing New Zealand (or Dunedin) to move into the higher alert levels. Additionally, if an onsite worker were to contract COVID-19, this may also require closure of the site (or parts of the site) for a period for cleaning. This would also decrease labour resource availability due to isolation requirements.

These could have additional costs, such as the sanitisation and cleaning of the site, ensuring the security of the site whilst closed, any costs involved in closing the site. Any site closures and decreases in labour resource availability will of course also cause delays.

Exchange rate risk

Stakeholders at one of the risk workshops estimated that around 40 per cent of construction materials are imported. This presents an overall price risk to a significant portion of the construction costs. Figure 13 shows the movements in the trade-weighted index since 2017 to show some of the volatility in general exchange rates. While there has been a general downward trend (which would lead to an increase in prices for imported products), there is also significant short-run changes. The last few months also show significant volatility, we assume, largely due to the impacts of COVID-19 on both New Zealand's and other countries' economies.

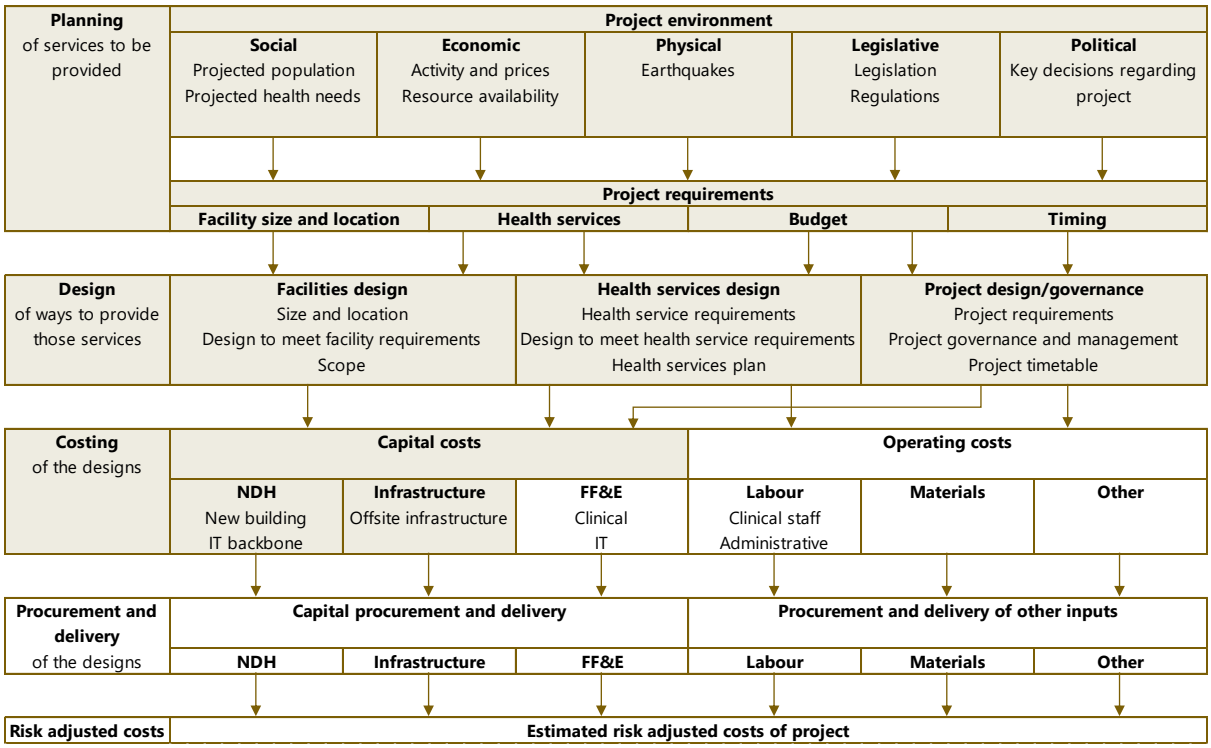
Figure 13 Movements in trade-weighted index

Source: Reserve Bank of New Zealand

6.3 Previous assessment of risk

Areas of risk and uncertainty were identified and refined in the risk workshops following the Initial Detailed Business Case. A high-level summary of the areas of risks relating to project costs is shown in Figure 14.

Figure 14 Areas of risk identified



Discussions with key stakeholders at the second risk workshop highlighted the following key sources of uncertainty (shaded areas in Figure 14) that have the potential to cause the actual costs of constructing the new hospital to deviate from their estimated "most likely" values:

Planning of services to be provided

- Regional population forecasts are a significant source of uncertainty. Any significant changes to the actual versus forecast population in the Otago region will impact the design phase of the project. Facility and health service design requirements are contingent on the anticipated population size.

Design of alternative ways of providing those services

- Availability of a suitable site. The identification and acquisition of a site suitable for the new hospital was a big risk for the design and construction of the new hospital, as well as the overall project timetable and budget. With the purchase of the site, this risk has been largely mitigated.
- Condition of that site. Geotech testing after acquiring the site/s may reveal costly issues. The site options are on reclaimed land and it's likely there will be some contamination that needs to be addressed. We note that the land is being treated as contaminated for cost estimates, however, the full extent of this can't be known until tests are complete.

Costing of alternative designs

- Resource availability is always an issue for projects of this size. The availability of idle labour resource will impact costs during the project design/governance phase. Other recent large projects (such as the various Christchurch hospital builds; the outpatients building, Burwood Hospital, and ASB) all experienced some difficulty getting the required labour resources for construction. The mix of New Zealand and Australian resource was different for each project. Further uncertainties regarding labour resource issues are likely due to COVID-19, as discussed in the previous section.
- Securing an appropriate skill mix will also be a challenge. A consequence of constrained labour resource can be that the skill mix is compromised to get workers on site.
- Costs arising from design errors, such as not interpreting the specification of code or doors being set up in the wrong place, can only be partially managed. These risks are considered 'business as usual'.
- Scope changes are often a large percentage of variation spend. As indicated in Figure 11, the breakdown of variations for the ASB project are an example of this. In total over 60 per cent of the variations were related to scope change:
    - 32 per cent of that additional expenditure is due to design errors or omissions (i.e. as a result of uncertainty surrounding the design of the project)
    - 15 per cent is due to seismic design (i.e. uncertainty surrounding the site condition)
    - 14 per cent is due to client and end user changes (i.e. as a result of uncertainty surrounding the scope of the project).
- Changes in building codes during construction can also increase costs. Code changes during construction add significant costs to a project. For a build the size and duration of

the proposed NDH, it will be important to try to anticipate any changes that could be introduced throughout the project.

At this workshop, stakeholders also evaluated and quantified both the magnitude of potential deviations in construction costs from their 'most likely' values, as well as the likelihood of those deviations occurring. The risks ranges developed are presented in Table 19. The low and high values represent the best- and worst-case scenarios, respectively. Distributions were assumed to follow a triangular distribution, which is standard practice, with the most-likely value of zero deviation. These ranges exclude contingency and escalation estimates.

In general, these stakeholder views regarding the potential magnitude and likelihood of the risks surrounding the construction costs of the project are broadly consistent with the McDonald (2012) study and the Christchurch ASB variation spend described previously.

However, we note that the worst-case (upper) bounds are often lower than the contingency estimates by RLB. Based on the previous cost estimate, the weighted average of these upper bounds is also lower than the current total contingency estimate of approximately 15.6 per cent (of before escalation costs). Therefore, if these ranges and distributions were to be used (in combination with the assumed triangular distribution), this would result in the extreme upper expenditure bound falling lower than the current cost estimate including contingencies. We also note that it is likely that the assessment of the likelihood and magnitude of deviations will have changed due to updated information.

Table 19 Price and quantity risk assessment in 2018

Risk-factor group (values represent the percentage of estimated costs)	**Price risk**		**Quantity risk**		**Total risk**	
	Low	High	Low	High	Low	High
Site preparation and substructure	-5	10	-	-	-5	10
Infrastructure, external works and IT backbone	-	-	-	5	-	5
Structure and envelope	-5	10	-5	10	-10	21
Fit out	-	20	-5	-	-5	20
Decanting	-	5	-5	-	-5	5
Land sale and purchase	-	20	-5	-	-5	20
Other	-	5	-5	-	-5	5

6.4 Approach to the implementation business case QRA

Our anticipated approach to the analysis is based on the 'risk-factor' approach recommended by the Australian Government Department of Infrastructure, Regional Development and Cities.[38] This is described further in the section below.

As described in the Better Business Case Guidance, the risk modelling process involves five main steps:

1. building the models
2. assessing the probability and impact of each risk, which enables developing distributions for uncertain inputs
3. simulating outcome distributions
4. generating outcome graphs and tables
5. reviewing and revision as necessary.

6.5 Risk-factor approach

This approach models risk and uncertainty in terms of 'risk-factors'. These risk-factors can have many-to-many relationships with costs areas. That is, a single risk-factor might affect several areas of costs and several risk-factors may affect a single cost. These could include the price and/or quantity of required inputs, such as labour, concrete and equipment. Uncertainty is then modelled using Monte Carlo simulation, which enables production of distributions showing the likelihood of different outcomes.

By modelling underlying risks and how they may affect different cost areas the risk-factor approach several advantages over a more traditional line-by-line approach, including the following.

- Simplifies the information that needs to be gathered. The risks can be thought of the uncertainties of the prices and quantities of inputs, rather than having to attempt to estimate uncertainties of cost of each line-item (which is function of several different prices and quantities).
- Inherently accounts for more of the correlation. The risk-factor approach models the underlying risk and applies this to each of the relevant cost categories in the same way. A line-by-line approach would need to assess how the movement in cost of each line-item is correlated with the other items.
- Allows easier calculation of the impact of individuals risks on the cost. Since the model is based on assessing sources of risk (rather than their aggregated impact), it is easier to assess how each risk impacts the uncertainty regarding the whole of project costs. This could help prioritise mitigation strategies. Following on from this, if a risk mitigation strategy were implemented, it is simpler to adjust the model (changing only a single risk) rather than having to update all the distributions and correlations under the line-by-line approach.

[38] Australian Government Department of Infrastructure, Regional Development and Cities. (2018). Cost Estimation Guidance: Probabilistic Contingency Estimation.

The level of detail available at the time the QRA will have an impact on the level at which risk-factors are assessed. As seen in the previous section, costs were aggregated into groups where costs were likely to move together (i.e. costs within these groups are highly correlated; in the modelling, they are implicitly assumed to be perfectly correlated). This approach was taken as detailed estimates of prices and quantities of individual resources were unavailable. A similar approach is likely to be taken for this implantation business case QRA as, again, the detailed information is not likely to be available. However, the groupings may change, ideally with less aggregation.

6.6 Risk workshop

A key step in our approach to estimating risk adjusted cost is to hold a risk workshop, attended by the key stakeholders in the project, in order to obtain information from subject matter experts on the:

- estimated non-risk adjusted costs of the project (i.e. information from the quantity surveyor on project costs, including any contingencies that might be included in those costs)
- key types of risks that have the potential to affect project costs
- likelihood of those risks occurring
- the impacts that the realisation of those risks would have on project costs
- any inter-relationships between those risks (i.e. any correlation between those risks that need to be considered in the course of estimating the risk adjusted costs for the project).

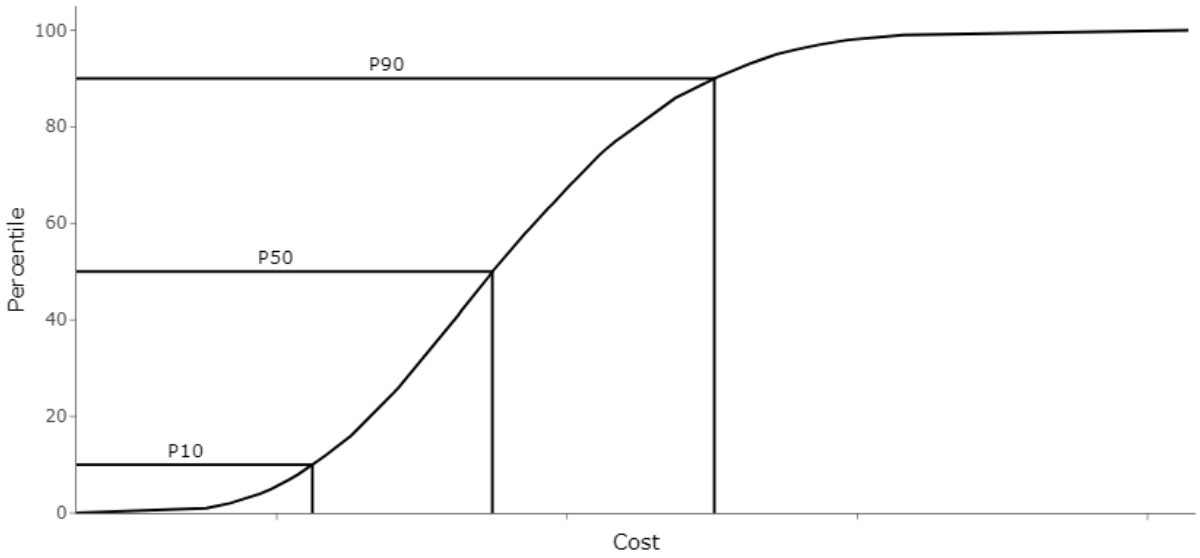
The key output of the risk workshop is a detailed risk matrix that:

- describes each of the project risks and the stage of the project at which those risks could arise
- outlines the likelihood of those risks occurring, the consequences of those risks being realised, and the consequent level of risk in the absence of any strategies designed to mitigate those risks
- notes the strategies that are intended to mitigate those risks (and any costs involved in implementing those strategies)
- outlines the revised likelihood of those risks occurring and the residual level of risk after the application of those risk mitigation strategies
- indicates whether those residual risks can be quantified
- provides available information on those residual risks, including the:
    - probability of the risk not occurring
    - if the risk does occur, the probability of:
        - the worst outcome occurring and its cost consequence
        - the most likely outcome occurring and its cost consequence
        - the best outcome occurring and its cost consequence
- these probabilities and cost consequences are used in the Monte Carlo simulation mentioned in the prior section.

6.7 Outputs and review

Outputs of the Monte Carlo simulations will allow for production of distributions showing the likelihood of different outcomes. An example output might look something like that shown in Figure 15. This figure shows the likelihood of different cost outcomes, where, for example, the 'P90' annotation line shows that there is a 90 per cent likelihood of costs falling below this level (or alternatively, only a 10 per cent chance of costs being higher than this level).

Figure 15 Example QRA distribution output



The results of our modelling will be presented back to the attendees of the risk workshop for sanity checking and confirmation. If required, risk distributions will be adjusted accordingly. We can also provide an 'interactive' QRA model, which simulates results 'on-the-fly' to help enable tangibility and sensitivity of results to different risk assessments.

Commercial Case

7. Introduction to the Commercial Case

This Commercial Case sets out the procurement strategy for the construction of the New Dunedin Hospital, with a focus on the appointment of the contractors for construction of the Outpatient and Inpatient buildings.[39]

The procurement strategy this Commercial Case was developed through a series of workshops facilitated by EY including the Ministry of Health, MBIE, Infrastructure New Zealand, Sapere and construction experts from the NDH Project Technical Reference Group.

The Ministry will reflect the broader outcomes of the construction accord[40] in the procurement and delivery of the New Dunedin Hospital. The Ministry will consider the construction accord in developing the procurement strategy, tender evaluation, the collaborative development stage and during construction.

Figure 16 Procurement approaches for the Outpatient and Inpatient buildings

Outpatients **14,806 m² – 3 year construction**	**Inpatients** **73,567 m² – 6 year construction**
Construction Management – Preliminary General & Margin • Relatively simple design has less scope for design innovation • Attractive to local market • Ability to advance programme to provide early capacity to SDHB • Let long led items (lifts and façade) • One stage RFP January 2021 with contract award May 2021	**Early Contractor Engagement** • Large and complex building will need a large and experienced contractor • Maximise contractor/subcontractor involvement in collaborative design phase • Enhances price certainty • Fair and transparent risk allocation • Design collaboration Feb 2021 to July 2023 • All contracts awarded by November 2023

Source: MOH/Sapere

The Early Contractor Engagement (ECE) model proposes a collaborative approach in line with the requirements of the 2019 Construction Accord. It is a model familiar to the market and maximises the involvement of contractors and key services subcontractors in design through a formal (rather than informal) collaborative development phase.

The Ministry's chosen ECE approach reflects lessons from other major projects (including Christchurch Acute Services Building) in the following ways:

- The Ministry has taken the risk on the most uncertain element of the construction activities. These activities are the removal of existing buildings, site rectification and

[39] Design and project management consultants were procured in early 2019, including architects, building services, quantity surveyors, and engineering

[40] Retrieved from: https://www.constructionaccord.nz/the-accord/

groundworks. These works commenced in January 2020 and the contract can be extended to include foundation works.

- The contractor will be engaged earlier and the design process will be longer. The contractor will know what it must build and will help to ensure that design is complete before construction is commissioned.
- The Ministry will hold design risk, and consequently will manage the design process. With the desire for a collaborative process and avoiding adversarial relationships developing, design risk is best maintained by the Ministry who is the party that can control design risk.
- The contractor will bring knowledge from experienced specialist services subcontractors to inform the design with industry best practice and explore innovations. This will also give subcontractors the ability to understand the likely resourcing requirements of the overall design, and to prepare to invest in their workforce and supply chain accordingly.
- Opportunities will exist to extend design innovation from the Outpatient building to the Inpatient building, with a focus on standardisation of design and materials.
- Through a process of progressively awarding separable portions (for example the award of substructure and base isolators) construction will be able start during the ECE process.
- The Ministry will retain discretion to award (or not award) the main works contract to the ECE contractor based on its performance during collaborative development, the quality of their interim deliverables and their final tender submission.

In determining preferred options for each building, the Ministry of Health considered the feedback from the market engagement process run in August 2019 and has re-engaged with the market to seek its feedback on the proposed approach particularly in light of current market issues.

Further detail on the proposed procurement model, the packaging of works, contents of the RFP and the collaborative development phase and contractor performance is included in the appendices.

7.1 Substantial pressure on our national construction sector

New Zealand is expected to see an unprecedented level of infrastructure investment over the next decade. A large number of projects are expected that are larger and more complex than previously seen in New Zealand.[41] The health sector is making significant capital investment in facilities. There is an estimated NZ$2.8 billion spend planned across 22 health projects reflected in the infrastructure pipeline, including the New Dunedin Hospital.

The construction industry plays a major role in New Zealand's economy, but there are common incidences of skills and labour shortages, inappropriate and/or unclear risk allocations and a lack of co-ordinated leadership. The increase in construction activity has seen the construction sector stretched and struggling to keep pace with project pipeline growth.

Industry and Government have adopted a shared responsibility to change the way major projects are procured and delivered through the Construction Sector Accord, and by establishing the Infrastructure

[41] Forecasts from the Infrastructure Pipeline (captures non-building construction including: roading, rail, and other land transport; ports and airports; electricity generation, electricity transmission, and electricity distribution; irrigation; and local council spending on the three waters), retrieved https://infracom.govt.nz/projects/pipeline/.

Commission Te Waihanga. For more detail on the Accord, and government procurement rules see 11.2Appendix C:. There are specific challenges for Dunedin which will arise from delivering a project of this scale and complexity:

- A large labour force will need to be recruited and accommodated without disrupting the housing market and the environment.
- The local construction market is currently constrained - there appears to be a lack of depth in some specialist subcontractor markets (both in the workforce size and the apprenticeship pipeline) and a general shortage of supervisory resources with the experience to manage teams on a large project.

COVID-19 impacts have already been significant, and the long-term outlook is uncertain:

- Infrastructure New Zealand on 30 March,[42] estimated a decline in construction company employment of 30 per cent within three months, with a slow recovery over the following 12 months.
- Construction firm stability and capacity may be challenged. For example, Fletcher Building announced at the start of April a significant cut in pay for employees to cover the period of working restrictions[43] and a subsequent reduction in staff numbers of 1,000 in May (a 10% reduction).[44]

The combination of critical infrastructure and a government counterparty may enhance the New Dunedin Hospital's relative attractiveness to construction contractors. Market engagement, that is currently underway, will further inform the impact of COVID-19 on the construction industry and the subsequent impact on the New Dunedin Hospital.

7.2 Two procurement models for two buildings

The preferred Site Masterplan option has two distinct stages that will be packaged and procured separately. The Ministry's preferred procurement strategy for each building's construction contract reflects the individual characteristics of each building and the complexity (and therefore risk) of the building.

The Ministry has appointed a design team and will retain design control on both buildings. Preliminary market engagement occurred in 2019, and there is further market engagement underway to further inform the procurement processes for the two buildings.

7.2.1 Outpatient building (circa 14,806 m^2) procured through Construction Management

The Outpatient building is smaller and less complex with a likely construction period of three years. This building has a relatively low risk profile as it is follows, to a large extent, the design of the Outpatient

[42] Retreived from: https://infrastructure.org.nz/media/8868809
[43] Retreived from: https://fletcherbuilding.com/news/significant-uptake-of-fletcher-buildings-bridging-pay-programme/
[44] Retreived from: https://fletcherbuilding.com/news/fletcher-building-update-on-trading-and-organisation-reset/

building in Christchurch. There is less scope for innovation and fewer potential delivery challenges. Industry appetite is expected to be strong for delivering a smaller building in the local and domestic market and is unlikely to constrain the larger Inpatient building delivery. The proposed procurement approach achieves the objective of delivering SDHB early day surgery capacity to mitigate the current challenges in the existing Dunedin hospital. The proposed procurement approach is explained:

- It will be delivered through a Construction Management arrangement familiar to the construction market - Preliminary General & Margin (PG&M) build and progressive tender for limited trades.[45]
- The Ministry will issue a one stage RFP for the construction management contract in January 2021, and contract award in May 2021.
- As a lesson learnt from other projects, the Ministry will let some specific long lead items such as lifts and façade separately to de-risk the programme.
- As design progresses, the construction manager will let subtrades on an open-book basis to provide price certainty and progressively start construction.

7.2.2 Inpatient building (circa 73,567 m^2) procured through Early Contractor Engagement

The Ministry's recommended approach is to deliver the Inpatient building of the New Dunedin Hospital under a form of collaborative procurement "Early Contractor Engagement".[46] Through the Detailed Business Case process, a full evaluation of a range of approaches were considered. Appendix D: provides an explanation of the process taken to confirm ECE as the preferred approach. ECE was chosen from a short list including Alliancing, and Design and Build.

The ECE approach chosen by the Ministry differs from a traditional Early Contractor Involvement (ECI) approach in the following ways:

- It is a more collaborative arrangement requiring commitment through engagement with the main contractor into the process and design outcomes
- It has a progressive subtrade tender process built in that will only be completed once the Inpatient building has been fully designed
- The Ministry through its progressive Separable Portions award process (for example the award of substructure and base isolators) is seeking construction to start during the ECE process. A traditional ECI process does not have physical works undertaken during the ECI design stage.

[45] Prelimiary General & Margin is where the construction manager is paid for their costs of running the construction task, both with onsite (Preliminary and General – i.e. tools, plant, scaffolding etc) and offsite costs (Margin – i.e. head office, salaries, insurance). Progressive trade tendering will be open book with where possible a requirement of 3 quotes per trade and will be under supervision of the Ministry's Quantity Surveyor. Trades will be predominately let at the completion of developed design.
[46] Note: initial market engagment focussed on an Early Contractor Involvement process, which has evolved to a Early Contractor Engagement approach.

The inpatient building is large and complex with a likely construction period of six years. The preference for a collaborative approach by central government infrastructure advice, and insight from market engagement with contractors in 2019 has contributed to development of the procurement approach. Detailed analysis of the preferred packaging approach is included in Appendix E:. The approach is summarised as:

- The Ministry will appoint a prime contractor together with its specialist sub-contractors.
- A one stage RFP for the collaborative design phase will be issued in July/August 2020 to identify the preferred contractor(s), including specialist sub-trades.
- The ECE contractor will be identified in February 2021.
- The preferred contractor(s) and key specialist subcontractors will then work with the Ministry and the Ministry's design team in a collaborative development phase to complete Detailed Design by July 2023.
- Structural packages (substructure and superstructure) will be progressively tendered from November 2021. Key risks will be identified and quantified prior to the letting of each structural package. Risk quantification is dependent on suitable design progress including indications of physical quantities and anticipated programme duration.
    - Key subtrade contractors (such as painters, electricians and vinyl layers) will be tendered under an open book closed tendering process and bids will be benchmarked by the Quantity Surveyor.
    - Three bids will be sought on other sub-contracts.
- Following completion of detailed design, the construction contract and price will be finalised and, if pricing and contractor performance during the collaborative stage is acceptable, main works will commence.

7.3 Non-competitive Early Contractor Engagement preferred for Inpatient building

A combination of factors informed the decision to proceed with the Construction Management and ECE models:

- Wider government procurement advice suggested preference for collaborative approaches. This model maximises the involvement of contractors and key services subcontractors in design during a formal collaborative development phase. Market engagement was undertaken with a range of national and international contractors and sub-contractors also suggesting a more collaborative approach. The Ministry and the construction industry (based on market sounding) prefer a collaborative model. A collaborative approach combines the attractive teaming and relationship principles of alliancing with the price certainty and desired risk allocation of design and build contracting, and is aimed at developing the overall capability of the construction industry in Dunedin and New Zealand.
- With both Construction Management and ECE, design risk is held by the Ministry. This is most appropriate for the Ministry and the SDHB to hold given the critical nature of the final design to the long-term suitability of the hospital. As outlined in the Management Case, the Ministry is co-located with the SDHB Project Management Office and has

established a larger and more experienced client side Project Delivery Team. Key appointments include Programme Director Mike Barns and Design Director Onno le Roy who are supported by an experienced Technical Advisory Group and procurement team.

- The development of fair and transparent risk allocation within the Ministry's funding envelope that supports broader outcomes through project delivery. Using the construction industry's practical experience allows the Ministry to optimise its design solution, gain a better understanding of the project's potential risks and encourage more accurate contractor pricing. Unlike Early Contractor Involvement, the contractor is paid to participate in the design process.
- The likely market for contractors is different and scarcer from that of the Outpatient building.

The Ministry acknowledge the strength and experience of the client and contractor teams will be critical to the success of an ECE project. The value of the ECE project to cost certainty will come from the open-book tendering, and independent verification of rates from the Ministry Quantity Surveyor, noting that full cost certainty will occur at final contract award. There remains a risk that if contractor performance is not acceptable, and an alternate construction contractor is engaged, there will be adverse implications to cost and schedule.

7.4 Two other approaches were considered and rejected

Design and Build and Alliancing were both considered but rejected.

7.4.1 Design and Build not favoured by contractors

Design and Build was set aside because of a range of concerns about risk allocation, adversarial relationships, as well as loss of innovation and flexibility and other issues highlighted in the Construction Accord.

Design and Build performs well against traditional commercial objectives of programme and cost certainty and allows public sector agencies to access private sector design innovation. However, the hard risk transfers inherent to this approach (where a design brief is handed to the contractor) means it is less effective at delivering the benefits of collaboration and does not encourage the contractor to deliver broader public outcomes.

Anecdotal evidence from the construction industry, and reiterated during initial market engagement, suggests firms have had negative experiences with how design and build was implemented on previous projects, where inappropriate risk allocation (including opaque design risk transfer), lack of early involvement of contractors and adversarial contracting relationships were seen as major issues.

7.4.2 Alliancing increases risk to Ministry

Alliances are typically adopted for large, complex and risky projects that need flexibility during delivery – particularly where project scope and risks are highly uncertain. This is not considered the case with the design and construction of the Inpatient building:

- For the New Dunedin Hospital, a collaborative planning/design phase provides certainty on most aspects of project scope and risks ahead of a final main works contract, enabling these to be effectively allocated to the party best placed to hold them. In contrast, an alliance would mean the Ministry would be responsible for sharing and managing risks that a contractor is better able to manage.
- An alliance utilises a target out-turn cost mechanism where cost overruns/savings are shared between the Ministry and contractor(s). ECE will give a greater level of price tension than alliancing although not as much as a fixed price contract model.
- It is typical for an alliance contractor to cap its cost risk exposure to the value of its overhead and profit, leaving all the cost risk in a distressed project to the owner, the Ministry and SDHB in this instance.
- The effort and cost associated with forming an alliance model implies both the Inpatient and Outpatient buildings would be delivered by one alliance. This reduces the chance for a smaller organisation to deliver the Outpatient building, which limits the ability to meet the Government's desired broader outcome of developing local construction firms' capacity and capability.
- Professional fees would be higher. The current project cost estimates do not include the additional cost of alliance contracting, or the cost risks involved.

The Ministry does not have experience with the alliance model. To run an effective alliance project, the Ministry would need to increase its project team's capacity further and would need to recruit in a market where construction management skills are scarce.

7.5 Our approach to Early Contractor Engagement is non-competitive

Early Contractor Engagement can be undertaken in either a non-competitive or competitive form.

- In a non-competitive model, a single preferred contractor is initially procured through a tender process (potentially including prequalification/EOI and RFP). After appointment, the contractor works collaboratively with the Ministry and its design team to complete design prior to final pricing and contract award.
- In a competitive model, two contractors are shortlisted through an EOI process and enter a competitive process to develop and price separate design solutions/innovations with the Ministry, before a preferred contractor is appointed.

The Ministry prefers a non-competitive process:

- A non-competitive process provides the greatest certainty to the construction industry at both contractor and subcontractor levels.
- It establishes a collaborative culture by committing to a single counterparty early.
- A collaborative and transparent process maximises the opportunity to address the challenges that will come through the planning and design process (including the ability to support broader Government objectives).

- The relationships formed between the Ministry, its design team, contractors and subcontractors are expected to establish positive collaborative behaviours in advance of the delivery phase.
- The Ministry will retain the option of terminating the relationship with the contractor if the contractor's performance is unsatisfactory during the design stage.

The Ministry accepts advice from its Technical Reference Group that a competitive process is likely to be unattractive to contractors. The risk is "B teams will be put forward in a competitive process", or prospective contractors would not bid at all. The Ministry's resource requirement and that of the design team in managing two contractors would be significant, and may compromise the speed of the collaborative process, or adversely affect project cost through additional resourcing and engagement complexity.

The Ministry recognises reduced pricing tension is a drawback of the non-competitive approach. Evidence from Australia provided by the Infrastructure Commission suggests that a premium in the range of 5-10 per cent is likely to be paid by the client when a non-competitive process is used.[47] The lack of pricing tension can be partly offset by adopting a competitive process to initially appoint the contractor. The Ministry will incorporate aspects of price competition as appropriate during this stage. The Ministry will require contractor(s) to provide independently verified open book subtrade pricing.

The Quantity Surveyor has provided the expected margin in the NDH costing.

Table 20 Benefits and risks of competitive and non-competitive early contractor engagement models

Considerations	Non-competitive	Competitive
Relative benefits	• Likely to see significant appetite from the construction industry to participate in the project. • Overall, this approach aligns more closely with feedback received from contractors/subcontractors during the market engagement process. • Earlier certainty provided to industry to enable them to build their resourcing, especially among subcontractors. • Greater ability to create "one team" collaborative culture early in design phase.	• Overall, this process is designed to leverage competitive tension as much as possible throughout procurement. • Contractors/subcontractors from both bidders can inform design earlier in the design process, potentially providing greater scope of influence. • Greater opportunity to incentivise innovative design ideas through competition. • More aspects of price able to be locked down within a competitive process.
Relative risks	• Loss of competitive tension earlier may reduce incentive for innovation and price tension.	• Potential market depth issues – question as to whether the market can support two high quality bidders under a model with

[47] Department of Treasury and Finance, Victoria, *In Pursuit of Additional Value, A benchmarking study into alliancing in the Australian public sector,* October 2019.

	• "Client capture" may arise during the collaborative phase and result in middling to poor result. • Price, design and programme are still incomplete (and at risk) at the point of contractor selection, increasing the likelihood the Ministry reaches an outcome that is not palatable later in the process. • Collaboration limited to the design phase, but commercial incentives remain in place for when the contract is signed.	substantial subcontractor involvement during design phase. • Delays provision of certainty to contractors/ subcontractors as to whether they will be delivering the contract, delaying ability to ramp up workforce and supply chain until late in process. • Significant resource burden on the Ministry to manage two contractor teams. • Extended competitive process without direct engagement with single bidder may be interpreted by industry as the Ministry not listening to market feedback.

Source: MOH

The Infrastructure Commission provided advice to the Ministry that the proposed procurement strategy featured critical success factors that would need to be achieved to meet the expected benefits of a non-competitive ECE. We are attending to each of these critical success factors in our implementation of ECE. The critical success factors are summarised below:

- Creating and Capturing innovation – Ideas generated during the collaborative phase will need to be identified, assessed, and included within the project design. The Ministry will need to consider how it will make decisions when the advice provided by the client design team and contractor differs as this will have a major impact on the risk profile held by the client.
- Creating a Collaborative Culture – Understanding the key decisions the contractor needs to be consulted on, what key decisions will be made collectively and unanimously, and what areas the contractor is happy for the client to undertake independently will be essential to the design of the governance and decision-making framework. Market participants will be asked to confirm what critical attributes will be required from the Project Team for the collaborative process to be a success.
- Defining the scope of services - The scope of service, project outcomes and breadth of risk to be considered by the contractor in developing their advice and project solution needs to be carefully assessed. Targeted aspects of the Project the client wants input on or sees particular value in developing in a collaborative manner will be identified in advance of the procurement process and refined through engagement with the market.
- Moving to Contract – The process to agree a final contract will be documented and consist of simple processes and procedures with clearly defined outputs; as well clearly articulating underpinning assumptions to be used in development of the final proposal. It must consider how the client and the contractor will agree a contract price, programme, design specification and methodology whilst delivering acceptable margin, risk, and contract terms for both parties.
- Oversight and Governance - Understanding how incentive mechanisms such as fee reimbursement, "no-fault" break fees, no-fault/no-blame clauses, rights to tender in

subsequent procurement processes, and formal stage gates drive behaviour is important to design an effective relationship.

7.6 Learning from the past, from health and other experience

The Ministry has recent experience on large public-sector vertical projects in the South Island. These lessons will be incorporated into the Inpatient building approach. Contractors will be involved in the design process, and the design process will be longer. The contractor will know what it must build and will help to ensure that design is complete before construction is commissioned. FF&E will be addressed early on to ensure the Inpatient building is suited to the choice of clinical equipment, such as MRIs, etc.

Table 21 Christchurch acute services building lessons learnt and proposed response

Issue	Explanation	Previous experience	Inpatient building approach
Contractors are procured too late to add significant value	It is difficult for contractors to demonstrate value-add when they were included late in the design process. For example, there is little (or no) opportunity to influence major decisions around structural and façade system design	Christchurch Hospital ASB saw the contractor appointed late in design and for a very short period (12 weeks)	Collaboration services start early in Preliminary Design. This is reflected in procurement timelines and master programme
Contractors need to commit highly skilled technical staff to a process that does not produce revenue	Contractors have become reluctant to commit staff to design processes that do not contribute to revenue or risk management, where profit is generated. This is exacerbated in a tight construction market	Christchurch Hospital ASB saw appointment of a contractor with few resources in Christchurch without local market knowledge and limited time between appointment and starting on site to mobilise key staff and expertise before works commenced	The long collaboration period allows the contractor enough time to deploy the right level of skill and expertise. The project is sufficiently large to be an incentive, and the risks of under-performing are high for a contractor to commit the correct level of skill and expertise to the process
Contractors win the contract without security for the building works contract	The sector is hesitant to invest expertise and time into a process with an uncertain outcome	Christchurch has recently seen two major public-sector contracts let on an ECI basis to Contractors that did not to convert to the construction phase. The contracts were let to other contractors	It is intended to create a more collaborative partnering environment, though the Ministry will have appropriate protection if contractor performance is poor. If the contractor is successful in Dunedin there is a future pipeline of large regional hospital construction contracts (Nelson, Whangarei, Palmerston North)

Source: Sapere/MOH

In addition to the specific experience the Ministry has had in recent vertical construction projects, more general advice about common challenges with a collaborative process like ECE is summarised and specific mitigations are proposed below.

Table 22 Vertical construction lessons learnt and proposed response

Issue	Explanation	Inpatient building approach
Contractors lower the price of their ECE services to win the work, then under-perform	ECE services are often procured with a price component attached. The incentive is the profit associated with winning the full construction contract. It has been observed that some contractors with less expertise (and cost) have lowered their proposal price to win the contract	To capture the right level of expertise and service at the collaborative stage, the procurement team has a reasonable expectation of budgeted cost associated with capturing the right level of expertise and service. **Evaluation of price is at a lower priority level to emphasise the importance of value**
Contractors inherit a transfer of design risk that is not reflected in the form of contract	An informal moral obligation can be wrongly framed by the Principal that the Contractor should not claim for design errors and omissions that they had the ability to influence before the design team produced the tender documentation. This inferred obligation may not be strictly reflected in the form of contract but has created dispute downstream in the negotiation of variations	ECE services precede the tendering of a build-only contract. Design documentation quality responsibility remains with the Ministry. **The Ministry has procured an independent design management service to mitigate this risk.** The importance of high-quality design management is key to successful delivery of an ECE process
Contractors expertise is diminishing with sub-contractors holding more expertise	It has been observed that more complex designs and main contractors increasingly become 'management contractors' (who further package up and pass risk and liability down the sub-contracting chain), sub-contractors have strengthened their management resources and expertise. The main contractor's expertise is diluted and more weighted toward technical and financial co-ordination.	It is expected main contractors will respond to the RFP with preferred prime subcontractors so the project may understand their expertise. For example, a requirement for civil contracting capability was included in the Demolition Contractor RFP. This enabled a review of ground improvement technologies and design with the staged demolition to accelerate ground improvement works

Source: Sapere/MOH

We set out the specific steps we are taking in response to those learnings.

7.6.1 The request for proposal starts collaboration

The RFP stage enables bidders to demonstrate their capability, innovations and teaming behaviours before the collaborative development phase. Early design information (e.g. partial Concept Design)

will be provided alongside RFP documentation, collaborative design contract documentation, and construction phase draft contract documentation (including proposed risk allocation).

The Ministry intends to communicate its funding envelope for the project to contractors during the RFP phase.

Collaboration is emphasised in the RFP phase:

- In the RFP response the lead contractor(s) will bring expertise in specialist sub-trade areas. The specific trades will be communicated in market engagement to give lead contractors enough time to develop partnerships or run subcontractor tender processes. Non-exclusivity of subcontractors will be required.
- Subcontractors will provide insights during the collaborative development phase, with subcontractors comprising a large portion of the new hospital's total construction cost. Allowing specialist subcontractors to maximise their contribution to design is expected to save time on site, enable a fairer risk allocation and facilitate greater market buy-in. It allows the market to commence early project planning by giving contractors/subcontractors enough lead time to increase their resourcing and establish supply chains.
- Collaboration will be a core part of the RFP process, through confidential interactive workshops between each bidder and the Ministry to refine the quality of proposal responses.

Expanded detail of the RFP contents is included in Appendix F:.

7.6.2 Collaborative development will improve project design

The collaborative development phase will bring practical elements into the design. We highlighted this above as one of the key learnings from past projects and set out what we intend to do about it here.

The collaborative development phase involves the Ministry's design team and the contractor(s) working together to optimise delivery by developing a greater understanding of the project's scope and risks (enabling informed risk allocation discussions). The Ministry has identified and allowed for the following features of the collaborative design approach, with details of the workstreams in the collaborative design phase contained in Appendix G:.

- Sufficient time is needed for the design team to explore and adopt feedback from the contractor(s), and for the contractor(s) to consider and price risk. This may extend collaborative development, however additional clarity around constructability and risk can result in programme efficiencies during construction.
- Collaborative development success requires a positive relationship between the Ministry, its design team and the contractor, where a "best for project" approach is adopted for decision-making.
- Ensuring the design team is incentivised to collaborate with the contractor and adopt innovative ideas into the completed design is critical. Where the design team will continue to hold design risk (e.g. for design elements that have not been informed by and risk

passed to specialist services subcontractors), the design team could be hesitant to adopt innovative or untested ideas proposed by the contractor.
- The Ministry intends to develop a framework that outlines where design risk is allocated, how these decisions will be made and what independent review and assurance processes are in place.

Design team and contractor collaboration could be supported by:

- The contractor agreeing to take design risk on discrete packages where they have a high-degree of expertise and scope of influence (e.g. modular solutions, mechanical services).
- Agreed share of savings for the design team through design development (and similar pain/gain share with the contractor across other aspects of the performance framework).

The governance structure for the New Dunedin Hospital will establish an integrated Project Design team, with membership from the Ministry, the SDHB and the contractor. The integrated Project Design team will also include input from the Clinical Advisory team to enhance user acceptance of the design and reduce the chances of design rework.

7.6.3 Standardisation to reduce cost and error

Where practicable, there will be substantial standardisation of theatres, wards, ensuites, procedure rooms and consultant rooms. This standardisation has not been the case in some previous hospital builds. We will start with previous plans and adjust with experience rather than starting from scratch.

7.6.4 Collaborative development phase fees enhance buy-in

The Ministry will reimburse contractor(s) costs during the collaborative development phase. The fee will represent expected preliminary and mobilisation costs plus overheads and margins and will be based on market rates to reflect the contractor(s) involvement level.

The Ministry recognises the market engagement feedback noted fees provided during a collaborative phase do not necessarily provide a strong incentive given the substantial time and resource commitment. Construction companies rely on earning profit margins across the full scope of work in project delivery. The potential inclusion of foundation works (and its accompanying profit margins) within the scope of services requested from the contractor will enhance process buy-in.

7.6.5 The final price will be assessed on an open book basis, based on the Detailed Design

The contractor will be issued the Detailed Design by the Ministry's design team and will provide a price to the Ministry for project delivery at the end of collaborative development. Contractual derogations or outstanding decisions on risk allocation will be addressed and resolved during the collaborative development phase and will not be part of the final submission.

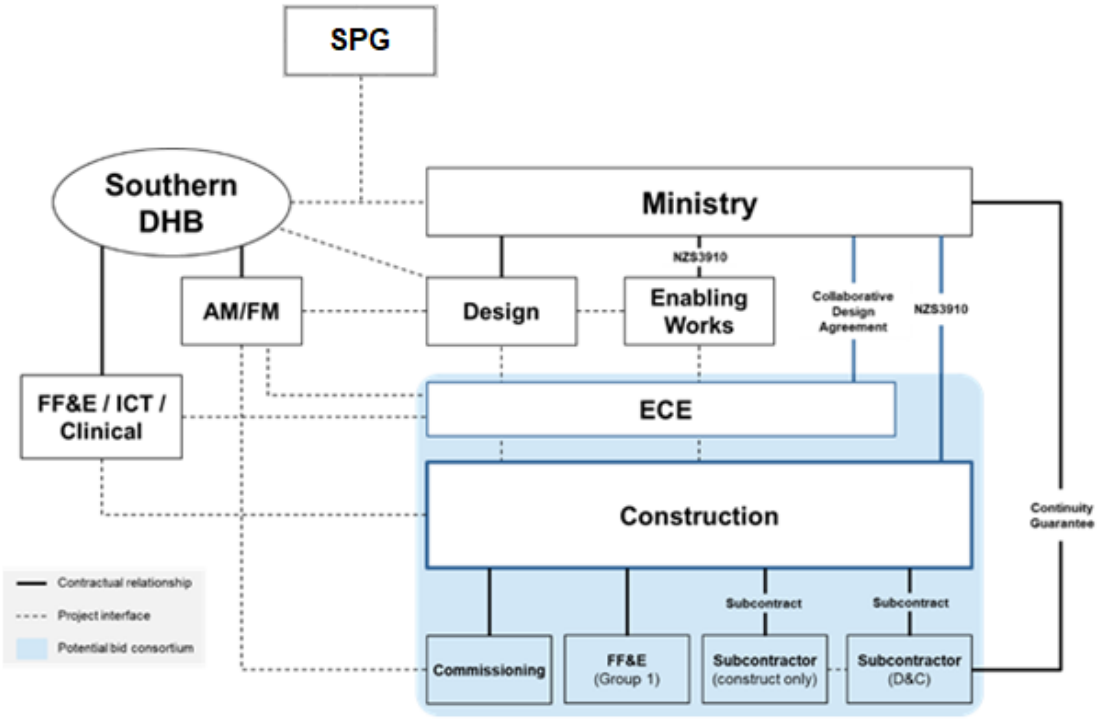
To ensure maximum transparency and public value, the final price will be assessed on an open book basis. Key elements, such as rates and margins, must be consistent with the contractor's RFP

submission. The contract will be signed following formal evaluation of the contractor's final submission, and any negotiations.

7.7 Commercial principles rely on standard construction contracts

An indicative contractual framework for delivering the Inpatient building is set out below. This represents the direct contracting relationships between the Ministry and SDHB and their suppliers, plus the non-contractual interfaces between each party that will influence the delivery solution for the project.

Figure 17 New Dunedin Hospital contractual structure



Source: Sapere

Key elements of this contractual framework include:

- The Ministry has engaged the project's design team under a standard contract for professional services.
- The Ministry has engaged a civil works contractor to deliver site clearance and demolition works under an NZS3910:2013 standard form contract with special conditions. The Ministry has reserved the right to subsequently appoint this contractor to deliver future enabling works for the project, potentially including site remediation, ground improvement and foundations (or parts thereof) subject to commercial negotiations.
- The Ministry will enter an ECE agreement with its selected contractor (likely comprising a lead contractor(s) and its choice of specialist major subcontractors), that provide the terms

and conditions of the collaborative development phase. These include, but are not limited to:

  - Key principles and behaviours of the collaborative development phase
  - The length of the collaborative development phase and all key milestones (e.g. price submissions, design drops, interactive meetings, etc.).
  - Clearly outlined scope of services for contractors and subcontractors, including required deliverables and submission dates.
  - Key roles and responsibilities for the Ministry and contractors/subcontractors.
  - Protocols for engaging with the Ministry's design team, enabling works providers, SDHB, maintenance providers and other related parties.
  - Details of the performance framework to be put in place during the collaborative development phase.
  - Processes for dispute resolution, change management, etc.

- The Ministry will enter a contract for the construction of the Inpatient building. This is currently envisaged to be a NZS3910:2013 standard form contract with special conditions (reflecting any design risks transferred during the collaborative development phase). The contractor(s) (and any major subcontractors party to the agreement) will be responsible for delivering the project in accordance with all the Ministry's contract specifications. The contractor(s) will enter subcontracting arrangements to deliver the project.
- In parallel to the main construction contract the Ministry will consider entering continuity guarantee arrangements with all major subcontractors (e.g. structural steel, façade, specialist prefabricated features, mechanical, electrical, hydraulics, etc.). The guarantee arrangements are to give the Ministry comfort that it has protected the delivery of key subtrades against insolvency or termination of the main contractor.
- SDHB will enter separate contracts to procure necessary clinical equipment, ICT assets and certain FF&E assets (likely Group 2 & 3) independently of the main construction contract.
- SDHB will enter separate fixed-term agreements with specialist asset management and facilities maintenance providers to maintain the New Dunedin Hospital once construction works are completed.
- All clinical services will continue to be provided by SDHB during construction of the new hospital and once the new buildings are commissioned.

7.7.1 Streamlining contractual arrangements

The Ministry will use the collaborative development phase to streamline the contractual arrangements in response to the construction industry's desire to move away from excessive special conditions-to-contract that have been prevalent in New Zealand in recent years. The steps to be taken are:

- A simplified contract structure maintaining a fair risk allocation while ensuring a clear description of roles and responsibilities (i.e. the Ministry as principal, contractor(s) and subcontractors), process for proposing and pricing changes/variations, termination clauses (for cause and convenience), the security regime and the disputes resolution process.
- Issuance of a draft version of the desired contractual framework early in the procurement process (likely alongside the RFP), providing the opportunity to negotiate key contractual

positions with contractor(s) and minimise residual contract departures/derogations later in the collaborative development phase.

- To encourage a fairer and more transparent risk allocation, the Ministry will consider requiring contractors to use standard form subcontracts for engaging their key suppliers and subtrades, and may consider implementing additional security measures such as project bank accounts and retention trust auditing.
- These subcontracts will be reviewed and approved by the Ministry in advance and will ensure consistent treatment of subcontractors for risk transfer, payment terms, security regime, labour/workforce development, etc.

7.8 Risk allocation will be fair and transparent

The Ministry will seek a fairer and more transparent allocation of project risks between the public sector and the construction industry on the New Dunedin Hospital:

- The risk allocation strategy is based on the principle that risks will be held by the party that is best positioned to manage, understand and price each risk. Risks are assigned to the party who can most effectively reduce the likelihood of each risk or reduce the adverse impact of that risk should it occur.
- The approach transfers key risks – such as construction performance, cost overruns and programme – to the successful bidders, and is intended to add value to the Ministry by maximising industry design input and innovations during the collaborative development phase.
- The Ministry and/or SDHB will retain risks with time and cost implications. The Ministry will also carry design risk.
- This proposed risk allocation will be tested with contractors and subcontractors during the current round of market engagement.
- A detailed risk allocation between the Ministry/SDHB and contractor(s)/ subcontractors will be agreed during the collaborative development phase and specified in the construction contract.

The proposed key risk allocation for both Inpatient and Outpatient buildings is summarised below. The risks will be quantified and negotiated in detail with the contractors prior to contract award. Specific attention will be given to risks in relation to programme, cost and design conformance given their impacts on SDHB and the Ministry.

Table 23 Proposed construction risk allocation Withheld under Section 9(2)(i)

Risk Category	Types of Risk	Allocation
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Source: MOH/SDHB/Sapere

7.9 Performance management of contractors

There has been considerable thought into the management of contractors.

7.9.1 Performance monitoring and off-ramps ensure contractor performance

The Ministry's performance framework (see Appendix H:) will apply throughout the collaborative development phase. Contractor(s) will be obliged and incentivised to show collaborative behaviours and work positively with the Ministry. Performance will be monitored and assessed at key milestones. Performance monitoring will focus on:

- performance of the contractor in collaborating with Ministry and design team
- alignment of personnel availability with the initial proposal
- timely and quality provision of deliverables
- full contractor cost transparency through open book pricing.

The Ministry will retain discretion to award (or not award) the main works contract to the contractor based on its performance during collaborative development and/or the quality of their interim deliverables and final tender submission.

7.9.2 Off ramps

The Ministry will retain a credible option to go back to market with the in-progress or completed design throughout the collaborative development phase. A framework will be put in place (including independent design and cost reviews, Disputes Advisory Board, etc.) to regularly confirm that both the Ministry and the contractor are meeting their obligations during the collaborative development phase. This provides a consistent incentive for the contractor to provide high quality services and to operate in good faith. The Ministry's off ramps will be most credible at the key milestones of Preliminary

Design, Developed Design and Detailed Design completion (which will also be supported by price estimates from the contractor).

The Ministry understands that the use of off-ramps will be balanced with providing the contractor confidence that, if required services are provided, they are likely to be awarded the contract.

7.9.3 Payment mechanism will incorporate the Ministry's performance regime

The Ministry will pay the contractor(s) a fixed price as agreed in the main construction contract for delivering the Inpatient building. This payment mechanism will incorporate the Ministry's performance regime, which will give the Ministry the right to adjust contractor payments based on their performance in meeting the Ministry's objectives.

Withheld under Section 9(2)(j)

[redacted]

Payments for other works packages outside the main building contract (e.g. supply of speciality items such as Group 2 & 3 FF&E/ICT/clinical equipment, long-term maintenance) will be subject to agreed contractual payment terms once these contracts are agreed.

7.10 Project timetables

The Inpatient building procurement plan timeline is:

Phase	Date
Market engagement	May 2020
RFP release	August 2020
RFP submission	October 2020

RFP evaluation	February 2021
ECE start	February 2021
Preliminary Design complete	June 2021
Developed Design complete	April 2022
Detailed Design complete	February 2023
Progressive award of contract **Substructure including Base Isolator** **Superstructure, Base-building Services, Façade and Roof** **Clinical and Non-clinical Internal Fitout**	 March 2022 October 2023 November 2023

The Outpatient building procurement timeline is a single stage RFP to appoint the main contractor. The timeline is:

Phase	Date
Market engagement	May 2020
RFP release	January 2021
RFP close	March 2021
RFP evaluation	April 2021
Contract award	May 2021

7.11 Market feedback will be used to refine the procurement strategy

Market engagement restarted in May 2020 for both the Inpatient and Outpatient buildings. The Ministry is testing parts of the procurement strategy with the construction industry for feedback or adjustments. Market engagement includes Tier 1, 2 and 3 providers as well as key sub-trades to confirm their appetite to respond to the RFPs. Local Dunedin-based firms are included in the market engagement. The Ministry is seeking comments on the procurement strategy, including:

- the impact of Covid-19 on domestic and international contractors and their appetite to bid
- the current pipeline of other construction projects
- procurement phase duration
- bidders' deliverables at the RFP phase
- subcontractor requirements (including extent of subcontractor commitment at each phase and how these will be assessed within the procurement process)
- intended contract form (including subcontracts)
- risk allocation
- the proposed process for the Inpatient building, including the length of design collaboration.

The Ministry will review the procurement strategy if feedback received during market engagement requires it. The Project Team will then finalise RFP documentation, including procurement documents and the evaluation plan.

Financial Case

8. Introduction to the Financial Case

This Financial Case addresses the question of affordability of the construction of the NDH for SDHB. Against the backdrop of ongoing operating deficits, SDHB will become substantially more efficient. The new hospital enables the DHB to increase capacity to serve its population and their health needs while delivering efficiency gains in the form of reduced staff to patient ratios and controlling operating costs. As noted elsewhere, this will happen in conjunction with workforce, IT and primary care changes.

The total cost of the hospital and its components is [redacted]

[redacted]

Withheld under Section 9(2)(i)

In 2028/29, the first full year to show the full financial impacts of the NDH, there will be net additional operational spending of [redacted] from outsourcing reductions.

For the 10 years from 2025/26 to 2034/35, there will be net total operating expenditure of [redacted]

[redacted]

More details of the effects on SDHB's financial position can be found in Appendix J:.

8.1 Addressing the question of affordability

The Financial Case differs from the Economic Case in several important respects. The main differences are:

- Use of nominal dollars; the Economic Case uses real dollars.
- Recognition of accounting costs, particularly depreciation. Depreciation is implicitly covered in the Economic Case by looking at the residual value of the project at the end of the analysis period. In the Financial Case, depreciation is the means of allocating the depletion of the asset across years.
- Non-monetary benefits and costs. Those benefits and costs attributable to other parties are ignored in the Financial Case. Benefits accruing to individuals (such as savings in patient time) are counted in the Economic Case. This Financial Case only explores the DHB's financial results.
- Focused on the preferred option. The Economic Case evaluates multiple options, the Financial Case is focused only on the preferred option.

The Financial Case demonstrates that the DHB will have enough financial headroom to cover the spending required over the lifetime of the project.

8.2 The Initial DBC has been updated

The Financial Case has been improved since the Initial DBC:

- There is better understanding of the future finances: Since the Initial DBC, the finance team at Dunedin Hospital has undertaken a comprehensive review of its financial model. This review has produced a new financial model which is robust, can be edited and updated more quickly, allows for quick error tracing, and facilitates the comparison of multiple cases. These new model features mean there is a much better understanding of the financial situation and outlook of the DHB.
- The preferred option has changed: Since November 2019 a new preferred option has been identified. This option has been costed based on the Schedule of Accommodation dated 17 April 2020 and has been described as "pre-concept".
- The Implementation Business Case will provide greater certainty: This Final DBC is able to provide additional detail around the preferred option, including the selection of site, the configuration of the buildings and the staging of the construction.

Additional work will be needed for the implementation business case to:

- confirm the costings
- provide another year of actual financial results
- confirm efficiency proposals
- develop the workforce model further
- account for any sector changes that could occur following the submission of this document.

8.3 Key modelling assumptions

This section details those assumptions which, if they were to change, would have a significant effect on the affordability of the new hospital. Full statements of assumptions are appended.

Key macroeconomic forecast data (including CPI inflation, and wage inflation) are used for cost and funding escalation. The capital charge rate has been used to estimate the financing costs.

8.3.1 The wider economy needs to be considered

The common assumptions are those that apply across different parts of the model and are then used to develop the whole of life costs.

The period modelled is up to 2042/43. This time period makes it possible to model SDHB's performance between now and the commissioning of the building, and an estimated financial position at commissioning.

At this stage changes that may occur in the health sector as a result of Covid-19 have not been considered. This, and other risks, will be discussed in the quantitative risk assessment.

Table 24 Macroeconomic assumptions

Assumption	Driver/value	Source
Period of analysis	From 2019/20 to 2042/43	SDHB
Inflation (CPI)	Forecast until 2020/21 then 2%	Budget economic and fiscal update 2018
Wage increases	3.5% per annum	SDHB

Source: SDHB/Sapere

8.3.2 Revenue assumptions are based on Treasury advice

SDHB revenue is consistent with the long-term investment plan. This plan considers population growth including the effects of an ageing population. Forecast revenue growth over the period of analysis averages 3.7 per cent on a compound annual growth (CAGR) basis and takes into account the recent increase in funding to DHBs.

An assumption is that there will matching funding for the additional capital charge levied once NDH is complete, which will be recorded as capital charge relief revenue. This is the consequence of an interim decision was announced on 8 July 2019, since confirmed, that the Crown will fund the capital charge of major health investments.

There is currently a New Zealand Health and Disability Review (released 16 June 2020) which, as part of its terms of reference, is looking into health system funding. We assume no changes at this stage to funding arrangements.

8.3.3 Capital assumptions are provided by the quantity surveyor

The construction cost estimate has been developed by Rider Levett Bucknall. The current Schedule of Accommodation that this Financial Case is based on, is for a gross floor area (GFA) of 88,994 square metres. The components of this build and the associated expected useful life of the components are detailed in Table 25.

Table 25 Cost components of new build – nominal dollars (thousands) Withheld under Section 9(2)(i)

Component	Outpatient building	Inpatient building	Total	Useful life (years)	Depreciation (annual %)
Building shell	[redacted]	[redacted]	[redacted]	40	2.5%
Architectural fit out	[redacted]	[redacted]	[redacted]	25	4.0%
Plumbing	[redacted]	[redacted]	[redacted]	40	2.5%
Mechanical	[redacted]	[redacted]	[redacted]	30	3.3%
Fire	[redacted]	[redacted]	[redacted]	40	2.5%
Electrical	[redacted]	[redacted]	[redacted]	40	2.5%
Lifts	[redacted]	[redacted]	[redacted]	25	4.0%
Security	[redacted]	[redacted]	[redacted]	15	6.7%
Comms	[redacted]	[redacted]	[redacted]	15	6.7%

Withheld under Section 9(2)(i)

Component	Outpatient building	Inpatient building	Total	Useful life (years)	Depreciation (annual %)
Nurse call	[redacted]	[redacted]	[redacted]	15	6.7%
Med gas	[redacted]	[redacted]	[redacted]	40	2.5%
Lamson tube system	[redacted]	[redacted]	[redacted]	25	4.0%
Seismic restraints	[redacted]	[redacted]	[redacted]	40	2.5%
External works	[redacted]	[redacted]	[redacted]	25	4.0%
Demolition	[redacted]	[redacted]	[redacted]	25	4.0%
Helipad		[redacted]	[redacted]	40	2.5%
Link		[redacted]	[redacted]	40	2.5%
Land[48]	[redacted]	[redacted]	[redacted]	NA	NA
Total[49]	[redacted]	[redacted]	[redacted]	**33**	**3.1%**

Source: Rider Levett Bucknall, SDHB and Sapere analysis

Project fees have been capitalised as part of this project. There are other capital assumptions:

- there will be ongoing renewal of clinical capital equipment
- there is provision for further spending on information technology
-

There are material areas of spending on clinical equipment, IT and other buildings that are referenced in this business case but for which funding will be sought in other business cases. The main items and value of capital expenditure not within the scope of this business case but included in the financial forecast include (costs are nominal dollars, not discounted):

Table 26 Capital expenditure expected between 2020/21 and 2039/40 (not in this BC)

Item	Nominal amount ($m)
Buildings	[redacted]
Clinical equipment	[redacted]
IT[50]	[redacted]
Other asset categories	[redacted]
Total	[redacted]

Source: SDHB/Sapere

Withheld under Section 9(2)(i)

Figure 18 shows the year on year capital expenditure.

[48] Land costs have been apportioned to each building using share of total build cost.
[49] The figures in the total row for useful life and annual depreciation percentage are weighted averages. This should not be taken as an indication of the probable useful life of the building, rather the number of years it will take to depreciate the initial build cost.
[50] Of this total, [redacted] has been earmarked for projects associated with NDH, which will be developed in a separate business case

Withheld under Section 9(2)(i)

Figure 18 Capital spending excluding NDH (thousands) 2020/21-2042/43 Withheld under Section 9(2)(i)

Source: SDHB/Sapere analysis

8.3.4 Service volumes are based on population and efficiencies

The service volume forecasts were produced by Sapere.[51] The method consisted of:

1. Analysing base service demand by a set of demographic categories for the base year (in this case 2016/17).
2. Deriving population change weights for each demographic category by dividing the Statistics NZ population projected for a future year by the population for the base year.
3. Multiplying service demand by the population change weights for each demographic category for each future year.
4. Summing service demand over demographic categories for each year.

A high efficiency scenario, which we are using as the basis for the financial modelling was developed. In broad terms it achieves the following results across services:

Table 27 Assumptions for forecast service volumes (high efficiency scenario)

Service	Expectation
Emergency Department	Hold attendances flat for 10 years; population driver thereafter
Acute medicine (i.e. excluding cardiology, renal and oncology)	30% lower intervention rate 30% lower average length of stay

[51] David Moore, Rebecca Rippon, Tom Love, James Swansson – *Technical Annex: Dunedin Hospital Service Volume Forecasts*, 28 February 2018.

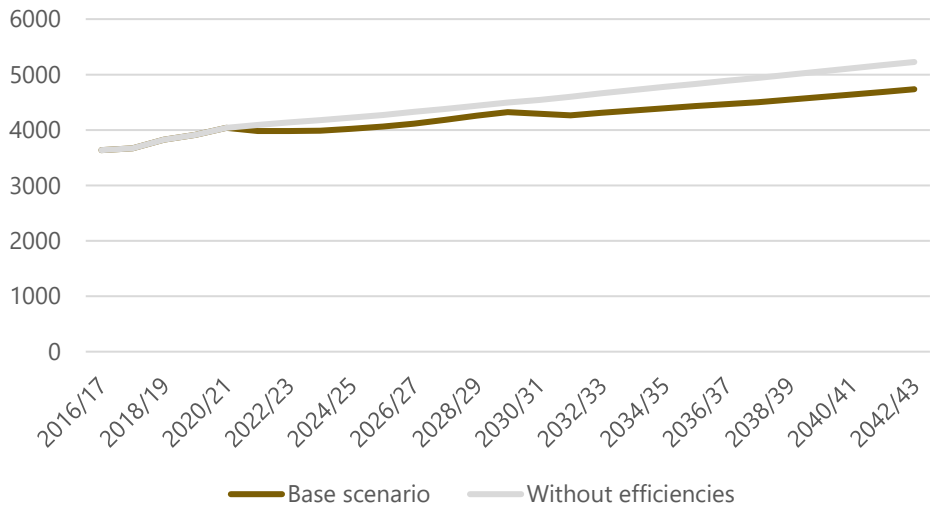
Rehab	Hold bed days flat for 10 years 30% reduction in average length of stay between 2025 and 2043
Surgery	15% lower average length of stay 3% per annum increase in orthopaedic and general surgery discharges

8.3.5 Workforce modelling assumptions are complex

We note that more work is needed to translate service volumes into workforce numbers. This section provides a general overview of the workforce modelling, the results of which are contingent on achieving efficiency targets and are set forth in the next section.

Workforce expense for Dunedin is 69 per cent of total provider arm operational expenditure (i.e. excluding asset related costs). The workforce assumptions, which are contingent on the new hospital, are therefore particularly important.

Figure 19 Workforce growth under the efficiency scenario



Source: Data provided by SDHB, Sapere analysis

The efficiency assumption makes a material difference to workforce numbers. Once the Inpatient building is completed, there is a two-year period of adjustment where efficiencies are realised (estimated at 2.5% per annum) after which growth resumes, but at a slower pace. The net result is that 4,735 employees are needed in 2042/43, 492 fewer than would be the case if no efficiencies were achieved.

The average workforce efficiency factor assumed between 2020/21 and 2042/43 is 0.5 per cent per annum. The effects of this assumption can be seen in Table 28, where growth in the medical workforce will increase around 15 per cent over the next twenty years. Growth is lower in the support staff and management and administration category (labelled as "other" in the table), where staff numbers will increase just over 14 per cent over the same period.

Table 28 Number of employees by category at five-year intervals

	2020/21	2025/26	2030/31	2035/36	2040/41	% growth across period
SMOs	316	318	337	348	364	15%
Registrars	342	344	364	376	394	15%
Nurses	1804	1814	1919	1981	2075	15%
Allied health	732	736	778	804	842	15%
Other	844	848	894	921	964	14%
Total	**4039**	**4061**	**4292**	**4429**	**4640**	**15%**

Source: Sapere/SDHB

8.3.6 Other operating costs assumptions

Efficiencies averaging between 0.19 per cent (funder) and 0.51 per cent (provider other costs) are applied to non-workforce costs between 2020/21 and 2042/43. The compounding effect of these efficiencies reduces spending by 3.7 per cent and 11.2 per cent compared to current growth levels respectively in 2042/43. Savings in outsourcing, which average 0.15% per annum between 2025/26 and 2042/43 are also achieved.

Table 29 Cost efficiency assumptions

Assumption	Driver/value	Source
Funder arm	0.19% per annum between 2020/21 and 2042/43	SDHB
Other costs (provider arm excluding personnel)	0.51% per annum between 2020/21 and 2042/43	SDHB
Outsourcing (provider arm)	0.15% per annum between 2025/26 and 2042/43	SDHB

Source: SDHB

The underlying drivers of the cost categories are detailed in Table 30.

Table 30 Cost drivers – other operating costs

Expenditure item	Cost driver (volume)	Inflation driver (price)
Outsourced clinical services	Inpatient caseweights	Wage inflation
Other outsourced services	No driver	Wage inflation
Treatment disposables	Inpatient caseweights	CPI
Instruments & equipment	Inpatient caseweights	CPI
Diagnostic supplies & other clinical supplies	Inpatient caseweights	CPI
Pharmaceuticals	Inpatient caseweights	CPI
Other clinical supplies	Inpatient caseweights/ inpatient bed days/ outpatient volumes	CPI

Expenditure item	Cost driver (volume)	Inflation driver (price)
Patient appliances	Inpatient caseweights	CPI
Implants & prostheses	Inpatient caseweights	CPI
Other operating expenses	No driver	CPI
Hotel services, laundry & cleaning	Inpatient bed days/ clinical FTE growth	CPI
Transport	No driver	CPI
Facilities	No driver	CPI
IT systems & telecommunications	No driver	CPI
Professional Fees and Expenses	No driver	CPI

Source: SDHB

8.3.7 Other assumptions or exclusions

We note modelling assumptions that are either implied or not considered:

- no sale of surplus land
- no modelling of old ward block demolition costs
- no specific modelling of Invercargill and other areas outside of Dunedin, which may reach capacity or end of useful life within the analysis period
- any holding costs relating to the build will be incurred and expensed by the Crown.

We also note that [redacted] of capital expenditure relating to IT projects relating to NDH has been included in the financials. This expenditure, although integral to the successful completion of the NDH, will be the subject of a separate business case. Withheld under Section 9(2)(i)

8.3.8 Funding is through Crown equity

In practice, DHBs are limited in how they can finance projects such as these. In 2017, DHBs were required to convert long term debt into Crown equity removing borrowing as an option. Government policy is for public-private partnerships not to be considered for health projects.

The only viable financing options are financing from accumulated funds or equity financing. Given the scale of the project, financing from accumulated funds is not possible, which leaves equity financing as the remaining option.

Equity financing will operate as follows:

- The Crown will hold the asset for the duration of the construction period on its books and will expense any holding costs.
- Upon completion (being completion of construction, attaining a building warrant of fitness and on completion of commissioning and DHB acceptance), the asset will be transferred to SDHB in the form of a capital injection to its books.
- The increase in equity generates a higher capital charge which is levied on the DHB by the Treasury.

- However, a recent Cabinet decision provides for the DHB to be provided capital charge relief to offset the increase in capital charge.

8.3.9 The model brings all the assumptions together

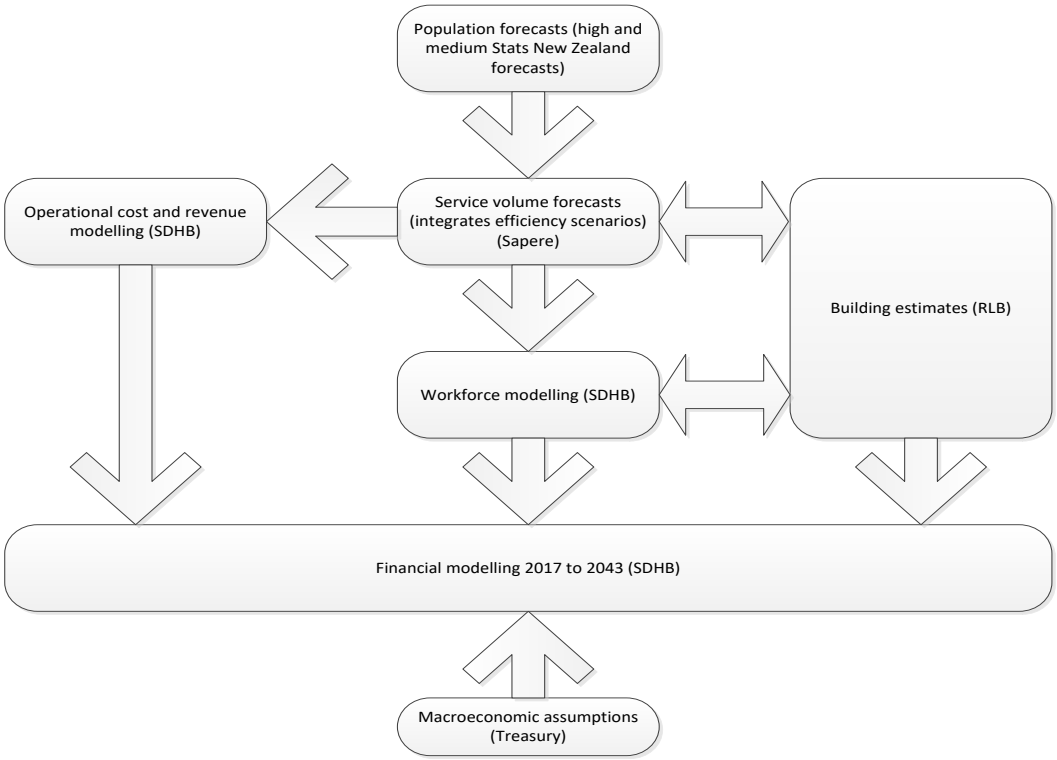
We model the cost of the preferred option, revenue, employee costs, other operating costs, finance costs, capital expenditure and depreciation. The SDHB financial model is the basis for the results. This financial model is a consolidation of other models, including an important workforce model. The consolidated model produces a financial forecast with statements of comprehensive income, a statement of cash flow and a balance sheet.

The key subsidiary models and their dependencies are set out below. Table 31 shows the structure of the model and Figure 20 shows how the model components fit together.

Table 31 Elements of the financial model

Model title	Source	Dependent models
Population forecast	Statistics New Zealand	Service forecast Revenue
Service forecasts	Sapere	Workforce model Operating costs of consolidated model
Macroeconomic assumptions	Treasury	Revenue Other operating costs of consolidated model
Capital costs of new hospital	Rider Levett Bucknall	Capital plan of consolidated model
Workforce model	SDHB / Ministry of Health / Sapere	Workforce costs of consolidated model
Efficiency assumptions	SDHB	Workforce costs and other operating costs in consolidated model
Capital plan	SDHB	Financial forecast in consolidated model

Figure 20 Modelling approach



Source: Sapere

8.4 Modelling results of this significant capital infrastructure project

The summary of funding required is shown in the table below:

Table 32 Funding requirements ($ thousands) Withheld under Section 9(2)(i)

	2025/26	2026/27	2027/28	2028/29	2029/30	5 year Total
Capital expenditure						
Outpatient	[redacted]					[redacted]
Inpatient				[redacted]		[redacted]
Land	[redacted]					[redacted]
Total capital expenditure	[redacted]	[redacted]	[redacted]	[redacted]		[redacted]
Operating expenditure						
Additional costs for two buildings				[redacted]	[redacted]	[redacted]
Reduction in outsourcing costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

	2025/26	2026/27	2027/28	2028/29	2029/30	5 year Total
Capital charge	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Depreciation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total operating expenditure	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Revenue						
Capital charge relief	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Net operating expenditure required	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Source: Sapere analysis

Withheld under Section 9(2)(i)

For more details see Appendix J:.

8.4.1 Operating spending increases by [redacted] million per annum

Depreciation and financing costs increase when the construction cost is transferred on to the DHB balance sheet. Other operational expenditure items associated with the new build such as utilities and maintenance are assumed to continue as per the status quo. The direct impacts on building operational spending are shown in Table 33.

Table 33 Additional operating spending from 2025/26 to 2042/43 Withheld under Section 9(2)(i)

	Average per annum (nominal $m)
Depreciation	[redacted]
Capital charge	[redacted]
Additional costs for two buildings	[redacted]
Reduction in outsourcing costs	[redacted]
Total	[redacted]

Source: SDHB/Sapere

Figure 21 shows the total spending on asset related costs from 2012/13 through to the end of the forecast period.

Withheld under Section 9(2)(i)

Figure 21 Financing charges (interest, depreciation, capital charge) 2020/21-2042/43

Source: Sapere SDHB modelling

8.4.2 The DHB is working to reduce its deficit

In 2015, following a series of financial deficits, the Minister of Health dismissed the members of the SDHB board and replaced them with appointed Commissioners. In 2019, a new election for board members took place, the first board member election since 2013.

Figure 22 SDHB net result 2020/21 to 2042/43 Withheld under Section 9(2)(i)

Source: Data provided by SDHB, Sapere analysis

SDHB has struggled to generate positive operating cash flow. Given the state of the balance sheet, which at the end [redacted]

[redacted] Withheld under Section 9(2)(i)

Source: SDHB, Sapere analysis

8.5 Project risks tested in the QRA

We have tested several scenarios to try to determine the major factors that could prevent the SDHB from reducing its deficit, and from being able to cover the operating costs of the new building.

1. The first was population risk, i.e. if a larger population than the medium scenario from Statistics New Zealand requires the services performed at Dunedin Hospital. There are two aspects to consider regarding population:

   - The new hospital provides additional capacity that is otherwise not available under the current arrangements. In that sense, the risk lies with the existing set up rather than the new hospital.
   - Whether operating costs rise faster than available funding. However, previous analysis shows that the population-based funding formula provides Dunedin Hospital with enough revenue in a higher population scenario. Population risks have been examined further.

2. The next area of risk is those that relate to the construction project including risks such as workforce and delay in decision-making. These risks are considered in the quantitative risk assessment which is part of the Economic Case.

3. The third area of risk is with respect to possible events (e.g. an earthquake, a severe weather event, a pandemic) which could change the way services are provided and which services are needed. Such a scenario is not analysed here because there is too much uncertainty over timing, interventions and mitigation actions from central government. There will be measurement of the effects of COVID-19 in the quantitative risk assessment as that is possible rather than unpredictable.

Failure to achieve expected efficiencies is analysed. The modelling that has been undertaken started by forecasting financial results based on service volume forecasts. After that first round of analysis, six scenarios are constructed to show what would happen if those efficiencies failed to materialise or if a more ambitious efficiency scenario were to eventuate. Our scenarios relate to variation of the following:

- service volumes
- funder arm outsourced expenditure
- personnel employed by the DHB
- other expenses (non-personnel) incurred by the provider.

8.5.1 Summary of scenarios

Figure 24 SDHB net result comparison - all efficiency scenarios ($ thousands) Withheld under Section 9(2)(i)

Source: Sapere

The assumption that has the greatest effect is that of personnel efficiencies.

Each of these scenarios is reviewed in turn.

8.5.2 Base scenario – expected efficiencies achieved

This scenario applies efficiency factors to all SDHB expenditure areas arising from length of stay and admissions, reducing the service volumes over time.

Table 34 Effect of achieving expected efficiencies

Measure	Total % change	CAGR 2020/21 to 2042/43
Consolidated expenses	120%	3.6%
FTE numbers	17.2%	0.7%
Net result	**2020/21**	**2042/43**
Net financial result ($ thousands)	[redacted]	[redacted]

Source: SDHB modelling/Sapere

Withheld under Section 9(2)(i)

Figure 25 shows the effect on net income of the new hospital construction. Between now and 2025/26, SDHB reduces its deficit as a result of efficiency programmes it has initiated. In 2029/30, the Inpatient building is transferred to SDHB's books, which results in much higher asset related costs in the form of depreciation and capital charge.

[redacted] Withheld under Section 9(2)(i)

[redacted]

8.5.3 Scenario two – no efficiencies

Under this scenario, SDHB does not achieve any productivity savings either to change the service volume mix or to achieve savings in procurement and staff efficiencies. SDHB continues to record worsening deficits, which accelerate following the construction of the Inpatient building to become rapidly unsustainable.

Table 35 Effect of no efficiencies across any spending category

Measure	Total % change	CAGR 2020/21 to 2042/43
Consolidated expenses	131%	3.9%
FTE numbers	29.4%	1.2%
Net result	**2020/21**	**2042/43**
Net financial result ($ thousands)	[redacted]	[redacted]

Source: SDHB/Sapere

Table 36 SDHB net result - no efficiencies ($ thousands)

Withheld under Section 9(2)(i)

Source: SDHB modelling/Sapere

8.5.4 Scenario three – no funder efficiencies

Under this scenario, SDHB achieves provider arm efficiencies but do not achieve efficiencies in outsourced services. Under this scenario, SDHB would be close to being able to break even.

Table 37 Effect of no efficiencies in funder arm

Measure	Total % change	CAGR 2020/21 to 2042/43
Consolidated expenses	122%	3.7%
FTE numbers	17.2%	0.7%
Net result	**2020/21**	**2042/43**
Net financial result ($ thousands)	[redacted]	[redacted]

Source: SDHB/Sapere

Figure 26 SDHB net result - no efficiencies in funder arm ($ thousands) Withheld under Section 9(2)(i)

8.5.5 Scenario four – no personnel efficiencies

Under this scenario SDHB achieves funder arm efficiencies and some reductions in procurement of other expenses but not personnel efficiencies. Of the individual assumptions, failure to achieve personnel efficiencies is the assumption that will make the greatest difference to the net result.

Table 38 Effect of no personnel efficiencies

Measure	Total % change	CAGR 2020/21 to 2042/43
Consolidated expenses	125%	3.8%
FTE numbers	30.3%	1.2%
Net result	**2020/21**	**2042/43**
Net financial result ($ thousands)	[redacted]	[redacted]

Source: SDHB/Sapere

Figure 27 SDHB net result - no personnel efficiencies ($ thousands) Withheld under Section 9(2)(i)

8.5.6 Scenario five – no other operating cost efficiencies

Under this scenario SDHB achieves efficiencies everywhere except in other expenditure item procurement (e.g. clinical supplies). This assumption has the least effect of any of the assumptions.

Table 39 Effect of no operating cost efficiencies

Measure	Total % change	CAGR 2020/21 to 2042/43
Consolidated expenses	121%	3.7%
FTE numbers	16.5%	0.7%
Net result	**2020/21**	**2042/43**
Net financial result ($ thousands)	[redacted]	[redacted]

Source: SDHB/Sapere

Figure 28 SDHB net result - no operating cost efficiencies ($ thousands) Withheld under Section 9(2)(i)

[redacted]

Management Case

9. Introduction to the Management Case

The Management Case describes the arrangements that are required to ensure the successful build of the NDH, to manage risks and to realise the benefits of the NDH as outlined in the Economic Case and in this Management Case. There are four substantive parts to this Management Case as detailed below.

1. The governance and management arrangements for the construction and commission of the NDH – action 20 of the BBC actions
2. The SDHB's change management approach and plan – action 21 of the BBC actions
3. Benefits Management Planning – action 22 of the BBC actions
4. Risk Management Planning – action 23 of the BBC actions.

The Management Case has progressed substantially since the IBC was approved in 2017. Revised governance arrangements are recommended, in line with international and New Zealand best practice guidance for Early Contractor Engagement procurement approaches.

The SDHB's Change Management Plan has also progressed substantially over the past two years with several system wide initiatives under way mainly in the primary and community sector where the SDHB identified further investment was required, but also within the hospital services where the re-orientation towards generalism is a step change for SDHB. Over the past two years, with the restructured Executive, the SDHB has also reoriented its focus more sharply towards planning and investing in information and communication technology. The SDHB also recognises the need to refresh its Strategic Plan and to review and align its various planning documents as action plans that will sit under a revised system wide strategic plan.

Benefit indicators were developed in collaboration with Executive Leads and by desktop review. These proposed benefit indicators will be useful for workstream leads to help monitor their delivery progress. The New Dunedin Hospital Project Management Office is working with Executive Leads to ensure that the benefits being described are correct, aligned with current and planned reporting, and appropriate. Both the Ministry of Health and SDHB have developed robust Risk Management approaches aligned to the standards outlined in the Treasury Better Business Case guidance. A benefits realisation plan will be generated by SDHB in a Programme Business Case, nested in the Implementation Business Case.

A thorough risk register has been brought together for the project and is attached in 11.2Appendix I:.

9.1 Project governance and team arrangements for Early Contractor Engagement

Project governance arrangements for the NDH will evolve to align with the increasing pace of design and works activity in Dunedin.

This change allows more localised decision-making and autonomy, but within tight parameters specified by the Ministry of Health. The project management team must be experienced and appropriately sized for the chosen procurement approach, ECE, requiring more active involvement in design and sub-contracting than, for instance, Design & Construct.

The recommended approach for project governance for the NDH construction project is based on the following:

- desktop review of the project governance literature and best practice guidelines for major infrastructure projects in the United Kingdom (UK), Australia and New Zealand to identify best practice governance principles for infrastructure projects
- review of the international literature on the success factors and project governance arrangements for Early Contractor Involvement (ECI) procurement (the general lessons apply to ECE which is a version of ECI) for infrastructure
- review of the available information on the project governance approach and external audit agency review of comparable major public hospital construction projects in Australia and New Zealand
- assessment of the alignment of the current NDH project governance structure detailed in the Draft NDH Project Execution Plan.[52]

9.2 NZ Infrastructure Commission – Major Infrastructure Project Governance Guidance

The NZ Infrastructure Commission has published its Major Infrastructure Project Governance Guidance. The guidance is intended to detail the relevant considerations for the establishment of project governance for major infrastructure projects including project governance roles and responsibilities.

The Infrastructure Commission's guidance also emphasises that an **effective governance framework identifies who has responsibility and authority to make decisions**. Thus, the advice closely reflects the project management literature. It also identifies that the governance framework will be overseen by a project governance board and that it is critical that the right people are involved in project governance boards with authority to make decisions.

> *A project governance board is not simply appointed to receive project updates. It must be able to ensure that a project will achieve its intended outcome. It should be prepared and equipped to proactively monitor, mentor, challenge and support the SRO; asking the right (and searching) questions, offering alternatives and making timely decisions.*[53]

The guidance document also outlines the suggested project governance roles and responsibilities as illustrated in Table 40 below.

[52] Resource Coordination Group (2019) *New Dunedin Hospital – Project Execution Plan & Project Library, Preliminary Design Phase, Draft issue – Revision 0.1 – October 2019*
[53] NZ Infrastructure Commission (2019) *Major Infrastructure Project Governance Guidance*

Table 40 Project governance roles and responsibilities

Role	Project Governance Responsibility
Senior Responsible Owner / Project Executive / Project Sponsor	Provides project leadership, owns the business case and is responsible and accountable for the project's success. This includes optimising value, managing risk, ensuring timely delivery, meeting project performance requirements and determining remedial action if required. Ensures appropriate project assurance processes, such as Gateway reviews, are scheduled and responded to in a timely manner. Provides leadership on culture and values, obtains required resources, upholds probity principles and manages relationships (stakeholders, governance board etc.). Appropriately senior (for major infrastructure projects generally a Tier 2 manager) and reports directly to the Chief Executive. Has the authority to make decisions. Is the link between the organisation's senior executive body and the project.
Project Governance Board Chair	Usually the SRO. Where delegated there must be clarity regarding authority tolerances and lines of accountability between the Chair and the SRO and the overall sponsoring Minister(s) and Cabinet.
Project Governance Board Members	Understand the investment context and support the SRO to make required decisions. Can hold the SRO to account in fulfilling their role. Provide strategic direction, monitor the project and make key decisions and/or recommendations to the SRO and responsible Ministers in accordance with the Terms of Reference and overall governance framework. The board approves and/or endorses a range of project documentation. All members should read and familiarise themselves with the business case, Cabinet approvals and any other documents that aid understanding of the investment, its objectives, and their accountability to ensure its delivery. For major infrastructure projects, the project governance board will need members with robust construction expertise to inform conversations and decision making. Where this does not exist an independent, external member with the right expertise should be made a member of the project governance board.
Project Director / Manager	Leads and manages the project team on a day-to-day basis reporting to the SRO or Project Governance Board. Responsible for supporting organisational change management, managing key relationships and keeping the project team motivated and supported. Responsible for preparation of all project documentation and prepares reporting to support the role of the SRO, the Project Governance Board, Executive Leadership, Ministers and Cabinet as required. This includes developing and updating the project management plan, project schedule, RAID registers (Risks, Actions, Issues, and Decisions) via team reporting, probity requirements and project reporting. The project director also resolves planning and implementation issues, manages progress and budget, structures project delivery and provides specialist resources and skills necessary to deliver a project to an agreed scope, quality, schedule and budget. The project director needs to have well-developed project, risk, relationship and commercial management skills. Knowledge of government processes, procurement experience, infrastructure or construction industry experience and experience developing and negotiating contractual agreements is also required.
Project Team	Responsible for completing tasks and activities required for delivering project objectives against the approved project scope. Responsible for delivering input into project governance reporting and or project deliverable status information at the request of the project director.

Source: NZ Infrastructure Commission (2019) *Major Infrastructure Project Governance Guidance*

9.3 Establishment of HIU

The Health Infrastructure Unit (HIU) was established in the Ministry of Health in 2019 and continues to build its capability to support a stronger public health system that will be equipped to deliver better health outcomes for New Zealanders and their whānau. The establishment of a Health Infrastructure Unit (HIU) allowed a strategic reset of the Government's response to health infrastructure planning

and prioritisation to address a large expected increase in demand for health infrastructure over the next ten years.

As with other key Government agencies the impact of COVID-19 issues will lead to changes in the New Zealand construction industry and how the planned pipeline of work is prioritised and delivered. In providing leadership to the sector the HIU is also ensuring lessons from previous major health projects are not lost. The Ministry will:

- enhance delegations to the NDH construction project team and its programme manager, to ensure that the Ministry can perform well in an ECE contract
- ensure there is a seamless and collaborative working relationship between the respective project offices of the Ministry and SDHB
- appoint key roles such as design director and construction manager as part of the client delivery team
- attend to key assurance points based on Canterbury experience, such as attention to passive fire safety and seismic restraint
- ensure that there is enough time for complete design drawings to be issued
- move forward the timing of purchase of clinical equipment to ensure that the necessary steel and other structures can support that equipment
- greatly standardise design and explore possibilities of prefabrication.

9.4 Enhancements to the NDH project governance

The Ministry of Health, in collaboration with SDHB, reviewed and strengthened the Steering Group Terms of Reference and membership at the end of 2019. The Steering Committee aligns the immediate project objectives of the SDHB with the longer-term objectives of the HIU's capital programme and NDH Project delivery requirements. As part of establishing the HIU, the Ministry will review the most appropriate governance arrangements for the $15.7 billion required for New Zealand's health infrastructure redevelopment over the next ten years.

The Ministry recognises that it can materially contribute to the efficiency of the project, and therefore its cost efficiency by continually reviewing its systems, delegation limits, responsiveness and agility, and by proactively identifying and then managing potential delay points. This optimisation has not yet been achieved but is under active review. The Ministry is strongly committed to achieving optimal settings which we anticipate will change and evolve as the project progresses.

9.4.1 NDH project structure

The governance structure, roles and responsibilities detailed in the draft NDH Project Execution Plan[54] incorporate most of the elements of good project governance principles and project management structure. Based on the analysis of good governance principles and literature on ECI (and ECE)

[54] Resource Coordination Group (2019) *New Dunedin Hospital – Project Execution Plan & Project Library, Preliminary Design Phase, Draft issue – Revision 0.1 – October 2019*

procurement for major infrastructure projects, there has been strengthening of the NDH project governance structure in the following areas with some further opportunities noted:

- the NDH Programme Director has been appointed and reports directly to the Director of Health Infrastructure
- the SDHB Programme Director, supported by a dedicated Project Management Office (PMO), is co-located with the Ministry project team in a shared NDH Project Office that opened in October 2019, to ensure strong operational alignment with both the design and the construction programmes
- the establishment of an NDH integrated Project Design Team (including the appointed ECE contractor) will be strengthened by the appointment of a Project Director, a Design Director and a Construction Director
- Clinical Leadership Group (CLG), or a group comprised of its key representatives, will have direct input to the project processes, and liaison with the integrated Project Design Team, in addition to the CLG's role in providing clinical advice to the CEO of the SDHB
- an experienced Technical Advisory Group has been established, providing regular advice to the Programme Director (and the Steering Group) on all aspects of the project
- establishment of a Disputes Advisory Board to provide early intervention into any disputes between the Ministry and its contracting parties with the aim of early resolution of issues without recourse to litigation.

9.4.2 Southern Partnership Group is there for oversight and assurance

The Southern Partnership Group (SPG) is the independent group appointed by the Minister of Health and accountable to the Ministers of Health and Finance. The accountability includes assuring the hospital construction project is managed within time, scope, quality and budgetary requirements in accordance with Cabinet direction.

The SPG is responsible for governance of the various projects that comprise the delivery of the NDH through their various stages, from the indicative business case through to fit out and handover of each project.

SPG reports quarterly to the Ministers of Health and Finance and is appointed to provide recommendations, independent assurance and oversight of the design and construction of NDH. SPG is also required to ensure SDHB and MOH are brought together with Dunedin City Council, Otago Regional Council and the University of Otago, to agree the vision for NDH and instruct a sense of common purpose in achieving that vision.

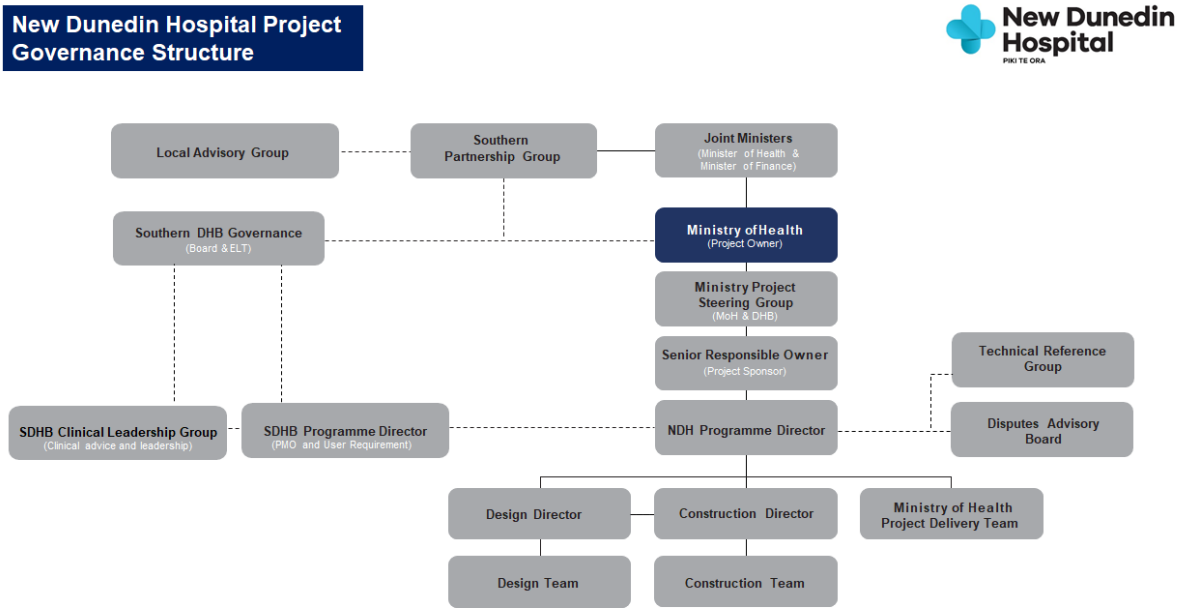
Responsibilities include: robust programme and project planning, that the appropriate skills and experience are applied, that feasibility and design work is undertaken, business cases endorsed and there is sufficient user input from SDHB.

9.4.3 Integrated Project Design

The enhancements to the NDH governance structure since 2018 are illustrated in Figure 29 below. These further steps are an interim measure to improve current project governance and accountability

measures until governance and accountability of HIU is clear post health sector systems changes. There is close attention to establishing team capacity while health system institutional change consolidates.

Figure 29 NDH Governance Structure



Source: MOH

9.4.4 The Steering Committee for the New Dunedin Hospital

The key attributes of good governance include:

- *Accountability* – the establishment of a body with dedicated accountability for delivery of the project
- *Transparency* – transparency with respect to the mandate of the body and decision-making framework
- *Decision making* – will provide for a clear and timely decision-making process
- *Institutional boundaries* – it can provide for clear institutional boundaries to negotiate complexity (e.g., decisions on clinical equipment requiring structural solutions)
- *Expertise* – provides the basis for the incorporation of experts with industry and sector expertise in the delivery of major construction and infrastructure projects.

It is clear from the review of best practice governance internationally and in NZ (through the Infrastructure Commission guidance) that major infrastructure projects such as the NDH benefit from the establishment of a structure with a degree of independence to oversee the project and make timely decisions through the course of the project.

The Ministry of Health retains primary oversight of the project including the selection of the prime contractor, finalisation of the design approach and principles, selection of major subcontractors and approval of the final design. However, the project structure and governance arrangements must also support the interests of the SDHB as end-user. The Ministry would be supported in this regard by

regular reviews of Steering Committee arrangements to ensure they represent the interests of both parties.

9.4.5 The Steering Group is chaired by the Ministry of Health and includes the operator (SDHB)

The Ministry of Health has clarified and confirmed responsibility for the construction of the NDH build whilst also staying open to further changes at each phase of the project and as institutional settings evolve. The composition of the NDH Steering Group is likely to always include a blend of clinical and project management expertise, and, as a minimum, would include:

- The Deputy Director DHB Performance, Support and Infrastructure;
- The Chief Executive Officer of SDHB;
- The head of the Ministry of Health's Health infrastructure Unit;
- The Programme Director of the SDHB; and
- The Programme Director for the Ministry
- Chief Medical Officer, MOH
- Chief Medical Officer, SDHB

The NDH Programme Director will have full responsibility for construction of both the Outpatient building and the Inpatient building but will work closely on all design and construction matters with the Programme Director of the SDHB. External experts with major infrastructure experience, construction market expertise and community engagement will advise the Executive Steering Group through the Technical Advisory Group. A Disputes Advisory Group has already been established along the lines of that used in Ministry of Justice construction projects, utilising existing experience of disputes resolution, with the appointment of Hugh Rennie QC as Chair.

9.4.6 NDH integrated Project Design Team

To ensure an effective ECE procurement process, there is a need to establish an NDH integrated Project Design Team. Based on the findings from the review of literature on ECI/ECE, there will be a critical need to provide a structure that enables the MOH, SDHB and ECE Contractor to constructively collaborate on the design of the NDH. Given the importance of strong stakeholder engagement for a successful ECI/ ECE process (as highlighted in the literature review above), there will be an integrated Communications and Engagement Strategy reflecting the needs and interests of SDHB and Ministry, with a Dunedin-based Project Communications Manager appointed and reporting to the Programme Director.

The Design Team will include responsibilities for fire safety and for FF&E services, both issues which caused delay, cost and concern in the Canterbury construction experience.

9.5 Clinical Leadership Group

To ensure a successful ECI design phase, it is critical that clinical requirements are appropriately addressed. The SDHB has an existing Clinical Leadership Group, and key representatives of this group liaise directly with the integrated Project Design Team. Liaison between the ECI design team and

clinical experts was identified as a key success factor for the other major hospital developments highlighted previously. Liaison between the Design Team and clinical experts was cited as improving the level of user acceptance and helps minimise requirements for rework of design and subsequent delays to the project.

A key role of the CLG is to oversee the specification of SDHB clinical equipment. The specification of clinical equipment needs to be early and integrated with the infrastructure requirements for that equipment. For instance, there may need to be concrete plinth, radiation shielding, secondary steel reinforcing. There were considerable cost over-runs in the construction of Canterbury DHB's Ambulatory Services Block because these clinical equipment needs were not identified early enough. Each brand of equipment has different design and construction needs.

9.6 Summary of key responsibilities

In the fast moving, dynamic environment of ECI, most of the tactical decisions need to be taken within the project team and by the Steering Committee.

The following are key responsibilities:

- Cabinet will decide to proceed within a funding envelope and with expectations of construction timeline and benefit realisation
- joint ministers being the Minister of Health and the Minister of Finance will decide on risk-sharing of, for instance, the risk of escalation
- SPG provides oversight and assurance and reports directly to the Minister of Health and the Minister of Finance
- the Ministry of Health will assume delegated authority for construction and the Director-General of Health will in turn delegate to the Steering Committee
- the Steering Group, comprising Ministry and SDHB representatives, will select the prime contractor for each building, will sign off on design approach and final design, and will progressively sign-off on major sub-contractors
- the Programme Director, working collaboratively with the SDHB Programme Director, will be responsible for recruitment of the project, design and construction management teams, as well as management of contingencies.

9.7 The commissioning phase will require dedicated and skilled management

The NDH project and Ministry of Health will need to carefully plan during the lead up to, and throughout, the commission phase. The SDHB will need to ensure business as usual operations as well as service improvement and infrastructure initiatives, alongside the development of system wide new models of care. Careful planning will be required in the lead up to the commissioning to ensure that staff, systems and processes are ready for the in-service date. We recognise this stage is easy to under-estimate and a commissioning manager will be appointed one year before the commissioning process starts. The two stages of commissioning are:

- Cold commissioning including testing of medical gases, certification of building and user acceptance, and certification of the hospital by the Ministry of Health in its regulatory role
- Warm commissioning including training of surgical of teams, decanting wards, staff and patients and establishment of logistic services. At this point, responsibility transfers from the NDH Programme Director to the SDHB PMO.

9.8 Project management approach

The overall project management approach for the NDH project will need to evolve from the current arrangements (which are focused on the preliminary design phase) to the ECE design phase and construction phase.

The key issues for the project management arrangements for the NDH will include:

- ensuring that there is the capability and capacity in place for managing a large-scale project of this nature
- ensuring the management structure, roles and responsibilities across the project team are effective and well defined
- establishing and operating a project management approach to ensure an effective ECI process.

Capability and capacity

The responsibility and accountability for ensuring there is adequate capability and capacity across the project are the responsibility of the Steering Group. The MOH Deputy Director-General (or delegate) and the CEO of SDHB will have the seniority to ensure the decision-making can happen promptly and with authority.

Management structure, roles and responsibilities

The NDH Programme Director who will have primary responsibility for ensuring that there is a someone with the necessary experience, accountability and management authority to drive the project.

9.8.1 Project management approach to ensure a successful ECE process

Some key issues critical for the construction phase are as follows:

- The working relationship during the ECE phase requires cooperation between contractor and client in a collaborative environment (whereas, the Design and Build phase is regulated by the conditions of the contract).
- Interaction between the project participants, internal stakeholders and external stakeholders is significantly greater compared to conventional procurement methods and the information exchange between them is significant.
- Ensuring there is a joint leadership team including the key decision makers who have enough authority across and within project teams is critical for successful collaborative procurement arrangements.

It was clear from the literature and review of other major hospital redevelopments, that the ECE procurement phase for the NDH will require the design and operation of dynamic project management processes with a major focus on communications with all relevant stakeholders.

Key changes from the current project management approach that will need to be incorporated include:

- Appropriate financial and other delegations to the NDH Programme Director to ensure that he has primary responsibility and authority for day-to-day operational project management.
- Establishment of an integrated Project Design team that incorporates the MOH Project Team, ECE team, and DHB PMO team.
- Integration of clinical needs for FF&E at an early stage.
- Establishment of an appropriately resourced communications team to develop and implement a comprehensive stakeholder management and communication strategy that incorporates the interests of the Ministry and the SDHB.

9.9 Working in an alliance type structure

We propose to knit together other important networks and influencers in an alliance type structure to assist the wider aims of the NDH as well as meet the needs of the project itself.

9.9.1 A Local Advisory Group to support SPG

To ensure the wider opportunities from the hospital project are realised the Chair of SPG has established a Local Advisory Group to support SPG on matters of collective interest including but not limited to:

- central business district strategic planning
- cityscape and land scape issues
- transport issues including public transport
- workforce issues (including accommodation)
- energy issues
- economic development issues and opportunities.

Construction or models of care are not within the jurisdiction of the Local Advisory Group but are within the remit of SPG. The membership of the Local Advisory Group will change depending on the issues being addressed and will be the interface with representatives of Territorial and Regional Authorities.

Three key elements of the NDH construction are being actively discussed by the Local Advisory Group.

9.9.1.1 Workforce development

Workforce development is recognised nationally, regionally and locally as important, and particularly important for the NDH. At its peak, around 900 workers may be onsite. The current estimate of available workers is 300 and expected demand for workers over the next decade is in the order of 600. A further 300 are likely to be moved into the region to complete the workforce.

These figures are based on two studies undertaken to define the labour supply and demand issues, and opportunities in Otago's construction industry. Prior to COVID-19, about $10 billion worth of construction and infrastructure projects were identified across Otago for the next 15 years. Workforce Central's (WFC's) development is based on the findings of both studies and modelled off the five current Jobs & Skills Hubs operating in Auckland, incorporating learnings from these previous experiences and adaptations to the local context. The Otago Chamber of Commerce has undertaken some preliminary work into developing a Construction workforce to help build a successful regional industry[55]. The Chamber has organised the work as follows:

- To build a successful regional industry by working collaboratively to maximise the opportunities available to local employers.
    - Align with the National Construction Accord through active engagement with a Regional Skills Leadership Group, promote and support standardised procurement process, leverage skills shortages lists, promote diversity and inclusion and active promotion of the construction pipeline
    - Create a collaborative network
    - Promote Otago
- To promote and build awareness of construction as an interesting and financially viable long-term career option
    - Active community engagement, to develop an engagement programme, establish information centres, organise site visits and provide print and digital support material, and implement a "local kids" programme
    - Define and develop a construction career pathway and actively share the pipeline
- To support employers in obtaining labour by effectively connecting them with labour markets either directly or via existing employment providers and return to work agencies
    - Supporting employers with a toolbox, advice, and ensuring return to work pathways and incentivised employment programmes are visible.
    - Partner current employment providers
    - Targeted recruitment campaigns
    - Group employment opportunities.
- Enhance current construction training to deliver consistent and high-quality skills development across Otago
    - Pre -career development. A work ready passport. Promotion to careers advisors. Work with TEC/MOE. Support training providers in offering work experience or cadetships.
    - Build skills development capability. Fill local skills gaps in current training. Identify training opportunities across the region. Build skills in areas of low supply such as supervision, standardise induction across the region, consider "stackable" credentials

[55] Otago Workforce Committee Update, Labour Supply Project, 11 November 2019, Leonie Williamson, Workforce Coordinator.

(e.g. micro-credentials). Investigate prior learning. Develop employer led programmes on well-being.

- Establish a platform to drive and co-ordinate the delivery of agreed activity across the region with Workforce Central (a Skills Hub), regional skills "hives" and supporting provision of difficult to source skills.

9.9.1.2 Workforce Central (WFC)

This comprehensive plan is in its first phase of mapping labour demand and later this year will move on to implement a governance and operating model. At its heart, the project proposes a change in the traditional workplace practice in the sector to develop trades into an attractive and sustainable career choice. Changes will be implemented into the traditional workplace practice and employment model, promoting worker diversity and wellbeing with strong focus on mental health. The manner of implementing this programme is still emerging:

Withheld under Section 9(2)(i)

- The anticipated costs of this programme for NDH are in the order of [redacted] over 2-3 years, corresponding with the Provincial Growth Fund's Te Ara Mahi Program, with possible funding up to [redacted] over 3 years.
- WFC will provide a physical site for training and education based beside the New Dunedin Hospital (NDH) build with the core team operating from the NDH Project Office at 83 Castle St Dunedin. PGF funding will fund an operations manager, community engagement coordinator, job and skills broker, and administrator as well as marketing costs, one car lease and contingency costs (over four years).
- The program will be administered by the Otago Chamber of Commerce.
- The local commercial arm of Ngāi Tahu is already well engaged in the area of skills development and a small number of Māori apprenticeships have begun. A possible next step is to develop a formal MoU for the New Dunedin Hospital between Ngāi Tahu and MOH.

The type of people includes those Not in Education, Employment and Training, school students (and their whānau), Ministry of Social Development clients and people in Corrections' care, or people returning home to Dunedin from other regions.

The project will also support people in the region displaced due to the COVID-19 pandemic into industry specific training, upskilling and re-skilling, playing a key role in promoting job retention and re-deployment. This upskilling or reskilling can also incorporate improved earning and social outcomes for Māori, Pasifika and other disadvantaged groups.

Workforce Central will provide coordination for:

- On-site recruitment and employment. The WFC will leverage local sustainable employment outcomes and reduce reliance on imported labour to support the pipeline of construction projects. In the current changing environment, WFC will also assist the construction industry in retaining and re-deploying their workforce with zero costs recruitment extended to multiple industries.
- On-site training and upskilling. On-site delivery of literacy and numeracy skills training, mental health and wellbeing support, compliance tickets, cadetships, apprenticeship,

supervisor and project management training, as well as development of individual learning plans.

- School and community engagement. Will create pathways for trades students via engagement with Iwi, Corrections, schools, Polytech and university students, MSD clients, Women in Trades, NEETs, PTEs, etc.
- Induction programme for all site workers: This induction has been co-designed by stakeholders and provides a complete orientation package for the training and upskilling requirements tailored around individual needs. The induction will involve recognition of prior learning, literacy and numeracy upskilling, Ngāi Tahu education around the significance and importance of the land to iwi and the community, Mates in Construction training (mental health awareness), connector and assist training, and verification of competency. Staff hired in both demolition and construction work connected to the NDH project will be inducted through WFC as soon as it becomes operational. The result is a unique two-day site induction programme for all employees.

Workforce Central is supported by the Otago Workforce Development Committee, which includes members of the Otago Chamber of Commerce, Aukaha, representatives of local and central government, Otago Polytechnic, industry-training organisations, pre-employment course providers, regionally based construction company and subcontractor representatives, career advisory representatives, and MBIE's Sector Workforce Engagement Programme.

WFC has cross agency support from Ministry of Social Development (MSD), Corrections, Tertiary Education Commission (TEC), Immigration New Zealand, and Ministry of Education. The Ministry of Health, MSD Southern, Corrections, TEC, and industry businesses (users) will contribute a in co-funding.

9.9.1.3 Shaping Dunedin's Transport

The Connecting Dunedin Partners are working together on the Shaping Future Dunedin Transport Project[56]. The NDH offers challenges and opportunities for the city. The work is guided by a joint MoU between NZTA, DCC and ORC The wider challenges identified by Connecting Dunedin Partners include:

- better connections between city precincts and new developments to create attractive walkable city
- need to maintain through routes and port access
- opportunity to improve efficiency of harbour arterial
- desire for pedestrian and safety focus around hospital
- need to move heavy vehicles away from St Andrew Street.
- Need to keep city moving during long construction period for hospital.

This work is critical for the hospital both during construction, as workers and materials move on and off-site, and to ensure there are clear transport routes including pedestrian access to the hospital site.

[56] LAG meeting, Shaping Future Dunedin Transport Project Update, March 2020.

This initiative is liaising with the Local Advisory Group and seeks to achieve:

- Joint commitment by mid-2020 to the best long-term transport system for central Dunedin
- Focus on integrating new hospital and other developments within the city, promoting economic growth, keeping the city moving, increasing transport choices and safety, safe and accessible people friendly streets
- contributing to carbon emission reduction targets.

10. SDHB change management arrangements

The SDHB has been on the path of change for several years starting with the merger of the Southland and Otago DHBs in 2010. Whilst not part of this business case, it is an important part of the wider programme of activities that cannot be ignored.

Over the ensuing years, the DHB has embarked on a significant programme of work to align the clinical, management and support functions of the two former DHBs into one DHB, and to refresh and modernise models of care and hospital organisation. The Southern Strategic Health Plan Piki te Ora, 2014, laid the framework for realigning the DHBs' work programmes.

Since 2014 there have been several strategies (e.g. Primary and Community Health Strategy, Raise Hope – Hapai te Tumanako & Next Steps, Workforce Strategy) model of care frameworks/statements (e.g. Clinical leaders Group Model of Care 2018) and plans (e.g. Southern Health Workforce Plan 2014-2018) that span the Southern health system. The SDHB has confirmed that during 2020 it will refresh its overarching strategy, to incorporate and integrate the principles and strategic directions of the existing strategies and plans into a cohesive and clear Strategic Plan. A change management programme was endorsed by the board in March 2020. The SDHB will reposition the various documents as action plans that have clear alignment to the Strategic Plan, stop any activity that does not align and plan for any required activity.

As noted in the Indicative Business Case (2017), the Facilities Redevelopment Executive (FRE) confirmed support for the development in the following district wide areas:

- primary and community care
- ambulatory care
- maternity services
- secondary/tertiary services.

Progress has been made on several initiatives within each of these areas and are highlighted throughout this section of the Management Case.

The SDHB is building strong, collaborative relationships with local government, social agencies and iwi to address the wider determinants of health that are beyond the health sectors control. An **All in Health Policies** approach recognises that social, economic and environmental factors have an impact on the health of individuals, whānau and wider communities.

In 2017, the SDHB released its **Primary and Community Care Strategy and Action Plan** that sets out a very clear articulation of the future strategic directions and programmes of work that are required to transform the way in which services are delivered across the health system.

The SDHB recognises the Strategy and Action Plan as one of two important "planks" to create system wide service redesign. The second key plank – **Valuing Patients Time**, is a programme of patient flow and redesign, to ensure that patient flows through the hospital are efficient and effective.

To implement these programmes SDHB is committed to developing a "**whole-of-system culture** based on shared values, collaboration and innovation", investing in **business and IT systems** and implementing its **workforce** and **digital** strategies (SDHB, 2019).

The SDHB has developed an **environmental sustainability strategy** "Green Healthcare: creating an environment for health" (2019). The SDHB has recently completed a carbon footprint to gauge the impact that it is having on the environment related to energy use, transport, waste and procurement.

The SDHB is well placed to continue its journey of change. In 2017, the SDHB underwent a restructure to better align its roles and responsibilities to the transformational changes envisioned. The restructure was designed to enable more focus on integration with primary care, improve clinical quality and safety and permit more strategic investments in effective infrastructure such as IT. The organisational restructure has been implemented and all new roles have been filled.

10.1 Intervention Logic Map – pulling it all together

Two workshops were held on 11th July and 21st October 2019, with Facilities Redevelopment Executive (FRE) to review and update an earlier version of the SDHB's Intervention Logic Map (ILM) developed for the Initial DBC (2018). The ILM framework provides a mechanism for relevant stakeholders to come together for a robust discussion to identify problems, the solutions to address these problems, the enablers to operationalise these solutions, the benefits that will be realised and the key metrics for measuring these benefits.

The Benefits Realisation Plan outline is in section 10.4.

10.1.1 The SDHB has identified several overarching challenges

At the workshops mentioned above, FRE confirmed or amended the challenges identified in the Initial DBC (2018) and added new ones. At the 21st October 2019 workshop the FRE confirmed the following overarching challenges for the SDHB:

The vision is not commonly shared or understood

- While the SDHB has the following vision statement "better health, better lives, whānau ora", there are varying interpretations across the health system of how this vision statement translates into practice. The SDHB's Executive Leadership Team (ELT) has a shared understanding of the vision for the SDHB's future and is clear that the SDHB's vision statement needs to be more clearly communicated with stakeholders across southern health system to realise the vision.

Inequity of access and health outcomes persist, and experiences are variable

- Ethnically the Southern district is predominantly European, at 80.6 per cent, 10.1 per cent are Māori, 7.3 per cent Asian and 2.0 per cent Pasifika. However, inequitable health outcomes for Māori and Pasifika peoples persist, and show up in a broad range of health statistics. For instance:

    - the standardised Ambulatory Sensitive Hospital (ASH)[57] admission rates (per 100,000) for SDHB for the 12 months ending March 2019 show that the rates of admission for Pasifika and Māori adults between the ages of 45-64 were over twice the rates for 'other' adults (Ministry of Health , 2019).
    - Māori have significantly higher rates of disability across all age bands.
- SDHB has the largest geographical area of all DHBs. Much of the SDHB's population live in rural areas widely dispersed across the district. Rurality and distance can lead to inequitable access to health service and outcome. Economic and demographic growth has been apparent in some parts (e.g. Central Otago) but not in others.
- There are other populations within the district, such as a refugee population and those living in socio-economic deprivation, that suffer relatively poorer health outcomes than the general population.

The health system is not universally patient centric

- There are exemplars of patient centric models of care [e.g. paediatric diabetes service, respiratory service]. However, in general the SDHB recognises that it needs to invest in service redesign that emphasises valuing patient time and experience, as well as providing high quality health care. This service redesign is underway, and at its heart includes the provision of timely, efficient and effective hospital care when needed, and provides services within the community closer to people's' homes whenever clinically appropriate.

The health system is not enabled to support increasing patient complexity in a primary and community context

- The SDHB recognises that the health system is not currently enabled to support increasing patient complexity and demand in the community. Again, there are some exemplar models of care where secondary and tertiary services are integrated in primary care settings. For instance, the SDHB now provides a radiology service for people who reside in Te Anau through the Fiordland Medical Centre, whereas previously they would need to travel to a secondary centre. However, most of the specialist secondary and tertiary services still require patients to come to the hospital for their care.
- An enabled system requires a clear and common vision for the SDHB's future, the development of good functional relationships between providers across the spectrum of care, the development of clinical and health pathways, workforce development and investment in infrastructure and technology such as telehealth. This is a core focus of the Primary and Community Strategy and Action Plan and the SDHB's Annual Plan 2018/19.

Operating and clinical management systems are out of date

Operating systems (e.g. HR, payroll, finance) are out of date and do not provide information in the manner that SDHB needs.

[57] ASH rates are mostly acute admissions that are considered potentially reducible through prophylactic or therapeutic interventions deliverable in a primary care setting (Jackson, 2001. 25(3)). However, it should be noted that this definition is somewhat controversial and other aspects of the health care system can impact ASH rates.

Focus needed on workforce transformation

The workforce needs to be able to meet the needs of the frail elderly patient as well as allowing all clinical staff to work to the top of their scope.

Facilities are outdated, unfit and uneconomic to repair

- As outlined in the Strategic and Economic Cases, many facilities are unfit for contemporary models of care, create safety risks and potential harm, restrict service capacity, cause delays and increase outsourcing costs.

It will be difficult to reduce the deficit under the status quo

- SDHB (and its predecessor organisations) has recorded persistent operating deficits for several years identified in the Financial Case.

10.1.2 The SDHB's response to the challenges identified

Since the IBC, the SDHB has been working on several headline actions to respond to the challenges identified above. This section is not exhaustive of all the service development initiatives that are currently being worked on throughout the SDHB.

The SDHB will refresh the Southern Strategic Health Plan – Piki te Ora

As outlined above, during 2020/21 the SDHB will refresh its Strategic Health Plan, incorporating and integrating the vision statements, guiding principles and key directions of its various strategies, frameworks, position statements and plans. The refreshed Strategic Plan will provide a clear articulation of the SDHB's vision for the entire future Southern health system and a clear picture of what services, or aspects of services will be delivered in different or remote care settings such as Community Health Hubs in the future. As other specific strategies require refreshing these will be remodelled more overtly to become direct responses to the overarching strategy (action plans).

The SDHB has developed guiding principles to inform planning and service development

The SDHB has continued its efforts to further articulate its vision statement "Better health, better lives, whānau ora" through developing a set of principles for the transformation of the Southern health system building on the Primary and Community Health Strategy and Action Plan. Three workshops were held (between 22 August 2019 and 30 September 2019) across Invercargill and Dunedin with a broad range of stakeholders. The workshops acknowledged the efforts to date on implementing the Primary and Community Health Strategy and Action Plan and recognised the need to more broadly engage stakeholders across the continuum of care and expediate progress on implementing the Action Plan. In particular, the SDHB recognises the need to accelerate efforts to ensure that the whole of the health system is better equipped to support care delivery in a primary and community setting.

Workshop participants agreed the following principles that will underpin implementation of the Southern Primary and Community Care Strategy and Action Plan based on the Pae Ora healthy futures framework.

Whānau Ora – health families

- Our services exist to serve patients and their whānau, to optimise their health outcomes within a community context.
- Recognising constraints, ultimately, we will deliver services as close to home for people as possible.
- Our service recognises that patients and their whānau will be included in decisions about their care.

Wai Ora – Health environments

- Patients and whānau will experience safe, stable and efficient care from our service. Care is based on best evidence and involves teaching, learning and research.
- The complexities of daily life for our patients and their whānau will be accommodated by our service.
- Wai Ora reflects the need for our patients and their whānau have access to resources and to live in environments that support and sustain a healthy life.

Mauri Ora – healthy individuals

- Patients and their whānau will receive the level of health care that is needed from our service, regardless of who they are or where they live.
- We will actively promote self-care to help focus on keeping our population well.
- Achieving mauri ora will mean that individuals have good health and that the health system works to ensure that the way it delivers services across the continuum, from prevention to treatment, is appropriate for all ages.

The SDHB recognises the importance of maintaining momentum on key initiatives and that these are not unnecessarily compromised during the development of a revised Strategic Plan. While these guiding principles may be altered during the development of the revised Strategic Plan, they will serve the SDHB as guiding principles until such time as they are formally adopted in the Strategic Plan or altered.

10.1.3 Collaboration with local government, social agencies, communities and iwi

The SDHB's Public Health Service is adopting a new model of working with its stakeholders. Key changes in the model include embedding the 'Health in All Policies' (HiAP) approach working in partnership with communities and settings (as opposed to focussing on specific issues) and increasing the SDHB's health intelligence capability.

The Health in All Policies approach seeks to address the social, economic and environmental determinants of health through building strong partnerships and collaboration between health, local government, and iwi. The approach recognises that many of the determinants of health are beyond the control of the individual and the health sector.

The increased health intelligence capability will provide an opportunity to develop an integrated health intelligence function for the SDHB and WellSouth that will have a wider benefit for the whole system and support delivery of the Primary and Community Strategy's objectives.

Canterbury DHB has taken a HiAP approach for over a decade and has described the approach as having both strategic aspects (e.g. new forms of governance, shared goals and budgets) and technical aspects (e.g. undertaking Health Impact Assessments, joint work plans, data collection and analysis).

10.1.4 Reducing inequity

The SDHB is conscious of the need to ensure health service delivery is effective in rural and remote areas. The SDHB is working actively with its rural hospital network and has identified and is addressing issues of inequitable outcomes for Māori.

Particular areas that are being addressed in respect of Māori health are:[58]

- avoidable hospital admissions in 0-4 year olds and 45-64 year olds;
- acute admissions and readmissions to hospital
- amenable mortality rates
- acute admissions
- self-harm hospitalisation admissions
- cervical screening
- child respiratory inpatient admissions.

SDHB also recognises the importance of strengthening the Māori workforce through the development of a Māori Workforce Strategy and is working in alliance with Te Rūnanga o Ōtākou and Kāti Huirapa ki Puketeraki.

There are particular disparities of access that need to be taken into account.

Refugee population

The SDHB is receiving and helping settle more refugees than any other DHB in NZ. The SDHB has developed a unique rights-based strategy for refugees who often arrive with vulnerabilities and health conditions exacerbated by war and dislocation. Rather than creating specific refugee health services, the SDHB works to ensure refugees have full access to the health services that are available to all New Zealanders. The SDHB partners with the PHO in the provision of primary health services that financially support GP access, pharmaceuticals, face-to-face interpreters and health navigators who assist in refugee integration and who are also able to identify and address any pathway access issues encountered by refugees. The SDHB also contracts with the University of Otago Dental School in addressing the oral health issues that former refugees often suffer from. Finally, the SDHB invests in packages of care in mental health so that former refugees can receive support for trauma experienced offshore that would typically have been covered by ACC if such trauma took place in New Zealand.

[58] From SDHB Annual Plan 2019/20

10.1.5 Southern Primary and Community Care Strategy and Action Plan, the first of two key planks for system wide change

During the development of the IBC the FRE committed to further investment in primary and community care. Since then the SDHB has invested in developing and implementing a comprehensive Primary and Community Care Strategy and Action Plan. The Strategy and Action Plan was launched in 2018 and describes the vision and goals for transforming primary and community care services. **While the Strategy is centred on changes within primary and community settings, it spans the breadth of services from tertiary to community and reorients the system towards providing care closer to where people live and work, wherever clinically appropriate**. The vision for Southern primary and community care is:

> Excellent primary and community care that empowers people in our diverse communities to live well, stay well, get well and die well, through integrated ways of working, rapid learning and effective use of technology (SDHB and WellSouth Primary Health Network, 2017, p. 15).

The strategy has the following four goals:

- Consumers, whānau, and communities are empowered to drive and own their care.
- Primary and community care works in partnership to provide holistic, team-based care.
- Secondary and tertiary care is integrated into primary and community care models.
- The health system is technology-enabled.

There are three main pillars to the Strategy:

1. The Health Care Homes (HCH)
2. Community Health Hubs
3. Locality Networks

Implementing the Strategy and Action Plan is pivotal to enabling the system to support increasing patient complexity in a primary and community context. The following table shows the increase in the SDHB's investment over the past two years to support implementation of the Strategy and Action Plan.

Table 41 SDHB investment in Primary and Community Care 2018 - 2020 Withheld under Section 9(2)(i)

	2018/19	2019/20
Healthcare Homes	[redacted]	[redacted]
Shared Care Plan Coordinator	[redacted]	[redacted]
Patient Portal OPEX	[redacted]	[redacted]
Patient Portal CAPEX	[redacted]	[redacted]
Locality Networks	[redacted]	[redacted]
POAC	[redacted]	[redacted]
Home Team	[redacted]	[redacted]
Budgeted but not contracted		[redacted]

	[redacted]	[redacted]	Withheld under Section 9(2)(i)

Source: SDHB

10.1.6 Redesign and bolster the role of the primary care team

The IBC signalled that the SDHB would explore developing Health Care Homes. The **Health Care Home** (HCH) model is at the core of the Primary and Community Care Strategy and Action Plan. The HCH model reinforces the role of the general practice as the main provider of primary care and enhances capacity and capability through new roles, skills, and ways of working. HCHs are being rolled out across the country, in accordance with national model of care requirements and additional local requirements. The Primary and Community Care Action Plan lists the following components of the Southern HCH model:

- Being the key source of holistic care for consumers.
- Using risk stratification and a formalised needs assessment to target workforce time and effort to people with higher need.
- An expanded primary care team though introduction of new workforce roles.
- Development of higher skills within scopes of practice, and delegation of clinical and non-clinical functions within the team.
- Active engagement in the education of undergraduate and postgraduate students, as well as participation in primary care research networks.
- Redesigned care models that streamline operations within the HCH and enable urgent and extended consultations.
- Use of virtual health approaches to enhance access.
- Use of system-generated contacts to support proactive practice engagement with consumers.
- Use of evidence-based care pathways.
- Active involvement in care planning and delivery with SDHB and NGO services as part of locality networks.
- Active engagement in the education of undergraduate and post graduate students, as well as participation in primary care research networks.
- Movement to hub and spoke model through development of large Community Care Hubs networked with other locality providers.

The largest practices in the district are now a health care home, with 121,000 patients in total (nearly 40 per cent of enrolled patients), of which 20,370 are high needs and 10,838 Māori.

Progress has been made as follows:

- Tranche 1A: four practices started implementing the Health Care Home model from 1 November 2018 covering 32,000 patients. Practices include Amity (Dunedin), Gore Health, Gore Medical, and Queenstown Medical. These practices are currently developing their year two plans.
- Tranche 1B: five practices started implementing Health Care Home model from 22 March 2019 again covering 32,000 patients. Practices include Aspiring (Wanaka), Broadway Medical Centre (Dunedin), Junction Health (Cromwell), Waihopai Health Services (Invercargill), and Wanaka Medical.

- Tranche 2: six practices started implementing the Health Care Home Model from 1st July 2019 covering 56,000 patients. Practices include HealthCentral (Alexandra), Clutha Health First, Invercargill Medical Centre, North End (Oamaru), Te Kaika Caversham (Dunedin), and Mornington Health Centre

What this has meant for patients:

- The implementation of tranche two HCH practices has seen significant progress in enrolling Māori and people from high dep communities in a HCH practice. Tranche 2 practices are 25 per cent high needs and 12 per cent Māori, compared to 11 per cent and 6 per cent respectively in Tranche 1.
- An additional 2,968 appointments were made available as a result of GP triage, and 8,401 patients had a GP quickly determine their needs without coming into the practice.
- Patient portal numbers have grown quickly: 27 per cent of HCH patients have an actively used portal (14 per cent for non-HCH patients), compared to 12 per cent a year ago (9 per cent for non-HCH patients).
- 32,899 patients have access to their consultation notes via OpenNotes
  Online appointment booking is saving hundreds of hours of administration time a month across the HCH practices.
- 70 per cent of HCH CLIC (Consumer Led Integrated Care) patients have one or more shared care plan, compared to 24 per cent in non-HCH practices.

10.1.7 Provide a broader range of services in the community

The IBC also noted that the SDHB would further consider the development of community-based services, with multidisciplinary teams providing a broader range of services. As outlined in the Primary and Community Care Strategy, future primary care practices and configurations will ideally service populations of up to between 7,000 and 30,000, thereby providing more opportunity to provide a broader range of SDHB and NGO services including ambulatory specialist care (either by primary practitioners with special interests or DHB / private specialists).

The Community Health Hub model complements HCH services, to include colocation of community health services, both mobile and in-clinic services (e.g. rehabilitation), hospital specialist care, onsite pharmacy and diagnostics, enhanced urgent care and minor procedures. Community Health Hubs will be developed through either existing infrastructure or new sites. In rural areas, rural hospitals may act as a hub but with the explicit expectation that this includes primary care delivering the HCH model of care[59].

The SDHB and WellSouth have together been progressing the design of the Community Health Hubs. The Strategic Brief and Plan for Phase 1 start-up Community Health Hubs (30 October 2019) states that "Community Health Hubs will be developed sequentially and incrementally across the Southern district". The plan outlines a two phased approach:

[59] SDHB Primary and Community Care Action Plan.

- Phase one will focus on new Models of Care for Child Health, Mental Health and Health of Older People. This phase will also gather information for infrastructure development as well as interest from potential providers of services.
- Phase two is likely to include development of new Models of Care for other health areas or services, as well as to further explore and develop (in partnership with key stakeholders) the Community Health Hub infrastructure.

The Southern Primary and Community Care Strategy identifies the following three tranches to deliver Community Health (Care) Hubs.

Tranche 1: Models of care

- Determine efficient configuration of Community Care Hubs, including consideration of including ambulatory secondary care within the scope of service.

Tranche 2: Scope

- Develop a rule-set to determine the optimal mix and distribution of Community Care Hubs to support locality networks including:
  - Catchment population size
  - Distance from an acute hospital
  - Alignment with existing or proposed infrastructure including any ambulatory care hubs developed as part of the Dunedin Hospital rebuild.
  - Scope of services proposed to be included in a Community Health Hub.
  - Potential to promote integrated ways of working across primary, community and secondary care.
  - Principles to guide care model design[60].

Tranche 3: Procurement

- Identify design, financing and implementation options, and develop a procurement approach for prioritised Community Health Hub development either as physical infrastructure or as services.
- Enact procurement approach.

The SDHB has prioritised the following services as priorities for Phase One:

- Child Health
- Mental Health, and
- Health of Older People.[61]

[60] These have been completed and are included under 4.2.3

[61] This is a change to the initial action plan where the following priorities were identified: orthopaedics (e.g. fracture clinics), dermatology, ophthalmology, ENT, women's health, mental health and addictions, high volume, low complexity medical services, and geriatrics.

Work is already underway on developing a model of care for Urgent Care and for Diagnostics. The SDHB is refining the plan and are due to commence work on designing the models of care for child health, mental health and health of older people in January 2020. An RFI was issued in August of this year, to explore interest in the community.

10.1.8 Broader locality planning across the SDHB catchment

Locality Networks are an integral part of the wider Primary and Community Strategy. The SDHB is current planning to develop up to six Locality Networks covering the SDHB catchment area. The Networks will provide communities with a vehicle to influence the prioritisation of service within their geographical. Locality Networks will provide advice and recommendations to the Southern Alliance to enable the Alliance Leadership Team to effectively determine priorities for health service planning and provision.

Earlier this year SDHB established the Central Lakes Locality Network. This is an area within the SDHB catchment that is experiencing significant demographic change and industry development (e.g. the redevelopment of Lakes Hospital in Frankton and plans for the development of a new private hospital). The Network, at this point, has met on four occasions and agreed an initial plan of action. This plan takes a twofold approach of firstly identifying key areas which will be a major focus of discussion and planning and secondly identifying what opportunities might exist for "quick wins" to improve access to service.

The key areas identified for the major focus are:

- Access to unplanned and emergency care across the network area.
- Access to safe maternity across the network area.

The potential "quick wins" areas are:

- Providing follow up ophthalmology clinics at Lakes (high volume of patients travelling for clinics in Dunedin and Invercargill)
- Increased usage of POAC (Primary options for Acute Care) to reduce Emergency Department presentations at Lakes Hospital.

10.1.9 Valuing patient time – the second of two key planks for system wide change

The Valuing Patient Time Programme is the second key plank for redesigning the Southern health system. The SDHB has progressed its focus on secondary and tertiary service improvement since the IBC and initial DBC (2018). A series of workshops were held in June 2018 with the Executive and Commissioner Teams to help the SDHB further understand the impact of waiting from a patient, whānau, staff and an organisational perspective. This involved evaluating current work to date; exploring frustrations, challenges and barriers to achieving improved flow, as well as considering the potential opportunities that could be realised if we made valuing patient time a strategic priority.

Several initiatives were identified (some existing and some new) the acute hospital settings based on shaping or reducing demand, matching capacity and demand, and redesigning the system[62]. The SDHB drew on external expertise to assess current service delivery and develop a proposed way forward culminating in the *Valuing Patients Time* programme that commenced in October 2018.

This programme has focussed on improving flow through the ED, Internal Medicine, and in end-to-end care of older people with frailty. Ultimately, the objectives of the programme are to reduce unnecessary time spent in hospital and therefore:

- ensure services provide timely, high quality, patient-centred care
- reduce deterioration associated with delayed assessment and treatment
- reduce the consequences of hospitalisation such as deconditioning, delirium, falls, sleep deprivation and treatment injury
- improve the experience for patients and their families; as well as staff experience.

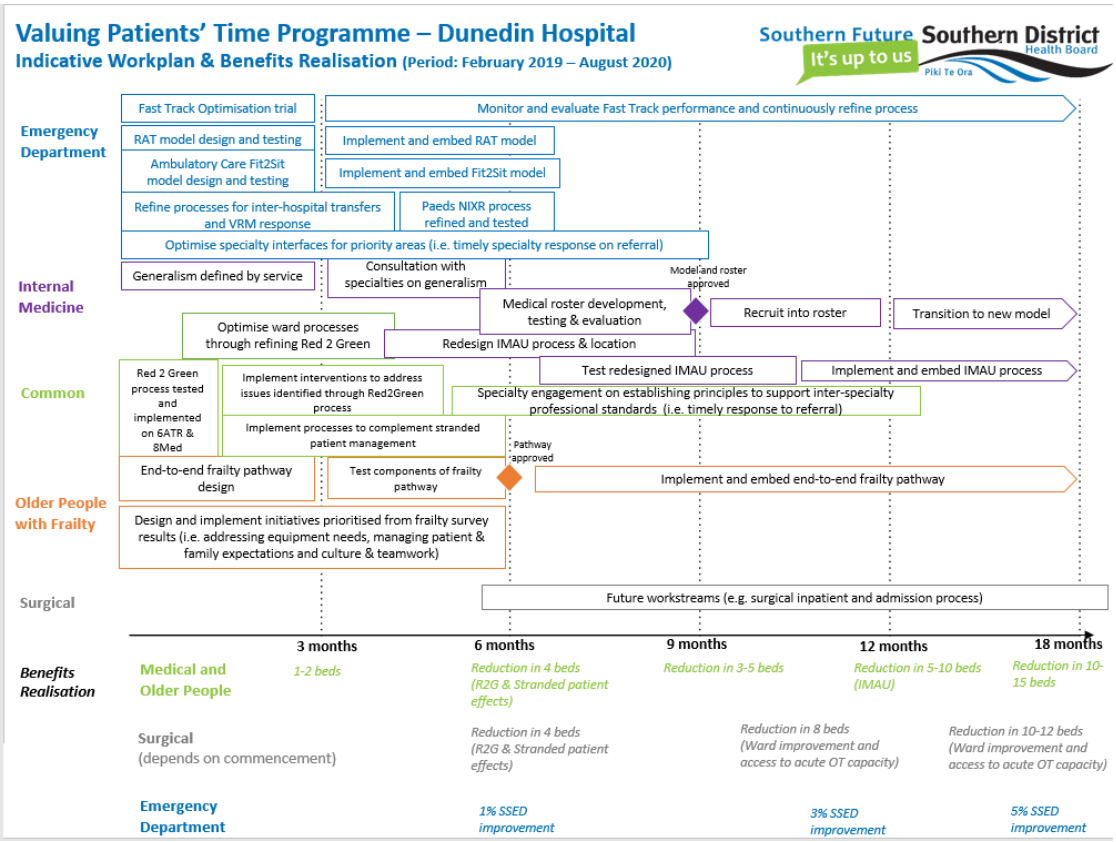
Key initiatives the SDHB have planned between February 2019 and August 2020 include:

- Design a Generalist model supported by effective medical models of care
- Design and implement a model and processes to improve same day/next day acute care within the IMAU
- Implement a robust process (i.e.Red2Green) to identify and address barriers to discharge for Internal Medicine and OPH/6ATR patients
- Improve the end-to-end care of the frail elderly and reduce the number of stranded patients through the development of an end-to-end frailty pathway
- Implement at ambulatory care ('Fit2Sit') model within ED
- Implement a Rapid Assessment & Treatment (RAT) process in ED to promote early senior decision making.

The following diagram providers an overview of the key activities and milestones for the 18 months beginning February 2019.

[62] The concept of 'shape or reduce demand', 'match capacity and demand' and 'redesign the system' is adopted from the IHI's White Paper "Achieving Hospital-wide Patient Flow" (2018)

Figure 30 Valuing Patient Time Programme



Source: SDHB

Valuing Patient Time – progress with Older People's Health Service[63]

Dunedin hospital's rehabilitation ward needed to reduce its beds from 32 to 24 (due to ICU development on the floor below and intolerable noise disruption). The Older People's Health team residing on the ward 6 AT&R decided to implement improvement initiatives to rise to the challenging constraint of bed reduction. The team identified the need to be more proactive in identifying patients earlier in their path through the hospital and implemented several initiatives:

- The recently established Home Team worked with the Emergency Department to facilitate discharge home with a supportive, restorative support service reducing the need for the frailer older patients to be managed as effectively at home.
- Highlighting the negative effects of de-conditioning and encouraging reduced waiting for those at highest risk.
- Working more closely with Ward 8 Med and pulling patients for earlier intervention in collaboration with Internal Medicine.

[63] Taken from the Valuing Patient Time, Acute Flow Benefits Realisation Plan V2

These three initiatives have resulted in a reduced length of stay on 6AT&R and a reduction of the admission waiting times for the 6AT&R ward to virtually zero. With the reduction of beds from 32 to 24 the team have also managed to increase the number of discharges from the award compared to the same time the previous year.

The improvement work undertaken by Older People's Health demonstrates that if similar efficiency gains can be achieved with the other medial wards then similar improvements in care and reduced waiting for patients can be achieved with the associated reduction in service provision and deconditioning.

10.2 Digital Change – an enabler of system wide productivity

Existing digital and technology infrastructure across the Southern health system has, historically and in the main, suffered from fragmentation (such as different systems in Invercargill and Dunedin); older versions of software; been disproportionally paper intensive; suffered from a deficit position; and disconnected within – and across – the system. There have been occasional breakthroughs such as implementation of HealthOne and a long-standing implementation of electronic hospital pharmaceutical management. The SDHB is clear that more is needed for the future Southern health system and since the IBC have developed a Digital Strategy and Action Plan.

The DHB's Clinical Leadership Group provided a position statement in 2017 that outlined how the digital hospital will operate in the future. In the Clinical Leadership Group's view, the full impact of the digital revolution will be felt over the next 10—20 years. Artificial intelligence is expected to have a major impact on how humans' function, including healthcare workers. Although digital technology is strictly a tool, it is also a very powerful enabler and it is best harnessed in a programmed fashion rather than permitting it to insinuate in an uncontrolled fashion. For the development of a New Dunedin Hospital with a working life-span of up to 50 years, it will be essential to build in provisions for rapidly expanding digital applications.

A Digital Strategy and Action Plan

The SDHB's Digital Strategy and Action Plan have been developed for the Southern health system informed by the Strategic Brief developed for the NDH (see below). The SDHB recognises that in a changing health environment, long-term planning for the digital health system needs to outlive any changes in organisational structure, service delivery or delivery location. As outlined in these documents, the digital transformation of the system will be achieved through the fulfilment of three key goals:

- Digital Environment - Laying the foundations, providing secure, sustainable and scalable digital environments.
- Digital Solutions - Enabling the people of Southern Health to achieve better health, better lives, Whānau Ora via digital solution
- Digital Insights - Bringing our people and information

The Action Plan prioritises activities and identifies resources required, reflecting the need to take clear steps forward while managing current funding limitations and changes in care delivery models. A parallel business case is being developed for the SDHB's digital change management programme. The change programme will extend over the Southern health system and is a key enabler of a paper light hospital.

The SDHB's project management guidance/methodology uses the fundamentals of P3M3 (Portfolio, programme and project management), - a Treasury-mandated methodology. In addition, a senior clinician(s) will be assigned to each clinically focused project as a project sponsor. That clinician will be selected for an interest in health informatics and health information systems and will be asked to champion the change programme with his or her colleagues.

Strong national regional and local alignment

The Digital Strategy and Action Plan builds on and is aligned to national and regional directions and initiatives. Supporting these initiatives, SDHB and WellSouth are entering an ambitious programme of activity to seamlessly integrate data and information for patients and clinicians alike.

The Strategy aligns with the Ministry of Health's National Health Information Platform (nHIP), a key enabler for delivering the NZ Digital Health Strategy. The nHIP is focused on joining up data services - interoperability is a core requirement for the platform to enable the ability to assemble a virtual electronic record on an 'as required' basis from multiple trusted sources and provide access to data and services.

SDHB is a key contributor to the South Island Alliance's Data and Digital Health Strategy. The South Island Information Services' Service Level Alliance was established to deliver improved outcomes for both the person and system. The Alliance supports the vision of enabling clinicians and health providers to have access to health information where and when they need it supporting clinical decision making at the point of care.

Strategic Brief for the New Dunedin Hospital

In 2018, a Strategic Brief – which describes the vision and values of the future Southern health system and the role that the New Dunedin Hospital will play in its successful delivery – was created.

It outlined a series of stretch targets and aspirations for the future, as follows:

- Every consumer will have an electronic health record (EHR) accessible to them and members of their care team, accessible from any device, and with a consumer-nominated lead carer as custodian.
- The health workforce will use digital platforms for professional development and fostering of peer support networks.
- An integrated set of technology solutions will enable a single point of contact to the Southern health system, shared care planning and efficient administration. It will support e-ordering and instant communication regardless of device, reducing access barriers and supporting the primary and community workforce to operate at the top of their scopes.
- Virtual health technologies supporting the delivery of virtual consultations by the primary, community, secondary and tertiary care workforce.

- Clearly specified processes for data collection, analysis, and performance improvement initiatives driven by insights, with the use of AI to augment human input.
- New technologies to support home-based care and remote monitoring will be commonplace including in-home sensors for people with relevant physical and/or cognitive needs (e.g. heart disease; dementia), with real-time data being collected and acted on by care professionals.
- Consumer genomic information and health data from both home-based and wearable technologies will be incorporated into the consumer's EHR, informing discussions and decisions with their care team.
- Where feasible, cost-effective robotic technology will be in use by consumers (e.g. home-based support for older people) and by providers (e.g. community pharmacy).
- The introduction of emerging technologies will have a clear process for prioritisation, seed funding, structured adoption, and evaluation (including return on investment).
- Southern will be a fast-follower of national and other regional trends, adopting others' proven solutions where possible and innovating as required depending on needs and technology trends.

As noted above, the Southern Digital Strategy responds to this Strategic Brief.

Design principles for the Dunedin hospital build

Following on from the Digital Strategy and Action Plan, the SDHB developed an Information and Communications Technology (ICT) Blueprint. This Blueprint defines the ICT target state (including data, systems, and infrastructure) that will be in place for "day one" operations of the NDH. The ICT Blueprint acts as a functional ICT brief and includes a complete catalogue of all ICT components required to achieve the target state of operations. As the associated detailed delivery plan is implemented, it will be used as an input into technical specifications, work packages and the physical design of the facility to ensure all ICT components have been considered.

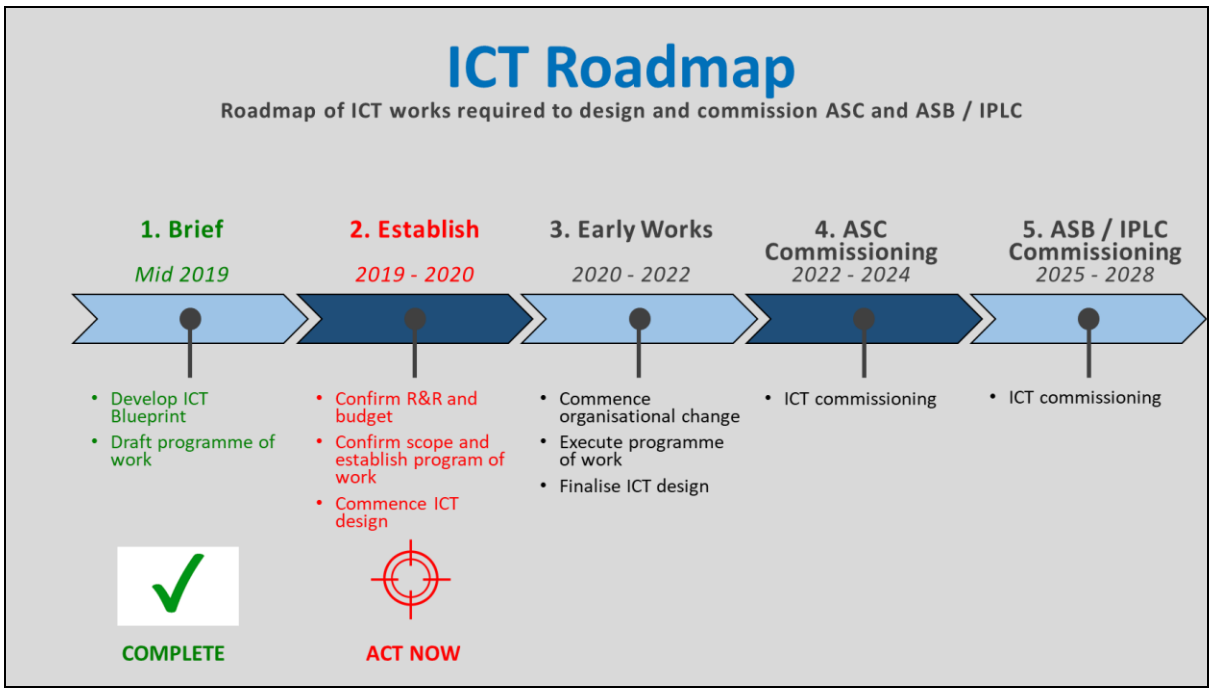
The key design principles of the Blueprint describe the ICT infrastructure and systems of the New Dunedin Hospital as:

- Digitally capable – capable of supporting current and emerging technologies and trends.
- Highly integrated – minimises manual data entry by being highly integrated on all levels.
- Data hungry – stores all data generated throughout the facility for analysis and reporting.
- Highly mobile – staff and devices are not tethered to locations.
- Deeply interactive – all ICT is accessible, intuitive and encourages interaction.
- Always available – all ICT infrastructure and systems are architected to be highly available.
- Device agnostic – information is accessible from a broad range of device types.
- Paper light – an emphasis on a full digital health record and full digital corporate records.

The ICT Blueprint is the first dedicated ICT artefact to be commissioned within the Southern health system and covers a depth and breadth of domains encompassing data; systems/applications and infrastructure. Work is underway to further develop the programme into a detailed ICT roadmap at each corresponding stage of the facility design process. A business case for additional resources will be developed to support this work programme and detailed milestones – and a programme plan – will follow.

The SDHB is currently at the 'established' phase of the ICT Roadmap (below), with the ongoing development of a Programme Business Case to support the Digital Hospital programme with some indicative costings and programme being discussed with the Ministry of Health (as at October 2019). There is an early estimate of $110m additional Crown capital of the estimated budget of $197m.

Figure 31 ICT Roadmap



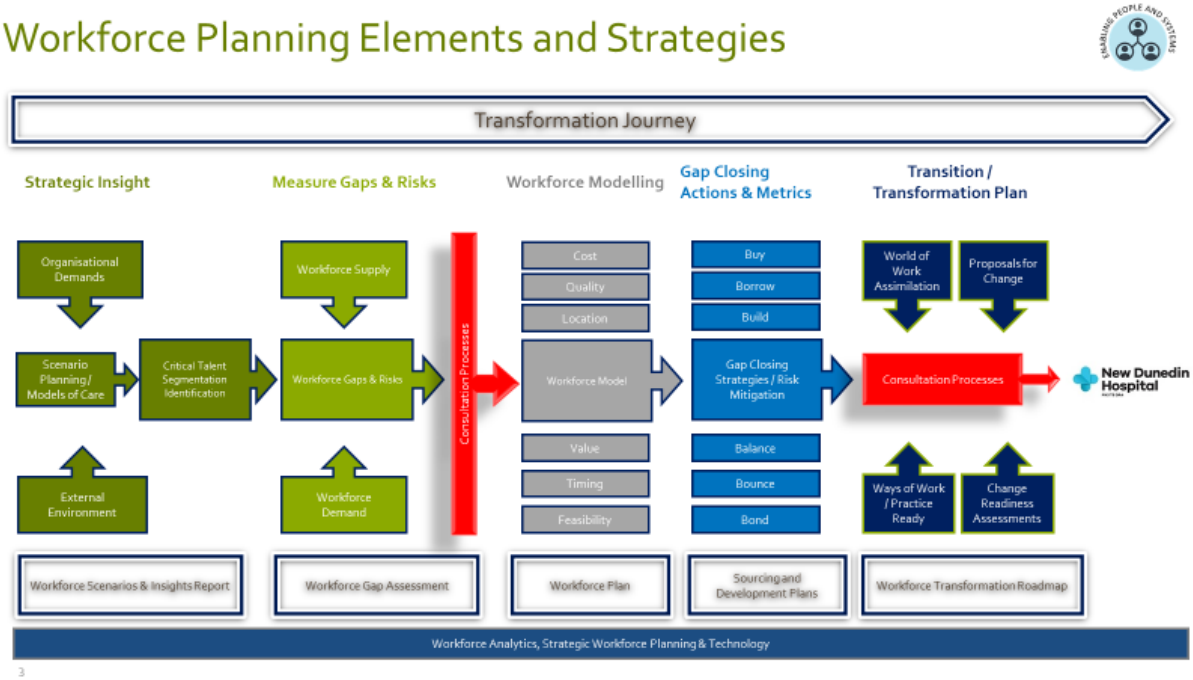
Source: SDHB ICT Blueprint

10.3 Workforce transformation

A project manager has been appointed to the PMO to oversee the workforce transformation project pipeline. Accountability of the Workforce Transformation Programme resides with the Executive.

Developing a modern HR function

The SDHB is closely looking at the functionality and systems underpinning our human resources function. A workforce strategy has been developed and the planning elements underpinning that strategy have been identified.



Source: Workforce power point presentation, titled Strategic Workforce Planning, dated 1 November 2019, SDHB

10.3.1 Strategic workforce themes

There was considerable reflective thought about workforce themes in the planning processes happening in the design stage for the concept plan. Themes identified by the CLG and FRE are as follows:

- interdisciplinary workforce
- the seven-day hospital
- utilising other workforces.

10.3.2 A shift to generalism

The importance of generalism is recognised in several contexts, especially acute general medicine. Complexity of needs and multiple conditions are driving the trend towards generalism. There will be an increased focus on looking after patients with several conditions and therefore a need for much more generalism in the medical workforce.

One of the design principles for the NDH is that it will need to serve the frail elderly. This means that geriatricians will work across the community and hospital rather than just the hospital. They will also work at the front door of the hospital, and proactively across primary care, with primary care.

10.3.3 The workforce needed for the new hospital

The SDHB is undertaking several reviews of staffing. An allied health review identified gaps in workforce and an opportunity to work differently.

The SDHB is undertaking an extensive review of SMO contracts and rosters. Some changes have been made already (e.g. there is a different way of working with rheumatologists which both expands their

interactions with primary care and reduces their on-call obligations). This review will be actioned in consultation with the Association of Salaried Medical Specialists. The SDHB will work through each of the departments and rosters to identify understaffing whilst ensuring that additional payments such as for on-call or for a ten-hour day, align with actual practice. This review is likely to reveal some savings but, more importantly, will give the SDHB a very clear understanding of its SMO workforce.

10.4 Measuring and monitoring the benefits

The benefits plan that is discussed in this section is still at a draft state and requires SDHB executive approval and greater alignment with the annual plan and other action plans.

A benefits realisation plan is important for showing – using continuous monitoring of available measures – that a project has delivered value to an organisation. Work has been undertaken to identify the measures that will be used, ensuring that these measures cover a suitably broad sweep of the organisation given the magnitude of this project.

10.4.1 Benefits to be monitored

As background, the key benefits that were outlined in the intervention logic map were:

- decreased aged residential care (rest home) rates
- increased elective surgery rates
- lower average length of hospital stay
- decreased wait times (for community, primary and secondary care and diagnosis
- decreased acute medical admissions
- decreased hospital readmission rate
- reduce staff vacancies
- reduced deficit.

Executive leads were created to consider:

- better patient outcomes -
- one health team
- living within our means
- increased productivity
- improve patient and staff experience
- improve patient safety.

There is naturally some overlap between the different leads. Most of the metrics relate to measures that are already being monitored.

Better patient outcomes

Better patient outcomes is described as:

> **Effective, safe, efficient, equitable and timely patient-centre care for all patients and their whānau across the Southern health system [...]. The [f]ourfold Aim [has been adopted] –**

a set of four balanced goals chosen as the focus of all our work, which comprise population health, patient experience of care, cost per capita and teaching and learning – to demonstrate our commitment to achieving better patient outcomes in all that we do.

To show that patient outcomes have improved, the workstream has proposed looking at a number of measures across time to monitor if these measures improve. Some measures will be used to show if wait times for patients have reduced (e.g. the number of people admitted to ED within 6 hours). There are measures that relate to reductions in certain types of admission (e.g. avoidable hospital admissions, acute readmissions within 28 days). Finally, there are measures to show if some activities have increased (e.g. elective surgery, interRAI assessments). Table 42 shows the measures that might be used to capture better patient outcomes.

Table 42 Better patient outcomes

Category	Measure to support
Avoidable hospital admissions	Avoidable hospital admission rates per 100,000 for the population aged 45-64
Waits for Urgent Care	Percentage of people presenting at ED who are admitted, discharged or transferred within 6 hours
Age-Related Residential Care	Number of Rest Home Bed Days per capita of the population aged over 65 years Percentage of aged care residents who have had an InterRAI assessment within 6 months of admission
Acute readmissions	Rate of acute readmissions to hospital within 28 days of discharge
Community Referred Testing and Diagnosis	First Cancer Treatment within 62 days CT referrals within 42 days Accepted MRI scans within 42 days
Care Closer to Home	Increase in number of procedures in community – care closer to home
FSA DNAs (first specialist appointment Did Not Attends)	% of FSA DNAs
Increased elective surgery rates	Average Length of Stay (run charts) Caseweight Target vs Forecast Percentage of day-case to non-day-case surgery
Maintain elective procedures	Meet procedures vs plan discharge and CWD to plan
Health Care Home	Percentage of patients activated on a portal in HCH practices vs percentage of patients registered on a portal in Non-HCH practices Total number of patients who had their issue resolved over the phone % of patients who have had an MDT in HCH practices vs Non-HCH practices

One health team

One health team is described as:

> **[Taking] a more cohesive team approach across the Southern health system. We will work towards shared goals and supersede traditional organisational, sectoral and clinical boundaries to proactively help our people and populations in need and to ensure continuity. We will do this by operating as a seamless,**
>
> **interprofessional team that reflects the community that we serve and that operates in a high-trust, participative and community-facing system. Using health pathways, our focus will be to work together with the person and their family and whānau at the centre of care.**

To demonstrate the notion of "one health team" a number of measures have been taken that show that cooperation across different levels of the health system is taking place. Such measures refer to enhanced activity in primary care, reduced ASH (ambulatory sensitive hospitalisation) rates, patient satisfactions, and increased numbers or roles that span both primary and secondary care.

Table 43 shows the measures that might be used to capture the notion of one health team

Table 43 One health team

Category	Measure to support
Low acuity ED presentation	ED presentations by triage category as % of total ED presentations, and rates/1,000
GP and practice nurse/Rural nurse specialist usage	GP and nurse consultations per 1,000 patients
Community Health Hub implementation	Number of services provided out of a Community Health Hub
Health Promotion and Education Services	Number of smokers seen in primary care offered support to stop smoking Infants fully/partially breastfed at 3mths
Primary Health Care Services' Performance	ASH admission rates (per 100k) for 0-4 year old children Number receiving a brief intervention from the primary mental health service
Community Referred Testing and Diagnosis	First Cancer Treatment within 62 days CT referrals within 42 days Accepted MRI scans within 42 days
Patient Experience of One Health Team	% of patients who record a positive experience of the "One Health Team" told via patient journey questionnaires
Health Pathways	Increase in Health Pathways utilisation
Workforce Change	Number of staff employed in roles that span primary and secondary

Living within our means

Living within our means is described as:

> **As one of the Southern Strategic Priorities, we aim to work together across the Southern health system in smarter, more clinically, financially and environmentally sustainable ways. We will do this to move towards living within our means and continue to deliver the best possible care for patients, their whānau and the wider communities that we serve.**

Living within our means is captured in two broad principles: the first is to reduce SDHB's deficit over time to a position of breaking even; the second is the promotion of environmental sustainability, to use resources carefully. Environmental sustainability also assists with the first principle by using fewer resources.

Table 44 shows the measures that might be used to capture living within our means:

Table 44 Living within our means

Category	Measure to support
Deficit reduction	Year on year reduction (aligned to annual plans)
Environmental Sustainability: Energy Supply and Efficiency	Coal use (tonnes per annum) Electricity use (kWh per annum)
Environmental Sustainability: Waste	Waste to landfill
Environmental Sustainability: Travel	Number of EVs in fleet by 2030 % reduction in patient NTA (National Travel Assistance) claims by 2030
Business Intelligence and Reporting	FPIM (Health Finance Procurement and Information Management System) implementation by 2021

Increased productivity

Increased productivity is described as:

> **[Not] about doing more with less, but instead about working smarter, doing the right things and doing them in the right way, ensuring we have the right tools and right equipment to do our jobs and prioritisation of where we focus our time effort and investment to realise the best patient outcomes. We are constantly seeking the right outcome for our investment, in collaboration with our patients and their whānau**

Increased productivity is measured by looking at:

- higher proportions of specialist staff and enhanced qualifications of staff
- lower staff to case weight discharge ratio
- improved acute patient flows.

Table 45 shows the measures that might be used to capture increased productivity:

Table 45 Increased productivity

Category	Measure to support
Workforce	% of SMOs as a generalist workforce % of qualified nursing staff % of qualified AH staff Implementation of Calderdale Framework for Allied Health professionals
Acute Patient Flow	Acute Midnight Occupancy (run charts) Decreased acute medical discharge rate Discharges with LOS>2.3 days (target by MOH from memory) Stranded patients with LOS>7 days
Staff activity	Nurse (FTE) to case weighted discharge ratio Doctor (FTE) to case weighted discharge ratio

Improve patient and staff experience

Improved patient and staff experience is described as:

> **We strive to develop strong partnerships and authentic community, patient and whānau-centred care. To do this, we will work with patients and whānau to co-design care and develop facilities and strategies to improve patients' experience and facilitate positive outcomes, while retaining a focus on the patient and their holistic physical and emotional needs.**
>
> **How staff feel when they are at work is key to the successful delivery of high quality patient care and staff wellness. Evidence shows us that having engaged, healthy staff leads to increased productivity and an overall happier workforce. We are committed to demonstrating SDHB's values to empower our staff to work as one health team. Our staff will be engaged, motivated, supported by technology and provided with development opportunities to further improve their professional practice**

Assessing the patient and staff experience will be undertaken by direct measurements of patient and staff satisfaction. In addition, measures of metrics that are known to be good proxies (fewer sick days taken) or drivers (shorter waiting times) of staff and patient satisfaction.

Table 46 shows the measures that might be used to capture improved patient and staff experience:

Table 46 Improved patient and staff experience

Category	Measure to support
Staff Satisfaction	% of staff who rate SDHB as good, or very good, place to work

Category	Measure to support
	Average number of sick leave days by FTE Turnover rate of staff (% of employee resignations) Reduced staff vacancies
Patient Satisfaction	Measures to follow
Patient access	Year-on year % of patients accessing portal
Improved Consumer Engagement and satisfaction	% of overall home-based support services clients with Patient experience data
Improved technological support District wide	Shorter waiting times for patients reduced NTA reduced travel distance % of clinical appts delivered via TH Increased % of non-Dunedin based patients accessing services via telehealth
Digitalisation of Health Records	Delivery of Electronic Health Records (EHRs) against plan Paper-lite roll-out plans Further measures to follow from the ICT Early Works Team

Improved patient safety

Improved patient safety is described as:

> **Our end goal is to improve medication safety; infection prevention and control; reduce adverse events; reduce harm from falls; facilitate consumer engagement and participation; and reduce perioperative harm.**

The outcomes measured in this workstream cover a wide spectrum. On one side of the spectrum there is a narrow measure which looks at the number of falls within the hospital. This is a proxy for the level of safety that is delivered in the institution. At the other end of the spectrum is the rate of all-cause mortality for people under 65. This measure is influenced by many interventions from community programmes, primary care, ED, and many others.

This focus recognises that the hospital is just one part of the overall health system, albeit a necessary one, i.e. the hospital is an enabler of positive health outcomes in the wider community. An efficiently run hospital can free up resources to be deployed in the community.

Table 47 shows the measures that might be used to capture improved patient safety

Table 47 Improved patient safety

Category	Measure to support
Mortality rates	Rate of all-cause mortality for people aged under 65 (age standardised per 100,000)
Fewer avoidable hospital admissions	Rate of ambulatory sensitive hospital admission for adults (45-64)
Falls prevention	Percentage of population (75 years and over) admitted to hospital as a result of a fall

Category	Measure to support
Adverse events	Rate of SAC Level 1 and 2 falls in hospital (per 1,000 inpatient bed-days)
Acute readmissions	Rate of acute readmissions to hospital within 28 days of discharge

10.5 SDHB's governance and portfolio management

The SDHB's Board will approve the change programme. Overall governance for implementing the change programme will be through the SDHB's ELT reporting to the Chief Executive Officer (with exception any action exceeding the limits delegated to the CEO). ELT members will be sponsors on projects relevant to their area of accountability (for instance, the sponsor for the implementation of the Primary and Community Action Plan will be the Executive Director, Strategy, Primary and Community). The SDHB's ELT membership is as listed below.

- Chief Executive Officer
- Chief Medical Officer
- Chief Nursing & Midwifery Officer
- Chief Allied Health Scientific & Technical Officer
- Executive Director, People, Culture & Technology
- Executive Director, Communications
- Executive Director Finance, Procurement and Facilities
- Chief Māori Health Strategy and Improvement Officer
- Executive Director, Strategy, Primary and Community
- Executive Director, Specialist Services
- Executive Director, Quality and Clinical Governance Solutions
- Programme Director, Infrastructure & New Dunedin Hospital.

10.5.1 Strong clinical leadership

The Clinical Leadership Group (CLG) is the key clinical and service advisory group for the facility redevelopment project to ensure the all related service developments support enhanced patient focused health care delivery. The CLG will report through to the ELT with advice and recommendations on service redesign for the change programme. The CLG's Terms of Reference outline their existing functions and responsibilities and these are listed below:

- To provide clinical advice and act as a reference group for business case writers and service planners.
- To provide advice on models of care to support enhanced patient focused health care delivery, and the facilities to support this.
- To facilitate the required high-level clinical discussions and consultations to provide the support and direction for working groups and work streams.
- To receive and review submissions from working groups, Project Management Office or planning consultants for decision making or recommendation to the SDHB Chief Executive through the Facilities Redevelopment Executive.

- To identify any issues/gaps in the process and decide or recommend the required investigations.
- To consider implications of redevelopment planning from a whole of health system perspective.
- To maintain a close dialogue with the Project's User Groups, including exchange of key documents.

Membership includes broad clinical representation from across the SDHB's clinical directorates, primary care and University of Otago. Because the CLG is large, a smaller Executive sub-group works with other stakeholders on behalf of the CLG.

The SDHB's Clinical Council, that spans the SDHB's entire district, will also be involved.

10.5.2 Robust and dedicated management required

Programme Manager and Programme Management Office

The existing Programme Manager, Infrastructure and New Dunedin Hospital will provide day-to-day management. The Programme Manager will report through to the Chief Executive, SDHB, and is a member of the ELT.

The Programme Manager will use an appropriate methodology to develop a comprehensive plan that maps out how each of the projects interconnect, align activity for maximum efficiency and effectiveness, support projects to deliver on objectives within constraints, and measure and report return on the investments through a benefits realisation process. Regular updates will be provided to the Executive Leadership Team as the programme plan evolves.

The Programme Manager will be supported by the Programme Management Office (PMO) for SDHB's New Dunedin Hospital. This PMO works to:

- Provide advice, support, guidance and challenge to the business and decision-makers about the change programme required to deliver the new strategic models of care in the Southern District. With a "big picture" focus on affordability, achievability and alignment, the PMO works closely with the CLG and others to help deliver dependent projects associated with the project.
- Support SDHB to develop plans to address key risks and issues at the Dunedin Hospital campus prior to the commissioning of the New Dunedin Hospital, including the development of a wider "Dunedin Hospital Transition" programme of activity over seven to ten years.
- Help to shape models of care and service design/configuration through facilitating ongoing dialogue, review and challenge between SDHB staff and the consultant teams preparing the Business Cases for the New Dunedin Hospital.
- Establish and support structures to enable this engagement, including the Clinical Leadership, User Groups, and other regular and ad hoc meetings.
- Prepare, maintain and manage delivery of the SDHB's project plan for the redevelopment of Dunedin Hospital and work with the Ministry of Health project team to develop and refine key project artefacts.

- Provide New Dunedin Hospital Redevelopment communications advice and support.

Additional, dedicated change management resource will be added as required to the PMO team to ensure that progress is able to be maintained.

Project Managers

Project Managers will continue to be appointed to each of the projects identified. These people will be responsible for the day-to-day management of their individual projects. They will co-ordinate time, budget, and resources to complete work within program guidelines, and report to the program manager on progress and any changes made to the initial project plan.

11. Managing risks

The purpose of this section is to outline the arrangements for the on-going management of risk. Robust effective and on-going risk management disciplines are critical particularly for a project of this size and complexity.

11.1 The Ministry and SDHB work together to manage risk

The NDH Project Risk Management Plan defines and establishes the required activities and responsibilities for the management of risk for the NDH project. This approach also utilises the Ministry of Health's approved Risk Management framework and tools, to which the Southern District Health Board's risk management approach aligns. The framework is closely aligned to the AS/NZS ISO 31000 Risk Management – Principles and guidelines (2018), and the Ministry's Risk Management Policy (February 2018).

The NDH Project Risk Management Plan will be reviewed at the end of each stage of the project and modified as necessary. The next update to the Plan will be made at the completion of the Detailed Business Case and Concept Design Phase.

The Plan relates specifically to the responsibilities of the NDH Project Team and the SDHB who are tasked with managing the delivery of the NDH. SDHB maintains its own risk register in respect to those activities which fall under its responsibility, albeit with a defined process for escalating risks to the Project Risk Register where risks have material implications to the project.

Both the Ministry and the SDHB recognise there are some overlap of risks on the SDHB's risk register that are elevated to "project" risks. For this reason, the representatives from both the Ministry's Project Team and the SDHB Team meet at least monthly to share and review their respective Risk Registers to ensure alignment; to agree risks that will be escalated for management review; and to ensure a "no surprises" approach is maintained between the partners.

11.2 A comprehensive Risk Management Plan

The NDH Project Risk Management Plan provides a clear statement of the nature of each individual risk, the way the risks can be contained, the potential impact on the Project's success if the risk is left unaddressed and the likely cost of mitigation strategies. The Ministry is responsible for ensuring details of the risk are recorded in the project's Risk Register, with the SDHB's NDH PMO ensuring the SDHB-risks are recorded and presented to the FRE on at least a monthly basis for review, discussion and direction.

The following details are included in the Risk Management Plan.

Table 48 Risk Management Plan – key components

Risk Management	Description
Risk identification	Risks will be identified and filtered to determine which identified risks:

Risk Management	Description
	• Are best left, as the likelihood and impact would be so low that mitigation strategies are not required; • Need monitoring, but no proactive mitigation strategies required at this stage; • Need planned mitigation strategies, as detailed in the Risk Register. • Are avoided by changing scope of the work of the project, with appropriate sign-off; • Are transferred, if possible, to another party to manage; • Escalated for the attention of the Project Sponsor and other Senior Managers within the organisation (and where relevant to the SDHB Executive) as a risk to the overall project.
Risk analysis and evaluation	Analysis will be undertaken of the likelihood that risk will be realised and the level of seriousness/impact they will have if they occur. Risks that pose the highest threat will be further evaluated.
Risk mitigation	This will identify the actions to be taken to remove or reduce the likelihood a risk will be realised, or to maximise opportunities.
Monitor and review	This will identify how often the Risk Register will be formally reviewed. Current risks which are Very High or High will be escalated to the Ministry's Southern Steering Group (and where relevant to the Southern Partnership Group) as considered appropriate. The Southern Partnership Group has identified those risks that it would like to see reported on each month for this phase of the Project. These are captured in the SPG Risk Dashboard. The overall project risk rating is reported bi-monthly to the ELT Risk Sub-Committee.
Communication and consultation	The project will communicate and consult with internal and external stakeholders as appropriate at each stage of the risk management process and concerning the process as a whole.

Source: New Dunedin Hospital Project Risk Management Plan v 1.5 (28 August 2019)

Identifying a risk owner that is best placed to deal with each risk is essential. Although the Project Director has overall responsibility for management and resolution of risks within the Project, each risk is assigned an owner that is responsible for:

- identifying and assigning appropriate actions or strategies to reduce, avoid or mitigate an assigned risk
- ensuring identified actions are completed by target dates
- on-going assessment of the likelihood and impact rating for each assigned risk
- ensuring updated information pertaining to an assigned risk is passed to the project's PMO Manager for recording in the Risk Register.

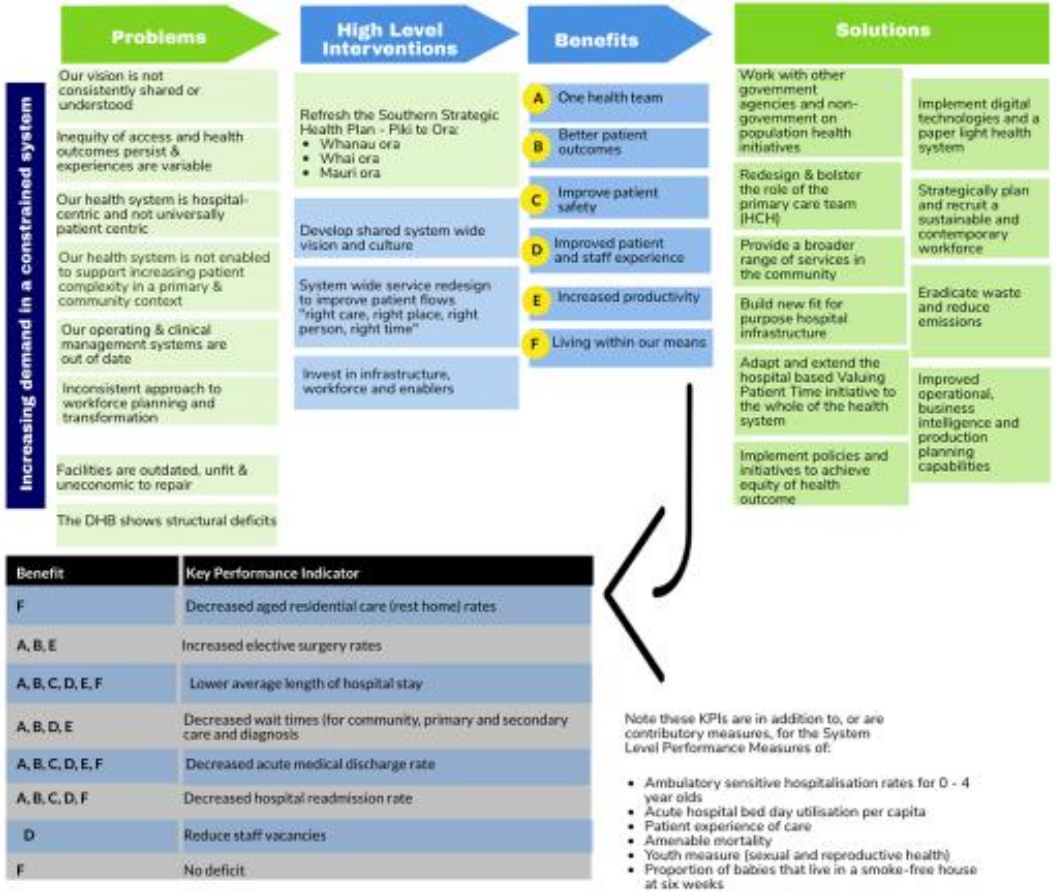
Risks are reviewed monthly by the Project Director and the Project's PMO Manager and are standing agenda items for governance meetings. Any risks causing concern are discussed promptly with the

Project Director to allow a decision on whether the risk will be escalated in accordance with a risk escalation process.

A summary is attached of the more relevant risks. We note that this risk register is still being developed and, in particularly, has not been approved by the Steering Group or SPG. The risks in FF&E and, importantly, in the SDHB change need to be developed further.

SDHB's PMO regularly report to their FRE at each meeting on risks.

Appendix A: Investment Logic Map (updated December 2019)



Benefit	Key Performance Indicator
F	Decreased aged residential care (rest home) rates
A, B, E	Increased elective surgery rates
A, B, C, D, E, F	Lower average length of hospital stay
A, B, D, E	Decreased wait times (for community, primary and secondary care and diagnosis
A, B, C, D, E, F	Decreased acute medical discharge rate
A, B, C, D, F	Decreased hospital readmission rate
D	Reduce staff vacancies
F	No deficit

Note these KPIs are in addition to, or are contributory measures, for the System Level Performance Measures of:

- Ambulatory sensitive hospitalisation rates for 0 - 4 year olds
- Acute hospital bed day utilisation per capita
- Patient experience of care
- Amenable mortality
- Youth measure (sexual and reproductive health)
- Proportion of babies that live in a smoke-free house at six weeks

Appendix B: Cost benefit analysis details

This technical appendix provides additional material on the cost benefit analysis undertaken.

(1) Assumptions

The approach to this cost benefit analysis has been informed by the New Zealand Treasury guidance.[64]

- A public sector discount rate of six per cent has been used to determine present value of the incremental costs and benefits.
- Depreciation, capital charges, interest and other financing costs are excluded from the analysis – consistent with the Treasury guidance.
- The economic cost of raising revenue for public expenditure has been allowed for, with a deadweight cost being set at 20 per cent.
- The period of analysis is 30 years, i.e. 2019/20 to 2049/50. Any residual value of asset at the end point of this timeframe is factored into the analysis.

(2) Estimating the costs

Allowances are also made for: (1) life cycle capital maintenance costs (set at 1 per cent of asset value per annum); and (2) the economic cost of raising additional revenue via taxation (set at 20 per cent of capital expenditure)

The residual value of the asset (present value) at the end of the period of analysis (2049/50) has also been included. The assumption is a useful life of 30 years for new capital assets, leaving approximately seven remaining at the end of the period of analysis, assuming that the building is commissioned no later than 2027/28. This is necessary to avoid over-estimating the economic costs of each option.

The table below outlines the detail underlying the cost estimates of each option. To enable a fair comparison, the capital cost for the "do minimum" base case has been adjusted to reflect 2019 dollars and scaled to include a contingency provision that is proportionate to that used in the quantity surveyor estimate for the masterplan option.

Detail informing the cost estimates for each option

Option	Description
Base case – the "do minimum"	Provides for the demolition and rebuild of the CSB, which was estimated to cost [redacted] in the IBC. This has been scaled up from 2017 to 2019 dollars, using the Capital Goods Price Index (8.9%). An allowance has also been made for contingencies based on the quantity surveyor estimate in the SDHB capital plan (30 per cent). The total capital cost is therefore [redacted] and is assumed to occur evenly over the four years to 2025/26. The redevelopment cost of the current Dunedin Hospital buildings included in the SDHB 25-year capital plan is also included. This expenditure totals [redacted] over 25 years, of which half relates to the refurbishment of the Ward

Withheld under Section 9(2)(i)

[64] New Zealand Treasury (2015) *Guide to Social Cost Benefit Analysis* https://treasury.govt.nz/sites/default/files/2015-07/cba-guide-jul15.pdf

	Block. This has been scaled up from 2017 to 2019 dollars, using the Capital Goods Price Index (8.9%) so that the expenditure totals [redacted].
Preferred new build option (Option 5)	This option has been costed by the quantity surveyor at [redacted]. This estimate includes the cost of purchasing a central city site and the cost of demolishing existing buildings. Excluding the escalations (assumed to reflect usual inflationary impacts), which are dealt with under the risk analysis, the capital cost is [redacted]. Sunk costs (incurred to date in preparation of the business case) have been excluded. The resulting capital cost is [redacted]. This is spread in line with the forecast prepared by the quantity surveyor, out to 2028/29.

Withheld under Section 9(2)(i)

(3) Estimating the benefits

The table below outlines the categories of benefit and the approach to estimation.

Description of benefit categories and estimation approach

Benefit category	Approach to estimation
Efficiency gains – in the form of the forecast reductions in the average length of stay that will allow a given volume services to be delivered for fewer resources than would otherwise be the case	Efficiency gains are modelled for three service areas: acute medical, AT&R services, and surgery (acute and elective). This is done by estimating the avoided cost of having to deliver those services without the expected efficiency gains. Avoided case weights were used as the measure for acute medical services and surgery. Avoided bed days were used for AT&R services. 'Low' and 'high' attribution assumptions are used – i.e. the extent to which the efficiencies in the service forecasts can be attributed to the new hospital build. These efficiencies were 'priced' using the national service unit prices.
Patient time savings – the value of avoided patient time in hospital.	A lower length of stay, resulting from efficiency gains, means patients do not have to remain in the hospital as long. Patient time can be valued using avoided bed days for acute medical, AT&R and acute and elective surgery services. Avoided time in hospital, for example, by being discharged earlier, or by avoiding an unnecessary admission, has value to patients because they can do other things. The approach draws on a value from a 2013 study in the Netherlands, which found patients valued treatment time, on average, at €13.32 per hour or $24.71 in New Zealand dollars in present day terms.[65] As context, this is lower than other values commonly used to value passenger time savings in New Zealand transport policy analyses, and so is, arguably, a more conservative figure to use.
Additional services – significantly more elective surgery is forecast to be delivered under the new hospital (arising from more capacity).	The greater capacity of the new hospital also contributes to the provision of additional surgery. The remainder of the increased service volumes is attributed to increased capacity, after estimating the portion

[65] van den Berg, Bernard et al (2013) "Attributing a Monetary Value to Patients' Time: A Contingent Valuation Approach" University of York, Centre for Heath Economics, CHE Research Paper 90.

	of the additional surgery possible with efficiency gains (i.e. from a lower average length of stay). Conservative assumptions are then made about the portion of these additional services that may be achievable in the base case, for example, via outsourced arrangements. It is assumed that 25 per cent of these additional services are attributable to the new hospital at the low end of the range, rising to 50 per cent at the higher end of the range. In terms of valuing these additional services, the focus is on the 'value in exchange', which represents the value to society of the services delivered and received. The national case weight price for these volumes is used as a conservative proxy for this value.

Appendix C: Construction accord will drive procurement

The Construction Sector Accord (the 'Accord')[66] was jointly developed by Ministers, Government agencies and construction sector leaders, to signal a desire to work together to improve the overall health and performance of the construction industry. Key initiatives are being progressed to build the resilience of the construction sector and ensure New Zealand gets the quality infrastructure investment needed to improve long-term economic performance and social wellbeing. Specific shared goals:

- Increase productivity: A productive, value-driven and efficient construction sector able to produce more for each dollar spent.
- Raise capability: A skilled and capable workforce that meets New Zealand's growing housing and infrastructure needs.
- Improve resilience: Strong, sustainable businesses with the capacity to innovate and adapt to change and disruption.
- Restore confidence, pride and reputation: A high-performing, transparent and trusted sector we can all be proud of.

Government procurement rules reflect the Construction Accord

The 4th edition of the Government Procurement Rules (the 'Rules') was released on 4 October 2019.[67] The update includes revisions aimed at bringing to life the Government's goal of leveraging procurement to achieve wider public outcomes for New Zealand, including improving the construction industry's performance and resilience. The Rules align to the Accord's goals, and mandate agencies to consider broader outcomes for major projects' procurement strategies. The Rules align with the Government's expectations for how agencies will use procurement to achieve environmental, social, economic or cultural benefits that are generated from the procurement activity and will deliver long term public value for New Zealand. Examples of Government Procurement Rules specifically relevant to the delivery of broader outcomes are set out below.

Table 49 Examples of Government Procurement Rules

Rule 16	Rule 17	Rule 18	Rule 19	Rule 20
Consideration of broader outcomes (social, environmental, cultural or economic) that	Increase access for New Zealand businesses to procurement opportunities and encourages	Suppliers expected to contribute to growth of construction skills and training, to support the	Improving conditions for New Zealand workers, such as protecting workers from unfair and unsafe	Transitioning to a net-zero emissions economy and designing waste out of the system

[66] https://www.constructionaccord.nz/the-accord/
[67] Retrieved from: https://www.procurement.govt.nz/procurement/principles-and-rules/government-procurement-rules/

arise as a result of procurement and delivery of a project	agencies to involve Māori, Pasifika and regional businesses as well as social enterprises	expended capability and capacity of the construction workforce	behaviour and labour practices	to support a circular economy

The broader outcomes will be reflected in the Ministry's procurement and delivery of the new hospital, from the procurement strategy, through to tender evaluation, the collaborative development and during construction.

Outcome	How the Ministry will achieve this outcome in procuring the New Dunedin Hospital
Broader Outcomes **The secondary social, environmental, cultural or economic benefits that are generated through procurement, and will deliver long term public value for New Zealand. They will reflect not only the whole-of-life cost of the procurement, but also the costs and benefits to society, the environment and the economy.**	Subject to available funding, a wider range of wider public outcomes (e.g. in the social housing, education and transport sectors, among others) may be able to be delivered by the project, and will be actively considered through the procurement phase and the collaborative development phase as follows: • During market engagement and procurement documentation, clearly communicate to bidders its expectations around the role of the construction industry in supporting the delivery of broader outcomes. • During the collaborative development phase, establish a dedicated workstream focusing solely on the planning and delivery of broader outcomes. The Ministry will work with contractors to determine how delivery of the new hospital can also facilitate investment in additional works (e.g. accommodation construction) that would not have otherwise occurred. • During construction, establish dedicated management roles to focus on monitoring the delivery of the broader outcomes, including to act as a liaison between the contractor(s), the Ministry and other relevant agencies.
Priority Outcomes	
Increase the size and skill level of the domestic construction sector workforce	• Require contractors and subcontractors to demonstrate how they will invest in growing their workforce to meet the significant labour demands for the project, including to create new apprenticeships, on-the-job training, better job retention and skills development. This will be included with the Ministry's evaluation criteria during the RFP stage of the procurement process and is likely to form part of a dedicated workstream during the collaborative development phase. • By requiring major services subcontractors to participate directly in the collaborative development phase, these firms will benefit from high exposure to large-scale public-sector procurement processes. • Working together with the University of Otago, Otago Polytechnic and other secondary/tertiary education providers to encourage participation in construction sector-specific courses. • Sub-contractors involved in the Outpatient building will have increased scale and experience that likely would be an advantage to the Inpatient building contractor. These benefits would extend beyond the New Dunedin Hospital into other upcoming hospital construction projects.

Increase New Zealand businesses' access to Government procurement	• Engage with the local construction industry to ensure they have opportunity to: (a) provide feedback and contributions to the procurement process, and (b) allow enough time to invest in ramping up their workforce. • Contract directly with large contractors and their choice of specified major services subcontractors as part of a single bidding consortium, which allows many of these suppliers' access to direct Government contracting for the first time.
Improve conditions for workers and future-proof the ability of New Zealand businesses to trade	• Explicitly consider all contractors' health and safety credentials in its procurement process. • Include specific KPIs (e.g. worker wellbeing, safety-in-design) relating to the contractor's/subcontractor's Health & Safety outcomes in the performance framework to be implemented during the delivery phase.
Net zero emissions and waste reduction	• Explicitly consider environmental sustainability in its procurement process. • Include specific KPIs (e.g. reduced or zero emissions, reduced waste as a result of design, reuse and recycling, diversion from landfill, etc.) relating to the contractor's/subcontractor's environmental outcomes in the performance framework to be implemented during the delivery phase.

Appendix D: Market engagement informed procurement plan

The Ministry undertook a formal market engagement process to seek the views and expertise of the New Zealand and international construction sector. This process was led by the Ministry and facilitated by Ernst & Young, with participation from the Commission and Resource Coordination Partnership (RCP).

Market engagement allowed market the opportunity to consider and provide comment on the New Dunedin Hospital's scope, the Ministry's objectives and the status of the delivery planning. It increased the Ministry's understanding of current conditions and key risk areas in the main contractor and subcontractor markets and informed the procurement and delivery approach.

Feedback was sought from contractors/subcontractors based on the Ministry's design for the new hospital at that time, which was based on a single building. Ongoing design work since market engagement means certain aspects of the facility design and site masterplan has materially changed.

Procurement model considered over several years

The IBC, completed in June 2017, undertook a preliminary analysis of potential procurement options that considered risks, market appetite and other advantages and disadvantages of different procurement models against a set of objectives. The IBC concluded that, pending further decisions on the new hospital's location, size, programming and design, there was **'no recommendation at present'** for the procurement model. The IBC noted that several procurement models were viable, ranging from a traditional build to a Public Private Partnership (PPP).

A market sounding in August 2019 informed the further consideration of procurement models with a strong supplier preference for more collaborative models. In the DBC process potential delivery and risk transfer approaches were considered.

The Ministry updated the commercial objectives developed in the IBC. The IBC's commercial objectives for programme, cost, risk allocation and innovation are still considered to be relevant and remain largely unchanged. Six new objectives were introduced in response to the Ministry's desire to strengthen relationships between the private and public sector and for the New Dunedin Hospital to deliver a wider range of social, economic and environmental benefits.

Objective	Procurement strategy contribution to commercial objective
Programme	Certainty that the project's delivery programme meets the SDHB's operational requirements, including with respect to ensuring clinical in-service dates are met.
Cost	Maximises public value to the Ministry by optimising whole-of-life outcomes and minimising the likelihood of cost overruns.
Risk allocation	Encourages a fair and transparent risk allocation to party best placed to manage risk.

Innovation & flexibility	Encourages innovation and flexibility in design & construction in order to achieve the Ministry's desired outcomes without unnecessary risk.
Governance	Requires the Ministry to be a competent counterparty, including establishing a project governance and management structure that enables transparent, optimal and efficient decision making.
Relationships	Encourages strong and trusting relationships between the Ministry and the construction sector in order to deliver successful outcomes for each party during project delivery.
Sustainability	Encourages positive environmental, social and sustainability outcomes.
Industry resilience	Encourages the construction sector to participate in the project in a way that builds industry capability and improves the overall resilience of the sector for future projects.
Labour productivity	Supports improved labour productivity by encouraging efficiency in design, creating skills and training development opportunities and building resilience in the local and national labour market.
Local impact	Supports positive outcomes for local people and businesses by minimising disruption, creating opportunities and building a legacy for Dunedin.

These were considered against the combined single inpatient/outpatient building. The summary evaluation is set out below.

Table 50 New Dunedin Hospital long list assessment

Procurement Model		**New Dunedin Hospital** **Not suitable** **May be suitable** **Suitable**	
Traditional	Construct only		Market feedback was that the Construct Only model is unsuitable for a project with this scale and risk profile. This model was considered suitable for the smaller Outpatient building but not the larger and more complex Inpatient building.
	Design and build		The D&B model is suitable because the risks of transferring design are outweighed by the benefits of design innovation/flexibility, potential programme efficiencies, and having a single point of accountability. That said, many participants expressed that traditional D&B (hard risk transfer) is not preferred due to recent negative experiences with this model on other projects. This model may be more suitable for the smaller, less complex Outpatient building.
	Design, build, maintain		A DBM model is expected to increase procurement complexity, may limit competition and may be inconsistent with SDHB's site-wide maintenance arrangements.
	Design, build, maintain, operate		Clinical operations will remain the responsibility of SDHB.

Collaborative	ECI (Construct Only or D&B)		Market feedback was that a well-run ECI process for the New Dunedin Hospital could provide significant benefits to the Ministry through design input, industry certainty, collaboration and innovation.
	Management contracting		Management contracting is most suitable where no single contractor can take on the lead role in project delivery. Market reflected appetite and capacity to take on the lead contractor role (including as a JV).
	Alliance		The size and complexity of the New Dunedin Hospital warrants consideration of an Alliance as a means of managing risks, addressing uncertainties in cost and programme and fostering positive relationships with the industry. There was strong positive market feedback. However, critical review suggested our lack of experience of such contracts would substantially increase risk.
PPP	Design, build, finance, maintain, (operate)		Does not align with Government policy

Three models were shortlisted: Design and Build (D&B), two versions of Early Contractor Involvement (Non-competitive and Competitive); and an Alliance.

Short-list evaluation

Shortlisted procurement models were assessed against the Ministry's agreed commercial objectives in a Commercial Case workshop to understand the advantages, disadvantages and trade-offs of each approach. The assessment was conducted using an equally weighted five-step scale (see below), that measured the extent to which each model meets these commercial objectives.

Objective	Design & Build	Early Contractor Engagement		Alliance
		Competitive	Non-competitive	
Programme				
Cost				
Governance				
Risk allocation				
Innovation and flexibility				
Relationships				
Sustainability				
Industry resilience				
Labour productivity				
Local impact				

Key: Impact on objective

Meets objective		Neutral		Does not meet objective

- For the Inpatient building, Alliance was set aside because of a weaker showing against the two commercial objectives of Programme and Cost.
- Design & Build was set aside because of a range of concerns about Risk Allocation, Relationships, as well as loss of Innovation and flexibility and other issues highlighted in the Construction Accord.

Design and Build summary view

1. Design & Build (D&B) performs well against traditional commercial objectives of programme and cost certainty and allows public sector agencies to access private sector design innovation. However, the hard risk transfers inherent to this approach (where a design brief is handed to the contractor) means it can be less effective than other models at delivering the benefits of collaboration and encouraging the contractor to deliver broader public outcomes.

2. The theoretical benefits and practical success of D&B can differ. Anecdotal evidence from the construction industry suggests that some firms have had negative experiences with how the D&B model was implemented on previous projects, where an inappropriate risk allocation (including opaque design risk transfer), lack of early involvement of contractors and adversarial contracting relationships were seen as major issues.

ECE summary view

1. Early industry involvement can be used to bring practical design elements into the professional design early - improving design, delivery planning, buildability and realisation of broader outcomes (e.g. environmental, construction sector resilience, etc.). The collaborative phase encourages the contractor(s) to drive innovation, but the Ministry must establish a robust decision-making framework so that contractor design proposals can be identified, assessed and included in the overall design. There are examples of hospital projects being successfully delivered under this model, e.g. the ASB in Christchurch and Fiona Stanley Hospital in Western Australia.

2. During the market engagement process, contractors and subcontractors viewed early involvement as a key mitigation to many of the delivery risks for the New Dunedin Hospital, including ramping up the workforce and supply chain capacity.

3. Appointment of a contractor occurs earlier than under a Construct Only/D&B model (to achieve the benefits of early involvement), therefore competitive price tension is reduced earlier. This is particularly true of non-competitive. However, a collaborative model would provide the Ministry greater price protection and certainty upon contract signing than an alliance model.

4. ECE provides greater cost certainty compared to the Alliance model. In the ECE process there is full transparency of costs as both the contractor/sub-contractor and client are involved in developing each package of work's cost as the design is detailed. The QS budget for each package is known and during the ECE process design solutions will be developed with the intention is that each package is within the QS budget. The alternatives of a full lump sum tender are not possible as the detailed design will not be ready for this to occur. In addition, a lump Sum would feature significant tags on the detailed design provided, leaving a large percentage of cost open ended. In an alliance model there is no obligation on the parties to work towards achieving the QS budget. This contract form is equivalent to a cost-plus model and it is difficult to prove cost value to the client.

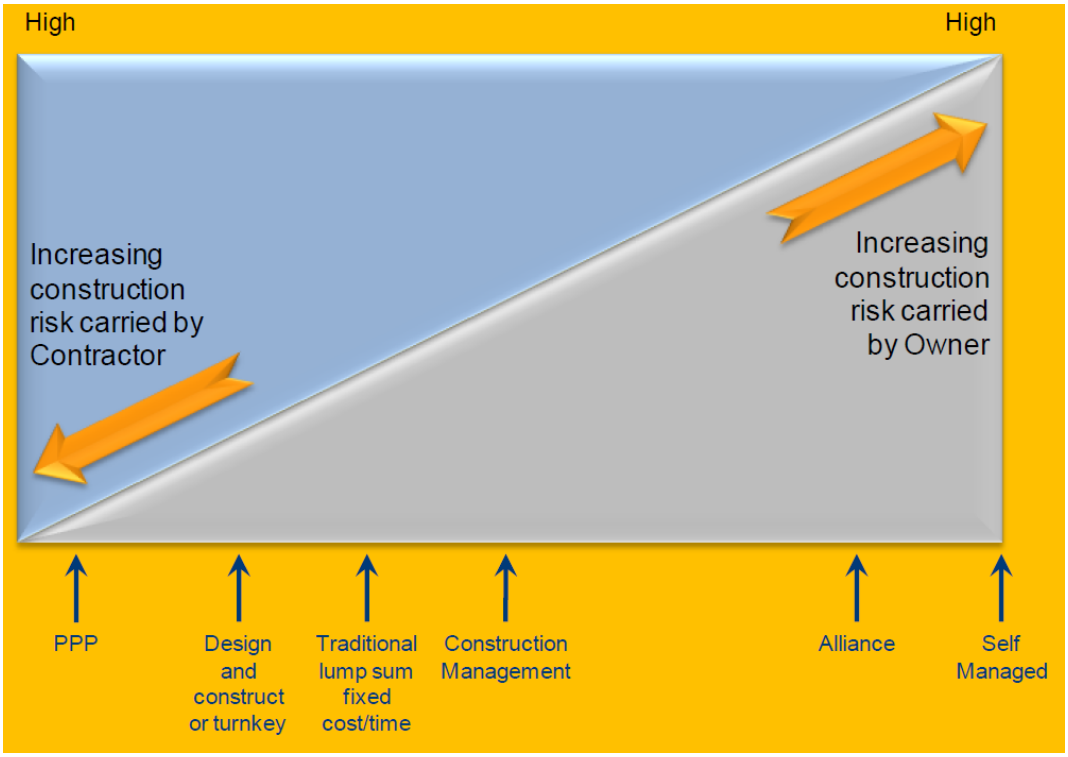
Alliance summary view:

1. An alliance fully embodies the principles of collaboration, predicated on the Ministry, its design team, contractors and subcontractors all working as a single team throughout project planning and delivery toward shared goals on a "best for project" basis. These goals include seeking opportunities for cost and programme savings, innovation and safety outcomes, and supporting broader outcomes for Dunedin, the construction sector, the environment for example. With appropriate governance and focus, this approach can generate innovative solutions that may be missed in traditional project delivery; however, it is important to regularly manage non-cost objectives to ensure those objectives do not become superseded by cost driven commercial imperatives.

2. In considering an alliance, it is assumed that due to the effort and cost associated with forming the Alliance model, that both the Inpatient and Outpatient buildings would be delivered by one alliance. This reduces the chance for a smaller organisation to deliver the Outpatient building, which in turn reduces the chance to meet the broader outcome of developing local market capacity and capability.

3. The key drawback of an alliance (which utilises a target out-turn cost mechanism where cost overruns/savings are shared between the Ministry and contractor(s)) is the reduced level of price certainty versus a fixed price contract model. The current project cost estimates do not include the additional cost of alliance contracting, or the cost risks involved. It is typical for an alliance contractor to cap their cost risk exposure to the value of their overhead and profit, leaving all the cost risk in a distressed project to the Owner. An alliance would mean the Ministry would be responsible for sharing and managing risks that a contractor could manage more effectively. The Australian Government (Australian Government, Department of Infrastructure and Regional Development, 2015) summarise the financial risk in comparison to other forms of contracting:

Figure 32 Financial exposure to construction risk



Source: Australian Government, Department of Infrastructure and Regional Development, 2015

4. Establishing an alliance can also be time-consuming and may challenge the Ministry's targeted in-service date for high-priority clinical functions (e.g. Day Surgery) versus other models. This could be at partially offset by the alliance developing programme innovations over the project duration. However, noting the concept design progress, this opportunity is lower. It is also noted that all key design and consultancy contracts have been executed on a more traditional approach and represent a significant existing liability that Ministry would be liable for, or vary to accommodate an alliance model.

5. The Ministry does not have experience with the alliance model. Competition for experienced resources to deliver major government projects may be increased if stimulus funding launches a significant volume of new projects. If the Ministry is unable to engage a suitably experienced management team it should not do an alliance. It is anticipated that under an alliance the Ministry would need double the resources it would need for a traditional or a design and construct approach.

6. Alliances are typically adopted for large, complex and risky projects that need flexibility during delivery – particularly where project scope and risks are highly uncertain. For the New Dunedin Hospital, a collaborative planning/design phase will provide certainty on most aspects of project scope and risks ahead of a final main works contract, enabling these to be effectively allocated to the party best placed to hold them. An alliance would mean the

Ministry would be responsible for sharing and managing risks that a contractor is better able to manage.

7. With an alliance it is important to ensure a 'no blame and no disputes' culture does not translate to a 'no accountability and no disagreements' culture where the cost-plus mentality overtakes excellent project management discipline and risk management, driving up costs and reducing value for money. Other forms of contract can more clearly define accountability for downstream changes and construction risk management.

Contractors were interested in partnering to deliver

The initial market engagement process included:

- three market briefings (two in Dunedin, one in Sydney), attended by 37 organisations
- a written Questionnaire which received 25 responses
- one-to-one meetings in Auckland, Sydney, Christchurch and Dunedin with 20 contractors and subcontractors.

There was significant interest from contractors and subcontractors. Many of the market engagement participants noted their interest is conditional on the approach the Ministry takes for project delivery, including procurement, risk allocation and packaging. Note that the feedback discussed, and the market engagement report relates to the original design. The key themes presented below remain broadly relevant, however the international nature of the firms engaged may not reflect the likely construction counterparties:

- Most participants acknowledged the local workforce would need to be supplemented by labour resources imported from outside Dunedin (from within New Zealand and/or internationally) with Australian firms noting a need for supervisory staff to be imported.
- Availability of sufficient labour force was seen to be a surmountable challenge by most participants. Labour availability is a key constraint, this can be (at least partly) addressed by providing contractors and subcontractors with long lead times to mobilise and recruit their workforce, creating training opportunities within the project, and using prefabrication to spread the location of the workforce and minimise onsite labour requirements.
- Based on the level of market interest a competitive procurement process for the construction works is likely to be supported, however this may be at risk if multiple large contractors either partner or no-bid the project. The involvement of larger international contractors will also depend on the attractiveness of the project relative to the considerable pipeline of health and other infrastructure projects on the eastern seaboard of Australia, and the evolving nature of Covid-19.
- Participants emphasised the importance of collaboration in a project of this scale. Constructive collaborative relationships will need to include the client (the Ministry and its stakeholders), the design team and contractors/subcontractors working together to share risk, address challenges and make decisions on a "best for project" basis.
- Participants suggested that early engagement will be critical to delivering the project successfully. Early engagement will provide an opportunity for contractors and subcontractors to inform the design, influence buildability and maximise whole of life

value. Early engagement will also give contractors and subcontractors sufficient lead time (and certainty) to, including to ramp up resourcing and establish supply chains.

Many participants acknowledged the value in combining the scale and experience of Tier 1 and/or Tier 2 contractors with the local experience and relationships of local contractors/subcontractors. Participants were clear that an imported workforce was no substitute for local expertise.

Appendix E: Packaging analysis

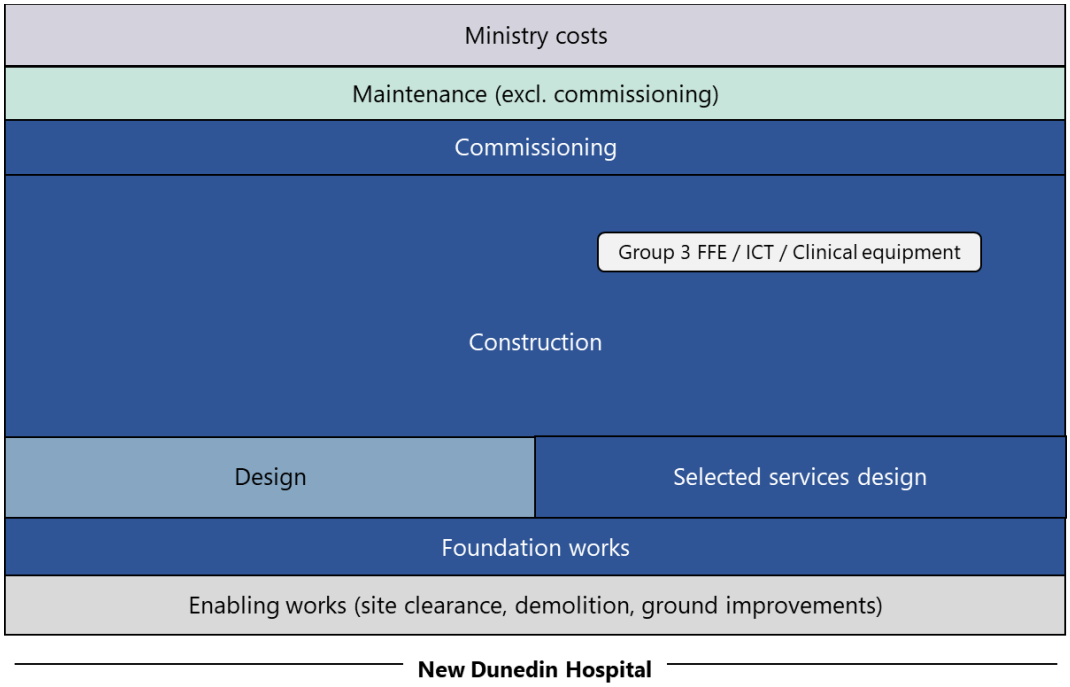
The Ministry and its key advisors considered the advantages and disadvantages of different ways of combining the Inpatient building's key services which collectively comprise the scope of the project – enabling works, design, construction, provision of specialty items, commissioning and maintenance. Colours were used to illustrate the separation and combination of different packages of work in the analysis. The long list of variations is set out at the end of the Appendix.

The advantages and disadvantages of different combinations of the key services that comprise the scope of the Inpatient building – enabling works, design, construction, provision of specialty items, commissioning and maintenance were considered.

The preferred packaging approach highlights the different packages of services to be procured. Colours illustrate the separation and combination of different work packages. The workshop conclusion was:

- The preferred packaging approach has the main construction contract for the Inpatient building bundled together with foundations works (subject to design timing), selected services design and commissioning.
- The Ministry intends the other packages to be procured separately.
- Clinical equipment and other fit-out including ICT will be purchased by SDHB.
- Maintenance is excluded.
- The Outpatient building will be procured separately (not shown in the diagram).
- Enabling works are contracted for separately, for both buildings.
- Ministry costs for both buildings are included in the budget.

Figure 33 Preferred packaging approach



Enabling works and foundation works already procured

To prepare the site for construction, three discrete stages of work are required – site clearance and demolition works, ground improvements (including piling) and foundations. Site clearance, demolition and ground improvements will remain separate from the main construction contract and will commence immediately to maximise overall programme and cost efficiencies. Foundation works could be included within the main construction contract.

Site Clearance and Demolition Works have been procured and there is flexibility in this contract to include the ground improvements and foundation construction if required, enabling ground improvement works to commence whilst demolition and site clearance continues.

Tendering site clearance, demolition works and ground improvements separately reflects the Ministry's commitment to a fairer risk allocation between the Ministry and the contractor(s). Retaining ground risk allows the Ministry to understand the exact costs of enabling works, avoids potential inaccurate risk pricing if transferred to the contractor(s) and allows the contractor(s) to take possession of a de-risked construction site. The Ministry assuming ground risk was viewed positively during market engagement.

The Ministry's recommendation to include foundations within the main construction contract is expected to improve site coordination and programme efficiencies before and during the construction phase. The approach to market for the foundations works package – including whether or not it should be tendered separately to construction - will ultimately depend on the status of design development, programme and the Ministry's ultimate technical solution.

Site clearance and demolition works commenced in January 2020 and are expected to conclude by July 2022, pending resource and heritage consent approval. Subject to design development, ground improvements are currently programmed to begin progressively following demolition works and complete by April 2023. The timing of foundations works will be subject to the final design solution and may progressively follow on from completion of ground improvements.

Design supported in a collaborative design approach and risk held by the Ministry

The Ministry has appointed a design team. The design team includes an Architect & Health Planner, Building Services Engineer, Fire Engineer, Structural & Civil Engineer, Traffic Engineer, Design Manager and Project Manager. Design development will continue with Preliminary Design targeted for September 2021. and be completed in October 2022. Developed Design is expected to commence in August 2022 and be completed by July 2023

Market engagement feedback suggested the historic approach to transferring design risk will not work without prior consultation with the market on design risk allocation. Contractors have had negative experiences under both Construct Only contracts and fixed price D&B contracts. Participants reflected on the value they could add by working collaboratively to provide input to the design solution, however did not want to accept any material design risk in the main works contract without first agreeing risk transfer and pricing through a collaborative, early involvement process (if at all).

The Ministry supports a collaborative design approach and appreciates the value of involving experienced contractors and subcontractors early in the design process. The Ministry's preference is to retain control of the design, through its design team, separate from the main works contract. Where specialist subcontractors hold high degrees of design expertise, the Ministry appreciates elements of a design and construct contract may be adopted (with the design being passed over at Detailed Design).

The Ministry understands the benefits and risks of including design within the main works contract and recognises that the functional and design requirements and collaborative scope must be well defined before contracting with the market. The Ministry recognises that if suggestions are made during the collaborative development phase or during value engineering, it is the Ministry design team's responsibility to assess whether these suggestions will work with their design. The Ministry will test the initial design scope and risk allocation with potential bidders in the current round of market engagement.

Construction starts in 2022

The Ministry will engage a private sector contractor(s) to build the New Dunedin Hospital. The contractor(s) will be required to provide all labour, materials, supply chain and services necessary to construct the completed design of the new hospital, certain furniture fittings and equipment (FF&E), backbone infrastructure for information and communication technologies (ICT) and clinical equipment. The Ministry intends to require that contractor(s) bid for and deliver the project in conjunction with their choice of subcontractors from a set of specialist services subtrades, subject to the approval of the Ministry.

Based on the Ministry's current programme, construction of the New Dunedin Hospital is expected to commence in June 2022 (early works) and is scheduled to complete in April 2028.

Specialty items purchased outside the construction contract

The Ministry's expectation is that some specialty items (including clinical equipment, ICT and Group 2 & 3 FF&E) will be procured separately from the main construction works. The project's lengthy construction period will require the Ministry and SDHB to retain sufficient flexibility in selecting this equipment to respond to changing clinical trends and technological change.

Clinicians (the end user) will inform decisions on the most appropriate clinical equipment, and this will change over time. Clinical equipment is expected to be procured by SDHB, noting there are risks around procurement of clinical equipment and how it relates to the design and programme (refer to the Management Case for details on how clinicians will inform the design process).

Furniture Fixtures and Equipment (Group 2) to be supplied

The current programme shows that installation of Group 1 FF&E will commence in the final year of construction. The timing of installation for other specialty items (clinical equipment, ICT and Group 3 FF&E) will be subject to specialist advice from clinicians and experts during the design phase.

- Procurement of Group 1 FF&E items will be included within the main construction contract. This is a typical approach for construction projects to maximise programme and cost

efficiencies, ensure whole-of-life considerations are made and to encourage innovation and flexibility in design and construction.

- The Ministry intends to supply Group 2 items to the contractor(s) to be installed. A list of appropriate Group 2 items will be agreed between the Ministry's design team and the contractor(s) in the collaborative development phase order to avoid claims for late selection affecting coordination of design and in-ceiling services.
- Group 3 FF&E will be supplied and installed under the management of the Project Team with the related costs being separate from any main build construction pricing. The cost of Group 3 FF&E will be covered by the FF&E budget. Procurement of complex Group 3 FF&E items will be coordinated with the design team.

An FF&E workstream with SDHB representation was established in October 2019. It will provide a procurement and supply chain function for the duration of the planning and commissioning of the New Dunedin Hospital.

Commissioning for some elements to be included in the construction contracts

Commencing operations will need a robust and well-planned commissioning and handover period. While the Ministry does not consider it optimal to bundle long-term maintenance of the new hospital within the main construction contract, the new facility will be a major step change from the original hospital, therefore there should be an opportunity to include certain commissioning and maintenance activities for a short period of time (e.g. 1- 3 years).

A handover period will enable robust and suitable training in the operations of the new facility while also ensuring asset management warranties, systems and processes are understood. It allows some contractors/subcontractors to stay in Dunedin beyond completion, which will provide further benefits for the region and could benefit other projects.

New Dunedin Hospital commissioning is expected to commence approximately 12 months prior to construction completion including time for staff training and migration to be completed. The handover stage will be agreed between the Ministry, SDHB and the contractor(s).

Long-term maintenance procured by SDHB

The maintenance contract will be procured by SDHB, separately from the main construction contract. The Ministry will seek input from SDHB and maintenance providers during the design phase by either incorporating them in its own design team or requiring that contractors include dedicated maintenance consultants within their bid teams.

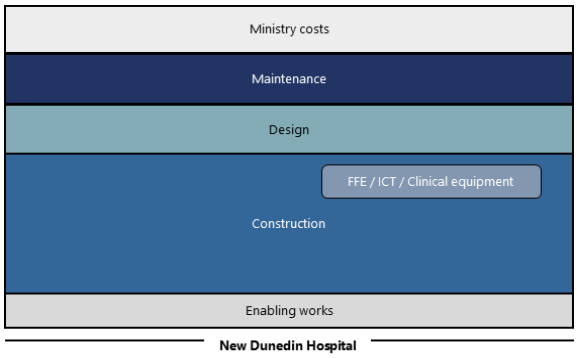
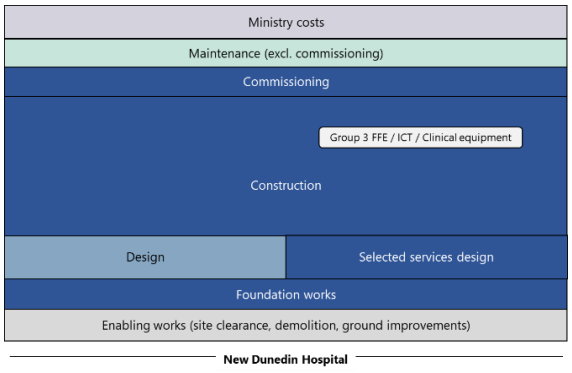
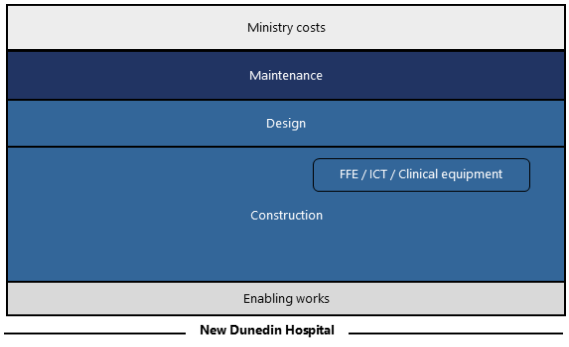
Long-term maintenance activities will commence at the conclusion of the agreed commissioning period, where the selected provider will assume responsibility for all maintenance services for a fixed time period.

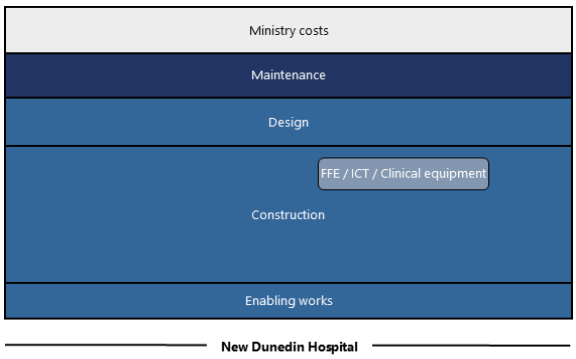
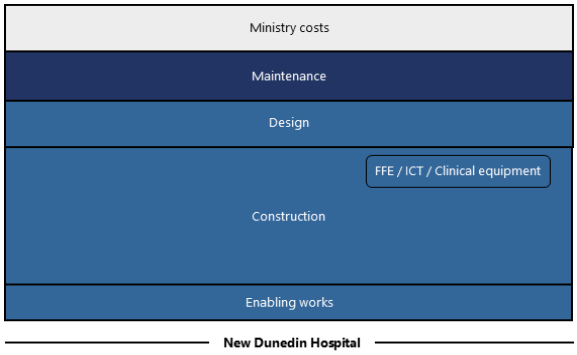
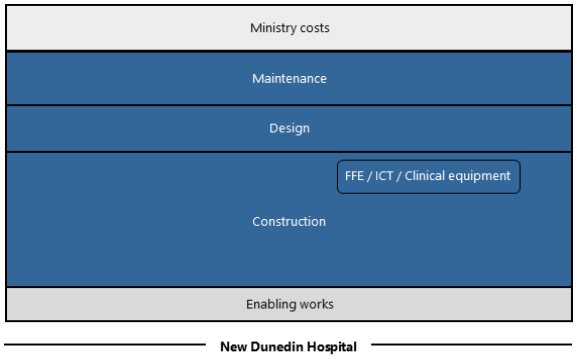
Ministry costs are included in the project budget

The Ministry will incur a range of indirect costs. These include the New Dunedin Hospital Project Team and consultants; any planning, consenting and RMA costs; and administration costs (e.g. rental and operating costs for project offices, procurement documentation and general administration). These Ministry costs are included within the project budget.

Variation long list (Variation 2: Ministry holds design risk is preferred)

We set out packaging variations discussed.

Variation 1: Fully disaggregated	
	Variation 1, where each package is procured separately, was disregarded. The Ministry recognises the advantages of combining certain packages, specifically improving affordability, creating programme efficiencies, introducing whole of life considerations and reducing interface risk.
Variation 2: Ministry held design, enabling works excluded, FFE/ICT/clinical equipment excluded	
	Variation 2 was preferred by the Ministry. The Ministry recognises the value that contractors/subcontractors can add to the design process. It also enables the Ministry to progress enabling works separately and retain sufficient control of the selection of FFE/ICT/clinical equipment and hospital maintenance. The SDHB leads purchase of specialty items including clinical equipment and ICT.
Variation 3: D&B, enabling works and maintenance separated	
	Variation 3 was disregarded largely because of the project's lengthy construction period which requires the Ministry and SDHB to retain sufficient flexibility in selecting FF&E, ICT and clinical equipment so as to respond to changing clinical trends and technological obsolescence. For clinical equipment, the Ministry also felt it was important that clinicians (the end user) inform decisions on the most appropriate equipment.

Variation 4: D&B, enabling works included, FFE/ICT/clinical equipment excluded	
	Variation 4 was disregarded because the Ministry intends to commence enabling works immediately to maximise overall programme and cost efficiencies. Furthermore, retaining ground risk allows the Ministry to understand the exact costs of enabling works and allows the contractor(s) to take possession of a de-risked construction site. The assumption of ground risk by the Ministry was viewed positively by contractors during market engagement.
Variation 5: D&B, enabling works included	
	Variation 5 was disregarded because the Ministry preferred to retain control of the enabling works and the procurement of FFE/ICT/Clinical equipment. The reasons for this preference are detailed in Variation 3 and 4 above.
Variation 6: DBM, enabling works excluded	
	Variation 6 was disregarded because the Ministry preferred for long-term maintenance to be procured separately by SDHB to maintain consistency of maintenance providers/approaches across their portfolio. The Ministry recognises the benefits of a commissioning handover period from the main contractor(s) and the maintenance contractor and will plan accordingly.

Appendix F: RFP contents

Bidders will provide RFP responses that comprise a methodological and a commercial response. The project team will finalise the RFP form. Example response areas are:

Methodological response

This could include how each bidder plans to work with the Ministry to successfully deliver the following areas during the collaborative development phase:

- collaboration and culture building
- ideas for design optimisation (including major services)
- proposed construction methodology and programme, including approach to subcontractor management and health and safety
- approach to risk exploration and allocation
- value and cost optimisation
- approach to delivering broader public outcomes and commitment to wider Government objectives
- stakeholder engagement strategy.

Commercial response

The RFP phase will have an early stage of design development. High quality pricing for the full project will not be possible. It may go against the principles of the Ministry's approach (including collaborative understanding and allocation of risk). Therefore, the commercial response could focus on:

- any outstanding contractual derogations (expected to be minimised if documentation is provided within the market engagement phase)
- commitment to selected price elements, such as:
    - Contractor / subcontractor margins (including off-site overheads and profit)
    - Preliminary & General rates
    - Schedule of rates on key items (where these are known)
- response to proposed collaborative development phase fees
- guaranteed availability of key personnel.

Evaluation of the RFP responses will enable the Ministry to appoint a contractor(s) for the collaborative development phase. The focus for this selection will remain primarily based on quality and culture.

Appendix G: Collaborative development phase workstreams

The Ministry's design team and the appointed contractor(s) will have a series of workshops to optimise the design solution and contractual arrangements to deliver the Inpatient building. These workshops are designed to improve and de-risk the project and foster strong positive collaborative behaviours between the Ministry and its construction counterparties.

The contractor(s) will need to continually demonstrate how they are delivering the Inpatient building within the funding envelope. Key collaborative development phase workstreams may include:

Table 51 Collaborative development phase workstreams

Workstream	Description
Collaboration and culture	An explicit and consistent focus on ensuring the Ministry, its design team and the contractor build a positive culture based on strong and trusting relationships. This workstream will look to align objectives between parties, tailor communication methods, encourage teaming, integration and advance stakeholder management.
Risk management	Ensure risk allocation and management are front-of-mind and gives all parties sufficient time to appropriately understand and price risks. Throughout the collaborative phase, the Ministry design team and contractor will consistently refine the project's risk management strategy. This will focus on a coordinated approach to identifying and exploring the risks (including scoping the appropriate investigative actions), followed by co-development of risk allocation and mitigation strategies. This workstream will provide an opportunity for all parties to develop a fairer and more transparent allocation of risk, as sought under the Construction Sector Accord.
Services design	The contractor will be expected to bring knowledge from experienced specialist services subcontractors to inform the design. By utilising practical experience, these subcontractors are expected to bring industry best practice and innovations to the services design approach. This may include initiatives to enhance buildability, identify cost/programme savings and/or maximise the whole-of-life value of the new building. From the contractor's perspective, this workstream also provides subcontractors the ability to understand the likely resourcing requirements of the overall design, and to prepare to invest in workforce and supply chain accordingly.
Ground works	Focussed initially on understanding the interface between the works being undertaken by the incumbent enabling works contractor(s) (site clearance, demolition, ground improvements) and the main works contract. The contractor will then be involved in optimising the key programming and handover approach associated with preparing the site for construction. This will involve inputting into the foundations and piling design (and contributing to the proposed risk allocation). Depending on the broader enabling works programme, the collaborative development phase may align with the programme for foundation works. If this occurs, the contractor may be asked to price and deliver the foundation works following the accelerated Detailed Design milestone as a separable portion of the main works contract.

Construction methodology	Designed to leverage the practical expertise of the contractor to consider innovations and practicalities in buildability. This may include areas such as prefabrication, modularisation, safety in design, supply chain and sequencing. This workstream will also consider the overall construction programme and any opportunities to make this programme more efficient.
Commissioning strategy	Having a dedicated commissioning workstream ensures that whole of life costs is a priority from the outset. This is especially important given that the long-life maintenance contract for the new hospital is expected to be procured separately by SDHB. SDHB is expected to be heavily involved in this workstream to plan a robust commissioning and handover period.
Public outcomes	Designed to encourage all parties to work collaboratively to progress initiatives that deliver broader outcomes from the project, in accordance with the Living Standards Framework, Construction Sector Accord and Government Procurement Rules. This workstream will include work being progressed by the Local Advisory Group, including seeking opportunities for how the New Dunedin Hospital can deliver enhanced outcomes in health and safety, skills and training, social outcomes, housing, sustainable construction and environmental outcomes.

Appendix H: Performance Framework

The contractor will be responsible for regularly tracking and recording its performance in accordance with agreed indicators. The Ministry will implement an appropriate performance monitoring and management framework, including the right to audit the contractor's performance data.

The Ministry recognises a successful performance framework incentivises the contractor (and subcontractors) to deliver desired behaviours and standards. To do this, the Ministry will develop a small set of well-defined key result areas and key performance indicators that reflect the Ministry's priorities and will be included in contract documentation for both the collaborative development and delivery phases.

The key features of the Ministry's performance framework will be developed further in the procurement strategy, but in principle will:

- represent a clear link between the Ministry's desired performance standards and the contractor's contribution to delivering these outcomes
- encourage the right principles, culture and intent of the Ministry's desired relationship with the contractor(s)
- reflect the highest priority outcomes required under the Government Procurement Rules and encouraged under the Construction Sector Accord
- include performance standards that are objective, flexible, challenging and within the contractor's control
- require input from the Ministry's technical advisors to ensure KPIs are accurate and realistic.

To ensure the contractor remains incentivised to meet the Ministry's performance expectations throughout the collaborative development and delivery phases, the Ministry will continuously evaluate the contractor's performance against the agreed KPIs. Achievement (or not) of these KPIs will have direct financial and/or non-financial consequences for the contractor based on its ability to deliver the Ministry's required outputs and outcomes. Financial incentives may include identifying a portion of the contractor's construction payment that is subject to deductions for performance below an agreed standard; conversely, the Ministry may consider ringfencing funds to act as a "bonus pool" that is available to the contractor for exceptional performance against requirements.

Examples of potential areas and indicators that the Ministry will consider in developing its performance framework for the collaborative development and delivery phases of the New Dunedin Hospital include:

Table 52 Key result area and potential performance indicators

Key result area	Key performance indicator
Public value	• Identifying opportunities for cost savings, value enhancements and efficiencies that improve the public value achieved through delivery of the new hospital • Seeking opportunities for innovation in planning, programming, design and delivery

Labour skills & training	• Commitment to apprenticeships • Implementing on-the-job training and upskilling programmes • Employing workers from targeted groups, e.g. Māori/Pasifika, unemployed, prisoners, etc.
Safety	• Improved worker health and wellbeing (e.g. physical/mental health, stress, OH&S) • Safety in delivery of the New Dunedin Hospital itself • Promoting H&S outcomes in excess of legislation • Corporate social responsibility
Time	• Achieving key operational delivery dates during project (e.g. opening of Outpatients) • Ensuring key interface stakeholders have timely access to site • Achieving committed construction completion dates (e.g. completing Inpatient building)
Social outcomes	• Enabling supply chain opportunities for social enterprises and socially innovative businesses • Commitment to a positive legacy for the people and city of Dunedin • Corporate social responsibility
Sustainability & environment	• Reduced or more efficient resource consumption (e.g. emissions, water use, materials) versus base case • Reduced waste generation (i.e. avoided through design, reused and recycled, % diverted from landfill)
Stakeholder management	• Demonstrating effective public consultation and communication • Minimising disruption and impact on quality-of-life during construction

Appendix I: Risk Register

Rating	Description	Reputation & Public Confidence	Human Resources	Deliverables	Fiscal
5	**Severe**	• Severe political or reputational damage to NZ Government or multiple agencies. • Government loss of confidence in the project. • Multiple and/or serious (criminal) breaches of the law. • Successful prosecution against the Ministry. • International adverse media coverage.	• Fatality or multiple serious injuries involving staff, contractors or public. • WorkSafe suspends all activity on site. WorkSafe Prosecution. • Inability to acquire adequate skills or workforce capacity in multiple areas significantly delays Ministry's ability to meet project objectives and goals.	• Failure to achieve one or more of the strategic objectives and goals of the project. • Project benefits are seriously compromised in terms of quality or quantum. • Key project milestones delayed by greater than 12 months without ability to make up lost time. • Complete reappraisal of business case required.	• Additional expenditure of >$75m (approx. 5%) on total budget (1.4b) which cannot be managed without additional funding from Government.
4	**Significant**	• Significant adverse focus on the project requiring direct briefing to and action by the Director-General. • Ministerial embarrassment with reduced confidence in the project. • Successful legal action against the Ministry for substantive regulatory (non-criminal) breaches. • Prolonged adverse national media coverage.	• Significant health and safety incident (requires hospitalisation) involving staff, contractors or public. • WorkSafe temporarily suspends activity on site. • Skills shortages in multiple areas adds costs and/or delays to programme.	• Material adverse impact on service delivery across one or more areas of the Ministry, SDHB due to prolonged service failure. Project benefits are compromised in terms of quality or quantum. • Key project milestones delayed by 6-12 months without ability to make up lost time. • Major milestones missed by 3 to 6 months.	• Additional expenditure of ≤$75m (approx. 5%) on total budget (1.4b) which cannot be managed without additional funding from Government, or substantial reduction in scope/functionality of hospital.
3	**Moderate**	• Director-General needs to be advised. • Minister(s) may need to be briefed. • Limited political or reputational damage to the Ministry. • Minor/technical breaches of regulatory requirements. • Moderate local media interest, or minor national/public interest	• Repeated or multiple minor health and safety incidents involving staff, contractor or public. • Skills shortages affect the ability of one of more branches to deliver services.	• Some reduction in the quality or quantum of project benefits. • Key project milestones delayed by 0-6 months without ability to make up lost time. • Some adverse impact on service delivery across one or more areas of the Ministry, SDHB due to prolonged service failure.	• Impact can be managed with some re-planning and modest extra financial (budget will run to limit of contingency) or human resources. (will run to limit of available contingency)
2	**Minor**	• Updates to DG or minister as part of routine reporting. • Short-lived media interest. • Key stakeholders need to be informed.	• Minor health and safety incidents (LTIs) involving multiple staff or contractors.	• Minor (inconvenient) impact on service delivery across one or more business units due to brief service failure. • Limited effect on the outcomes and/or objectives of the Ministry/Project. • Key project milestones delayed by up to 3 months, but with ability to re-coup time elsewhere.	• Impact can be managed within current resources/contingency, with some re-planning. (contingency not exhausted)
1	**Minimal**	• Limited local media interest is limited. • Limited impact on any stakeholder.	• Minor (non-LTI) injuries to employee or contractor.	• Limited effect on the outcomes and/or objectives of the Ministry/Project. No scope/solution changes.	• Impact can be managed within current resources, with no re-planning.

Overall Rating Assessment

Likelihood	Minimal	Minor	Moderate	Significant	Severe
Almost Certain	Medium 11	High 16	High 20	Very High 23	Very High 25
Likely	Medium 7	Medium 12	High 17	High 21	Very High 24
Possible	Medium 4	Medium 8	Medium 13	High 18	Very High 22
Unlikely	Low 2	Medium 5	Medium 9	High 14	High 19
Rare	Low 1	Low 3	Medium 6	Medium 10	High 15

Consequence

During the evaluation of a risk an initial rating is determined as to the likelihood to the risk occurring and the impact of the risk on project's objective.

Likelihood is the evaluated probability of a particular threat or opportunity happening, including a consideration of the frequency with which this may arise.

When determining the likelihood of a risk occurring, the following rating scale is used:

Rating	Likelihood	Description
5	Almost Certain	**Probability 81-100%** The event is expected to occur in most circumstances. No effective controls. Has happened in the past and no compensating controls have been implemented. Without additional controls the event is expected to occur in most circumstances.
4	Likely	**Probability 51-80%** The event will probably occur in most circumstances. Weak controls e.g. limited business controls, with no audits performed. With existing controls in place this event will probably still occur with some certainty.
3	Possible	**Probability 26-50%** The event could occur in some circumstances. Minimal controls, e.g. some business controls, with some audits performed. The event has occurred in different industries with similar levels of controls in place, i.e. substandard control and assurance.
2	Unlikely	**Probability 6-25%** The event is not expected to occur. It could occur in some circumstances, such as through human error in not following the business controls. Effective controls, e.g. timely business controls, with internal & external audits performed. The event hasn't occurred in the business, it could occur in some circumstances
1	Rare	**Probability less than 5%** The event is only expected to occur in exceptional circumstances, such as deliberate fraud / attack outside of existing deterrents, or activity beyond control of business actions. Strong controls: despite effective controls an external event or uncontrollable event could occur. Improbable: a very small chance of event occurring that would be caused by stressed economic, market and operating conditions or events not previously seen.

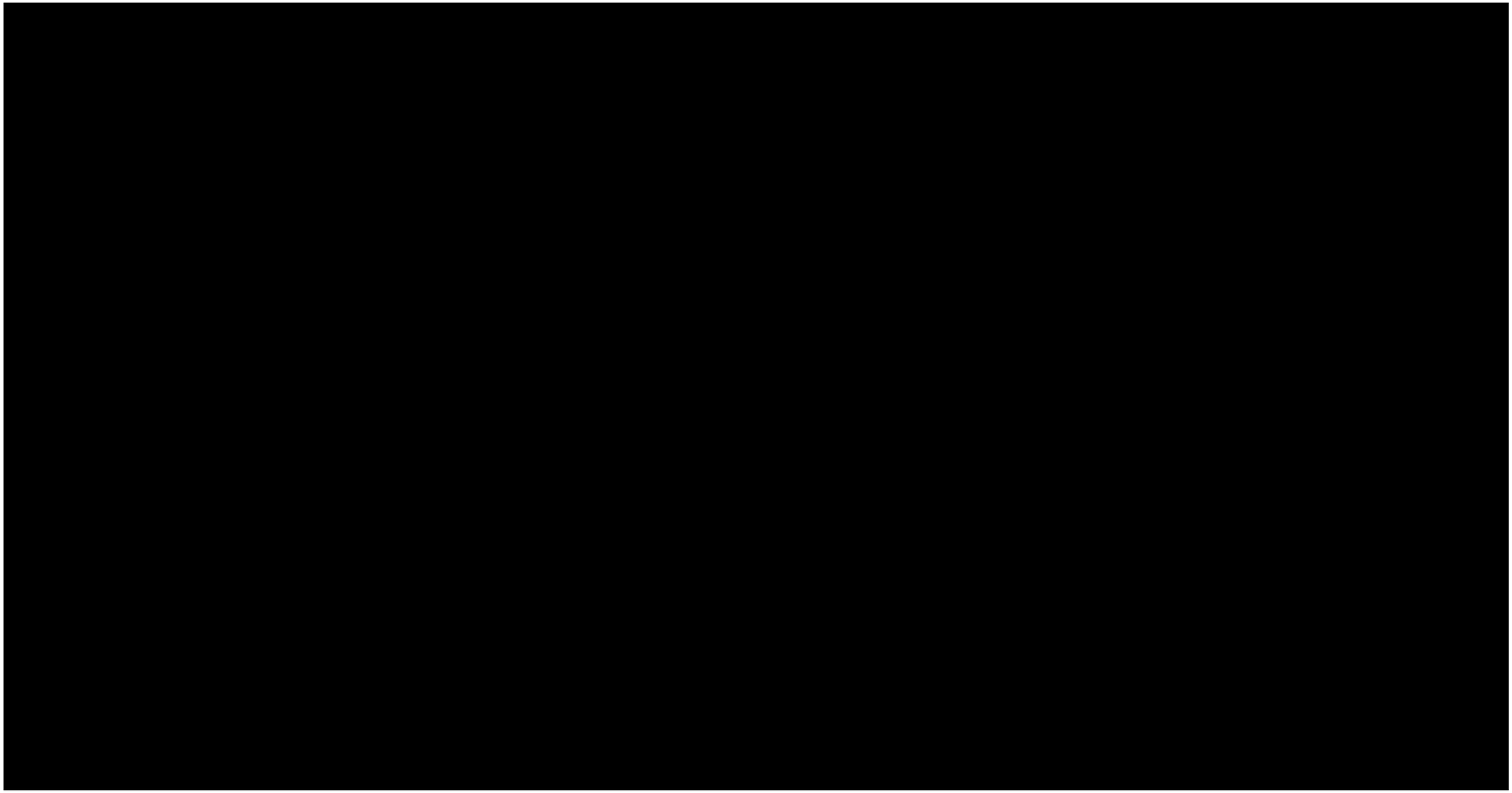
Withheld under Section 9(2)(f)(iv)

1. GOVERNANCE, PROGRAMME AND PROJECT MANAGEMENT

				RISK STATEMENT		INHERENT RISK					MITIGATION				CURRENT RISK RATING	RESIDUAL RISK ASSESSMENT		
Risk Number	Date Raised	Status *(Identified, under mitigation, mitigation completed)*	Title	Likelihood statement (IF)	Consequence statement (THEN)	Risk Owner	Likelihood	Consequence	Category	Rating	Mitigation Actions	Action for the month	Action Owner	Expected completion date		Residual likelihood	Residual impact	Residual rating

[redacted]

Withheld under Section 9(2)(f)(iv)



Withheld under Section 9(2)(f)(iv)

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Withheld under Section 9(2)(f)(iv)

[redacted]

2. REGULATORY

				RISK STATEMENT		INHERENT RISK					MIITGATION				CURRENT RISK RATING	RESIDUAL RISK		
Risk Number	**Date Raised**	**Status** *(Identified, under mitigation, mitigation completed)*	**Title**	**Likelihood statement (IF)**	**Consequence statement (THEN)**	**Risk Owner**	**Likelihood**	**Consequence**	**Category**	**Rating**	**Mitigation Actions**	**Action for the month**	**Action Owner**	**Expected completion date**		**Residual likelihood**	**Residual impact**	**Residual rating**
[redacted]																		

Withheld under Section 9(2)(f)(iv)

3. PROCUREMENT

				RISK STATEMENT		INHERENT RISK					MITIGATION				CURRENT RISK RATING	RESIDUAL RISK		
Risk Number	**Date Raised**	**Status** *(Identified, under mitigation, mitigation completed)*	**Title**	**Likelihood statement (IF)**	**Consequence statement (THEN)**	**Risk Owner**	**Likelihood**	**Consequence**	**Category**	**Rating**	**Mitigation Actions**	**Action for the month**	**Action Owner**	**Expected completion date**		**Residual likelihood**	**Residual impact**	**Residual rating**
[redacted]																		

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[redacted]

4. DESIGN

				RISK STATEMENT		INHERENT RISK					MITIGATION				CURRENT RISK RATING	RESIDUAL RISK		
Risk Number	**Date Raised**	**Status** *(Identified, under mitigation, mitigation completed)*	**Title**	**Likelihood statement (IF)**	**Consequence statement (THEN)**	**Risk Owner**	**Likelihood**	**Consequence**	**Category**	**Rating**	**Mitigation Actions**	**Action for the month**	**Action Owner**	**Expected completion date**		**Residual likelihood**	**Residual impact**	**Residual rating**

[redacted]

Withheld under Section 9(2)(f)(iv)

[redacted]

5. SITE ACQUISITION

				RISK STATEMENT		INHERENT RISK					MITIGATION				CURRENT RISK RATING	RESIDUAL RISK		
Risk Number	**Date Raised**	**Status** *(Identified, under mitigation, mitigation completed)*	**Title**	**Likelihood statement (IF)**	**Consequence statement (THEN)**	**Risk Owner**	**Likelihood**	**Consequence**	**Category**	**Rating**	**Mitigation Actions**	**Action for the month**	**Action Owner**	**Expected completion date**		**Residual likelihood**	**Residual impact**	**Residual rating**

[redacted]

[redacted]

6. DEMOLITION / PRE-CONSTRUCTION

				RISK STATEMENT		INHERENT RISK				MITIGATION		CURRENT RISK RATING	RESIDUAL RISK		
Risk Number	Date Raised	Status *(Identified, under mitigation, mitigation completed)*	Title	Likelihood statement (IF)	Consequence statement (THEN)	Risk Owner	Likelihood	Consequence	Category	Rating	Mitigation Actions	Action for the month	Action Owner	Expected completion date		Residual likelihood	Residual impact	Residual rating

[redacted]

Withheld under Section 9(2)(f)(iv)

[redacted]

7. FF&E

				RISK STATEMENT		INHERENT RISK					MITIGATION				CURRENT RISK RATING	RESIDUAL RISK		
Risk Number	Date Raised	Status *(Identified, under mitigation, mitigation completed)*	Title	Likelihood statement (IF)	Consequence statement (THEN)	Risk Owner	Likelihood	Consequence	Category	Rating	Mitigation Actions	Action for the month	Action Owner	Expected completion date		Residual likelihood	Residual impact	Residual rating

[redacted]

Withheld under Section 9(2)(f)(iv)

[redacted]

8. SDHB

				RISK STATEMENT			INHERENT RISK				MITIGATION				RESIDUAL RISK			
Risk Number	**Date Raised**	**Status** *(Identified, under mitigation, mitigation completed)*	**Title**	**Likelihood statement (IF)**	**Consequence statement (THEN)**	**Risk Owner**	**Likelihood**	**Consequence**	**Category**	**Rating**	**Mitigation Actions**	**Action for the month**	**Action Owner**	**Expected completion date**	Current Risk Rating	**Residual likelihood**	**Residual impact**	**Residual rating**
[redacted]																		

Withheld under Section 9(2)(f)(iv)

Withheld under Section 9(2)(f)(iv)

[redacted]

Completed Updates: Withheld under Section 9(2)(i)

[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

Appendix J: Detailed financial statements

a. Statement of revenue and expenditure
    i. Consolidated
    ii. Provider arm
    iii. Funder arm
b. Statement of cash flow
c. Balance sheet

Withheld under Section 9(2)(f)(iv)

Southern DHB

[redacted]

Provider

Revenue $	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
[redacted]										

FTE	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
[redacted]										

Personnel Expenses $	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
[redacted]										

Operating Expenses $	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
[redacted]										

Asset Related Costs $	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
[redacted]										

Withheld under Section 9(2)(f)(iv)

[redacted]

Funder

[redacted]

2020/21 2021/22 2022/23 2023/24 2024/25 2025/26 2026/27 2027/28 2028/29 2029/30

[redacted]

Operating Expenses $

2020/21 2021/22 2022/23 2023/24 2024/25 2025/26 2026/27 2027/28 2028/29 2029/30

[redacted]

Statement of cash flow

Description	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30
	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual

[redacted]

Withheld under Section 9(2)(f)(iv)

Balance sheet

DHB ID	Account Code		Description			2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
DHB Consolidated															
Southern DHB															
Statement of Financial Position															

[redacted]