NEW ZEALAND
INFRASTRUCTURE
COMMISSION
Te Waihanga

Health Infrastructure Review

Preface

Earlier in 2021, I was engaged by the New Zealand Infrastructure Commission, Te Waihanga to undertake a review of Health Infrastructure New South Wales (NSW) and the Victorian Health Building Authority, equivalent nearby health infrastructure organisations established in the past decade to address similar infrastructure issues to those currently faced by New Zealand's health sector. The brief I received from Te Waihanga is annexed to this report at appendix A.

In doing so, I have built on the work by others who have preceded preparation of this report, in particular, the Health and Disability System Review chaired by Heather Simpson.

The recommendations from this review have largely been actioned by the New Zealand Government, and in some respects the Government has gone further, particularly with the disestablishment of the district health boards.

The framework for the revamped health system is summarised in the *Health and Disability System Review: Proposals for Reform* Cabinet papers and related Cabinet minutes, both released by the Government.

In addition, Te Waihanga has done excellent work from which I could build on, including:

- the *Sector State of Play: Health and Disability Infrastructure Discussion Document*[1]
- early work on the New Zealand Infrastructure Strategy.

Both documents have formed a comprehensive basis on which to develop my recommendations, and section 3 and section 6 in this report draw significantly from these documents.

Lastly, I have been able to access the latest thinking on major project governance by virtue of the proactive release of the New Dunedin Hospital Governance Cabinet Paper.

I would like to have been able to better evidence the undoubted success of Health Infrastructure NSW and the Victorian Health and Building Authority, both of whom I know, from personal experience, have dramatically improved the delivery of health delivery infrastructure in their respective states. Unfortunately, such public sector agencies are not prone to self-promotion and, as such, it was hard to locate information that adequately demonstrates this improvement.

That is not to say everything is perfect. Certainly, Health Infrastructure NSW has come under scrutiny in a recent audit report, however, I would treat this as part of the process of continual improvement as opposed to the identification of fundamental flaws within the delivery structure.

Robert Rust
October 2021

[1] New Zealand Infrastructure Commission, Te Waihanga, *Sector State of Play: Health and Disability Infrastructure Discussion Document* (Wellington: New Zealand Infrastructure Commission, Te Waihanga, no date).

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Abbreviations

ACC	Accident Compensation Corporation
AMAF	Asset Management Accountability Framework
BC	Business case
CBA	Cost-benefit analysis
CBA Guide	Guide to Cost-Benefit Analysis of Health Capital Projects
CE	Chief executive
CIC	Capital Investment Committee
CISP	Capital Investment Strategic Plan
CSP	Clinical Service Plan
BBC	Better business case
DBC	Detailed business case
DDG	Deputy director-general
DHBs	District health boards
DTF	Department of Treasury and Finance (Victoria)
ESC	Executive Steering Committee
ETS	Emissions trading scheme
FF&E	Furniture, fixtures and equipment
GDP	Gross domestic product
GP	General practitioner
HDSR	Health and Disability System Review
Health NZ	Health New Zealand
HI	Health Infrastructure
HINSW	Health Infrastructure New South Wales
HIO	Health Infrastructure Organisations
HIU	Health Infrastructure Unit
HR	Human resources
HVHR Framework	High Value High Risk Project Assurance Framework
IBC	Indicative business case

ICR	Investor Confidence Rating
ICT	Information communication technology
INSW	Infrastructure NSW
IT	Information technology
IMF	Investment management framework
LHD	Local health district
MHA	Māori Health Authority
MME	Major medical equipment
MoF	Minister of Finance
MoH	Minister of Health
MOH	Ministry of Health
NAMP	National Asset Management Plan
NGO	Non-governmental organisation
NSW	New South Wales
NZ	New Zealand
PARs	Project assurance reviews
PMO	Programme management office
PPP	Public private partnership
SIS	State Infrastructure Strategy
SN	Specialty networks
SRO	Senior responsible owner
VHBA	Victorian Health Building Authority

1. Executive Summary

1.1. This review

In December 2020, the Ministry of Health requested that the New Zealand Infrastructure Commission, Te Waihanga undertake a review of equivalent nearby health infrastructure organisations, to address similar infrastructure issues currently faced by New Zealand's health sector. The review looked at Health Infrastructure (HI) in Sydney, New South Wales, and the Victorian Health Building Authority (VHBA) in Melbourne, Victoria, which were established in the past decade or so.

The review considers best practice aspects of the function and structure of these organisations and recommendations from the Health and Disability System Review (HDSR), to inform and recommend:

1. changes to the health infrastructure system, in line with observed best practice
2. the most effective function and structure of the Health Infrastructure Unit (HIU) within the reformed health system.

This report focuses on secondary and tertiary health service-related infrastructure within the national public hospital estate and does not consider primary and private sector health service-related infrastructure.

Moving system and organisational settings from current to recommended 'future state' as the health system reform progresses will require significant change management and time to achieve. This change and any interim health infrastructure processes and structures are outside the scope of this review.

The review brief is provided in appendix A.

1.2. Overview of New South Wales and Victoria health infrastructure entities

Health Infrastructure

HI was established in 2007 as a business unit within the New South Wales (NSW) Health's Public Health System Support Division of the Health Administration Corporation. It was established to provide specialist advice and lead the planning, procurement, delivery and evaluation of high value, high risk and high complexity major health capital investments valued at $10 million or greater.

Since then, HI's role has evolved to include asset and facility advisory and management services, leading health precinct planning and development, and providing commercial services to drive partnership and investment in health precincts and research and development initiatives.

The NSW Health public health system is the largest in Australia. NSW Health manages a significant asset portfolio, including 230 public hospitals and over 220 ambulance stations across NSW valued at $23.5 billion as at 30 June 2019.

HI has over 250 staff and partners across industry and government to manage the largest health capital works portfolio in Australia and second largest infrastructure programme in NSW. HI has over 110 projects in progress and, since 2011, has delivered more than 170 health capital projects including hospitals, multi-purpose services, ambulance and community health facilities throughout rural, regional and metropolitan NSW.

The NSW State Budget includes A$10.8 billion of capital investment for NSW Health over the four years to 2024/25. This figure incorporates HI projects, information communication technology (ICT), the asset refurbishment and replacement programme, locally funded initiatives and the minor works programme.

Total NSW Health 2021/22 capital expenditure is A$3.2 billion. HI's 2021/22 capital expenditure is A$2.136 billion. This is a 5% increase from the previous year.

HI is also managing the A$700 million statewide Mental Health Infrastructure Programme, announced in 2018, to support the delivery of mental health care reforms in NSW.

Victorian Health Building Authority

VHBA was established in 2017 and is a branch of the Department of Health in the Victorian State Government. It was originally the Victorian Health and Human Services Building Authority, however, the human services aspect of this role was recently separated from the health portfolio, consistent with the wider portfolio split of health and human services in Victoria.

VHBA's work includes planning and building new hospitals and ambulance stations, aged care and mental health facilities, redeveloping existing hospital facilities, as well as funding the replacement and upgrade of engineering infrastructure and medical equipment. The health portfolio of assets includes over 2,500 critical health facilities valued at $16.6 billion.

It has 240 staff and is carrying out over 80 projects this financial year (21 projects and grant programmes in planning and 34 projects and grant programmes in delivery). VHBA has completed 62 projects since 2017.

The 2021/22 capital budget across the health sector is $1.2 billion.[2] VHBA has $9.2 billion of projects currently active.

1.3. Health system reform

In March 2020, the New Zealand HDSR, led by Heather Simpson, was delivered to government. The review recommended system-level changes to the New Zealand health system that would be sustainable, lead to better and more equitable outcomes for all New Zealanders and shift the balance from treatment of illness towards health and wellbeing.

In April 2021, the Government announced a wide-ranging review of the health and disability system in New Zealand, designed to future-proof the health and disability service.

The overall infrastructure strategy conveyed by the HDSR is to reduce demand on hospitals. The strategy proposes a concerted effort to scale up and prioritise preventative public health programmes to manage demand on the system, moving health services that need not be delivered from a hospital out to primary care, communities or treating people within their homes. Even though this approach will hopefully reduce demand on hospitals, a significant amount of health infrastructure within the hospital estate will still need to be managed in a sustainable manner.

The HDSR indicated an unprecedented programme of necessary health infrastructure investment over the next decade, valued in the report at $14 billion (based on 2018 district health board (DHB) capital estimates) excluding repairs, maintenance and ICT. Addressing current issues, as well as responding to future trends and opportunities (such as digital service delivery), will require an integrated and strategic

[2] Victorian Premier, "Helping Our Health System Recover From Coronavirus," accessed August 30, 2021, https://www.premier.vic.gov.au/helping-our-health-system-recover-coronavirus.

approach to service delivery and planning, improved governance, and sufficient construction capabilities and capacity to run multiple large-scale projects at the same time.

In response to these identified challenges, the HDSR made the following health infrastructure-related recommendations. These recommendations have a more integrated centre-led approach to asset management of existing infrastructure, and future investment in new infrastructure, to get better value out of existing assets and ensure that new investment is spent where the need is greatest for the best value.

Capital planning

1. Health New Zealand (Health NZ), through the HIU should be responsible for developing a long-term investment plan for facilities, major equipment and digital technology derived from the NZ Health Plan.
2. Health NZ should develop a prioritised nationally significant investment pipeline so that unless a project has been prioritised, a business case is not developed.
3. Each DHB should have a longer-term rolling capital plan based on a prioritised, robust pipeline that would deliver the medium term and longer-term service requirements in their area.

Investment management

4. The HIU should develop central expertise to provide investment management leadership to support and speed up business case development and standardise the way capital projects are designed and delivered.
5. The Capital Investment Committee should continue to provide independent advice, both to Health NZ with respect to prioritisation and to Ministers with respect to business case approval.
6. Programme and project governance should be streamlined and standardised to ensure expertise is used strategically and project and programme governance is strengthened.

Asset management

7. The National Asset Management Plan should be developed and regularly refreshed so it can form a basis for ongoing capital planning.
8. There should be further work on refining the capital charge and depreciation funding regime for Health NZ and DHBs to ensure that a significant rebuild or new development in one DHB is properly accounted for in the system but does not starve the DHB of capital for business-as-usual capital replacement.
9. More financial and governance expertise on DHB boards, together with system and district accountability, should ensure better long-term asset management decision making. More explicit asset performance standards and a strong central monitoring function from the HIU would reinforce this.

The subsequent *Health and Disability System Review: Proposals for Reform* Cabinet paper (Reform Cabinet Paper)[3] broadly adopted system changes proposed in the HDSR as follows:

(a) to establish Health NZ

(b) to disestablish all DHBs and vest their assets and liabilities in Health NZ

(c) to consolidate services into four regional networks delivered through regional divisions led by regional chief executives with regional commissioning boards

(d) that Health NZ will own and operate public hospitals.

[3] Health and Disability Review Transition Unit, "Cabinet Decision CAB-21-SUB-0092: Health and Disability System Review – proposals for reform", updated April 21, 2021, https://dpmc.govt.nz/publications/cabinet-decision-cab-21-sub-0092-health-and-disability-system-review-proposals-reform.

1.4. Key health infrastructure system changes

Most of the Reform Cabinet Paper is dedicated to detailing the broad structural reform and clarifying the roles and responsibilities of key entities within the reformed health system. The Reform Cabinet Paper also confirmed the integrated, centre-led health infrastructure approach detailed within the HDSR, along with associated recommended system processes and entities responsible for their development, as follows:

- **New Zealand Health Strategy (and subsidiary strategies)** are developed and revised by the Minister of Health, with the assistance of the Ministry and the Māori Health Authority.
- The Minister of Health will issue a **Government Policy Statement** to set a multiyear national direction, including priorities and objectives for the health system. This Policy Statement will align with the Budget cycle.
- The Minister of Health will lead the development of a **New Zealand Health Charter** for the health system that will set out common values and principles to guide organisations and health and care workers.
- Health New Zealand will publish at regular intervals a **New Zealand Health Plan** and be the key vehicle for turning strategic priorities and policy requirements into concrete, funded plans for health services. The Minister of Health will sign off the plan, with advice from the Ministry.
- Health NZ should be responsible for national planning of hospital and specialist services, to ensure consistent networked models are developed and to allocate specialisms effectively. **A national hospital plan** would be expected to set detailed requirements for access, thresholds for treatment, common service specifications, standards and models of care, and expectations on cost, to be applied and monitored in all regional networks.
- There will be a need for **sub-national service plans** at the regional, district and locality levels, and **strategic multi-year commissioning plans** for localities.
- Development of the first phase of the **National Asset Management Plan**.

Health system entities and processes detailed within the HDSR and Reform Cabinet Paper observe best practice HI processes in NSW and Victoria, and these have been considered within the design of the review's recommended 'Future State' health infrastructure system.

Most of these systems and process changes will be rolled out as Health NZ is established. However, it is considered the following infrastructure-specific work needs to be progressed in parallel with the formation of Health NZ.

1.4.1. Progression of the National Asset Management Plan beyond the first phase

The HIU continues to lead work on the National Asset Management Plan (NAMP), and it is critical HIU is adequately resourced to progress the NAMP at pace. Initial work on the current-state assessment lays the foundation for improving the quality of capital funding decisions, asset management and long-term capital investment to contribute to better outcomes across the health sector. Not all assets have been assessed in the first phase. Completion of condition assessment across all assets in the hospital network should be progressed with urgency, providing a reliable and consistent basis for asset management planning. The extent of investment necessary to bring the hospital estate to a fit-for-purpose level cannot be reliably estimated until a comprehensive condition assessment of the whole estate is completed. HIU has advised that, of the 1,269 buildings it knows of, only an estimated 13% have expert assessments. As such, the estimated $14 billion investment to lift the hospital estate to fit-for-purpose level is likely insufficient, because it is not based on a consistent robust level of information and is now out of date (estimate was made in 2018).

Once established, Health NZ regions need to prepare regional asset management plans, enabling them to realise the full value from their assets in delivering their services, with the HIU-managed NAMP providing a common framework for these plans. Within their asset management plans, regions need to set intended service levels, considering future health service planning requirements, to ensure facilities can support hospital operation. Where service demand cannot be met, some form of action will be required, likely through new investment that needs to be managed within a centralised investment management framework (IMF).

1.4.2. Prioritisation of new investment

As is current practice with the DHBs, where, after conducting asset management planning, regions consider their existing facilities will not meet future service delivery requirements, they will make requests to government for new investment. As is also currently the case, the sum of these requests across the country will be greater than can be afforded, so investment requests will need to go through a prioritisation process to ensure investment is expended where the need is greatest within the available funding envelope. It is proposed that regions prepare their investment requests in the form of a strategic assessment.

The strategic assessment should contain the minimum level of information on the benefits and high-level costs and time associated with projects, to communicate value in a consistent manner sufficient for 'apples with apples' comparison against other strategic assessments. The strategic assessment should replace the current 'DHB intentions' process, be tailored specifically for health projects, and provide a more robust basis for capital prioritisation.

As inputs to strategic assessment, regions will need to have conducted their asset management and service planning in advance of the process, with detailed clinical services plans, hospital campus master planning, models of care and operational policies as key inputs. It is important this work is carried out to the appropriate standard, giving strategic assessments the necessary robustness when assessed against the IMF, prioritising projects considering capital availability and equity, undertaking proper analysis of alternatives, including non-capital solutions and options for staging or upgrading existing facilities, and consistency with the New Zealand Health Plan.

An IMF for health investment is in the HIU work plan.

The criteria and weightings that the IMF uses to prioritise projects will be updated when the Government Policy Statement is updated. The Policy Statement presents a multi-year national health direction, including priorities and objectives for the health system. The Reform Cabinet Paper indicated it was intended that the Policy Statement align with the Budget cycle, with multi-year funding introduced.

A prioritised programme of projects, along with multi-year funding, lays the foundation for forming a capital 'pipeline' of projects, to be published on Te Waihanga's Infrastructure Pipeline. This will communicate to the construction sector details of intended investment, with the intention of providing the market sufficient time to resource necessary capacity and capability to deliver the health pipeline.

1.4.3. Delivering the pipeline – increasing capacity and capability

The NSW State Budget includes A$10.8 billion of capital investment for NSW Health over the four years to 2024/25, an average of A$2.7 billion spend per year. NSW Health's track record in delivering large programmes of work in recent years suggests its health infrastructure system is geared to successfully deliver this work within the timeframe. In Victoria, the 2021/22 capital budget across the health sector is A$1.2 billion.[4] VHBA has A$8.35 billion of projects currently active.

[4] Victorian Premier, "Helping Our Health System Recover From Coronavirus."

In contrast, over the past decade or so, the New Zealand system has generally been geared to deliver capital expenditure of NZ$0.5 billion per year. The Ministry of Health estimates capital investment of more than NZ$14 billion (2018 estimates), excluding repairs, maintenance and ICT, will be required over the next decade, with peak annual capital expenditure estimated at NZ$2 billion to NZ$3 billion during this period – four-to-six times the typical recent annual capital expenditure.

Essential to achieving the necessary step change in investment volume to meet requirements is forming a national capital pipeline. This would prioritise and deliver investment where it is needed most and provide consolidated long-term capital planning and multi-year funding to enable projects to be aggregated into programmes or portfolios, to streamline delivery.

Te Waihanga's draft infrastructure strategy document[5] has forecast New Zealand's existing infrastructure pipeline at around $56 billion of investment over the next 10 years. Over the next 30 years, it is anticipated to grow by as much as $140 billion.[6] This infrastructure pipeline is generating a strong demand for labour. Workforce demand modelling for construction workers, for example, forecasts a supply deficit of around 118,500 workers in 2024.[7]

The workforce will need to be adequately trained and skilled to plan, build, operate and maintain future infrastructure in New Zealand. Climate change, and changing technologies, mean many of the skills required will also be different in the future, which may lead to workforce 'pinch points' due to the intense international competition for these skills.

These conditions will likely lead to client organisations competing for available construction sector resources. Clients with funded consolidated programmes of work that are well communicated to the market, enabling build-up of capability and capacity, will be better placed to secure the necessary long-term and sustainable relationships with the construction sector to meet the challenges of the anticipated environment.

Vote Health Treasury and the Department of the Prime Minister and Cabinet Transition team are working on how the financial settings could be modified to enable multi-year funding, the critical component in enabling a health capital pipeline to be formed.

1.4.4. Change to investment system governance and assurance

The move to establishing a capital pipeline, consisting of programmes with multiple projects and multi-year funding, will need an efficient governance and delegation framework that enables decision making at the right level and is streamlined so as not to slow down projects unnecessarily.

Within this review, recommended governance structures have been detailed in three areas:

1. organisational governance – that associated with the management of the HIU
2. project governance – that associated with the development of major and minor projects
3. programme governance – that associated with the finalisation of the Health NZ Capital Priority List.

It is important these governance structures, or similar, are implemented as soon as possible. This will provide sufficient and necessary oversight of the large health capital programme of projects either in progress or planned, of which the scale and complexity is greater than any capital programme in the country.

[5] Te Waihanga, "New Zealand Infrastructure Strategy"
[6] Sense Partners, New Zealand's infrastructure deficit: Quantifying the gap and path to close it? (Sense Partners, 2021).
[7] From WIP workforce demand and supply model 2021.

An enhanced level of assurance will be required to support the new capital investment system to manage risk within an acceptable level, such as:

1. clarifying, codifying and enforcing clear stage gates and approval points for infrastructure projects
2. clarifying and codifying the roles of monitoring, assurance, oversight and regulatory agencies
3. conducting and funding independent post-implementation reviews of major infrastructure projects on completion, with the purpose of improving future evaluation methods and processes
4. publishing ex-post-reviews in full and measuring performance, benefits and cost estimates against business case estimates to increase transparency in the system.

Table 1: Health infrastructure system recommendations

No.	Recommendation
	Asset management and maintenance
1	All Health NZ regions to develop regional asset management plans to enable them to realise the full value of assets over their lifetime and provide a basis for infrastructure investment. The Health Infrastructure Unit (HIU) is to provide a common, best practice framework for these plans.
12	All Health NZ regions are to manage all minor project and facility maintenance on existing assets that are funded from recurrent operational funding. The HIU is to provide best practice asset management functional leadership, processes and procedures and ongoing monitoring of these business-as-usual type activities.
13	The transition from the asset management systems within the DHBs to a regionally managed centrally led system is to be adequately and discreetly funded, with timing determined by Health NZ considering its other investment priorities.
19	The HIU should continue to manage the development and ongoing updating of the National Asset Management Plan.
20	The requirement for each region to have in place a strategic asset management plan that is certified annually for compliance, with attestation from each regional chief executive, should be enshrined in government policy.
	Capital planning and investment management
2	The HIU to develop and maintain an investment management framework to inform the prioritisation process that informs the 10-year Capital Investment Plan.
3	The HIU to evaluate the continued effectiveness of the Investment Management Framework and ensure alignment with the Government Policy Statement and New Zealand Health Strategy, as well as advising Health NZ on any necessary improvements to the framework as required.
4	The HIU to work with the Treasury to customise the Better Business Case process and associated guidelines to suit health infrastructure investment requirements, including the addition of a strategic assessment that informs the prioritisation process, replacing the current district health board capital intentions process.
5	Prioritised projects scheduled to start within the initial three years of the 10-year Capital Investment Plan should be funded to move promptly to subsequent business case stages, to ensure investment decisions are delivered in time to maintain promised delivery timeframes.
6	The HIU to administer a central pool of funding for all business case development including co-ordinating necessary planning inputs to the strategic assessment.
7	The Treasury to provide Health NZ with a 10-year capital envelope within which to reliably plan future health infrastructure projects.
8	The HIU to compile a 10-year Capital Investment Plan.
9	Health capital funding for new capital investment to move from an annual budgeting cycle to a three-year budget cycle, which is to align with the Government Policy Statement.
	Project delivery

No.	Recommendation
15	The HIU is to deliver new facility projects that have been assessed by the HIU as being, considering size, risk and/or complexity, in excess of a given region's delivery capability. The balance of projects is to be delivered by the regions.
23	Health NZ, through the HIU, develop asset management and project delivery systems and processes so, when assessed, Health NZ is rated at an ICR of B or greater.
25	The HIU develops and maintains a national project delivery framework, which is to be mandatory for the delivery of all Health NZ infrastructure projects.
	Infrastructure deficit of hospital estate
14	The remediation of the existing infrastructure deficit across the national hospital estate should be consolidated into a nationwide programme of works, with the programme co-ordinated by the HIU and timing determined by Health NZ considering its other investment priorities.

1.5. Health Infrastructure Unit operating model

The HIU will be a critical component within the reformed health infrastructure system. It will need to be (and be seen) as a credible organisation, capable of delivering a significant programme of health infrastructure works to quality standard, on time and on budget.

As Health NZ is developed, its Board and executive management will organise itself to best deliver its operating model, including the function of the HIU. This review considers how the HIU could be organised within the anticipated health infrastructure system and makes recommendations on how HIU could best contribute value within the reformed system.

HI and VHBA both sit within the broader jurisdictional health agencies, although with differing levels of independence. Likewise, other agencies with specialist capital works units generally retain those units within those agencies (an example is School Infrastructure New South Wales).

Health is a dynamic environment where changes in models of care, the increasing use of ICT in the delivery of services, and changes in accountability for delivery of those services occur far more frequently than in most other forms of social and economic infrastructure. Health NZ as an organisation will need to remain flexible and be capable of adapting to that rapid change. In such an environment, development of health facilities requires a high level of interaction between the planning, design, construction and operation of a facility to ensure it is fit for purpose on completion and into the future.

As a result, and recommended in both the HDSR and Reform Cabinet Paper, the HIU is best positioned as a business unit within Health NZ.

The main functional health infrastructure areas that need to be decided by Health NZ include:

1. the extent that HIU is involved in asset management of existing facilities
2. which new facilities HIU directly manages project delivery for.

Minor projects for new health infrastructure or maintenance, and minor renewal works on existing assets, are currently carried out by the DHBs. The new Health NZ regions will be large organisations with significant maintenance and engineering staff who have been supporting the hospital estate, while working for the DHBs. Many existing facilities carry a maintenance deficit, and keeping them operating in a safe and efficient manner will be a balancing act likely most effectively achieved if they are locally managed. Similarly, minor projects are generally better and more efficiently managed by local staff dealing with local trades. Currently, DHBs have various levels of asset management systems and processes: this needs to change. All minor projects and maintenance need to be delivered within a consistent framework with best practice systems and processes; HIU is best placed to lead and monitor this work from the centre, with delivery being locally managed.

In both NSW and Victoria, the skills and experience within the local health districts and health services (respectively) to deliver capital works vary greatly. Some have little local capacity to deliver projects and others are capable of delivering substantial projects above the $10 million level used in NSW for mandatory HI management. The current DHBs are much the same, with great variance in capability, systems and processes. The Health NZ regions will be much larger organisations than the NSW and Victorian health delivery agencies or any of the current DHBs, however, their project delivery capability will still likely vary across each region and will need to be assessed against project requirements.

As such, rather than setting a value threshold over which the project is managed by HIU, it is recommended, as is the process used in Victoria, that regions manage projects to the size and complexity they can show they have sufficient capability. Capability assessment could be based on a combination of the existing Investor Confidence Rating (ICR) or a HIU developed capability framework. This allows HIU to focus on management of projects that are considered beyond the region's capability, likely to be large and complicated projects, such as the new Dunedin Hospital and proposed Whangarei Hospital and Nelson Hospital redevelopments.

Table 2 presents recommendations relating to HIU's operating model and how it could be organised and structured to best support the reformed health infrastructure system.

Table 2: Recommendations relating to the Health Infrastructure Unit's operating model

No.	Recommendation
10	The Health Infrastructure Unit (HIU) to be a business unit within Health NZ, reporting directly to the Health NZ Chief Executive.
11	The HIU to have a governance board to oversee its activities.
6	The HIU to administer a central pool of funding for all business case development including co-ordinating necessary planning inputs to the strategic assessment.
17	Fit-for-purpose programme and project assurance structures be implemented as soon as possible, to provide sufficient 'guard rails' for the revised governance and associated delegation structures.
18	The HIU should not be responsible for centralised health service planning, as is currently the case, with this function best provided by a separate centralised dedicated function within Health NZ. The current arrangement is necessary and to be supported until the dedicated health service planning function is formed.
21	Government and Health NZ empower the HIU with necessary autonomy to perform its operations.
22	Health NZ to consider the proposed HIU structure contained within this review when considering how the HIU is organised within the reformed Health System.
24	The information communication technology and furniture, fixtures and equipment procurement, in particular, major medical equipment, to be provided by a separate centralised specialist function within Health NZ. The HIU will provide a co-ordination function to liaise with these specialist capabilities and integrate these requirements into project delivery.

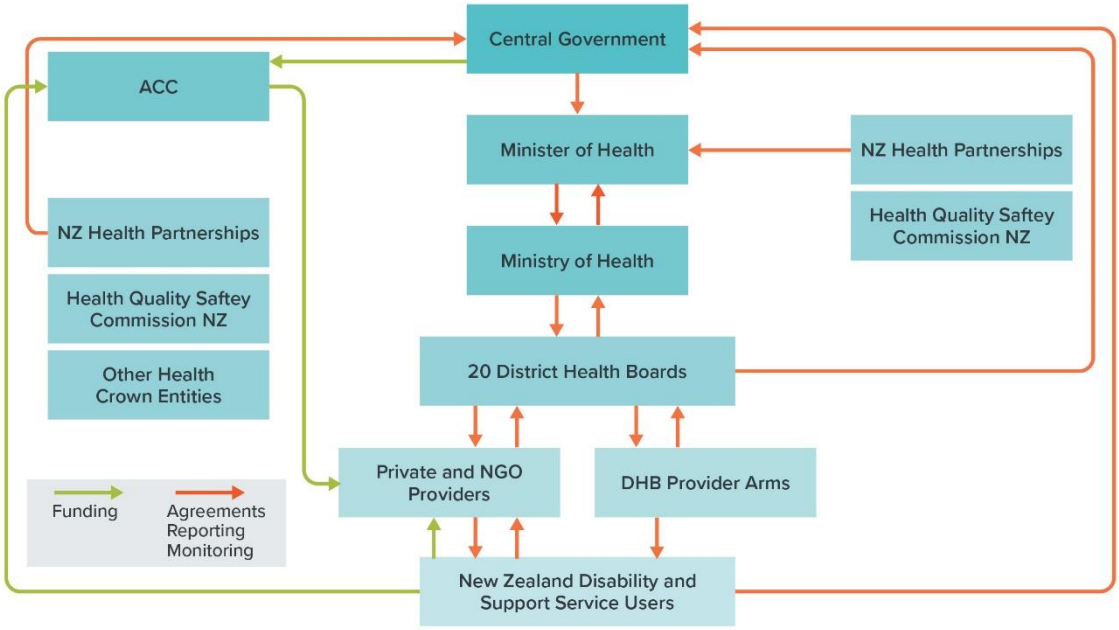
2. New Zealand context

2.1. What shapes the sector today?

2.1.1. Ownership and governance

Health and disability services in New Zealand are delivered by a complex network of organisations and people who work together to achieve better health outcomes for New Zealanders.[8] The structure of the New Zealand health and disability system[9] is shown in figure 1.

Figure 1: Structure of the New Zealand health and disability system



Note: ACC = Accident Compensation Corporation; DHB = district health board; NGO = non-governmental organisation.

Overall responsibility for the health and disability system lies with the Minister of Health whose functions, duties, responsibilities and powers are detailed in the New Zealand Public Health and Disability Act 2000 and other legislation.[10] The Ministry of Health leads New Zealand's health and disability system and has overall responsibility for the management and development of the health system.

The Capital Investment Committee (CIC) provides advice to the Minister of Health, Minister of Finance and Director-General of Health on public health capital investment prioritisation and allocation.[11] While the CIC acts in a support and advisory capacity, the Ministry of Health ultimately oversees and funds the

[8] Ministry of Health, "Overview of the health system," updated March 30, 2017, https://www.health.govt.nz/new-zealand-health-system/overview-health-system.
[9] Ministry of Health, "Overview of the health system."
[10] Ministry of Health, "Key health sector organisations and people," last modified November, 25, 2020, https://www.health.govt.nz/new-zealand-health-system/key-health-sector-organisations-and-people.
[11] Ministry of Health. "Capital Investment Committee." Updated May 27, 2016. https://www.health.govt.nz/new-zealand-health-system/key-health-sector-organisations-and-people/capital-investment-committee

20 DHBs, in addition to monitoring DHB and non-DHB Crown entity performance on behalf of the Minister of Health.[12]

While the Act sets out detail on their functions, the DHBs perform two broad functions:[13]

1. planning, management and purchase of health services for their population
2. provision of secondary and tertiary services for their population.

Key health and disability organisations, agencies and committees have been listed in appendix C.[14]

Health care within New Zealand is also defined by a series of strategies. The most important, from a health infrastructure perspective, is the 2016 *New Zealand Health Strategy: Future Direction*, which sets the direction of health services to improve the health of people and communities and outlines the high-level direction for the 10 years from 2016–26.[15]

2.1.2. Health services

Health services can be broken into primary, secondary and tertiary levels of care, as outlined below.[16]

Tertiary care: Specialist services for inpatients, including treatments for serious illnesses and injuries, cancer management, and complex (for example, heart or brain) surgeries.

Secondary care: Services provided by medical specialists (for example, cardiologists, radiologists, speech therapists and psychiatrists) within a hospital setting.

Primary care: Professional health care provided in the community, usually from a general practitioner (GP), practice nurse, nurse practitioner, pharmacist or other health professional working within a general practice.[17]

DHB-owned facilities mainly deliver hospital-based services and provide community, public health and assessment, treatment and rehabilitation services. DHBs can and do enter into service agreements with private and non-governmental organisation providers (for example, pharmacists, laboratories, radiology clinics and GPs) to provide various health services. DHBs may also act in a monitoring capacity under these agreements to ensure agreed levels of service are upheld and regulated.[18]

Non-hospital services are mainly commissioned by DHBs through national, regional and local contracts with non-governmental organisations. Primary health organisations provide primary health care services to people enrolled with a primary health organisation, and provide services either directly or through a contracted provider, such as a GP.[19] Primary care mainly covers services in the community provided by, for example, nurses, pharmacists, counsellors and dentists.[20] Māori health providers are typically contracted by DHBs to provide health services for Māori.[21]

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[12] Waitangi Tribunal, *Hauora: Report on Stage One of the Health Services and Outcomes Kaupapa Inquiry* (Lower Hutt: Legislation Direct, 2019), 41.
[13] Waitangi Tribunal, *Hauora: Report on Stage One of the Health Services and Outcomes Kaupapa Inquiry*, 44.
[14] Ministry of Health, "Key health sector organisations and people."
[15] Ministry of Health, *The New Zealand Health Strategy* (Wellington: Ministry of Health, 2000).
[16] West Coast District Health Board, "Primary, secondary, and tertiary healthcare," last updated August 7, 2020, https://www.wcdhb.health.nz/your-health/how-the-health-system-works/.
[23] Ministry of Health, "Primary health care," last modified February, 3, 2020, https://www.health.govt.nz/our-work/primary-health-care.
[18] Ministry of Health, "The structure of the New Zealand health and disability sector," last modified January 21, 2020, https://www.health.govt.nz/system/files/documents/pages/structure-nz-health-disability-sector-oct16.pdf.
[19] Ministry of Health, "About primary health organisations," last updated September 5, 2021, https://www.health.govt.nz/our-work/primary-health-care/about-primary-health-organisations.
[20] Waitangi Tribunal, *Hauora: Report on Stage One of the Health Services and Outcomes Kaupapa Inquiry*, 1.
[21] Waitangi Tribunal, *Hauora: Report on Stage One of the Health Services and Outcomes Kaupapa Inquiry*, 47.

2.1.3. Physical assets

The wider health and disability system physical infrastructure includes community-based facilities, such as general practice clinics, provided through primary health organisations, aged residential care facilities, DHB facilities, and private hospital buildings and clinical facilities. This section focuses on the public hospital network.

Hospital infrastructure

New Zealand has 83 public hospitals nationwide. These assets have been extensively underfunded over the past 15 years; many are in poor condition and no longer fit for purpose. DHBs currently manage buildings with a replacement value of approximately $24 billion.[22]

The Ministry of Health 2019/20 first stage of the NAMP current state investigation assessed the condition of over 1,000 main hospital campus buildings. The investigation found that:

- The average age of DHB buildings ranged from 28 years (Waitematā DHB) to 58 years (Southern DHB). Given the useful life of a building is typically 30 to 50 years, this indicates many DHB buildings are at, or approaching, the end of their useful life.[23]
- Although most buildings were found to be in good to average condition, many in average condition had 'poor' components, including structural integrity risks, seismic restraint issues, poor passive fire separation, and asbestos. Generally, the older the building, the poorer its condition tended to be.[24]
- Sitewide infrastructure (plumbing, mechanical and electrical) was highlighted as being in relatively poor condition compared with main campus buildings. Significant issues with reticulated infrastructure (electrical systems and pipes) were identified across several campuses.

The investigation also assessed 80 clinical facilities nationwide, including 56 acute pathway units (emergency departments, operating theatre suites, intensive care units) and 24 mental health units, and identified the relative appropriateness of these clinical facilities to support their models of care. Generally, these older facilities are not designed or in a condition capable of effectively supporting contemporary models of care and operational requirements. Their existing issues, commonly referred to as the 'infrastructure deficit', are likely to be further exacerbated by projected future demand requirements, and the continued evolution of care models. The investigation concluded that $14 billion is required for buildings and infrastructure investment over the next 10 years (2018 estimates), and $2.3 billion for information technology (IT) systems investment (2019 estimates).

The HIU has stated,[25] of the 1,269 known hospital estate buildings, only an estimated 13% have had expert assessments. Given this, and that the $14 billion estimate for buildings and infrastructure investment is out of date and pre-COVID-19, it is likely the actual cost to address existing issues and bring the estate up to a fit-for purpose level is much greater than $14 billion.

Information technology

DHBs also face significant technological challenges due to outdated infrastructure and legacy systems. IT infrastructure networks and security are outdated and unable to adequately support the introduction of new systems or manage increased cyber security issues. The recent hacking of Waikato Hospital's information systems by a malicious ransomware attacker provides a reminder that this risk is real. This outdated infrastructure also presents challenges to users accessing and using patient or clinical

[22] Ministry of Health, *The National Asset Management Programme for district health boards. Report 1: The current-state assessment* (Wellington: Ministry of Health, 2020), 5.
[23] Ministry of Health, *The National Asset Management Programme for district health boards. Report 1: The current-state assessment,* 20.
[24] Ministry of Health, *The National Asset Management Programme for district health boards. Report 1: The current-state assessment*, 9.

[25] *Asset Management and Analysis – Current State and roadmap to Health NZ – May 21.*

information across both internal hospital locations and wider health service settings. Further, the devolved capital settings for DHBs means IT investment is largely driven at an organisation level rather than through a national approach to implement the same systems to perform the same functions.

Future prioritisation of IT investment has been identified as an important strategy in enablement of evolving medical service delivery in the home and within community facilities, thereby reducing demand on the public hospital network.

2.1.4. Capital funding

Capital budgets for health and disability new projects over $10 million are set as part of the whole-of-life government budget process.[26] The current process for capital investment allocation requires DHBs to step through the Treasury's Better Business Case (BBC) framework for prioritised projects. A flow chart incorporating prioritisation, funding and the BBC framework can be found at appendix D.

The BBC framework is based on the internationally recognised five case model, which builds a business case proposal by answering five core questions:[27]

- What is the compelling case for change? (Strategic Case)
- Does the preferred option optimise value for money? (Economic Case)
- Is the proposed deal commercially viable? (Commercial Case)
- Is the investment proposal affordable? (Financial Case)
- How can the proposal be delivered successfully? (Management Case)

DHB business cases generally focus on the main elements of the district catchment area and day-to-day operations, including population need, asset condition and service enablers like models of care, workforce, and information and clinical technologies. Business cases have historically been developed in isolation from DHB neighbours and regional partners. The northern region (Northland, Waitematā, Auckland and Counties Manukau) DHBs are an exception; in 2016, the four northern DHBs collectively developed the Northern Region Long-Term Investment Plan, which set out a 10-year roadmap for capital investment. More generally, however, consistency and transparency of information is limited at the local, regional or national levels.[28]

Joint approval from the Ministers of Health and Finance is required for Crown funding or DHB capital investment over $10 million.[29]

While capital budgets for DHBs are set and allocated centrally, DHBs have responsibility for governance, planning and decision-making around capital renewal investment and maintenance at the local operational level. As such, short-term operational pressures have seen DHBs deferring capital maintenance. The Office of the Auditor-General states that the total deficit for all 20 DHBs increased significantly in 2016/17, with continued financial pressure making it difficult for DHBs to invest for the future.[30] Further, between 2008/09 and 2014/15, funding from DHBs' net operating cash flows covered only 55% of their total capital investment needs. Using depreciation as a proxy for how much is being consumed, the Auditor-General's analysis also showed that 12 of the 20 DHBs (60%) did not have enough internally generated funds to cover their renewal spending needs.

[26] Projects under $10 million are generally funded from the DHB baseline funding.
[27] The Treasury, "Better Business Cases," last modified October 7, 2020, https://www.treasury.govt.nz/information-and-services/state-sector-leadership/investment-management/better-business-cases-bbc.
[28] Ministry of Health, *The National Asset Management Programme for district health boards. Report 1: The current-state assessment*, 17.
[29] Ministry of Health, *The National Asset Management Programme for district health boards. Report 1: The current-state assessment*, 13.
[30] Controller and Auditor-General, *Health Sector: Results of the 2016/17 audits* (Wellington: Office of the Auditor-General, 2018).

2.1.5. Delivery of infrastructure programmes and projects

Since the advent of DHBs in 2001 to implement health services, capital projects have been largely delivered directly by DHBs, with the Ministry of Health focused on stewardship of the wider health system and associated policy and monitoring functions.

Since 2013, the Ministry of Health has directly managed a selection of large projects where it was considered that the local DHB lacked the necessary capability or capacity, however, at present, most health sector projects are delivered by the DHBs.

In late 2019, HIU was established to support, oversee and standardise DHB capital project design and delivery. The HIU is designed to enhance the Ministry's stewardship role and standardise project design and delivery. HIU currently oversees a portfolio of 102 projects across DHBs with a combined Crown funding of approximately $5.50 billion from successive budget appropriations. To date, HIU is directly managing the new Dunedin Hospital project (over $1 billion, which will be the largest hospital build in New Zealand) and has completed the first tranche of the Christchurch Hospital programme, and Te Nikau Grey Hospital. Since 2018, the Government has invested $3.5 billion into DHB capital projects.[31]

A depiction of the National Asset Management Programme interactions with HIU, Treasury and DHBs has been provided in appendix F. A summary of the entities and their functions within health infrastructure system is summarised at appendix C.

2.2. Current infrastructure issues and challenges

2.2.1. Health infrastructure capabilities and facilities not fit for purpose

Funding pressures, and a focus on managing short-term operations, have resulted in under-investment in infrastructure across the health sector that will affect access to high quality and safe care.

As a result of this under-investment, many facilities are not fit for purpose, with inflexible underlying infrastructure systems, subsequently restricting the introduction of new models of care and quality innovation. This 'infrastructure deficit' is compounded by the inability of health assets to sufficiently adapt to changing models of care. The life of many health assets is 25 years to 40 years (or longer), yet models of care evolve more rapidly in response to emerging trends and patient needs. As such, DHBs are having to try to adapt existing assets to new models of care in the absence of funding for proper upgrades or wait until the asset can be renewed.

The health system is characterised by poor asset management capabilities, which is likely to be undermining health outcomes. In 2016/17, the Office of the Auditor General found that DHBs' asset management was not as mature as expected from organisations of their size and with their level of reliance on their assets. A summary report of their 2016/17 audits found that: about two-thirds of DHBs were unlikely to have substantively updated their asset management plans since 2009; DHBs tended not to specify the levels of service they expected from their assets, resulting in weak asset performance reporting; and limited reporting to governors and senior managers on the performance and condition of assets.[32] More recent HIU information suggests that only 11 of the DHBs have current asset management plans. Few have master plans and clinical service plans that plan for future investment (locally and regionally) to address changing demographics, use of workforce and technology solutions and adoption of new models of care.

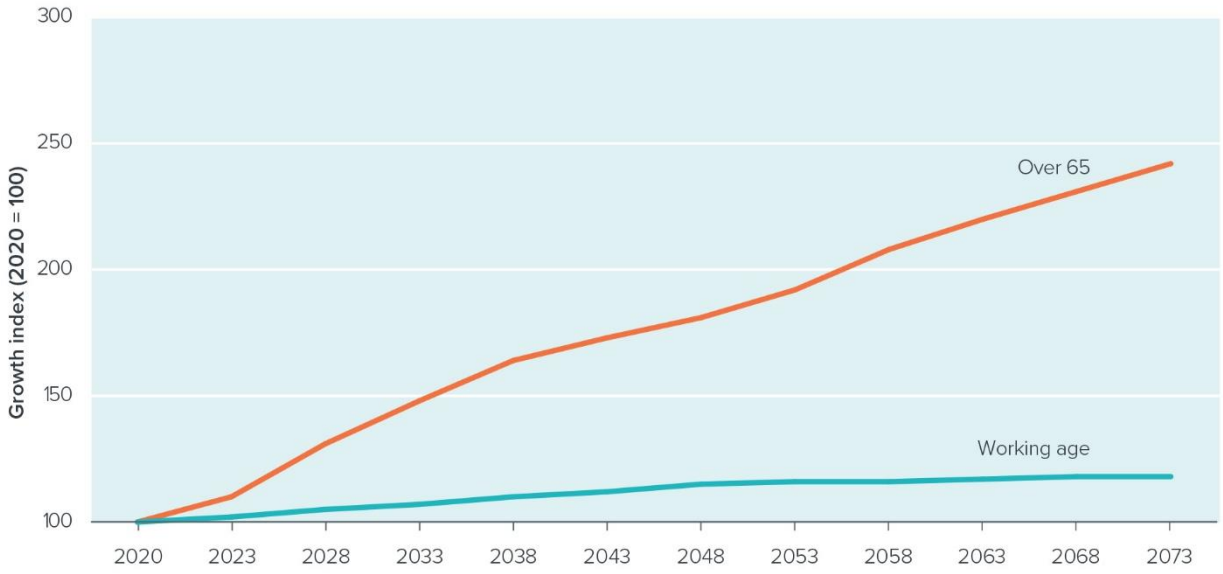
[31] Ministry of Health, "Health Infrastructure Unit," last modified June 9, 2020, https://www.health.govt.nz/our-work/hospital-redevelopment-projects/health-infrastructure-unit.
[32] Controller and Auditor-General, *Health sector: Results of the 2016/17 Audits*, 7.

Given the immaturity of health sector investment capabilities and asset management planning, asset management plans often do not inform the business case process. This often lengthens the business case process, but also has far reaching effects beyond the decision-making process and allocation of capital funding.[33] Whole-of-life costs for infrastructure are often not well considered in business cases, and estimations of required maintenance and operations spend over the lifetime of the asset are often under-represented. As a result, the New Zealand health and disability system has seen historic deferral of maintenance and reallocation of maintenance expenditure to fund operational (service delivery) requirements, because DHB funding is not ringfenced solely for maintenance spend.[34] The negative impact of this reallocation is evidenced by the pervasiveness of leaky buildings, compliance issues, defects within design life parameters, and product and material failures identified in the National Asset Management Programme Current State Assessment.[35] Unfortunately, it is not possible to effectively assess and understand the trade-offs of a lack of ringfencing of maintenance spend within New Zealand, given the widespread lack of good strategic asset management or robust asset management plans across the health and disability system.

2.2.2. Rapidly growing and ageing population

New Zealand's rapidly growing and ageing population is expected to place significant pressure on the health sector (see figure 2). In combination with the increasing prevalence of chronic disease and higher consumer expectations, this demographic shift will increase demand for services (both public and private), further straining infrastructure already stressed from historic under-investment and poor planning.

Figure 2: Projected persons of working age and over 65



[33] Ministry of Health, *The National Asset Management Programme for district health boards. Report 1: The current-state assessment*, 15,16.
[34] Ministry of Health, Subject matter expert interview, 2021.
[35] Ministry of Health, *The National Asset Management Programme for district health boards. Report 1: The current-state assessment*, 15,16.

2.2.3. Management of investments and assets

The Treasury's ICR is a three-yearly assessment of an agency's performance in the management of its investments and assets that are critical to the delivery of New Zealand government services. It is an indicator of the confidence that investors (for example, Cabinet and Ministers) have in an agency's ability to realise a promised investment result if funding were committed. It also helps an agency identify where it needs to lift capability to maximise the value of its investments and assets and is one component of the information considered by Cabinet when it prioritises investments.[36] Over time, these actions mean an agency is better placed to effectively manage future investments and assets.

The ICR scale ranges from A to E, where an 'A' rating signals a high level of performance, and an 'E' rating indicates significant help may be required to ensure an agency delivers results on its investments. A 'C' rating indicates that the status quo investment management system arrangements remain in place. Cabinet's expectation is that all agencies achieve a minimum of a 'B' rating.

The larger DHBs, along with the Ministry of Health, have recently had their ICRs confirmed. These are set out in table 3.

Table 3: Health sector Investor Confidence Rating (ICR) scores

AGENCY	HEALTH SECTOR ICR SCORES					
	FEB 2017	JUNE 2017	JULY 2018	NOV 2018	FEB 2020	JULY 2021
AUCKLAND DHB	B				B	B
CANTEBURY DHB	B				B	B
CAPITAL AND COAST DHB			C		C	
COUNTIES MANUKAU DHB	A				B	B
NORTHLAND DHB	C					C
WAITEMATĀ DHB	B				B	B
WAIKATO DHB			C		C	C
SOUTHERN DHB				D		D
MOH		C				D

Note: DHB = district health board; MOH = Ministry of Health.

[36] The Treasury, "Investor Confidence Rating," last modified June, 8, 2020, https://www.treasury.govt.nz/information-and-services/state-sector-leadership/investment-management/review-investment-reviews/investor-confidence-rating-icr.

Given the devolved DHB structure, each DHB and the Ministry of Health have their own investment delivery and asset management structure, processes and procedures. Considering the quantum of the infrastructure deficit within the national hospital network, it is critical that health infrastructure delivery and asset management systems be fully integrated to a best practice standard to meet this challenge.

Also, confidence is generally lacking in the sector's current capability to effectively address important infrastructure issues, given current incentives, lack of accountability, long-term planning and system-wide collaboration. Significant investment, and a change to how the health and disability system is structured, will be required to set the right incentives and ensure an appropriate investment in infrastructure and the wellbeing outcomes of New Zealanders.

2.2.4. Planning and governance

More transparent planning, governance and prioritisation of investment at a national level has been identified as being required to ensure facilities and equipment are safe and fit for purpose. Long-term investment planning, development of a nationally significant investment pipeline, standardisation of the capital investment and delivery process, and greater financial and governance expertise were noted as key recommendations from the HDSR. The HDSR identifies the need for a national long-term investment plan and investment pipeline, to ensure business cases are not developed for projects that are not of national priority.[37]

The sector's governance and regulatory structure is complex, with devolved governance contributing to a lack of co-ordination and leadership. The HDSR provided extensive regulatory and governance recommendations,[38] including the creation of Health NZ, to be accountable for service delivery, a new Māori health authority, and consolidation of the DHBs.

Robust infrastructure will be required to support these changes, including investment to improve data interoperability and strengthen technology and digital infrastructure. Good infrastructure is required to support governance structures and decision-making; just as good governance is required to build quality infrastructure.

2.2.5. Funding model issues

The current funding models have been criticised, including the capitation[39] and population-based funding structures,[40] the year-by-year funding cycle (which has the potential to stifle the flexibility required to reduce inequities), poor long-term planning, and poor management of, and short-falls in, current funding levels. Recurring criticisms cite that the system needs to operate more efficiently to use the funds made available to it.[41]

Further, there has been a historical trend of DHB capital underspending, which is typically attributed to timing delays. For the 2019/20 financial year, DHB capital expenditure totalled $520 million of a budgeted $740 million; a 30% underspend.[42]

DHBs are focused on delivering short-term results within a challenging operating environment and financial constraints, to the detriment of longer-term planning and capital investment. This is because expenditure on maintaining assets and use of depreciation is discretionary in the publicly funded health system (including for community and primary care). In essence, where funding has not kept pace with service costs, less has been spent on assets. Crown funding was previously sought for larger

[37] Health and Disability System Review, *Health and Disability System Review: Final Report*, 17.
[38] Health and Disability System Review, *Health and Disability System Review Final Report*.
[39] Waitangi Tribunal, *Hauora: Report on Stage One of the Health Services and Outcomes Kaupapa Inquiry*, 116.
[40] Health and Disability System Review, *Health and Disability System Review: Final Report*, 60.
[41] Health and Disability System Review, *Health and Disability System Review: Final Report*, 41.
[42] Ministry of Health, DHB Sector Financial Performance Report Year ended 30 June 2020, 9.

infrastructure projects but is now being sought for critical maintenance and remediation and ICT. These smaller investments were once funded from within DHB operating expenses.[43]

A common theme across the literature is the need for more deliberate and structured long-term funding and planning, as opposed to short-term operational based planning and funding. This short-term approach is a fundamental flaw and affects the distribution of costs across the system, the state of current infrastructure, investment in capital projects, technology and innovation, and the scope and roles of clinical services across hospital sites, as well as between hospitals and community services.[44]

2.2.6. COVID-19

The COVID-19 pandemic has had numerous effects on the health and disability sector. These include risk management, financial planning and performance, capital project delays, service delivery, and the need to adapt to new technology and data requirements. COVID-19 has revealed current issues within the sector and areas that require addressing in the future.

In terms of service delivery, the implementation of COVID-19 restrictions have seen demand increases in areas such as emergency departments, and the delay of services in other areas. This deferral resulted in notable backlogs to planned medical and surgical hospital care.[45]

The COVID-19 pandemic has also highlighted how New Zealand's current health infrastructure is not properly equipped for emergencies, such as a pandemic. Design and maintenance issues, such as older negative pressure rooms, inadequate sizes, lack of anterooms, and problems with door seals and ventilation within the current health infrastructure, led to capacity and operational issues surrounding disease control.[46] Technical issues, such as a lack of interoperability and integration of telehealth, inhibit the system's ability to provide services in an emergency without the need to visit a physical facility.[47]

2.2.7. Technology

Technological advancement is increasing rapidly and will undoubtedly affect the way we work, live and interact in the future.[48] The main areas of anticipated technological disruption include artificial intelligence, smart digital assistants and even virtual hospitals.[49]

Artificial intelligence alone has the potential to contribute over $700 million of value and savings to the New Zealand health system by 2026.[50] While artificial intelligence adoption and uptake into New Zealand's health and disability system remains nascent, isolated incidences of innovation and experimentation are occurring.

2.2.8. Climate change

Climate change is expected to have both direct (increased exposure to heat waves and weather events, flooding and fires) and indirect impacts (increased exposure to microbes, pollen, air pollutants and new disease carriers) on the health of New Zealanders and will more broadly have a disruptive effect on funding structures, service models and underlying infrastructure.[51] Adverse effects on health and wellbeing may include disruption to health services delivery, migration, housing and livelihood stresses.

[43] Ministry of Health, subject matter expert interview, 2021.
[44] Health and Disability System Review, *Health and Disability System Review: Executive Overview* (Health and Disability System Review, 2020), 7.
[45] Ministry of Health, *Briefing to the Incoming Minister: COVID-19 Health System Response* (Wellington: Ministry of Health, 2020), 13.
[46] Ministry of Health, *The National Asset Management Programme for district health boards. Report 1: The current-state assessment*, 10.
[47] Ministry of Health, *The National Asset Management Programme for district health boards. Report 1: The current-state assessment*, 11.
[48] MidCentral District Health Board, *Long Term Investment Plan 2016–2026* (Palmerston North: MidCentral District Health Board, no date), 18.
[49] AI Forum of New Zealand, *Artificial Intelligence for Health in New Zealand* (Auckland: AI Forum, 2019), 7.
[50] AI Forum New Zealand, *Artificial Intelligence for Health in New Zealand*, 9.
[51] Royal Society, *Human Health Impacts of Climate Change for New Zealand: Evidence Summary* (Wellington: Royal Society, 2017), 2.

Health infrastructure will be affected by increasing frequency of fires, floods, storm tides and high intensity rainfall events.[52]

The main climate change related themes and policy implications considered are summarised in appendix G.

2.3. The challenge ahead

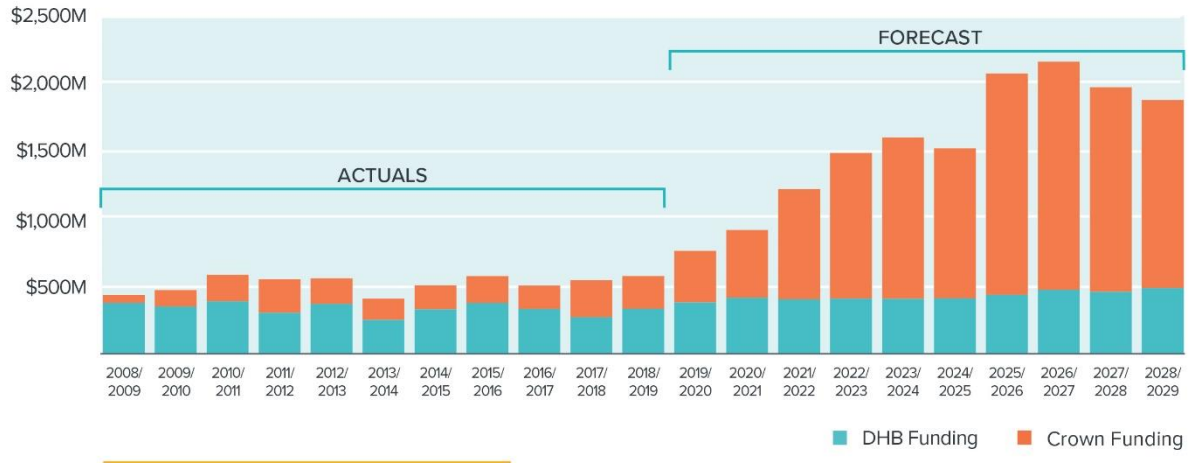
Health and disability infrastructure has the potential to improve society's quality of life through the provision of health care, supported living and end of life care. Health and disability infrastructure – buildings and technologies, skilled workforce, data connectivity and regulations, among other aspects – contributes to wellbeing and health outcomes by enabling a better standard of service delivery.

The current state of physical health infrastructure in New Zealand is poor (with ageing assets, historic under-investment and deferred maintenance). Future trends, such as shifting demographics (including an ageing population), an increasing prevalence of chronic disease and higher consumer expectations, will only serve to place further strain on infrastructure and a health system that is already stressed. Fit-for-purpose facilities, along with more transparent planning, governance and prioritisation of investment at a national level will be required to exploit emerging opportunities and improve the health outcomes of New Zealanders.

The HDSR detailed a forecast unprecedented programme of necessary investment in health infrastructure over the next decade, valued in the report at $14 billion (based on 2018 DHB capital estimates), excluding repairs, maintenance and ICT.

The extent of the step change of annual expenditure of infrastructure investment required to bring the hospital estate up to fit-for-purpose condition is shown in figure 3. Over the past 10 years, the average annual sector capital expenditure has been around $500 million. Over the course of the next decade, three to four times that quantum per year will be required to be spent, with a far greater level of Crown funding needed than previously.

Figure 3: District health board (DHB) capital expenditure forecast on a cash-flow basis



A correspondingly large increase will occur in the number of projects necessary to deliver this investment, which will need significant support from the construction industry, which will need time to build up capacity and capability to meet demand.

[52] Royal Society, *Human Health Impacts of Climate Change for New Zealand: Evidence Summary*, 5.

Te Waihanga communicates upcoming work to market through its Infrastructure Pipeline, which is available on Te Waihanga's website.

Before being able to be published on the Infrastructure Pipeline, proposed projects will need to be scoped, prioritised, approved and funded. The construction sector will be reluctant to invest in the capability necessary for the forecast health infrastructure pipeline unless a capital plan is in place with multi-year funding. Capital planning, funding and investment decision processes will need to be significantly streamlined from current practice, to enable this sort of long-term capital plan and substantial sector capability management.

An integrated portfolio approach to delivery of the investment pipeline will be necessary to provide the national construction sector with the continuity of work and allow for the necessary investment. This approach will be needed particularly considering the wider infrastructure challenges (refer to section 5) and what this means in the ability to obtain sufficient capability to cover the portfolio in a highly competitive and constrained environment. The need to move to a health system that presents continuity of work to the construction sector, so it can efficiently organise its resources and manage risk to deliver work profitably, will be critical in the future.

Working with the construction sector to transform how projects and programmes are assessed, procured and managed will be important in meeting successful delivery.

Projects and programmes will need to be thought about in new ways, with transformational change only achieved by systematically and collaboratively approaching risk, sustainability and innovation across portfolios of projects and programmes, not just project by project. If this doesn't happen, the desire to build better, quicker and greener will not be possible.

A partnership with the construction sector that addresses strengthening the health of the sector will be vital, including addressing low levels of productivity and skills shortages. Only an effective and efficient programme of work that delivers public value and a reasonable profit to industry will be sustainable. The UK Government has recently released *The Construction Playbook*,[53] a government guidance on sourcing and contracting public works projects and programmes that details a systematic approach to transforming infrastructure investment. Similar measures will be needed in New Zealand to meet the country's health infrastructure requirements in the future.

The health reform objective of transformation towards emphasis on public health-led preventative programmes, enhanced synergies with the private health sector and other non-capital intensive solutions will likely become increasingly critical, considering the existing infrastructure deficit and forecast capability constraints.

[53] Cabinet Office, *The Construction Playbook: Government guidance on sourcing and contracting public works projects and programmes*. (London: Cabinet Office, HM Government, Version 1.0, 2020).

3. New South Wales – current state

3.1. New South Wales health system

New South Wales (NSW) has a predominantly urban population of almost 8.2 million people. In 2016, nearly 75.0% of the population lived in major cities, 18.7% lived in inner regional areas and 6.3% in outer regional and remote areas.

The NSW public health system is the largest in Australia, with 164,000 (122,538 full-time equivalent) dedicated staff.[54]

3.1.1. Organisations

NSW Health comprises several government entities involved in identifying the provision of public health services, including:

1. NSW Ministry of Health,[55] which plays a systems manager role;
2. 15 Local Health Districts (LHDs) (eight covering greater Sydney metropolitan region and seven covering rural and regional NSW) and two Speciality Networks (SNs) (Sydney Children's Hospital Network and Justice Health and Forensic Mental Health Network), which provides health services in a wide range of settings and are responsible for effectively planning health services over the short and long term (including delivery of capital works under $10 million);[56] and
3. Five pillar agencies which provide expertise and support for the public health system including Agency for Clinical Innovation, Bureau of Health Information, Cancer Institute NSW, Clinical Excellence Commission and Health Education and Training Institute; and
4. Six agencies providing statewide or specialist health services to LHDs and SNs including NSW Ambulance, NSW Health Pathology, Health Protection NSW, HealthShare NSW, eHealth and Health Infrastructure.

Health Infrastructure (HI) is responsible for the delivery of the NSW Government's major works hospital and health services building programme, as well as asset and health facility advisory and management, health precinct planning and development, and supporting commercial services.[57]

The organisational structure for NSW Health can be found at:
https://www.health.nsw.gov.au/about/nswhealth/Pages/chart.aspx

These government entities are governed by the Health Administration Act 1982 (NSW) and the Health Services Act 1997 (NSW), in addition to a corporate governance framework that distributes authority and accountability through the public health system.

For the purpose of exercising their statutory functions under the Health Administration Act 1982 (NSW), the Health Secretary is given corporate status, that is, as the Health Administration Corporation.[58] Entities have been created under the Health Administration Corporation to provide ambulance services and support services to the health system, including HI.

[54] NSW Health, "Annual Report 2019–20," accessed August 27, 2021, https://www.health.nsw.gov.au/annualreport/Publications/2020/overview.pdf.
[55] A public service department under the Government Sector Employment Act 2013 (NSW).
[56] NSW Health, "Local Health Districts and Specialty Networks," accessed August 27, 2021, https://www.health.nsw.gov.au/lhd/Pages/default.aspx.
[57] NSW Health, "Structure," accessed August 27, 2021, https://www.health.nsw.gov.au/about/nswhealth/Pages/structure.aspx.
[58] Section 9, Health Administration Act 1982 (NSW).

Under the Health Services Act 1997 (NSW), statutory health corporations provide statewide or specialist health and support services and are subject to the control and direction of the Health Secretary and Minister for Health.

The process for delivery of health infrastructure projects and programmes within NSW is mature, having been developing for the past 14 years in its current configuration.

3.1.2. Asset portfolio and funding

NSW Health manages a significant asset portfolio valued at A$23.5 billion (as at 30 June 2019), which includes 230 public hospitals and over 220 ambulance stations.[59]

The NSW State Budget includes a total of A$10.8 billion of capital investment for NSW Health over the four years to 2024/25.[60] This figure incorporates HI projects, ICT, the asset refurbishment replacement programme, locally funded initiatives and the minor works programme.

The total NSW Health 2021/22 capital expenditure is A$3.2 billion. HI's 2021/22 capital expenditure is A$2.136 billion. This is a 5% increase from the previous year.

HI is also managing the A$700 million statewide Mental Health Infrastructure Programme, announced in 2018, to support the delivery of mental health care reforms in NSW.

3.2. Government entities involved in health infrastructure

Several government entities are involved in identifying, prioritising, funding and delivering health infrastructure projects, as discussed below.

3.2.1. New South Wales Treasury

The NSW Treasury is the Government's main adviser on economic and fiscal management, and sector performance.[61] It is responsible for the management of NSW finances, the provision of analysis and advice, and the management of NSW assets. Several NSW Treasury policies and circulars are relevant to health infrastructure.

- **Asset Management Policy (TPP19-07 – Asset Management Policy for NSW Public Sector)**
  The Asset Management Policy[62] provides a whole-of-government framework to support agencies in realising value from their planned and existing assets. It outlines a consistent approach to asset management and reflects the Government's objective to improve asset management through strengthening accountability, performance and capability across the NSW public sector. It requires government agencies to:
    - develop a fit-for-purpose strategic asset management framework, asset management plans and an asset register
    - ensure an 'accountable authority' provides an attestation statement to the NSW Treasury confirming compliance with the core requirements of the policy. A copy must be provided to Infrastructure NSW and the Office of the Government Chief Information and Digital Officer who may require evidence to support the attestation

[59] NSW Health, "News," accessed August 27, 2021, https://www.health.nsw.gov.au/news/Pages/20210622_04.aspx.
[60] NSW Health, "Budget 2021–2022," accessed August 27, 2021, https://www.budget.nsw.gov.au/sites/default/files/2021-06/NSW%20Budget%202021-22%20Overview.pdf.
[61] NSW Treasury, "About," accessed August 27, 2021, https://www.treasury.nsw.gov.au/about-treasury/about-nsw-treasury.
[62] NSW Treasury, "Asset Management Policy," accessed August 27, 2021, https://www.treasury.nsw.gov.au/finance-resource/asset-management-policy.

- undertake a periodic assessment of their asset management maturity and provide that information to Infrastructure NSW and the Office of the Government Chief Information and Digital Officer.

The implementation approach for the policy included a 12-month transition period between the release date and effective date of the policy to give agencies time to undertake the necessary gap analysis and start putting in place steps to ensure they have embedded the new policy requirements.

The attestation process includes an exemption process to provide agencies further time to implement the requirements of the policy, if needed. NSW Health working towards compliance by 2024.

- **Treasury Circular TC12/20 - Capital expenditure authorisation limits**
  Treasury Circular TC12/20[63] sets out the requirements relating to a government agencies' management of its capital expenditure programme within approved capital expenditure authorisation limits, which are determined and approved during the annual budget process.

  The NSW Minister of Health may approve:

  - variances within capital expenditure authorisation limits arising from new works with an estimated total cost less than A$5.0 million and/or adjustments to existing works. Approval must be obtained from the Treasurer before initiating any new works with an estimated total cost of A$5.0 million or more.
  - the addition of new capital projects costing less than A$5.0 million and adjustments to existing major projects subject to:
    - not exceeding 10% of the originally approved limit
    - the total authorisation limits for the Budget
    - the forward estimates years are not exceeded in any one year
    - no major project is delayed by more than one year.

- **Treasury Circular TC14/28 – Parameter and Technical Adjustments and Measures**
  Treasury Circular 14/28[64] defines the different types of submissions that an agency can make as part of the budget process:

  - Parameter and Technical Adjustments are a material, non-discretionary change in the net cost or timing of expenditure on existing programmes or capital projects under existing policy parameters.
  - Capital Parameter and Technical Adjustments are allowed where an existing approved project experiences changes in revenues or expenditure that are outside the control of the agency and a change in project scope is not possible to deliver the project.
  - Measures (new policy) involves a discretionary decision by government that changes existing policy and may affect a budget aggregate or require additional funding. Capital measures involve the approval of a new project or scope changes to an existing approved work-in-progress.

[63] NSW Treasury, "Treasury Circular TC12-20," accessed August 27, 2021, https://www.treasury.nsw.gov.au/sites/default/files/2017-03/TC12-20_Budget_Controls_-_Capital_Expenditure_Authorisation_Limits_dnd.pdf.
[64] NSW Treasury, "Treasury Circular TC14-28, "accessed August 27, 2021, https://www.treasury.nsw.gov.au/sites/default/files/pdf/TC14-28__Parameter_and_Technical_Adjustments_and_Measures_%28New_Policy%29.pdf.

- **NSW Government Business Case Guidelines TPP18–06**
  The NSW Government Business Case Guidelines[65] have been developed to help agencies and government entities with the preparation of business cases in line with best practice. The guidelines are supported by a suite of templates and tools, and involve three main stages:

  - Stage 0: Problem Definition
  - Stage 1: Strategic Business Case
  - Stage 2: Detailed Business Case.

- **NSW Submission of Business Cases TC12/19**
  The requirement to complete a business case is based on the size and risk profile of the project or programme. TC12/19[66] sets out the various estimated total cost ranges for which preliminary and final business cases, and risk assessments, are required.

- **NSW Government guidelines for economic appraisal and cost benefit analysis TPP17–03**
  This Treasury policy and guidelines[67] set the expectation for a consistent approach to appraisal and evaluation of public projects, programmes and policies across the NSW Government, and include an explanation of cost benefit analysis for analysts and advisers.

- **NSW Gateway Policy TPP17-01**
  This policy[68] requires major capital projects to be subject to a gateway review process to mitigate the risks associated with investing in major projects and support the effective delivery of government objectives. The gateway review process is an independent assurance process for capital projects that have a value of A$10 million or more and is a principles-based approach with risk being the key driver for determining its application. Risk-based assurance means that different levels of assurance and reporting are applied proportionate to a potential risk profile.

3.2.2. Infrastructure New South Wales

Infrastructure NSW (INSW) was established as an independent government agency in July 2011 to help the NSW Government in identifying and prioritising the delivery of critical public infrastructure for NSW. It prepares a series of plans relating to infrastructure requirements for the state for the future. INSW prepares a series of documents and frameworks, including:

- **State Infrastructure Strategy**
  The State Infrastructure Strategy (SIS)[69] is a 20-year infrastructure investment plan for the NSW Government that places strategic fit and economic merit at the centre of investment decisions. It sets out Infrastructure NSW's independent advice on the current state of NSW's infrastructure and the needs and priorities over the next 20 years.

  The 2018–2038 SIS (Building Momentum) looks beyond the current projects and identifies policies and strategies needed to provide the infrastructure that meets the needs of the growing population and the growing economy. In the health sector, a key recommendation of the SIS is for NSW Health to develop a robust 20-year health infrastructure strategy. This would achieve a co-ordinated and integrated response across government, non-government and private sector providers of health

[65] NSW Treasury, "TPP18-06," accessed August 27, 2021, https://www.treasury.nsw.gov.au/sites/default/files/2021-05/TPP18-06%20%20NSW%20Government%20Business%20Case%20Guidelines.pdf.
[66] NSW Treasury, "Treasury Circular TC12-19," accessed August 27, 2021, https://www.treasury.nsw.gov.au/sites/default/files/2017-03/TC12-19_Submission_of_Business_Cases_dnd.pdf.
[67] NSW Treasury, "TPP17-03," accessed August 27, 2021, https://arp.nsw.gov.au/tpp17-03-nsw-government-guide-cost-benefit-analysis.
[68] NSW Treasury, "TPP17-01," accessed August 27, 2021, https://arp.nsw.gov.au/tpp17-01-nsw-gateway-policy
[69] Infrastructure NSW, "State Infrastructure Strategy," accessed August 27, 2021, https://www.infrastructure.nsw.gov.au/expert-advice/state-infrastructure-strategy/.

services, where the strategy should focus on delivering new models of care, investing in fit-for-purpose health infrastructure and accessing the benefits of technology for future services.

- **NSW Government Infrastructure Pipeline**
  Infrastructure NSW publishes the NSW Government Infrastructure Pipeline,[70] which brings together all the NSW Government infrastructure projects expected to come to market over the next five years with a minimum capital value of over A$50 million. The pipeline is updated periodically, in consultation with delivery agencies as and when key projects details are known, for example, procurement strategy, estimated procurement and construction start dates.

- **Infrastructure Investor Assurance Framework**
  The Infrastructure Investor Assurance Framework (IIAF)[71] is a risk-based assurance process administered by Infrastructure NSW for the state's capital projects, the purpose of which is to identify the level of confidence that can be provided to Cabinet that the state's capital projects are being effectively developed and delivered. It involves a series of short, focused, independent expert reviews, held at significant decision points in a project's lifecycle, being Gates 0 to 6, where reviews are carried out at the go/no go, strategic options, business case, readiness for market, tender evaluation, readiness for service and benefits realisation stages of the project. The IIAF assurance reviews are appraisals of infrastructure projects that highlight risks and issues, which if not addressed may threaten successful delivery. Gateway reviews conducted at the preliminary and final business case stages provide opportunities for NSW Health to address any identified quality and compliance issues that pose a risk to decision-making and the project.

- **Infrastructure Investor Assurance Committee**
  The Infrastructure Investor Assurance Committee provides senior government oversight and strategic perspective on matters related to the IIAF. It ensures the Government's key infrastructure projects across NSW are delivered on time and on budget through the implementation of the IIAF. The Committee ensures that Cabinet is supported by effective tools to monitor the NSW Government's infrastructure programme, it receives early warning of any emerging issues, and acts ahead of time to prevent projects from failing.

- **Gateway and Health Check Reviews – Health**
  Health projects with an estimated total cost of A$10 million and above are registered on the INSW portal and assigned a project tier classification (where Tier 1 projects are deemed high risk and Tier 4 low risk), and the following requirements apply:[72]
    - Tier 1 projects are required to go through Gate 0 to Gate 6 reviews
    - Tiers 2 to 4 projects are required to go through certain Gates based on a case-by-case review.

[70] Infrastructure NSW, "NSW Infrastructure Pipeline," accessed August 27, 2021, https://www.infrastructure.nsw.gov.au/industry/construction-industry/nsw-infrastructure-pipeline/.
[71] Infrastructure NSW, "Infrastructure Investor Assurance Framework," updated February 2020, https://www.infrastructure.nsw.gov.au/media/2095/infrastructure-investor-assurance-framework_february-2020.pdf.
[72] Infrastructure NSW, "NSW Gateway Reviews," updated February 2020, https://www.infrastructure.nsw.gov.au/project-assurance/resources/nsw-gateway-reviews/.

3.2.3. Audit Office of New South Wales

The Auditor-General carries out financial and performance audits, special reviews and compliance engagements.[73]

The Audit Office has recently carried out a performance audit on the delivery of health infrastructure by NSW Health. The performance audit on health capital works[74] in August 2020 assessed the effectiveness of planning and delivery of major capital works to meet demand for health services in NSW and examined 13 business cases for eight discrete projects over a 10-year period to determine whether:

- the NSW Ministry of Health has effective procedures for planning and prioritising investments in major health capital works
- HI develops robust business cases for initiated major capital works that reliably inform government decision-making
- HI has effective project governance and management systems that support delivering projects on time, within budget and achievement of intended benefits.

It determined that:

- there was a blurring of responsibilities between NSW Health and HI in respect of the process of prioritisation, the development of business cases and opportunities to undertake more robust assessments against non-capital options during the project development phase
- HI's project governance, risk assessment and management systems could be improved to enable greater transparency of decision-making processes related to approval of project scope changes and subsequent release of approved project contingency funds, which impact project cost and time outcomes.

NSW Health accepted most of the audit recommendations and has (or is in the process of) implementing them.

3.2.4. NSW Ministry of Health

The NSW Ministry of Health supports the executive and statutory roles of the health sector and Portfolio Ministers. Its 'system manager' role includes responsibility for co-ordinating the planning of statewide health network services, workforce, population health, asset and capital works planning, and providing advice to the Minister for Health and the Minister for Mental Health on these matters. Two main divisions within the NSW Ministry of Health are:

- **Health System Strategy and Planning Division:** The Strategic Reform and Planning branch within the Health System Strategy and Planning Division[75] is responsible for capital planning and investment and develops the NSW Health Facility Planning Process and NSW Health State-wide Investment and Prioritisation Framework.
- **Finance and Asset Management Division:** The Asset Management branch within the Finance and Asset Management Division[76] is responsible for the Asset and Facilities Management Online system, which is a critical enabling tool to identify statewide asset management opportunities and provides data to support NSW health entities in local asset programme prioritisation. Implementation support for the Asset and Facilities Management Online system is being provided following the introduction

[73] Audit Office of New South Wales, "The effectiveness of the financial arrangements and management practices in four integrity agencies," accessed August 27, 2021, https://www.audit.nsw.gov.au/our-work/reports/health-capital-works.
[74] Audit Office Of New South Wales, "Health Capital Works," accessed August 27, 2021, https://www.audit.nsw.gov.au/our-work/reports/health-capital-works.

[75] NSW Health, "Structure".
[76] NSW Health, "Annual Report 2019–20".

of the NSW Health Asset Management Framework in 2022, predominantly drawn from the existing plans developed in response to the previous asset management policy (Total Asset Management).

The quality of the inputs into the system varies across the local health districts and speciality networks, and the NSW Ministry of Health is continuing to advocate to improve and standardise this information. Asset management plans provided by each local health district and specialty networks were a major input to informing the NSW Health Asset Strategy, providing detail of potential future capital investments, asset maintenance and asset disposals.

Several policies and plans are relevant to the development health infrastructure, including:

- **State Health Plan: Towards 2021**
  The *State Health Plan: Towards 2021* (State Plan)[77] is the main plan governing the operation of the NSW public health system and individual health agencies that aims to align with NSW Government policy and reflect the goals and targets for health in the State Plan.

  Strategy Four, Designing and Building Future Focused Infrastructure, outlines NSW Health's infrastructure proposal, including:
  - deliver the NSW Government's committed major investments for the next five years
  - better plan capital requirements based on service needs
  - grow partnerships in developing health facilities and equipment
  - look to non-capital solutions to deliver care.

This strategy will be shortly superseded by the Future Health 2021–31 strategy, which is nearing finalisation.

- **Corporate Governance and Accountability Compendium – February 2019**
  The Corporate Governance and Accountability Compendium[78] outlines the governance requirements that apply to NSW health organisations including their roles, relationships and responsibilities.

  Section 6, Strategic and Service Planning of the compendium outlines the responsibilities for strategic planning. The NSW Ministry of Health's involvement in the planning process ranges from setting broad directions to leading specific planning exercises. Asset-related activities include:
  - system-wide planning for information management, assets and procurement
  - providing guidelines, information and tools to facilitate local health service planning.

- **NSW Health 20-Year Health Infrastructure Strategy**
  In 2019, the NSW Ministry of Health developed the 20-Year Health Infrastructure Strategy (HI Strategy)[79] in response to the recommendation from Infrastructure NSW that supports the future delivery of health services and informs future planning for infrastructure investment for the health districts, networks and services. The HI Strategy was endorsed by the NSW Delivery and Performance Cabinet Committee in April 2020.

[77] NSW Health, *State Health Plan: Towards 2021* (North Sydney NSW: NSW Health, 2014).
[78] NSW Health, "Corporate Governance and Accountability Compendium," accessed August 27, 2021, https://www.health.nsw.gov.au/policies/manuals/Pages/corporate-governance-compendium.aspx.
[79] NSW Health, "20-Year Health Infrastructure Strategy," accessed August 27, 2021, https://www.health.nsw.gov.au/priorities/Pages/his-overview.aspx.

- **NSW Health State-wide Investment and Prioritisation Framework**
  The NSW Health State-wide Investment and Prioritisation Framework (Framework)[80] is an overarching guidance document that aligns the investment directions set out in the Health Infrastructure Strategy with NSW health organisations that undertake annual clinical service and/or asset strategic planning - it is anticipated that this year will be the first year in which it is fully implemented. The intention of the Framework is to provide clear guidance to health organisations on the types of investment proposals required to respond to the long-term health challenges facing the NSW health system and outlines the basis for which the NSW Ministry of Health will review and prioritise investment proposals in the 10-year Capital Investment Strategic Plan.

  The Framework provides the link between the investment directions set out in the HI Strategy and health organisations' clinical service and/or asset planning and prioritisation.

- **Streamlined investment decision process for health capital projects**
  NSW Health has developed a streamlined investment decision process for health capital projects with an estimated total cost above A$10 million rated as Tier 2–4 by Infrastructure NSW.[81] This is provided for these projects, instead of a final business case, to support the investment decision and includes only key project information required for State Budget approval. A final business case must still be submitted for a high profile and/or high risk Tier 1 project unless agreed otherwise.

  The estimated total cost for the project is based on HI's cost planning standards and includes the anticipated recurrent cost impacts of the facility.

- **Ten-year Capital Investment Strategic Plan**
  Each year, the NSW Ministry of Health considers the priority projects for capital investment identified by each district for inclusion within its statewide 10-year capital investment strategic plan. This plan identifies proposed capital investments within NSW Health over a 10-year horizon informed by the review of local health service priorities and the capital expenditure authorisation limit set by the Treasury each year.[82] Once the 10-year Capital Investment Strategic Plan is approved by the NSW Minister for Health, it is submitted to the Treasury for consideration as part of the annual State Budget process.

- **NSW Health Facility Planning Process Guidelines**
  The NSW Health Facility Planning Process Guidelines provide a framework for prioritising, planning, delivering and evaluating capital infrastructure across the NSW public health system. The guidelines are integrated with NSW Health's priorities, policies and approaches to ensure the efficient allocation and use of health resources. NSW health organisations are required to use these guidelines for capital investment projects and programmes valued at $10 million and above.

  In 2020, the NSW Ministry of Health finalised an update of the Facility Planning Process to reflect a contemporary facility planning framework, integrated service planning and government changes to capital policies.

[80] NSW Health, "NSW Health Facility Planning Process," accessed August 27, 2021, https://www1.health.nsw.gov.au/pds/Pages/doc.aspx?dn=GL2020_018.
[81] NSW Auditor-General's Office, NSW Auditor-General's Report to Parliament – Health Capital Works, accessed August 27, 2021, https://www.audit.nsw.gov.au/sites/default/files/documents/Health%20capital%20works%20-%20Appendix%20five.pdf.
[82] NSW Treasury, "Capital Planning," accessed August 27, 2021, https://www.treasury.nsw.gov.au/information-public-entities/capital-planning.

- **Support for infrastructure planning**
  NSW Health provides the following support to the local health districts and specialty networks in infrastructure planning:
    - Clinical Service Planning Analytics: this is the NSW Ministry of Health's IT platform that provides the NSW Health planning community with a range of data analytics tools, including activity projections and modelling tools and resources and training material to support evidence-based service planning. It includes data on population growth and ageing, changing patterns of disease, and clinical practice that may affect demand for services.[83]
    - Clinical Services Planning Guide: the guide identifies the information to be included in a Clinical Service Plan (CSP) developed to inform the scope of a capital investment decision and related priorities in the local health district's Asset Strategic Plan.[84] The guide emphasises the CSP should specify the changes in models of care, technology, support services, staffing and other enablers relevant to the proposed investment to meet current and projected service needs but does not need to determine infrastructure delivery options.
    - NSW Health Guide to Cost-Benefit Analysis of Health Capital Projects (CBA Guide): In 2018, NSW Health refreshed its CBA Guide to supplement the NSW Government's Guide to Cost-Benefit Analysis by focusing on the application of cost benefit analysis to health capital investment proposals.[85] The CBA Guide states local health districts and speciality networks should ensure they consider a wide range of service options to meet identified population health needs so the most appropriate options can be assessed. It highlights the importance of the range of options developed at the early planning phase, both capital and non-capital, in shaping the options considered by the CBA Guide.

3.2.5. eHealth New South Wales

eHealth NSW is an organisation within the NSW Ministry of Health that provides statewide leadership on the shape, delivery and management of ICT-led health care.[86] It is responsible for setting eHealth strategy, policy and standards, and works with local health districts and health agencies to implement statewide core systems and ensure compliance with statewide standards.

3.2.6. Local health districts and specialty networks

Local health districts (LHDs) and specialty networks (SNs) are responsible for effectively planning health services over the short and long term to enable service delivery that is responsive to the health needs of their defined population, which includes developing various service and related asset and capital investment plans. LHDs' and SNs' asset strategic planning is based on the Health Care Services Plan, and the relevant Boards ensure strategic plans to guide the delivery of services are developed for the LHDs or SNs, and for approving those plans. LHDs and SNs develop and maintain the following register and plans:

- LHD Asset Management Plans and Asset Registers: Each LHD and SN identifies the assets that should be maintained, disposed of, retained or enhanced through capital investment, based on its analysis of current and future service needs. Identified gaps in the performance of assets provide the basis for capital investment priorities listed and are then incorporated into the LHD

[83] NSW Health, "NSW Health Facility Planning Process".
[84] NSW Health, "Strategic and Service Planning," accessed August 27, 2021, https://www.health.nsw.gov.au/policies/manuals/Documents/cgc-section6.pdf.
[85] NSW Health, "Guide to Cost-Benefit Analysis of Health Capital Projects," accessed August 27, 2021, https://www1.health.nsw.gov.au/pds/ActivePDSDocuments/GL2018_021.pdf.
[86] NSW Health. "Structure".

Strategic Asset Management Plan and Asset Management Plan and submitted to the NSW Ministry of Health.

- LHD Clinical Service Plans: LHDs also develop clinical service plans to inform the scope of proposed new developments by more specifically defining the needs of larger projects and complex clinical services.[87]

3.3. Health Infrastructure New South Wales

Established in 2007, HI is a business unit within NSW Health's Public Health System Support Division of the Health Administration Corporation. It is one of three 'shared service' units providing centralised, statewide services to LHDs and SNs, the other two being eHealth and HealthShare.

HI is responsible for the delivery of the NSW Government's major works hospital and health services programme under the auspices of a Board appointed by the Secretary. The Board members each offer specialised expertise in areas of health and infrastructure delivery.

HI has grown significantly since its initial establishment in 2007, when it managed A$2.4 billion of projects to managing A$20 billion of projects in 2020–21.

HI delivers capital works valued over $10 million. Projects below this limit are delivered by the LHDs and SNs. In circumstances where the LHDs or SNs do not have the necessary skills and expertise to deliver, they contract HI or Public Works Advisory, an NSW Government agency, to carry out this work on their behalf.

Since its establishment, HI's role has evolved significantly to include asset and facility advisory and management services, health precinct planning and development, and commercial services to drive partnership and investment in health precincts and research and development initiatives.

In 2017, HI established an asset management unit to support LHDs and networks to meet the asset management requirements set out by NSW Treasury, INSW and the NSW Ministry of Health.

This unit has evolved to become the Asset and Project Advisory branch, providing expertise, systems and processes to support LHDs and networks, to inform infrastructure decision-making, to optimise operational efficiencies for existing facilities and to work towards compliance with the NSW Government Asset Management Policy by 2024.

In 2020, HI established a development and commercial business unit bringing together existing HI development and property functions with the precincts and partnerships function in NSW Ministry of Health.

HI is now leading NSW Health's precinct planning and development, including cross-government co-ordination, to ensure a co-ordinated approach to planning and investment. HI also expanded its commercial services to drive partnerships and investment in precincts across the cluster and support research and development commercialisation.

[87] Audit Office of New South Wales, "Health Capital Works."

3.3.1. Organisation

HI operates a 'thin client' model, whereby it has responsibility for the programme of health infrastructure works and directs each of the projects in their design and delivery. The project management, design, engineering, scheduling, cost management and other such tasks are carried out by external service providers under the direction of the HI project team. All construction work is carried out by external contracting organisations.

HI arranges or helps in the engagement of external advisers to the LHDs in any construction-related or commissioning activities they must carry out on projects. HI remains involved in all aspects of the development and delivery of a facility from the early strategic business case through to the successful handover of a completed facility for clinical commissioning.

HI is split into three major branches responsible for delivering on the functional aspects of the business.

These three branches are a collection of all the services needed to run the HI unit and include:

- The Assets and Project Advisory unit that oversees both the management of the asset management framework and planning, as well as all the 'consulting services' provided to LHDs in all phases of their infrastructure planning, facility design and business case development. This group also advises on medical and facility equipment and fittings.
- The Commercial and Development unit that leads health precinct planning and development including partnership strategies and investment, commercial negotiations and deeds, land and property services.
- The Strategy and Operations unit that covers the more standard corporate services (for example, legal, finance, procurement) and business strategy and performance including assurance and continuous improvement of the organisation's processes and capability.

The capital programme is delivered through three geographic-based business units: Western Region, Northern Region and Rural and Regional, to provide a clearer line of focus between the programme delivery and the LHD for which the facility is being developed.

HI does not have a centralised project management office (PMO). Those functions are delivered by a combination of the three central groups, the delivery teams and the consultants that are engaged on a project-by-project or programme basis. HI is currently considering the establishment of a central PMO to co-ordinate data capture, analysis and reporting.

3.3.2. Processes and procedures

The process of planning and delivering a facility comprises five interconnected stages aligned with the project lifecycle. LHDs and SNs lead the planning process within their respective areas, while the NSW Ministry of Health plays a 'system manager' role and HI has a 'delivery' role. HI leads Stages 1 to 4 in partnership with the LHD or SN and is responsible for implementing the procurement strategy, overseeing construction and commissioning, managing delivery risks, scope changes, and for delivering the project on time and within budget. [88]

[88] Audit Office of New South Wales, "Health Capital Works."

The five stages are as follows:

- **Stage 0 – Principles, Planning & Prioritisation:** the objective is to identify potential projects aligned with local service needs, system-wide objectives and Government policy using a collaborative approach and identifying potential investment priorities. HI participates in the collaborative planning approach and prepares Gateway / Health Check Reviews.
- **Stage 1 – Services & Facilities Needs Analysis:** the objective is to robustly analyse a spectrum of options to maximise benefits and improve the efficiency of the health system and to produce an investment decision document. HI leads service delivery planning, options analysis, cost benefit analysis, cost benefit estimates, risk management, and investment decision document in partnership with LHD or SN. It also prepares Gateway / Health Check Reviews.
- **Stage 2 – Project Definition:** the objective is to develop an evidence base that proves that the preferred option best meets the service need and maximises benefits at optimal cost and to prepare a final business case. HI leads options analysis, cost benefit analysis, procurement strategy, parameter refinement, risk management, and the final business case in partnership with LHD or SN. It also prepares Gateway / Health Check Reviews.
- **Stage 3 – Implementation:** the objective is to develop an approach to market and delivery scope that will realise the intended benefits of the project, to develop the tender documents and to award and deliver the project. HI prepares procurement strategy, market approach, and construction / commissioning. It also prepares tender documents and Gateway / Health Check Reviews.
- **Stage 4 – Evaluation:** the objective is to understand how well the intended benefits and outcomes have been realised and what can be learned from the project and to produce an evaluation report and next steps for lessons learned. HI prepares prioritisation, strategy, evaluation and closing the loop phases. It also prepares Evaluation and Next Steps Report and Gateway / Health Check Reviews.

3.4. Health Infrastructure delivery model

The HI delivery model has undergone continuous development and enhancement since its inception in 2007. The following are the main features of the HI delivery model, which differ slightly from its counterparts in other jurisdictions:

- **Accountability for budget**
  The estimated total cost in the Budget papers includes the cost of the design and construction of the facility, ICT and furniture, fixtures and equipment (FF&E) costs, contingencies and HI, LHD and SN internal costs. HI takes responsibility for all costs associated with the delivery of a project.
- **Contingency**
  Contingency is set and managed by HI, except for 'management contingency', which can only be released with the approval of NSW Health.
- **Public private partnerships**
  In NSW, any public infrastructure project with a total estimated capital value exceeding A$100 million must be assessed for possible public private partnership procurement.

- **Procurement**
  HI is accredited by NSW Treasury to procure both consultants and contractors. HI has developed its own procurement policies and processes which enable it to rapidly seek tenders and award contracts whilst remaining compliant with the NSW procurement policy. HI also provides a cut down version of these processes for use by LHDs and SNs.
- **Information communication technology and furniture, fixtures and equipment**
  The ICT-related infrastructure required to successfully commission and operate a facility is provided as part of the project. Legacy systems requiring upgrade to support new infrastructure are also included. Procurement of FF&E, where it is not available to be transferred to a replacement facility, is also included in the project costs.
- **Standard form contract**
  NSW Health has created the NSW Health standard form contract HGC21 (a version of the standard contract form GC21), which is used for all projects and is well understood by the market.
- **Payments**
  HI makes its own payments to consultants and contractors, enabling payments to be made within the periods as required under the contract.
- **Australasian Health Facility Guidelines**
  NSW Health and HI rigorously implement the Australasian Health Facility Guidelines[89] and are strong supporters of their continued development.
- **Market development**
  HI attempts to be as transparent as possible with the market in terms of the future project pipeline, not only for the major projects but also for regional work. It works with other NSW Government agencies to try to ensure it can identify contractors that are suited to the available projects, are not overstretched and can operate effectively in the proposed localities. It tries to ensure an appropriate spread of projects amongst suitable contractors and is constantly seeking to expand the pool of consultants and contractors from which it can draw.

3.5. New South Wales project prioritisation process

3.5.1. New South Wales new prioritisation framework

The Ministry is developing a new investment framework that will set out a series of investment principles and a new statewide prioritisation methodology that are intended to provide clear guidance on the types of investment proposals the system requires.[90]

LHDs will continue to lead on local planning and prioritisation, but the state's investment principles and prioritisation methodology will guide clinical and asset planning and development of local priorities to ensure alignment.

The NSW Ministry of Health will assess LHD priorities against the new prioritisation methodology when determining priorities and sequencing of investment in NSW Health's 10-year Statewide Investment Strategic Plan.

[89] Australian Health and Facility Guidelines, "Health Facility Guidelines".
[90] Audit Office of New South Wales, "Health Capital Works."

3.5.2. Capital Investment Strategic Plan

The Capital Investment Strategic Plan (CISP) has a 10-year horizon and outlines the aggregation of NSW Health's capital projects based on needs and priorities, including estimated total costs and cash flow for the annual budget process (Year 1) and forward estimates period (Years 2–4).

Future priority projects that are likely for inclusion in the outer years (Years 5–10) are also identified. Capital investment projects approved for inclusion in the NSW Health Asset Strategy and Forward Capital Investment Strategic Plan are prioritised in the context of competing statewide investment needs and the constraints of funding allocations made available to NSW Health through the annual Budget process.

3.5.3. New South Wales state budget process

NSW Health goes through the annual budget process (Year 1) and forward estimates period (Years 2–4) in the normal manner. Thus, the NSW Treasury is able to vary the spend on a year-to-year basis to accommodate any external factors that may affect the state budget. Any one-off commitments or federal government grants can be incorporated within the programme by making suitable adjustments at that time.

3.6. Health Infrastructure performance

HI was one of the first specialist capital works groups set up within an NSW government agency. It is now a common approach to provide a separate structure and governance for infrastructure delivery (particularly within agencies that have a substantial recurrent spend).

HI is delivering the second largest infrastructure programme in NSW and has delivered over 170 projects since 2011. In 2019–20, HI achieved its biggest year to date, delivering just over A$2 billion in infrastructure planning and construction, and completing 23 projects across NSW.

The separation of capital works from service delivery has enabled NSW Health to introduce the appropriate framework and disciplines to maximise the probability that projects that are delivered meet the requirements of the business case in terms of time, cost, quality and benefits provided.

As noted, the Audit Office of NSW recently released a performance audit of health capital works.[91] It had several criticisms around the process of prioritisation, the development of business cases and the lack of assessments carried out against non-capital options. It also considered responsibilities were blurred between the NSW Ministry of Health and HI in these areas and that substantial delays and budget overruns on some major projects indicated HI's project governance, risk assessment and management systems could be improved.

HI has agreed that enhancements to the governance and project management systems will be incorporated into its corporate plan for the 2021 to 2023 period.

[91] Audit Office of New South Wales, "Health Capital Works."

3.7. Health Infrastructure operating model

Some features of the HI operating model are worthy of consideration for the New Zealand Health Infrastructure Unit, including the:

- requirement for authorised representatives of government agencies to attest to compliance with the core requirements of the Asset Management Policy
- use of a streamlined investment decision process for low- to medium-risk health capital projects instead of a final business case to support the investment decision; it includes only the main project information required for Budget approval
- provision of guidance material to identify the information to be included in a clinical service plan (CISP) developed to inform the scope of a capital investment decision and related priorities in the Asset Management Plan. The guide emphasises the CISP should specify the changes in models of care, technology, support services, staffing and other enablers relevant to the proposed investment, to meet current and projected service needs but does not need to determine infrastructure delivery options
- provision of guidance material for the cost-benefit analysis of health capital projects focusing on the application of cost-benefit analysis to health capital investment proposals.

4. Victoria – Current State

4.1. Victorian health system

Victoria has a predominantly urban population of almost 6.7 million people. As at 30 June 2018, 75% of people lived in Melbourne and 25% in non-metropolitan areas of the state.

4.1.1. Organisations

The Victorian health system comprises several organisations, including:

- the Department of Health, which has a broader administrative role supporting the health, ageing and mental health portfolios
- thirteen metropolitan and six regional health services (established under the Health Services Act 1988 (Vic), which are responsible for planning health services (including delivery of projects worth A$20 million to A$30 million where the health service has significant capability in delivery)
- three denominational hospitals delivering public health services in Victoria; the Boards for these entities are required to comply with the Health Services Act 1988 (Vic) in relation to providing public health services
- nine subregional health services, 11 local health services and 47 smaller rural health services, which are all defined in the Health Services Act 1988 (Vic) as 'public hospitals' and are governed by boards. Mildura Base Hospital is a privately operated subregional health service that delivers public health services under contract with the Victorian Government
- the Victorian Health Building Authority (VHBA), which is responsible for planning, delivery and oversight of infrastructure projects. VHBA delivers projects if the project risk is high and the competence of the health service capital team is low. Project delivery is divided according to the type of project (that is, high-risk projects report to one group, with lower value and lower risk projects reporting to another).

While the establishment of VHBA is relatively recent, the delivery of health infrastructure using a centralised structure has been operating for around 10 years.

4.1.2. Portfolio and funding

The health portfolio of assets includes over 2,500 critical health facilities valued at A$16.6 billion. The 2021/22 capital budget across the health sector is A$1.2 billion.[92] VHBA has A$8.35 billion of projects currently active.

[92] Victorian Premier, "Helping Our Health System Recover From Coronavirus."

4.2. Government entities involved in health infrastructure

Several other government entities are involved in identifying, prioritising, funding and delivering health infrastructure projects, as discussed below.

4.2.1. Department of Premier and Cabinet

The Department of Premier and Cabinet plays a role in broad policy development and providing advice to government through the Social Policy and Intergovernmental Relations Group, which brings together social policy expertise with co-ordination of the state's intergovernmental relations. The Social Policy and Intergovernmental Relations Group is responsible for intergovernmental relations and the education, justice, health, families, fairness and housing, and community, security and emergency management portfolios.

4.2.2. Department of Treasury and Finance

The Department of Treasury and Finance (DTF) also plays a role in broad policy development and providing advice to government. It is the lead in economic, financial and resource management, and formulating and implementing the Government's budgetary and financial policy objectives. The relevant DTF policies are summarised below.

- **Asset Management Accountability Framework**
  The Asset Management Accountability Framework (AMAF) helps Victorian public sector agencies manage their asset portfolios,[93] which applies to physical assets controlled by government departments, agencies, corporations, authorities and other certain bodies.

  The AMAF is premised on a non-prescriptive, devolved accountability model of asset management. This allows public sector bodies to manage their assets in a manner consistent with government requirements, their own specific operational circumstances and the nature of their asset base.

  The AMAF details mandatory asset management requirements as well as general guidance for agencies responsible for managing assets. Mandatory requirements include developing asset management strategies, governance frameworks, performance standards and processes to regularly monitor and improve asset management. The requirements also include establishing systems for maintaining assets and processes for identifying and addressing performance failures.

  Additionally, secretaries and public sector boards, must attest to their agency's compliance with the mandatory requirements of the AMAF in their annual report, and self-assess their organisation's asset management maturity every three years.

- **Gateway review process**
  The gateway review process is delivered by the ICT and Project Assurance team of the DTF. All high-value high-risk investments are required to undergo the gateway review process.[94] The process examines projects and programmes at six main decision points in their lifecycle and involves using an independent external reviewer team to provide timely and confidential advice about progress and likelihood of delivery success.

[93] Department of Treasury and Finance Victoria, "Asset Management Accountability Framework," accessed August 30, 2021, https://www.dtf.vic.gov.au/infrastructure-investment/asset-management-accountability-framework.
[94] Department of Treasury and Finance Victoria, "Gateway Review Process," accessed on August 30, 2021, https://www.dtf.vic.gov.au/infrastructure-investment/gateway-review-process.

Project assurance reviews (PARs) complement the Gateway process and are an important element of DTF's assurance framework. PARs provide timely independent advice to government, responsible departments and/or agencies and the DTF, on a project or programme's current progress and its objectives, governance and readiness. PARs include bespoke terms of reference developed by the DTF or the Office of Projects Victoria in consultation with project teams.

- **High Value High Risk Framework**
  Under the High Value High Risk Project Assurance Framework (HVHR Framework), infrastructure and ICT projects identified as being high value or high risk are subject to more rigorous scrutiny and approval processes.[95] The HVHR Framework comprises a series of project assurance checks and processes for HVHR projects to increase the likelihood they will achieve their stated benefits and be delivered successfully on time and to budget.

- **Project Profile Model**
  The Project Profile Model is the first step in the gateway process and is DTF's risk-based assessment tool to determine whether a project should be subject to the HVHR Framework. The Project Profile Model provides a standard set of high-level criteria for assessing the degree of complexity of a proposed asset investment.[96] It is intended to be used as a starting point in assessing the likely levels of risk associated with the programme or project. It is a high-level indicator and not an exhaustive risk analysis model, although it can form the basis of a fuller programme or project risk analysis.

4.2.3. Office of Projects Victoria

The Office of Projects Victoria provides quality advice to the Victorian Government on developing and building major infrastructure projects and is responsible for:

- monitoring the performance of the state's high value high risk infrastructure projects and provides strategic advice to project teams and the Government
- working with departments and delivery agencies to address systemic project delivery issues and constraints. It hosts the Construction Leadership Group bringing together infrastructure delivery leaders on a quarterly basis
- providing support, technical advice and recommendations to project delivery teams and government on avenues to improve project outcomes
- hosting the Victorian Major Projects Pipeline, which lists future projects by estimated value, region, project type and relevant delivery agency. It is updated quarterly as new major projects are announced and budgeted.

4.2.4. Infrastructure Victoria

Infrastructure Victoria is an independent advisory body with three functions:
- preparing a 30-year infrastructure strategy for Victoria, which is refreshed every three-to-five years
- providing written advice to government on specific infrastructure matters
- publishing original research on infrastructure-related issues.

Infrastructure Victoria also supports government departments and agencies in the development of sectoral infrastructure plans.

[95] Department of Treasury and Finance Victoria, "High Value High Risk Framework," accessed on August 30, 2021, https://www.dtf.vic.gov.au/infrastructure-investment/high-value-high-risk-framework.
[96] Department of Treasury and Finance Victoria, "Gateway Review Process."

The draft 30-year infrastructure strategy takes an integrated, cross-sectoral view of infrastructure planning, making 95 draft recommendations to the Victorian Government across both metropolitan and regional Victoria,[97] and health-related recommendations including:

- Recommendation 21: Use innovation to deliver better models of healthcare;
- Recommendation 32: Produce public plans for priority infrastructure sectors;
- Recommendation 58: Upgrade and rebuild public hospital infrastructure;
- Recommendation 60: Expand the legislated definition of critical infrastructure and improve information flows;
- Recommendation 74: Build new hospital capacity;
- Recommendation 75: Deliver infrastructure for a better mental health system; and
- Recommendation 88: Use rural schools for children's specialist and allied telehealth.

4.2.5. Victorian Auditor-General's Office

The Auditor-General's Office provides assurance as to how effectively public sector agencies are providing services and using public money. This is achieved through an annual programme of financial and performance audits of state and local government public sector entities. The Victorian Auditor-General's report on managing major projects in August of 2015 was a catalyst for government reforms in the delivery of infrastructure and the creation of the VHBA.

4.2.6. Victorian Department of Health

The Victorian Department of Health advises the Government on health strategy, policy, planning, funding allocation and the performance of health services, and helps and advises the Minister on:

- service and capital planning
- funding policy and allocation.

The Deputy Secretary, Infrastructure leads the Department's infrastructure programme through the VHBA. The organisational structure for the Department can be found at: https://www.vic.gov.au/sites/default/files/2021-05/department-health-senior-management-structure.pdf

Several documents and frameworks govern the Department.

- **Health 2040 strategy**
  This strategy outlines the Department's vision for the delivery of health care into the future and the principles that will be used in developing a vision for a future health system.[98]

- **Victorian Public Health and Wellbeing Plan 2019–2023**
  The Victorian Public Health and Wellbeing Act 2008 requires the preparation of a state public health and wellbeing plan every four years. The Victorian public health and wellbeing plan 2019–2023 is the current plan[99] and is the primary mechanism through which the Department works to achieve its vision for the delivery of health care into the future.

- **Department of Health and Human Services Strategic Plan**
  The Department of Health and Human Services Strategic Plan sets the direction of the Department over four-years to respond to the challenges associated with the continued successful delivery of

[97] Victoria's Draft 30-Year Infrastructure Strategy was released on 9 December 2020 (Melbourne: Infrastructure Victoria, 2020), https://www.infrastructurevictoria.com.au/wp-content/uploads/2020/12/Victoria-s-Draft-30-Year-Infrastructure-Strategy-Volume-1.pdf.
[98] Department of Health and Human Services, State Government of Victoria, "Health 2040," accessed on August 30, 2021, https://www2.health.vic.gov.au/about/health-strategies/health-reform.
[99] Department of Health and Human Services, State Government of Victoria, "Public Health Wellbeing Plan," accessed on August 30, 2021, https://www2.health.vic.gov.au/about/health-strategies/public-health-wellbeing-plan.

health services.[100] It identifies that the Housing and Infrastructure Division includes the Victorian Health and Human Services Building Authority (now VHBA), which drives the delivery of the significant investment in infrastructure.

- **State-wide Design, Service and Infrastructure Plan for Victoria's Health System 2017–2037**
  The State-wide Design, Service and Infrastructure Plan for Victoria's Health System provides the planning framework to guide service, workforce and infrastructure investment in the health system over the 20-year period, including an initial five-year implementation plan, which includes a five-year infrastructure pipeline for Victoria.

- **Policy and funding guidelines 2020–21**
  The annual policy and funding guidelines represent the system-wide terms and conditions for government-funded health care organisations, which include health services and hospitals, and other organisations, such as Ambulance Victoria, primarily funded pursuant to a Statement of Priorities.[101] The guidelines articulate detailed information on various operational and service delivery policy items, including the conditions within which funded organisations operate, as well as the obligations, standards and requirements to which funded organisations are expected to adhere.

  Part 1 of the guidelines provides an annual publication identifying and highlighting to health services the novel policy changes for various delivered services. Section 12 – Capital Funding Programs, notes that the Department administers several capital grant programmes to assist health services with the costs of hospital infrastructure, including:

  - Infrastructure Renewal Contribution Grant – to help health services with the costs of replacing hospital infrastructure
  - Regional Health Infrastructure Fund – provides for regional and rural health services on a bid-based process and is managed by the Department centrally, based on delivery risk
  - Medical Equipment Replacement Program
  - Engineering Infrastructure Replacement Program.

  These funds support health services to manage risk and maintain patient safety, occupational health and safety, and service availability and continuity by enhancing the asset base and maintaining and replacing assets in a planned way.

  Part 2 of the guidelines outlines relevant standards and obligations to which funded organisations must adhere, ensuring the delivery of safe, high-quality services and responsible financial management. Section 23 – Asset and Environmental Management notes that health services must manage, maintain and replace assets in accordance with the Standing Directions and the AMAF.

  The Standing Directions require the chief executive officer of funded organisations (health services) to attest compliance with the requirements of the AMAF in their annual reports, and that their organisation complies with the requirements of the AMAF. In meeting its compliance with the AMAF, the Department requires health services to submit annual asset management plans and maintain accurate asset registers for all assets under their control. This requirement is for all the physical asset classes held and extends across all stages of the lifecycle, including planning, acquisition, operation and maintenance and disposal.

- **Strategic planning guidelines for Victorian health services**
  The Department provides guidance to health services in relation to infrastructure planning to form part of its strategic plan.

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[100] Department of Health and Human Services, State Government of Victoria, "Strategic Plan," accessed on August 30, 2021, https://www.dhhs.vic.gov.au/publications/department-health-and-human-services-strategic-plan.

[101] Department of Health and Human Services, State Government of Victoria, "Policy and Funding Guidelines," accessed on August 30, 2021, https://www.dhhs.vic.gov.au/policy-and-funding-guidelines-health-services.

- **Maintenance standards for critical areas in Victorian health facilities**
  Maintenance standards for critical areas in Victorian health facilities provide a set of general and additional maintenance standards that can be applied to all critical areas in hospitals and health services.[102] It is intended to clarify, standardise and formalise minimum standards and requirements for the maintenance of building services, such as air conditioning and ventilation systems in high-risk patient areas, within health facilities. VHBA is reviewing and further developing the maintenance standards over the next 12 months.

- **Department of Health and Human Services Annual Report**
  The Annual Report notes that changes to the way the Department is organised were implemented in 2019/20 financial year, including a new infrastructure division being established around the VHBA to provide a dedicated focus on strategic infrastructure initiatives.[103] It also notes the VHBA is responsible for the planning, delivery and oversight of infrastructure projects.
  The Department has the following capital-related committees:

  - **Capital Subcommittee:** responsible for ensuring the Department's capital priorities and that proposals of the Department align with service demand pressures and models of care, overseeing key programme-wide risks and opportunities, and ensuring a strategic approach to uses of the Department's land base.
  - **Finance and Budget Subcommittee:** provides stewardship of the Department's finance and budget-related matters, including oversight and advice on the strategic development and co-ordination of departmental finance and budget policy.
  - **Investment Subcommittee:** established in 2020, it oversees the investment case development phase of the Department's planning, investment and implementation cycle and provides assurance to the Executive Board that investment case proposals to be submitted for state Budget funding meet the Department's needs and the Ministers' expectations.

- **Victorian Health Services Governance Handbook**
  The Victorian Health Services Governance Handbook is a resource to help public health service board members and other interested parties to better understand the role of directors of health service boards and the operating environment of the public sector health service entities they govern.[104] It documents and summarises information on roles and responsibilities and consolidates statutory and policy-based elements, including those in the Health Services Act 1988 (Vic), other Acts, and policy and administrative documents and includes the following:

  - That developing strategic plans is an important element of the governance and accountability framework. Under the Health Services Act 1988 (Vic), metropolitan and major regional health services are required to prepare a strategic plan in accordance with any guidelines established by the Minister of Health. Once approved by the Minister of the Health, the Act requires a board to advise the Minister if it wishes to deviate from its approved strategic plan.
  - The strategic plans of health services have a three- to five-year outlook. They include the health service's role and objectives, and outline strategies to ensure the effective and efficient provision of health services and the financial sustainability of the health service. They provide the strategic context for the health service's annual statement of performance and should align with their service plan.
  - A separate process is involved for developing and agreeing a service plan for the health service, which is more detailed than the high-level strategic plan.

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[102] Department of Health and Human Services, State Government of Victoria, "Maintenance standards for critical areas in Victorian health facilities," accessed on August 30, 2021, https://www2.health.vic.gov.au/about/publications/researchandreports/maintenance-standards-for-critical-areas-in-victorian-health-facilities.

[103] Department of Health and Human Services, State Government of Victoria, "Annual Report 2019–2020," accessed on August 30, 2021, https://www.dhhs.vic.gov.au/publications/annual-report-department-health-and-human-services.

[104] State of Victoria, Department of Health, *The Victorian Health Services Governance Handbook: A resource for Victorian health services and their boards* (Melbourne: State of Victoria, Department of Health, 2012).

4.3. Victorian Health Building Authority

The VHBA was established in 2017 and is a branch of the Department of Health. As noted, it was originally the Victorian Health and Human Services Building Authority, however, the human services aspect of this role was recently separated from the health portfolio. VHBA has an advisory board providing governance support to the executive leadership team.

The VHBA is responsible for the planning, delivery and oversight of infrastructure projects, including:

- planning and building new hospitals and ambulance stations, aged care and mental health facilities
- redeveloping existing hospital facilities
- replacing and upgrading engineering infrastructure and medical equipment.

VHBA does not carry out asset maintenance but does ensure that health services have, and comply with, an asset management plan and accountability framework. VHBA is working on updating the guidance materials.
VHBA delivers infrastructure projects based on an assessment of project risk and complexity against the competence of the health service capital team. No criteria are defined for when health services can self-perform projects. However, the larger health services can carry out projects worth A$20 million to A$30 million. VHBA's capital spend has quadrupled from A$300 million to $500 million in 2017 to $1.2 billion in 2021.

4.3.1. Organisation

Like Health Infrastructure New South Wales, VHBA also operates a 'thin client' model, whereby it has responsibility for the programme of health works and directs each of the projects in their design and delivery.

The project management, design, engineering, scheduling, cost management and other such tasks are carried out by external service providers under the control of the VHBA Project Director. All construction work is carried out by external contracting organisations.

VHBA currently has one delivery report and four functional reports to the VHBA Chief Executive Officer:
- Executive Director, Delivery;
- Executive General Manager, Planning and Development;
- Executive General Manager, Asset Strategy;
- Executive General Manager, Communications and Engagement; and
- Executive General Manager, Business Services and Program Management Office.

In turn, the Executive Director, Delivery has two reports:
- Executive Director, High Value High Risk (HVHR) projects, and
- Executive Director, Health Capital Program.

The individuals above comprise the VHBA leadership team responsible for strategic direction and performance.

Rather than dividing the delivery projects up according to geography (as is done in NSW), Victoria divides them according to the type of project. The high-value and high-risk projects report into one group, with the lower value and lower risk projects reporting into another.

The project management office (PMO) is part of the Corporate Services group, reporting to one manager. This role also covers continuous improvement of Victoria's processes and capabilities. The Executive General Manager Planning and Development oversees all the advisory functions as well as the commercially focused roles. Asset management and planning is seen as significant enough to have a single role focused just on that. A large communications and engagement team focuses on external relations and brand, and two separate teams advise the two delivery groups.

4.3.2. Processes and procedures

The capital project lifestyle consists of four stages:

- **Proposal stage**: the initial planning and benchmarking phase of capital works projects.
- **Planning and evaluation stage**: the planning, evaluating and organising of capital works projects, including scoping, costing and preparation of the business case.
- **Delivery stage**: the delivery development, construction, commissioning and post-occupancy of capital works projects. including development and implementation.
- **Operation stage.**

Much of the embedded knowledge within the Department and VHBA in relation to capital planning and delivery is freely available on their websites. The resources are available for use by health services, consultants, suppliers and contractors.
The Department of Health Infrastructure Planning and Delivery website[105] provides planning and development guidelines covering:

- policies and procedures
- project proposals
- planning and evaluation
- project delivery
- asset, property management and operations.

These guidelines are designed to help regions, programme divisions, health service boards, agency managers and consultants to establish a consistent approach and best practice to the management, planning, design and implementation of all capital investment projects regardless of size, cost, complexity and source of funds.

The VHBA website[106] provides resources for use in, and in association with, the development of health facilities, including those relating to:

- asset management
- design guidelines
- environmental sustainability
- grant programmes
- policies
- procurement
- property
- forms and contracts
- technical guidelines and
- universal design.

[105] Department of Health and Human Services, State Government of Victoria, "Infrastructure Planning and Delivery," accessed on August 30, 2021, http://www.capital.health.vic.gov.au/.
[106] Victorian Health Building Authority, "Industry Resources," accessed on August 30, 2021, https://www.vhba.vic.gov.au/resources.

4.4. Victorian Health Building Authority delivery model

The VHBA is continuing to develop and refine its delivery model. The following are the main features of the VHBA delivery model that differ slightly from its counterparts in other jurisdictions.

- **Accountability for budget**
  VHBA is accountable for all costs on a project. Any costs required before the project has a budget allocation are drawn from the VHBA budget.

- **Contingency**
  VHBA controls the use of contingencies. Surplus contingency from a project is used to enhance that project and cannot be used for unrelated projects.

- **Public private partnerships**
  The default position in Victoria is that any project greater than A$200 million should be a public private partnership (PPP), unless it can be shown that a better option is available. PPPs are funded centrally, separate from other funding, and therefore infrastructure funding is unaffected. Victoria has an experienced PPP team and is confident in this approach. The decision as to the best procurement model is made in the business case.

  Victoria has had success with the PPP model. The comprehensive approach to whole-of-life maintenance inherent in PPP's is an attraction and experience is that the life of PPP buildings is extended as a result. It is considered PPPs work well in the social infrastructure sector.

- **Information communication technology and furniture, fixtures and equipment**
  VHBA provides furniture, fixtures and equipment (FF&E) and information technology (IT) infrastructure, with the balance of IT sitting with the Department. FF&E is procured by HealthShare, which provides whole-of-system procurement.

- **Standard form contract**
  VHBA uses the Queensland Department of Energy and Public Works Standard Form Contract for managing contractor works and the GC21 form of contract for all other works.

- **Australasian Health Facility Guidelines**
  VHBA uses the Australasian Health Facility Guidelines and is a strong supporter of their continued development.

4.5. Victorian project prioritisation process

In the context of system-wide policy and planning, service planning relating to decisions about the state's recurrent and capital investment is undertaken collaboratively by the Department and the health services. Should the Service Plan identify a requirement for a project requiring capital investment (that is, a new or expanded facility) the Department determines and approves the service profile that will inform that development because this will determine the future capital and recurrent funding to be sought from government.

Locality and clinical services planning is completed by the Department. VHBA typically does the entity service plan, but when it does not have the resources may ask the health services to do this work using VHBA processes and consultants. This process is used to ensure a consistent approach to planning and to reflect Department priorities. The health services determine the models of care, with the help of the VHBA, however, they are approved by the Department.

The Service Plan is submitted to the Department, where it competes with other health services for priority and funding to move to the next stage: the strategic assessment or strategic business case phase. These planning funds are committed by the Department based on whether the projects are required to address critical safety and/or quality requirements, are election commitments or on what provides the greatest benefits in response to demand or asset renewal. The funds are restricted by the demands the projects will ultimately place on the available forward capital funding.

On major projects, the business case phase is run by VHBA and the health service is the client. VHBA manages the project from that point through its development and delivery until it is handed to the health service for clinical commissioning and operation. On smaller projects, health services use their own internal capabilities where available.

The strategic business case identifies alignment with government strategy, high-level options including capital and non-capital investment options, and the optimal approach for delivering the defined services. It also includes indicative costs and timeframes. Master planning will also be carried out at this stage, if required.

A preliminary business case may be undertaken, depending on the degree of detail in the strategic business case and other project-related issues. This provides a summary of the analysis undertaken, sufficient level of detail to enable key decision-makers to understand the issues, a rationale for the selected short-listed options and details of the implications of the initiative.

Following the strategic business case, and in parallel to a preliminary business case where undertaken, feasibility and initial design work is done to establish the scope and cost of the project.

The final business case usually includes the schematic design and cost plan, which confirms the project budget for the approved scope of works.

4.6. Victorian Health Building Authority performance

Internal reviews of VHBA capabilities have been carried out by Treasury and the Department of Premier and Cabinet. VHBA have stated that 96% of projects were delivered on budget and on time.

4.7. Victorian Health Building Authority operating model

Some key features of the VHBA operating model are worthy of consideration for the New Zealand Health Infrastructure Unit, including:

- the establishment of an investment subcommittee to oversee the investment case development phase of the planning, investment and implementation cycle and provide assurance to the Executive that investment case proposals to be submitted for state Budget funding meet the Department's needs and the Ministers' expectations
- having VHBA deliver infrastructure projects based on an assessment of project risk and complexity against the competence of the health service capital team.

5. New Zealand Infrastructure Strategy 2050

Te Waihanga has developed a draft 30-year infrastructure strategy that has been presented as a draft to the Minister for Infrastructure in September 2021. The final strategy will be tabled in Parliament by early 2022. It is important that any future state of the national health infrastructure system is consistent with relevant infrastructure themes identified in the strategy.

This section summarises the relevant themes (as they relate to this review) that have been compiled as part of the development of the 30-year infrastructure strategy.

5.1. New Zealand's infrastructure challenge

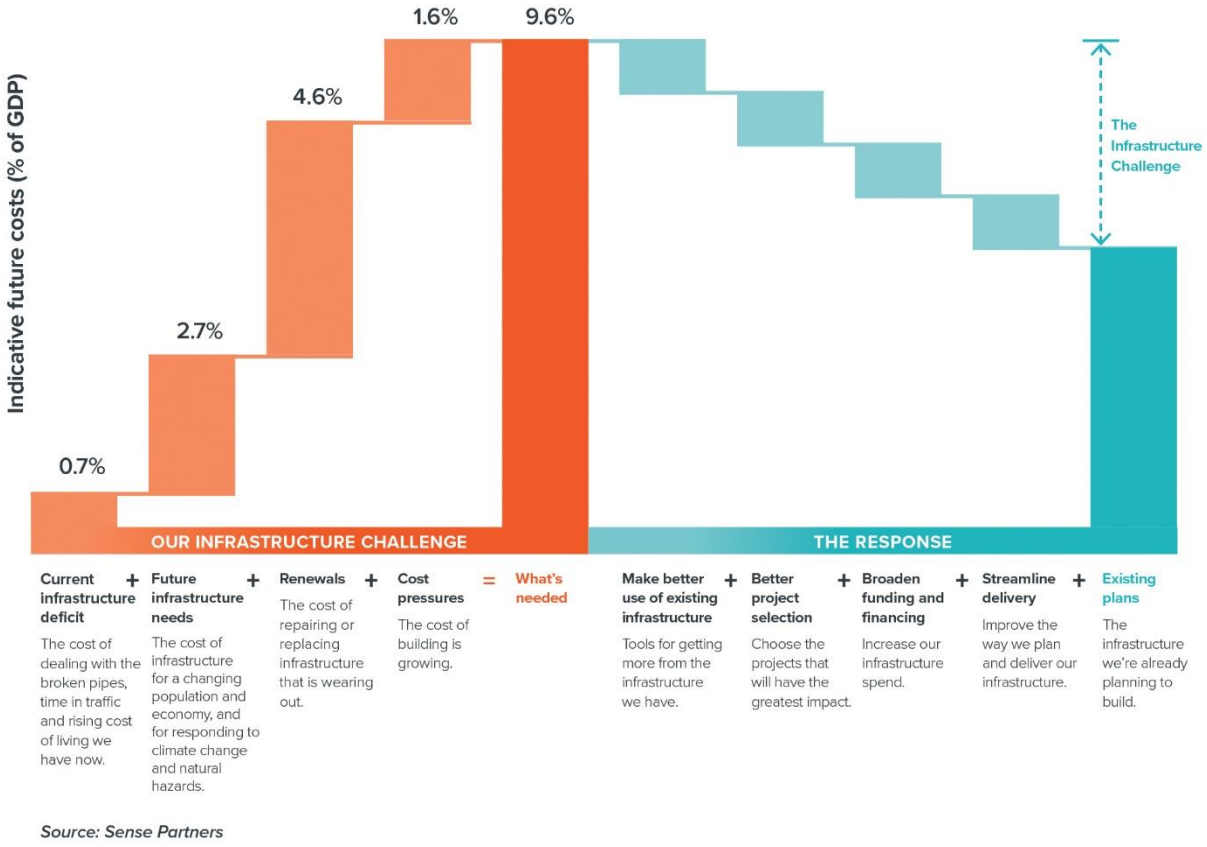
The scale of the infrastructure challenge is not unique to health. In compiling the New Zealand Infrastructure Strategy 2050, Te Waihanga has formed the view that a change in approach to infrastructure investment is needed in general. It will not be enough to simply keep doing what has always been done.

Overall, a large gap exists between the services and support the health infrastructure provides now and what is needed. A new approach to planning, delivering, maintaining, funding and financing infrastructure is needed to overcome these challenges.

Figure 4 shows the scale of the problem and breaks it into six main challenges: historical infrastructure deficits, population and economic growth, improving infrastructure quality, adapting to climate change and recovering from earthquakes, maintaining and renewing infrastructure and delivery cost pressures. At present, New Zealand spends around 5.5% of gross domestic product (GDP) on publicly owned infrastructure. This includes transport, water, hospitals, education, and defence facilities but excludes privately funded infrastructure like electricity generation and telecommunications.

For New Zealand to build its way out of current and future infrastructure challenges, it will cost around 9.6% of GDP over a 30-year period (see figure 4). This means the gap between what has been planned for and what is needed is about 4% of New Zealand's GDP.

Figure 4: New Zealand's infrastructure challenge



Source: Sense Partners

Note: GDP = gross domestic product.

5.2. Meeting the challenge

It is considered the current and future national infrastructure challenge, at around 9.6% of GDP, is one that is too big for New Zealand to build its way out of. Doing so would not only mean large increases in taxes and rates, but also require the New Zealand construction workforce to almost double.

Investment and building will be part of the solution, but planning, delivery and use of infrastructure will need to be smarter, as will non-capital solutions for service delivery. Within its strategy, Te Waihanga has identified four opportunities to achieve this:

- **Streamline delivery and build capability**: New Zealand needs to improve its ability to build infrastructure quickly and productively.
- **Better use of infrastructure**: New Zealand needs to get more use out of the infrastructure it has and new infrastructure that is being built, including managing demand for infrastructure to defer or avoid costly upgrades that will have to be maintained and renewed.
- **Better project selection**: New Zealand needs to make better decisions about new infrastructure to ensure that they are the right way to solve problems.
- **Increased funding and financing**: In addition to the above, New Zealand needs to increase funding and financing for infrastructure, by looking for new sources of revenue and using long-term debt to pay for long-lived infrastructure.

The Health and Disability System Review (HDSR) and the *Health and Disability System Review: Proposals for Reform* Cabinet paper (Reform Cabinet Paper)[107] have signalled, at a high level, the structural and procedural changes necessary to provide a fit-for-purpose health infrastructure system that can better meet anticipated future challenges. The intended integrated centre-led approach in how health infrastructure will be delivered and managed post-reform is consistent with system changes identified in Infrastructure Strategy 2050.

5.2.1. Achieving a low-emission economy

The Climate Change Commission has recommended interim targets for reducing carbon emissions from 2019 levels:

- a 7% reduction over the next four years
- 20% over the five years to 2030
- 35% over the 2030 to 2035 period.[108]

Achieving these targets will require emission reductions across multiple sectors, including the health sector. The long-lived nature of infrastructure means today's infrastructure decisions can lock-in future carbon emissions. Because current emissions trading scheme (ETS) prices reflect current carbon budget constraints, they are likely to understate the long-term price of carbon.

The ETS price is, at the time of writing, around $40 per tonne of cardon dioxide equivalent. According to Treasury, a significantly higher price, as high as $232 per tonne by 2050, would be needed to hold global warming at less than 2 degrees Celsius.[109] Getting the price right is fundamental to driving infrastructure decisions that support a low-carbon economy.

Investment decisions are informed by business cases. These should incorporate a long-term cost of carbon, rather than current ETS prices, to inform good project selection. The appropriate long-term cost should be one commensurate with New Zealand's international commitment to achieve net-zero carbon emissions.

The government has demonstrate commitment in provision of climate standards for government buildings, from 1 April 2022, new non-residential governments buildings with a capital value over $25 million will have to meet a minimum Green Star rating of five. The same standard will apply to government buildings with a capital value over $9 million from 1 April 2023

Non-capital and renewal programmes need to be prioritised to improve adaptive capacity: When existing infrastructure is maintained, upgraded, repaired or replaced, consideration needs to be given to the future climate. The asset management cycle should also be used to review current resilience, improve adaptive capacity, and plan for how services will be provided into the future.

[107] Health and Disability Review Transition Unit, "Cabinet Decision CAB-21-SUB-0092: Health and Disability System Review – proposals for reform", updated April 21, 2021, https://dpmc.govt.nz/publications/cabinet-decision-cab-21-sub-0092-health-and-disability-system-review-proposals-reform.

[108] Climate Change Commission, ***Inãia Tonu Nei: A Low Emissions Future for Aotearoa: Advice to the New Zealand Government on its first three emissions budgets and direction for its emissions reduction plan 2022–2025*** (Wellington: He Pou a Rangi Climate Change Commission, 2021).

[109] The Treasury, *CBAx Tool User Guidance: Guide for departments and agencies using Treasury's CBAx tool for cost benefit analysis* (Wellington: The Treasury, 2021), https://www.treasury.govt.nz/publications/guide/cbax-tool-user-guidance.

5.2.2. Contributing to a circular economy

New Zealand has a waste problem. It sends the most waste to landfill per capita of member countries in the Organisation for Economic Co-operation and Development. The construction and demolition sector is the largest source of waste in New Zealand, accounting for 29% of all waste. Auckland, construction and demolition waste was the largest single waste stream, accounting for 40% of total weight going to landfill, despite being 5% of GDP.[110]

"Construction is the main source of waste sent to landfill, and much of this could be reduced, reused and recovered."

Minister for Environment, David Parker.[111]

Infrastructure has a role in reducing and managing waste to improve the environment. The message for encouraging waste minimisation in the construction sector is that *the easiest and most efficient way to deal with construction waste is to not create it in the first place.*

Non-built options, such as adopting demand management mechanisms to make better use of existing infrastructure, can be an effective approach to avoiding waste creation, by making better use of existing assets.

When new infrastructure is needed, construction could contribute to better outcomes through improved option selection, design and procurement.

Waste minimisation strategies could be a requirement of core procurement, leading to a different design approach, selection of materials and consideration for how components can be taken apart and the materials reused in new projects.

Prefabrication might be preferable when offsite construction methods are more effective at capturing and reusing potential waste products.

Another option could be investment in new facilities that can sort and store waste materials from the construction, demolition and commercial industries and recirculate them back to construction activities and other markets.[112]

5.2.3. Building workforce capacity and capability

To meet identified future infrastructure challenges, New Zealand needs to ensure it has the right people, at the right time, with the right skills, to meet its current and future infrastructure needs.

New Zealand needs a skilled and experienced workforce to plan, build, operate and maintain the infrastructure required, both now and the future. This workforce needs to be adequately sized and skilled across the occupational mix of the infrastructure sector.

New Zealand's existing infrastructure pipeline is significant, at around $56 billion of investment over the next 10 years.[113] Over the next 30 years, it is anticipated to grow by as much as $140 billion.[114]

[110] This does not include the greater quantities of rubble and concrete that go to cleanfill (uncontaminated sites where natural materials are deposited) and managed fill sites.
[111] New Zealand Government, 28 July 2021
[112] New Zealand Government, "Funding projects reduce waste construction and demolition," uploaded July 28, 2021, https://www.beehive.govt.nz/release/funding-projects-reduce-waste-construction-and-demolition.
[113] Te Waihanga, "Pipeline".
[114] Sense Partners, New Zealand's infrastructure deficit: Quantifying the gap and path to close it? (Sense Partners, 2021).

This infrastructure pipeline is generating a strong demand for labour. Workforce demand modelling for construction workers, for example, forecasts a supply deficit of nearly 118,500 workers in 2024.[115] Skills shortages are pronounced across most of the infrastructure-related occupations, with some regions, such as Canterbury, currently facing an acute labour shortage.[116] Figure 5 shows the persistent labour shortages for construction and building.

Figure 5: Persistent labour shortages for construction and building are at historic levels

It is important to ensure the workforce is also adequately skilled to plan, build, operate and maintain New Zealand's future infrastructure. Climate change, and changing technologies, mean many of the skills required will also be different in the future, which may lead to workforce 'pinch points' due to the intense international competition for these skills.

Effective workforce forecasting and planning is needed – establishing investment pipelines

Reducing the uncertainties associated with the national infrastructure investment pipeline will allow more effective workforce forecasting and planning.

Greater certainty of infrastructure investment pipelines provides national and regional infrastructure employers with an increased ability to plan and respond more effectively in partnership with training providers, industry leaders and sector bodies.[117] This results in benefits such as increased workforce attraction, retention and development.[118]

[115] From WIP workforce demand and supply model 2021.
[116] New Zealand Immigration, "Construction and Infrastructure Skill Shortage List (2019)," accessed October 9, 2021, https://skillshortages.immigration.govt.nz/assets/uploads/canterbury-skill-shortage-list.pdf.
[117] HM Treasury, *National Infrastructure Plan for Skills* (London: HM Treasury, 2015), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/464354/NIP_for_skills_final_web.pdf.
[118] Construction Sector Accord, "The Accord (2020)," accessed October 9, 2021, https://www.constructionaccord.nz/the-accord/, and Ministry of Business, Innovation and Employment, "MBIE Construction Skills Action Plan (2018)" accessed October 9, 2021, https://www.mbie.govt.nz/building-and-energy/building/supporting-a-skilled-and-productive-workforce/construction-skills-action-plan/.

The challenges of workforce planning are more pronounced in the construction sector that consists of many small organisations. This is also the case for those firms that focus on the design and delivery part of the infrastructure lifecycle and that rely on new projects.[119]

Several sector- or firm-led infrastructure investment pipelines exist in New Zealand.[120, 121] Ideally, there should be 'one source of truth' in terms of a national infrastructure investment pipeline that is seen as the body of consistent evidence to start industry and organisational workforce planning across the different infrastructure sectors.

This would enable further work to be undertaken to help industry to gain a better understanding of future workforce needs.

The Construction Sector Accord transition plan provides a good template for future 'mission-based' initiatives to build consensus on the size and skill level of the workforce needed to respond to emerging societal challenges, particularly climate change.

Representation by Māori and Pacific peoples in the industry skews overwhelmingly towards the lowest-earning occupations, such as low-skilled and unskilled contract labour, and self-employed trades working as subcontractors to larger construction firms. Representation in the managerial and professional occupations of the industry is low.[122]

Government and industry initiatives should be fostered and encouraged, and progress made needs to be tracked. Progress should be published annually and reviewed regularly.

Building capability to improve infrastructure delivery

The Government procures around $10 billion a year of physical infrastructure,[123] and its project procurement and delivery functions are spread across numerous public sector agencies. Having common capability and development frameworks for procurement, asset management and project management practitioners would:

- provide greater consistency and allow the establishment of various common programmes to build capability
- ensure more transparency on the competencies required for different public sector roles and allow greater interchangeability of practitioners across the public sector
- help establish procurement, asset management or project management as career pathways in the public sector.

The establishment of a training and development programme for procurement specialists, asset managers and project managers would enhance capability within the infrastructure sector.

The establishment of a major projects leadership academy would provide a consistent training and development model for those undertaking project management within the public sector.

[119] Construction Sector Accord, "Transformation Plan," accessed October 9, 2021, https://www.constructionaccord.nz/transformation-plan/.
[120] Ministry of Business, Innovation and Employment, *National Construction Pipeline Report 2020: A Forecast of Building and Construction Activity (8th edition)*, (Wellington: Ministry of Business, Innovation and Employment, 2020).
[121] WIP, "Labour Forecast".
[122] Māori in the Labour Market – December 2020 Quarter (unadjusted).
[123] Ministry of Business, Innovation and Employment, *National Construction Pipeline Report 2020: A Forecast of Building and Construction Activity*.

5.2.4. An integrated, high-performing infrastructure system

Government infrastructure underpins wellbeing by helping New Zealanders to move around the country, connect, learn, stay safe and live healthy lives.

The nature of New Zealand's infrastructure decisions is changing and as we look forward 30 years, it is clear the approach to decision-making will need to change too. The way infrastructure is planned and delivered needs to be better integrated.

The interconnectedness and interdependence of infrastructure systems is increasing, both across geographical areas and sectors.

Clear vision and communication

The first step towards quality infrastructure is to have a clear vision for the future and a credible roadmap to achieve it.

A long-term vision for infrastructure can help governments establish an adequate institutional framework, implement clear governance arrangements, define needs and targets, co-ordinate across stakeholders and develop reliable action plans.

System leadership

Existing leadership is challenging and disjointed. Strong leadership and direction from political and public service system leaders is needed to drive meaningful change in infrastructure incentives and improve system performance.

A better system will require central government leadership to direct a co-ordinated, consistent and coherent programme of change across multiple agencies and functions to get better information, redesign integrated incentives and create common frameworks.

The establishment of a permanent, appropriately resourced and empowered system leadership team would enable the development of an evidence base to facilitate better intervention design, higher quality evaluation of proposed infrastructure projects, and allow a project to be prioritised relative to competing investments.

Permanent professional governance

The role of the client is an essential part of the successful project delivery.

The current approach to project development and delivery is fragmented, temporary, does not encourage knowledge retention and suffers regular governance problems.

To improve delivery performance, more projects need to be delivered through permanent professional governance and delivery structures that hold and grow the best of New Zealand's project delivery expertise and capability.

The focus of this governance should be on developing central expertise to standardise the way capital projects are designed and delivered within their various sectors. This would provide decision-makers with more high-quality choices for investment and improve the speed and success of those projects.

Common, fit-for-purpose frameworks

Common, fit-for-purpose frameworks provide a degree of consistency across the infrastructure system, reducing duplication and increasing the transferability of people and knowledge within the system. Fewer, more centralised frameworks make it easier to understand the implications of changes to any one part and manage engagement and sequencing.

The following areas would benefit from the development of common frameworks.

Project management

A common project management framework would standardise oversight and quality assurance processes, set clearer expectations, enable benchmarking or comparison between entities and projects, and make sure lessons are automatically fed back into new infrastructure projects.

Asset management

A framework that set a standard for everyone could dramatically shift the quality of information, help with integration for information systems, and facilitate analysis across a range of datasets, particularly for asset management, documentation and mapping. This would improve communication between sectors and reduce maintenance costs.

Longer term funding

Greater confidence in terms of funding means project planning can begin earlier and can be truly investment ready when the capital becomes available. Longer term planning windows will also incentivise agencies to consider emerging trends and issues and develop proactive investment strategies to address these.

Transparent and evidence-based decision-making

Clear, transparent and comprehensive prioritisation processes are the best tool to ensure investment in infrastructure delivers the expected social and economic benefits, while contributing to long-term policy objectives.

A rigorous project appraisal and selection process should consider economic, social, fiscal, environmental and climate-related costs and benefits and account for the full cycle of the asset.

Clear and accurate communication supports good decision-making

Governments seek to keep the community informed of proposed new infrastructure projects, often from the time of inception. Often public interest is high in community impacts, benefits, costs and delivery timetables. Premature provision of detail on solutions, scope, costs and timeframes may lead to disappointment in the community and counterproductive pressure on project delivery teams. Ultimately, this can limit the ability of the project to adapt to changing information and reduce the benefit delivered from government investment.

Effective communication as stages proceed provides confidence that decision-making is sound, public funds are being well managed and project benefits will be delivered. In early stages, government can clearly communicate its intent to address a need and the steps it proposes to take to provide a solution, referring to outcomes rather than outputs. This avoids the need to estimate cost or delivery timeframes as project scope is still being developed.

Cost-benefit analyses should be used for assessing alternative investment options

In many infrastructure sectors, cost-benefit analysis (CBA) is an important tool for understanding whether a project is desirable. However, the uptake and use of CBA to guide planning and decision-making is uneven across infrastructure sectors.

CBA should not be narrowly focused on financial outcomes, although these are often important. Instead, it should comprehensively consider all relevant benefits and costs, including non-financial economic, social, cultural and environmental impacts.

Cost-benefit analyses should value the future appropriately

Many infrastructure projects are long-lived, meaning it is necessary to consider costs and benefits that arise over multiple decades. CBA addresses this by 'discounting' the value of costs and benefits to assign a lower weight to future outcomes relative to present-day outcomes.

A review of the discount rate policy would be desirable, to ensure the approach to valuing future outcomes is aligned with New Zealanders' values and preferences and is consistently applied across infrastructure sectors.

Setting clear expectations for projects

Delivery agencies do not always apply existing settings consistently and well. This creates gaps between expectations and practice, eroding performance and depriving decision-makers of the information and assurance they need.

Real scrutiny and assurance are needed *before* investment projects are implemented.

Increased and formalised oversight

Monitoring the implementation of an infrastructure asset is a function performed by the government agency responsible for the implementation. However, delivery agencies do not always apply existing settings consistently and well.

Additional processes to identify, report and act on risks and challenges facing an infrastructure project during its implementation are an important, to ensure systemic problems are identified and addressed.

If a move is made to Ministers approving portfolios and/or programmes of work rather than project by project, fit-for-purpose oversight structures and processes will be vital for providing Ministers with confidence that projects are delivering the anticipated and required value. This can be achieved by:

- strengthening the accountability mechanisms for good infrastructure decision-making by:
    - clarifying, codifying and enforcing clear stage gates and approval points for infrastructure projects
    - clarifying and codifying the roles of monitoring, assurance, oversight and regulatory agencies to make sure it is clear what is watched (and what is not) and to identify what interventions may occur when risks are identified
    - conducting and funding independent post-implementation reviews of major infrastructure projects on completion, with the purpose of improving future evaluation methods and processes. Publishing ex-post reviews in full and measuring performance, benefits and cost estimates against business case estimates is important to increase transparency in the system

- strengthening incentives for transparent and evidence-based decision-making by:
    - setting expectations for the timely release of project information, to ensure project communication is clear about the level of uncertainty inherent in each project stage
    - ensuring a commitment by all local and central government agencies to undertake and *publicly release rigorous* CBAs on all public infrastructure investment proposals where the whole-of-life costs of the proposals exceed $150 million
    - ensuring analyses are done before projects are announced
    - if a project is announced before analysis is done, for example, in the lead-up to an election, making this conditional on the findings of a subsequent analysis
    - reviewing discount rates.

Reporting practices on the status of infrastructure projects during the implementation period of each project vary across the system. To increase awareness of the implementation status and risk of projects across government, the status of the implementation of infrastructure projects should be reviewed on at least an annual basis. Reports should also support the identification of lessons and corrective measures that may benefit future projects.

6. New Zealand – future state

At the time of writing, the way major health infrastructure is being delivered in New Zealand is undergoing substantial change. To ensure this review remains relevant, the changes that have already occurred have been referenced and those proposed to occur have been considered in developing my recommendations.

Regarding the wider context of health reform, consistent signalling has come from the Health and Disability System Review (HDSR), the Government's health reform announcement and the Health Infrastructure Unit's (HIU's) short- to medium-term work plan that significant system changes are needed to ensure a sustainable national health system into the future.

A clear direction has been given to reduce demand on hospitals. A concerted effort is needed to scale up and prioritise preventative public health programmes, to manage demand on the system and move health services that need not be delivered from a hospital out to primary care, communities or treat people within their homes.

It has been recognised that a comprehensive, common IT platform will be essential to enable targeted changes in service delivery, and, as such, will need to be a priority programme of work.

Remaining health services that require a hospital setting will need to be enabled by infrastructure that is fit for purpose. To ensure existing facilities continue to meet target levels of services over the life of the building, high quality asset management for existing hospital infrastructure until end of life is needed. Future new facilities will need to be delivered where the need is greatest (geographically and demographically) and give maximum value for money, providing the lowest cost of ownership.

Both Health Infrastructure (HI) New South Wales and the Victorian Health Building Authority (VHBA) have developed processes and capability to deliver portfolios or programmes of work, as opposed to project by project, that enable the quantum of necessary investment to be successfully delivered. In New Zealand, Waka Kotahi (New Zealand Transport Agency) and more recently Kāinga Ora – Homes and Communities and the Ministry of Education have developed similar processes and capability to meet their requirements.

It is important to note these organisations have been given the necessary autonomy and multi-year funding to enable this approach. Health infrastructure within New Zealand will need a similar step change in how it is managed and delivered to successfully meet the demands of the forecast investment 'pipeline'.

The HIU will be a critical component in the achievement of these goals and will need to be (and be seen) as a credible organisation, capable of delivering a significant programme of health infrastructure works of the requisite quality on time and on budget. It will need to deal effectively with the key stakeholders involved in health infrastructure works, other government agencies and private sector organisations that develop and deliver health infrastructure.

6.1. Health Infrastructure Unit

The HIU was set up in 2019 by the Ministry of Health as a business unit within the Ministry to oversee and lead health capital projects for the sector. The HIU was established to provide stronger oversight, assurance and standardised project delivery across a national portfolio of DHB-owned and operated infrastructure.

The current functions of the HIU[124] cover asset management, investment strategy, facility design, programme and project Management and monitoring and assurance. In addition, the HIU carries outs some limited-service planning primarily to inform its review and prioritisation of DHB business cases and provide facility design guidance. Each of these functions form part of an interlinked health infrastructure investment management and asset performance system as illustrated in Figure 6 below.

Figure 6: HIU Functions

Health Infrastructure Unit challenges and plan (2021)

In January 2021, the Ministry of Health briefed the Ministers of Health and Finance on the challenges and plans for the following six to 12 months for the HIU. The priority actions communicated were as follows:

<u>Better input to prioritisation decisions</u>

1. Urgent identification of critical assets requiring investment

[124] HR20202299, January 2021

2. Detailed analysis of DHB capital intentions alongside known national, regional, local service and asset needs
3. Complete DHB mental health infrastructure assessments
4. Communicate to DHB's clear decision-making criteria and steps to approval

Better planning for investment

5. Progress a clearer road map for the Northern Regions capital plan
6. Published service planning guidance for critical care and mental health (forensic services capacity)
7. Support for the HIU's Mental Health Infrastructure Programme - Budget 21 bid

Better investment ready business cases

8. Publish right sized guidance for business cases
9. Engaged with DHB's earlier in the business case process to provide better support and ensure opportunities to leverage work across the sector are incorporated
10. Additional support from The Treasury and Te Waihanga for streamlined processes
11. Establish HIU workflow and performance expectations for business case review and approval
12. Established supplier panel for HIU accredited consultants to improve business case quality and reduce re-work

Better understanding of critical infrastructure and performance

13. Complete work on risk and assurance (critical infrastructure and building systems)
14. Fully implement the Asset Management framework for the DHB sector
15. Support for ongoing work programme - Budget 21 bid

Delivering better

16. Implement conditions of funding to include adoption of standardised facility design guidelines
17. Establish a design authority to provide advice and confirm design standards
18. Publish a framework for HIU delivery of projects of scale risk and complexity and where DHB's lack capability
19. Establish supply panels for construction services (health planners, architects, cost and risk estimators, design, engineering and project managers) to meet expectations for higher quality and more efficient service delivery

Improved stewardship and governance

20. Implementation of a revised health capital governance framework for clearer accountabilities roles and responsibilities
21. Launch of HIU website providing access to planning and investment tools
22. New Terms of Reference and membership for the CIC
23. Establish the HIU Governance Board

Improved monitoring and assurance

24. Implementation of improvements in data collection and monitoring of expanded performance measures
25. Proactive publication of lessons learned from the projects in delivery and post completion initially the Christchurch Hospital rebuild and Grey Base Hospital

To remain applicable to the future state of the New Zealand Health system, some of these priority actions will need to be modified. However, in general, I support the capability and actions outlined, apart from:

- the HIU's role in service planning
- any changes to the independence of the Capital Investment Committee (CIC).

6.2. Future state New Zealand health infrastructure system

The HDSR made a series of recommendations as to the New Zealand health structure and processes and procedures. While the structure recommendations have been largely superseded by the Reform Cabinet Paper, the processes and procedures regarding investment in health infrastructure remain relevant.

Further, Cabinet Office Circular CO (19) 6 Investment Management and Asset Performance in the State Services[125] outlines a robust (though high level) asset management process that will need to be followed and that accords with best practice.

These proposals for reform relate to both structure and process and have been used as the basis for my recommendations for the New Zealand health infrastructure system.

6.2.1. Proposed system model

The entities within the proposed system model, as identified in the Reform Cabinet Paper, are outlined below.

- **Minister of Health**

The Minister of Health will continue to have overall responsibility to Parliament and the public for the health of the New Zealand population and the performance of, and outcomes achieved by, the publicly funded health system.

- **Ministry of Health**

The Ministry of Health will be strengthened in its continuing role as the chief steward of the health and disability system. In line with the HDSR recommendations, the Ministry will be the primary source of strategy and policy functions for the system. It will manage the interface with Ministers, develop national policy direction and health strategy, and secure and monitor Vote Health funding. It will set and review the parameters and settings within which the system operates, including legislative and regulatory settings and the ongoing design of the system model.

- **Māori Health Authority**

Partnership with Māori and the integration of Māori voice into the planning and priorities process will be an essential feature of the new health system. The Māori Health Authority (MHA) will be a statutory entity responsible for driving system focus on hauora Māori and leading strategy and policy for hauora Māori, alongside the Ministry. It will partner with Health NZ to develop and agree the New Zealand Health Plan and other national strategies, plans and operational frameworks. This will ensure health services include kaupapa Māori services and others targeted at Māori populations, and it will support innovation and provider and workforce development.

The MHA Board will be accountable to the Minister for advice, strategy and reporting on hauora Māori (although the Ministry will perform monitoring activities and information requests on behalf of the Minister). Further, MHA will monitor Health NZ (and others) with respect to Māori health.

- **Health NZ**

A new entity called Health NZ will be established to lead system operations, planning, commissioning and the delivery of health services. Health New Zealand's operational functions and authority will be broad. It will be a significant system leader, responsible for driving improvements in service delivery and

[125] Department of Prime Minister and Cabinet, "CO (19) 6: Investment Management and Asset Performance in the State Services

outcomes at all levels, in line with the Ministry's strategy and national policy direction. Health NZ will lead on national planning for services and enablers, including developing the New Zealand Health Plan, setting core standards, requirements and specifications for all services, and defining expectations for high-quality commissioning of services throughout the system (in conjunction with the MHA).

Health NZ will provide clinical leadership to the system and facilitate clinical networks. It will have an important role in fostering an innovation culture within the system. It will also provide system-wide supporting infrastructure and back-office functions, such as a contract management system and national data and digital functions, taking on the roles of current shared services agencies.

Health NZ will be responsible for national planning of hospital and specialist services, to ensure consistent networked models are developed, and to allocate specialisms effectively. A national hospital plan will set detailed requirements for access, thresholds for treatment, common service specifications, standards and models of care, and expectations on cost, to be applied and monitored in all regional networks.

DHBs will be replaced with a single Crown entity and sub-national groupings that will be internal divisions of Health NZ.

Health NZ will have two distinct 'arms', holding important functions at a regional level: one holding responsibility for commissioning primary and community services and one managing the delivery of Health NZ services in that region. It is proposed these two arms be co-located in four regional divisions, established as part of Health NZ. These new regional divisions will replace the existing functions of DHBs, which will be disestablished.

The shared services agencies in the current system that provide essential collective functions, such as service planning, information, analytical and IT services, provider audit and procurement, will transfer to Health NZ with future decisions on the precise model (including whether distinct agencies or subsidiaries are maintained and how they support regional divisions) to be made by Health NZ.

Four regional health service networks will be established, each of which will provide a comprehensive range of services for that region.

Governance of regional health service delivery within Health NZ will be through a regional executive board, including a regional director of health services, and chaired by Health NZ national leadership.

- **Health Infrastructure Unit**

The HIU's role will remain to oversee and lead health capital projects for the sector. It was established to provide stronger oversight, assurance and standardise project delivery across the national portfolio of health infrastructure.

The HIU will transfer to Health NZ, and its role will evolve as the organisational operating model for Health NZ is developed.

- **Capital Investment Committee**

No change in the CIC's role is proposed. The secretariat and support functions for the Committee will transfer to Health NZ.

- **Treasury**

The Treasury will continue to advise government on the level of effective and sustainable spending on health capital works in response to health policy, funding availability and the broader demand for capital funding. It will also produce the annual budget and provide allocations for, amongst other things, health capital, based on the prioritised list of capital projects.

6.2.2. Implementation

In broad terms, the implementation will have two major phases.

- **Initial preparatory and transitional phase**

The initial preparatory and transitional phase (which is under way) will include the establishment of new entities and early work to design functions and operating frameworks and test new approaches.

An interim Health NZ and MHA will be established as two separate departmental agencies in advance of legislation to enable the set up and commencement of new functions. Ministerial committees will be appointed for each interim agency to advise Ministers on the establishment and governance of the interim entities.

It is anticipated that legislation will come into force in July 2022 to formally establish the new entities and disestablish the DHBs.

- **Expansion and development phase**

The expansion and development phase, over the following two-to-three years, will see new entities become more mature, undertake and iterate strategic planning and refine the practical operations of the new system model. This phase will see the progressive full rollout of new delivery arrangements (including locality networks) and the ongoing improvement of systems and processes.

6.2.3. Delivery of outcomes through the new system model

The *Health and Disability System Review: Proposals for Reform* Cabinet paper and minutes (Reform Cabinet Paper)[126] outline a system operating model that lays the foundations for a clearer 'line of sight' that focuses the system on common outcomes and objectives and reinforces the delivery of these at all levels.

Significant documents include the following.

- **New Zealand Health Strategy**

The New Zealand Health Strategy (and subsidiary strategies) is developed and revised by the Minister of Health, with the help of the Ministry and MHA, to set the direction for the system. These will be important strategic documents that provide for a medium- to long-term view of overarching aims and direction.

The strategy should provide clarity on how the Ministry of Health plans to deal with supply and demand issues within the health system. It should also provide a strategic direction in relation to the Ministry's approach to the delivery of health services to the New Zealand population.

[126] Health and Disability Review Transition Unit, "Cabinet Decision CAB-21-SUB-0092: Health and Disability System Review – proposals for reform."

- **Government Policy Statement**

The Minister of Health will agree a government policy statement that sets multi-year requirements for the health system, supported by measurable goals. This policy statement will align with the Budget cycle and provide a clear basis on which Health NZ (with the MHA) can develop costed plans for services, built around a common priorities. It will draw on the Māori and consumer voice and provide the framework for regular monitoring of progress.

- **New Zealand Health Charter**

The Minister of Health will lead the development of a New Zealand health charter for the health system that will set out common values and principles to guide organisations and health care workers

- **New Zealand Health Plan**

The New Zealand Health Plan will be the main vehicle for turning strategic priorities and policy requirements into concrete, funded plans for health services. It will set the operational direction for the system, define planning assumptions and service and financial requirements, and be the basis for commissioning of services at all levels, with a particular emphasis on achieving equity. It will encompass both hospital and specialist services that are planned nationally, and also national standards and expectations for primary and community services. It will align service and financial planning for the health system, mirroring the national priorities in the Government Policy Statement and show how these will be achieved. Health NZ will lead development, partnering with the MHA. The Minister of Health will sign off the plan, with advice from the Ministry.

- **Sub-national service plans**

Sub-national service plans will need to be developed at the regional, district and locality levels.

- **National Asset Management Plan**

The HIU-led National Asset Management Plan (NAMP) process began in 2018–19 to establish a national long-term investment plan founded on a consistent nationwide approach to asset management. A current-state assessment report (the first deliverable) has been completed, to be followed by a full NAMP with investment scenarios in 2022. The NAMP is part of a government-wide focus to improve the quality of capital funding decisions, asset management and long-term investment outcomes, in which the primary objective is to deliver the best value from new and existing investments for generations of New Zealanders.

The Government has set clear objectives to have asset management plans in place to guide strategic, tactical and operational choices under Cabinet Office Circular CO (19) 6.[127] This circular specifies all aspects of the investment lifecycle for assets and will apply to Health NZ along with other government agencies. The NAMP is intended to guide strategic investment choices at a sector level, and it is expected that, over time, it will provide a consolidated picture of Health NZ's regional asset management plans.

It is proposed that responsibility for the delivery of the NAMP be assigned to the CIC. I do not agree that this is the best entity to manage this task and believe responsibility for delivery should sit with the HIU.

[127] Department of Prime Minister and Cabinet, "CO (19) 6: Investment Management and Asset Performance in the State Services

- **System-level digital strategy**

A coherent and ambitious system-level digital strategy will be developed. This will be underpinned by increased and more strategic investment in critical systems and infrastructure, and steps to incentivise digitisation and new models of care linked to national service planning. The Ministry of Health, MHA and Health NZ will work together to define this, building on and consolidating existing digital strategies and frameworks.

Strong digital capability will be built into Health NZ, including digital expertise on the Board and Executive. The digital and data function within Health NZ will be set up to make fast progress and be well integrated with the Ministry of Health and MHA.

6.2.4. Health and Disability System Review recommendations

The HDSR proposed several changes to investment in health infrastructure that were not subsequently covered in the Reform Cabinet Paper.[128]

Capital planning

- Health NZ, through the HIU should be responsible for developing **a long-term investment plan** for facilities, major equipment and digital technology derived from the New Zealand Health Plan.
- Health NZ should develop **a prioritised nationally significant investment pipeline** so that unless a project has been prioritised, a business case is not developed.
- Each DHB should have **a longer-term rolling capital plan** based on **a prioritised, robust pipeline** that would deliver the medium term and longer-term service requirements in their area.

Investment management

- The HIU should develop central expertise to provide **investment management leadership** to support and speed up business case development and standardise the way capital projects are designed and delivered.
- The Capital Investment Committee should continue to provide independent advice, both to Health NZ with respect to prioritisation and to Ministers with respect to business case approval.
- Programme and project governance should be streamlined and standardised to ensure expertise is used strategically and project and programme governance is strengthened.

Asset management

- The **National Asset Management Plan** should be developed and regularly refreshed so it can form a basis for ongoing capital planning.
- There should be further work on refining the capital charge and depreciation funding regime for Health NZ and DHBs to ensure that a significant rebuild or new development in one DHB is properly accounted for in the system but does not starve the DHB of capital for business-as usual capital replacement.

[128] Health and Disability Review Transition Unit, "Cabinet Decision CAB-21-SUB-0092: Health and Disability System Review – proposals for reform."

- More financial and governance expertise on DHB boards, together with system and district accountability, should ensure better long-term asset management decision making. More explicit asset performance standards and a strong central monitoring function from the HIU would reinforce this.

Generally, I support these changes, although I note that, since the HDSR, the Government has signalled that DHBs will not be part of the reformed health system, and so the HDSR proposals referencing change to DHB functions are no longer valid.

6.2.5. Current government capital processes

Cabinet Office Circular CO (19) 6 Investment Management and Asset Performance in the State Services[129] sets out investment decision rights in departments and Crown entities, and mandates investment processes including:

- long-term investment planning and reporting, including benefits reporting
- the Government procurement rules
- the risk profile assessment
- assurance plans
- Gateway and other investment reviews
- Treasury's Better Business Case (BBC) Framework.

This provides a robust, thorough high-level framework within which to develop the NAMP for health infrastructure. It also incorporates most of the contemporary thinking in this area, apart from a requirement for agencies to attest to their compliance as is required in New South Wales (NSW) and Victoria.

6.2.6. Developing the long-term investment plan and prioritised nationally significant investment pipeline

A key recommendation of the HDSR is that each of the regions should prepare a long-term rolling capital plan based on a prioritised, robust pipeline that would deliver the medium and longer term service requirements in their region. I would envisage this as being an output from the Regional Asset Management Plan that each region should develop.

The HIU would develop a long-term investment plan for facilities derived from the New Zealand Health Plan and informed by the regional plans. From this, Health NZ would develop the 'prioritised nationally significant investment pipeline' or the '10-year Capital Investment Plan', as I am proposing it be called.

The process of moving projects from the regional pipeline to the 10-year Capital Investment Plan needs to be carefully managed. This would ensure regional expectations are tempered by the reality of limited funding, competing demands, equity considerations and policy directives. The aspirational components of these projects should be removed before they become embedded and an expectation. This has been called the investment management framework (IMF).

[129] Department of Prime Minister and Cabinet, "CO (19) 6: Investment Management and Asset Performance in the State Services

Regional asset management plans

The regions will be required to prepare regional asset management plans to enable them to realise the full value from their assets in delivering their services, with the HIU providing a common framework for these plans.

With a better understanding of the condition of their existing assets, regions can prioritise essential repairs, replacement projects and facilities needed to respond to growth and changing models of care. Regions will also be able to provide the Regional Capital Priority List, a list of the priority projects for which they will require funding, to the HIU.

When current facilities will not meet requirements for service delivery, investment in new facilities will often be required. Any investment over $10 million will need Crown funding and be subject to the IMF.

Investment Management Framework

The HIU should develop and maintain the IMF through which the regional capital works priorities can be assessed. The IMF should enable the identification of system-wide benefits that each project provides and the extent to which the projects respond to the Government Policy Statement, allowing the production of a ranked list of projects across all the regions to inform the prioritisation process.

Establishing an IMF is consistent with HIU Priority Action No. 4 (communicate to DHBs clear decision-making criteria and steps to approval for prioritisation decisions) and Priority Action No. 2 (detailed analysis of DHB capital intentions alongside known national, regional, local service and asset needs).

The HIU should be the 'owner' of the IMF, ensuring it runs smoothly. It should provide advice to the regions on how to navigate the process and guidance on the types of proposals required to respond to the New Zealand Health Plan and Government Policy Statement.

The HIU would be responsible for evaluating the IMF's effectiveness and advising Health NZ and the Ministry of Health on improvements over time. It would also be responsible for implementing improvements.

The investment management process should involve negotiation between the HIU and Health NZ region as the strategic assessment (see below) for a project is developed and the proposed solution formulated.

To inform the strategic assessment, Health NZ regions and districts will need to develop the skills and expertise (to the extent that they do not already possess them) to provide appropriately detailed clinical services plans, models of care, operational policies and other such documentation related to the development of a facility. This information is an essential input into the strategic assessment, and it is critical this work is carried out to the appropriate standard.

In addition, in circumstances where the New Zealand Health Strategy and/or the New Zealand Health Plan is modified, the HIU would manage the retesting of the prioritisation criteria within the IMF in response.

I note an IMF for health investment is in the HIU work plan.

Recommendations

1. All Health NZ regions to develop regional asset management plans to enable them to realise the full value of assets over their lifetime and provide a basis for infrastructure investment. The HIU is to provide a common, best practice framework for these plans.
2. The HIU to develop and maintain an investment management framework to inform the prioritisation process that informs the 10-year Capital Investment Plan.
3. The HIU to evaluate the continued effectiveness of the Investment Management Framework and ensure alignment with the Government Policy Statement and New Zealand Health Strategy, as well as advising Health NZ on any necessary improvements to the framework as required.

Business cases for new facilities

The IMF will include the BBC process as part of the assessment and prioritisation process and incorporate the requirement for strategic, indicative and detailed business cases.

It is understood that Waka Kotahi (New Zealand Transport Authority), the specialist roading delivery agency, has customised aspects of the BBC process to suit its requirements. A similar exercise should be conducted for health infrastructure business cases, streamlining each as much as possible to maximise process efficiency.

HIU Priority Actions Nos. 8 to 12 relate to the quality and efficiency of delivering business cases. The HIU has already identified the need for a streamlined process and is developing this as a priority.

Strategic assessment

The purpose of the strategic assessment should be to provide decision-makers with sufficient information on the benefits, costs and time associated with projects so they can understand their relative merits, without requiring regions to incur time and cost of preparation of a detailed business case. The strategic assessment should replace the current 'DHB intentions' process, be tailored specifically for health projects, and provide a more robust basis for prioritisation, with more work performed by the regions in advance of the process.

To ensure robust and quality information is provided as part of the strategic assessment, the regions should be required to consult with the HIU on the available procurement strategies and likely total cost of and timeframes for the project, including those they anticipate will be delivered locally. This process should be iterative, so the regions are able to maximise their chances of being prioritised by ensuring their proposals provide maximum value, recognising the limitations in funding that will continue to exist. Feedback and transparency are important to avoid complaints from regions that they do not know what is going on.

One area where external advice may be necessary is in the evaluation of economic benefits associated with a proposal. This can be overcome by the development of guidelines on how benefits can be assessed in health projects, as has occurred in NSW, and may reduce or remove the necessity for such external advice. I recommend such guidance be developed.

Cabinet Office Circular CO (19) 6 Investment Management and Asset Performance in the State Services requires agencies to evaluate all procurement options. This includes evaluating innovative and non-traditional approaches to procurement and alternative financing arrangements, and should select the procurement approach that best delivers the investment objectives while optimising whole-of-life costs. Importantly, this should include non-capital options, as is required in other jurisdictions.

The strategic assessment is the document that explores the advantages and disadvantages of the options (including non-capital, refurbishment, staged development, new build or combinations thereof) to meet the clinical need on the basis of solid research, data and analysis. The strategic assessment briefly details the problem, the solutions that could solve the problem, a high-level assessment of effort and cost, as well as the benefits of each option.

The HIU should be provided with the authority and a budget (a planning allowance) to carry out early high-level planning of potential projects, including master planning works (if required) and concept designs, to be able to properly inform the options analysis. This work will generally need to occur well in advance of any formal announcement being made about a project progressing. I recommend such an allowance be provided to the HIU.

The project costings should encompass all activities associated with a project, including IT, major medical equipment, furniture, fixtures and equipment (FF&E), hospital commissioning and establishment and transition costs. If the latter are not included then separate budgets need to be established for these tasks, so that their impacts can be factored into any analysis.

Non-capital solutions

In the past, the default solution to increased demand for health services has tended to be to 'build more hospitals'. In some cases, this hospital-centric approach has been driven by political pressure or promises, and, in others, by a health infrastructure system that was based on assessing and approving the building of new facilities.

Governments around the world (including New Zealand) are faced with the economic reality that, as more health infrastructure is built, more funds are needed to be committed to operating and asset maintenance expenses. Also, new facilities contain large quantities of embedded carbon that are counterproductive to New Zealand meeting its carbon neutrality targets.

Today, although building more hospitals and health facilities may be essential, it is not necessarily the preferred option. Alternatives that need to be given future consideration to reduce demand on the hospital system are: increasing the use of ICT to extend the 'reach' of clinical services (telehealth), the use of private health providers that have spare capacity to deliver some services through outsourcing arrangements, or moving some service provision (for example, screening) away from the hospital to lower-cost facilities in suburban areas. This has the added advantage of health services being located closer to consumers.

Such approaches need to be considered in the development of strategic assessments.

Indicative business base and detailed business case

I recommend that projects prioritised to start within the initial three years of the 10-year Capital Investment Plan (see below section) should quickly move to development of the indicative business case and detailed business case (DBC), or a single stage business case,[130] to ensure they are ready to start once approval to proceed has been given and funding provided in the annual budgeting process. The intention should be to have several business cases prepared in advance to take advantage of any additional funding capacity or delays in other projects.

'High risk' or 'high value' assessed projects need to have an indicative business case and DBC completed, with all other projects having a single stage business case. High-value projects will have a whole-life-cost that exceeds $25 million, and whether a project is high risk is determined in accordance with the Treasury's risk profile assessment tool.

[130] The Treasury, "Better Business Cases," updated October 7, 2020, https://www.treasury.govt.nz/information-and-services/state-sector-leadership/investment-management/better-business-cases-bbc.

The process of developing business cases should be, as far as possible, standardised and consistent, to enable a like-for-like comparison of the benefits of each of the projects examined. The HIU has stated its intention to standardise cost plans, functional briefs, schedules of accommodation, ICT and equipment scope, and cost to increase process efficiency. The HIU's advisory group should work alongside the region's capital team to develop greater detail on facilities design, procurement and delivery.

The HIU would manage the development of business cases for projects on the priority list so that any governmental decision to invest in the project is made with a comprehensive understanding and knowledge of the project's costs and benefits. This will also provide the opportunity to reprioritise or stage projects to suit the available budget in the future.

It is recommended the HIU administer a central pool of funding for business case development to ensure this process is performed to the appropriate standard and sufficiently quickly so as not to cause any undue delay to critical projects. The situation where work cannot start on an announced project because funds are not available, or it is out of the budget cycle needs to be avoided at all costs. As stated previously, an excess of business cases should be prepared to take advantage of delays in other projects or opportunistic funding.

Recommendations

4. The HIU to work with the Treasury to customise the Better Business Case process and associated guidelines to suit health infrastructure investment requirements, including the addition of a strategic assessment that informs the prioritisation process, replacing the current DHB capital intentions process.
5. Prioritised projects scheduled to start within the initial three years of the 10-year Capital Investment Plan should be funded to move promptly to subsequent business case stages, to ensure investment decisions are delivered in time to maintain promised delivery timeframes.
6. The HIU to administer a central pool of funding for all business case development including co-ordinating necessary planning inputs to the strategic assessment.

Portfolio prioritisation – the national capital prioritisation list

In recognition of the critical nature of this decision, I believe prioritisation should be carried out in consultation with the Health NZ Board, the CIC, Treasury and the Ministers for Health and Finance (joint Ministers). The ranked list of projects across all the regions would be used to inform this prioritisation process.

This should help to satisfy HIU Priority Action No. 20 – implementation of a revised health capital governance framework for clearer accountabilities, roles and responsibilities.

Priority Action No. 22 – new Terms of Reference and membership for the CIC is a matter for the Government to decide. However, I support the continued involvement of an independent body in capital decision-making, as recommended in the HDSR.

This prioritisation process should occur on an annual basis. If the basis for prioritisation remains constant, not many changes would be expected, apart from the introduction of new projects and the removal of those for which funding has been provided.

The investment prioritisation criteria would probably include a combination of:

- the Government Policy Statement and New Zealand Health Strategy
- New Zealand Health Plan
- safety and asset condition based works
- replacement of life expired facilities
- benefits (Benefit Cost Ratio).

I note the HIU is in the process of developing a prioritisation framework.

The development of this prioritisation framework, the region clinical services plans, regional asset management plans, regional priority lists and strategic assessments for those projects on the regional priority lists is likely to take time to do properly, particularly given the extent of change that is occurring within New Zealand health.

The demand for capital investment is significant, so some form of fast-track prioritisation needs to occur so the HIU can prepare for the next budget bid. This is already proposed in HUI Priority Action No. 1, which is the urgent identification of critical assets requiring investment, so I will not make a recommendation in this regard.

Ten-year capital envelope

In my opinion, the greatest impediment to the development of a robust, affordable and achievable capital investment pipeline is the uncertainty associated with the annual budgeting process. If the HIU does not understand what is going to be approved in the medium term, it is difficult to set up a long-term plan for capital investments and communicate that to the market. To overcome this, I propose the HIU be provided with a 10-year funding envelope, which would provide an indicative annual capital allocation over the upcoming 10-year period that can cover all capital works, including emergency works, maintenance, upgrades, equipment, IT and major capital projects, or combinations thereof.

It is intended to provide sufficient certainty around the forward cashflows so projects can be confidently planned in the knowledge that funding should be available when the significant expenditures associated with the construction of a major project are incurred. It should also provide confidence to the Treasury that projects are being planned in a manner that will ensure the future demand for capital funding is consistent with anticipated funding availability.

It has been estimated that more than $14 billion of investment will be required over the next decade for facilities (excluding repairs and maintenance). The envelope should provide some surety as to the rate at which such funds will be made available.

Recommendation

7. The Treasury to provide Health NZ with a 10-year capital envelope within which to reliably plan future health infrastructure projects.

Ten-year capital investment plan

I propose the HIU develops a 10-year capital investment plan that outlines all the projects the HIU anticipates will be provided over that period. The national capital prioritisation list should be used to populate the 10-year capital investment plan, based on the 10-year capital envelope.

Prioritised projects can be re-evaluated annually across the 10-year period. Combined cashflows could be checked and projects recalibrated as required to meet annual capital allocations; large projects with

significant annual cash demands could be spread out in an orderly manner and the smaller projects used to infill any spare capacity. An opportunity would also be available to revise project priorities if circumstances change.

The 10-year Capital Investment Plan will also enable the HIU to produce a project pipeline to inform the construction market so consultants and contractors can plan based on a known forward programme spend. It also provides a basis for engagement with the market on programmes of work rather than individual projects, providing leverage to better value, with providers incentivised to perform. It should be noted that other agencies such as Kāinga Ora – Homes and Communities and the Ministry of Education are taking this approach in planning their capital investment. If the health sector continues with the project-by-project approach to project delivery, it may find it increasingly difficult to compete with other sectors for capability, particularly considering the forecast level of infrastructure investment in Australasia in the next decade.

The 10-year Capital Investment Plan also provides transparency to government and the ability to assess the effect of the introduction of larger projects on the available capital and the other projects that must be delayed to accommodate such projects.

Over time, the goal should be to align Health NZ priorities with government commitments by properly informing government of where the best system-wide benefits can be realised in the capital programme.

Recommendation

8. The HIU to compile a 10-year Capital Investment Plan.

Three-year budget cycle

I recommend that Health NZ move from an annual budgeting cycle to a three-year budget cycle.

The 10-year capital envelope provides a reasonable level of certainty for medium-term planning. The three-year budget cycle provides absolutely certainty for short-term planning.

This budget cycle would correspond with the electoral cycle in New Zealand and the likely duration of the Government Policy Statement. It would enable Health NZ to confidently meet the commitments of incoming governments over the term of that government.

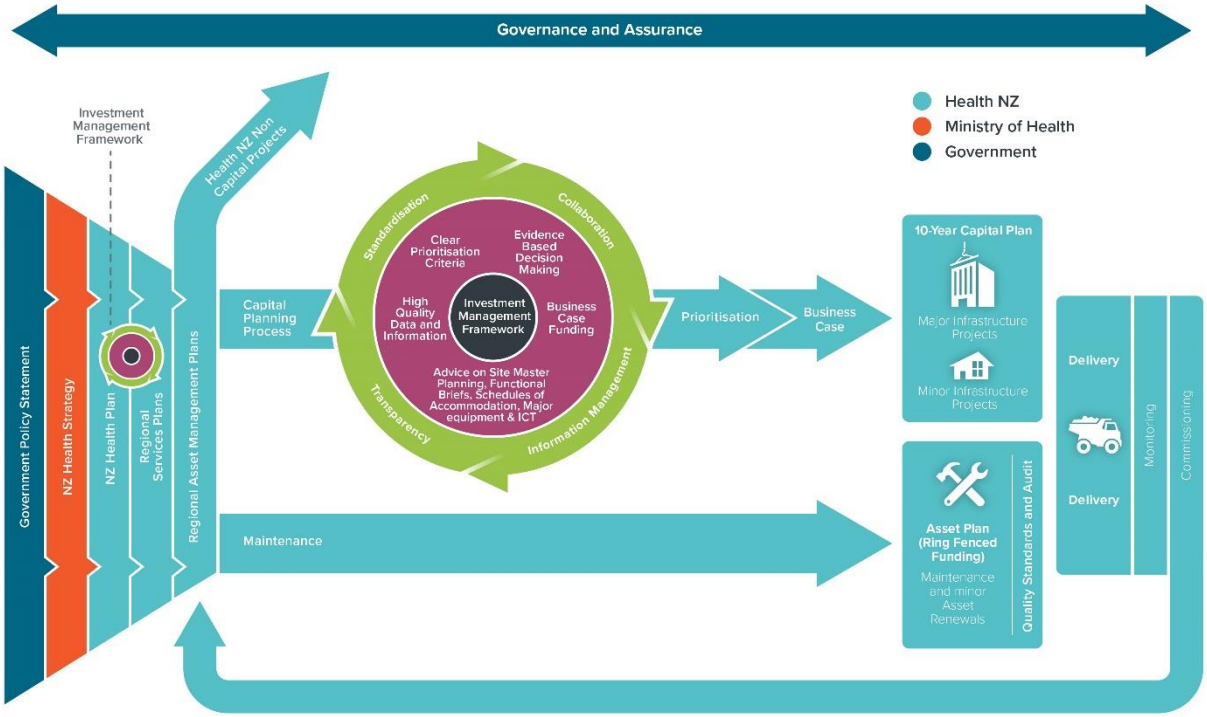
Recommendation

9. Health capital funding for new capital investment to move from an annual budgeting cycle to a three-year budget cycle, which is to align with the Government Policy Statement.

6.2.7. Capital planning system

The agencies and processes within the capital planning system, and how they interact with each other, are depicted in figure 7.

Figure 7: New Zealand capital planning system



The New Zealand Health Infrastructure Operating Model starts with a funding envelope to provide funding certainty. A NZ Health Strategy, NZ Health Plan, and Regional Clinical Plans are developed specifying demand, before a review of assets highlights current supply. The Regions then determine, with the help of Health NZ's Investment Management Framework, the options/solutions to close the gap. Non-capital solutions are managed by HNZ/Regions. Asset renewal/maintenance solutions are managed, and delivered by HNZ/Regions. Capital solutions navigate through an Investment Management Process before being prioritised, and approvals given. Approved projects progress to developing a business case, while non-successful projects go onto a 10-year capital plan to be reassessed in the future. Major and minor capital projects are delivered by HIU or the Regions, with all projects tracked by HIU on one capital plan. Once commissioned, the new facility becomes a regional asset.

A detailed flowchart outlining the planning process, from strategy through to the approval of the DBC, is provided at appendix E.

6.3. Health Infrastructure Unit operating model

6.3.1. Threshold issues

I consider that several threshold issues need to be addressed in the development of the HIU within the new New Zealand health system future state. These are discussed in greater detail below and include:

1. the HIU reporting structure
2. asset management responsibilities
3. organisational, programme and project governance
4. service planning
5. the National Asset Management Plan.

Health Infrastructure Unit reporting structure

Health is a dynamic environment where changes in critical drivers, such as models of care, the increasing use of ICT in the delivery of services, and changes in accountability for delivery of those services occur far more frequently than in most other forms of social and economic infrastructure. Health NZ, as an organisation, will need to remain flexible and be capable of adapting to that rapid change. In such an environment, development of health facilities requires a high level of interaction between the planning, design, construction and operation of a facility, to ensure it is fit for purpose on completion and into the future.

Separation of the delivery of health infrastructure from the broader task of delivery of health services risks creating organisations that have differing goals and measures of success, resulting in the potential for conflict that needs to be resolved at an executive government or ministerial level.

HI in NSW and VHBA in Victoria both sit within the broader health agencies, though with differing levels of independence. Likewise, other agencies that have developed specialist capital works units generally retain those units within those agencies (an example is School Infrastructure New South Wales). NSW did experiment with setting up an autonomous entity, the Transport Infrastructure Development Corporation, however, it was bought back into the fold when the NSW Government created its integrated transport authority, Transport for New South Wales, in 2010.

The HIU would benefit from an governance board overseeing its activities. Such a board would enable the involvement of private sector construction-related expertise in the HIU development and operations and provide an important conduit for the Minister and Health NZ Chief Executive to assess HIU performance and effectiveness.

Priority Action No. 23 refers to the establishment of the HIU Governance Board. While not knowing the proposed terms of reference and composition of this governance board, I endorse its use in overseeing the HIU.

The Board should be empowered to carry out internal audit functions so it is able to ensure the HIU is operating in accordance with its policies and procedures at all times.

Recommendation

10. The HIU to be a business unit within Health NZ, reporting directly to the Health NZ Chief Executive.
11. The HIU to have a governance board to oversee its activities.

Split of asset management responsibilities between the Health Infrastructure Unit and regions

The decision has been made to disestablish the DHBs and establish four regional networks delivered through regional divisions. Regions will establish district-level offices that will have responsibility for defined areas. Each region may have four-to-five district offices, depending on their circumstances. I anticipate that initially these will cover geographical areas not dissimilar to the existing DHBs. Given this new structure, it is necessary to consider the issue in split in responsibilities between the regions and the HIU in the management of existing assets and development of new health infrastructure.

The HIU was established to provide support for major capital projects in recognition of the unprecedented forecast demand for investment in health infrastructure over the next 10 years. It is still a developing organisation looking to establish the appropriate processes and procedures and to procure the skills in the market to carry out these major works. I would not recommend burdening it with the significant task of developing an organisation responsible for carrying out minor projects for new health infrastructure or maintenance and minor renewal works on existing assets, at this time. The DHBs currently carry out this work, and these functions are being transferred to the Health NZ regional or district offices, so responsibility for this more routine work would best sit with the Health NZ regional or district offices.

Many of the facilities are likely to carry a maintenance deficit, and keeping them working in a safe and efficient manner is often a balancing act that can only be effectively carried out at the local level. Similarly, minor projects are generally better and more efficiently managed by local staff dealing with local trades.

I would recommend that regions co-ordinate and manage minor project and maintenance tasks, with the HIU monitoring and developing a framework and systems and processes for this work. A common basis of condition assessment and asset management systems and processes would provide the foundation for this oversight.

It is important to understand that the transition from the legacy maintenance systems within the DHBs to a centralised system needs to be properly funded. Not only does the new system have to be purchased, each regional office will need funding from which to train its staff, backfill during this training, upgrade IT equipment, and ensure it has the appropriate resources and connectivity to transition the existing paper-based systems into the appropriate electronic format. Without this funding, it is unlikely the regional offices will implement the systems in the anticipated timeframes (if at all).

One of the benefits of having the HIU overseeing the maintenance services is it can ensure the funding is adequate, that allocated funding is used for maintenance work and not diverted elsewhere, and, over time, maintenance moves from a reactive fix-when-fail approach to a preventative regime focused on carrying out maintenance activities in advance of failure and extending the useful life of assets.

From the first phase of the NAMP, which describes the current state of the New Zealand health system assets, it is clear a significant maintenance deficit has accumulated. Tackling this deficit should be a priority, and in this instance I recommend consideration be given to doing this work on a programme basis, where multiple facilities are packaged up for improvement, rather than on a facility-by-facility basis. This would provide a good springboard for developing basic standards and may also take

pressure off the regions that would otherwise occur if a sudden increase in maintenance activity were to happen.

As for the threshold level for the HIU to deliver projects, in both NSW and Victoria, the skills and experience within the local health districts, specialty networks and health services (respectively) to deliver capital works vary widely. Some have little capacity to deliver projects and others are capable of delivering substantial projects above the $10 million level used in NSW. Rather than setting a standard dollar value below which projects are managed regionally, at this stage, I would recommend the value should be based primarily on the skills and capability of the people employed in each of the regional offices. This could be done by a combination of making use of the existing Investor Confidence Ratings, a skills audit or the HIU developing a capability framework that assesses each region to decide the level of projects capable of being delivered by that region. This may be in the order of 25 million in the most competent of regions.

As well as projects, programmes of works should undergo the same assessment, particularly where benefits are to be obtained by grouping together smaller projects in one package to ensure consistency in approach and economies of scale in their design and delivery.

The HIU will provide an opportunity to staff from within the former DHBs who may feel their careers are better served by joining the HIU. This could provide a valuable source of regional skills and expertise the HIU would otherwise a struggle to develop. Care will need to be taken not to excessively strip out the skills from the regional and district offices.

Recommendations

12. All Health NZ regions are to manage all minor project and facility maintenance on existing assets that are funded from recurrent operational funding. The HIU is to provide best practice asset management functional leadership, processes and procedures and ongoing monitoring of these business-as-usual type activities.
13. The transition from the asset management systems within the DHBs to a regionally managed centrally led system is to be adequately and discreetly funded, with timing determined by Health NZ considering its other investment priorities.
14. The remediation of the existing infrastructure deficit across the national hospital estate should be consolidated into a nationwide programme of works, with the programme co-ordinated by the HIU and timing determined by Health NZ considering its other investment priorities.
15. The HIU is to deliver new facility projects that have been assessed by the HIU as being, considering size, risk and/or complexity, in excess of a given region's delivery capability. The balance of projects is to be delivered by the regions.

Health Infrastructure Unit organisational, project and programme governance

I have examined the governance arrangements associated with the delivery of health infrastructure in three distinct areas:

1. organisational governance – that associated with the management of the HIU
2. project governance – that associated with the development of major and minor projects
3. programme governance – that associated with the finalisation of the Health NZ Capital Priority List.

I note that the Major Infrastructure Project Governance Guidance developed by Te Waihanga provides a sound basis for establishing governance arrangements for major infrastructure projects.

Further, I obtained additional detail as to what is proposed for the HIU and major health infrastructure projects from the New Dunedin Hospital Governance Cabinet Paper, which outlines the proposed new governance structure for the redevelopment of Dunedin Hospital.

Organisational governance

It has been established that the HIU will transfer to Health NZ.

The New Dunedin Hospital Governance Cabinet Paper proposes that a HIU governance board, which is accountable for overseeing capital investment and infrastructure delivery by the HIU, serves as an internal governance and assurance function for the Ministry of Health. It is also to help and provide technical advice to the Deputy Director-General, DHB Sector Support and Infrastructure and Director-General of Health, and provide reporting and information to the CIC. The Cabinet Paper also makes recommendations as to the Governance Board's membership.

While I generally concur with the approach being proposed, I would recommend a greater emphasis on board members with experience in the consulting and contracting markets, and an even mix of private and public sector members. In my view, the private sector members should, individually or in combination, have programme management, project management, design and construction experience with some exposure to health infrastructure, have good contacts in the private sector and/or have worked with government and broadly understand its processes.

The HIU Governance Board should monitor the progress of all HIU projects and be available to provide independent and expert advice on major projects that may be managed by the regions as and when required.

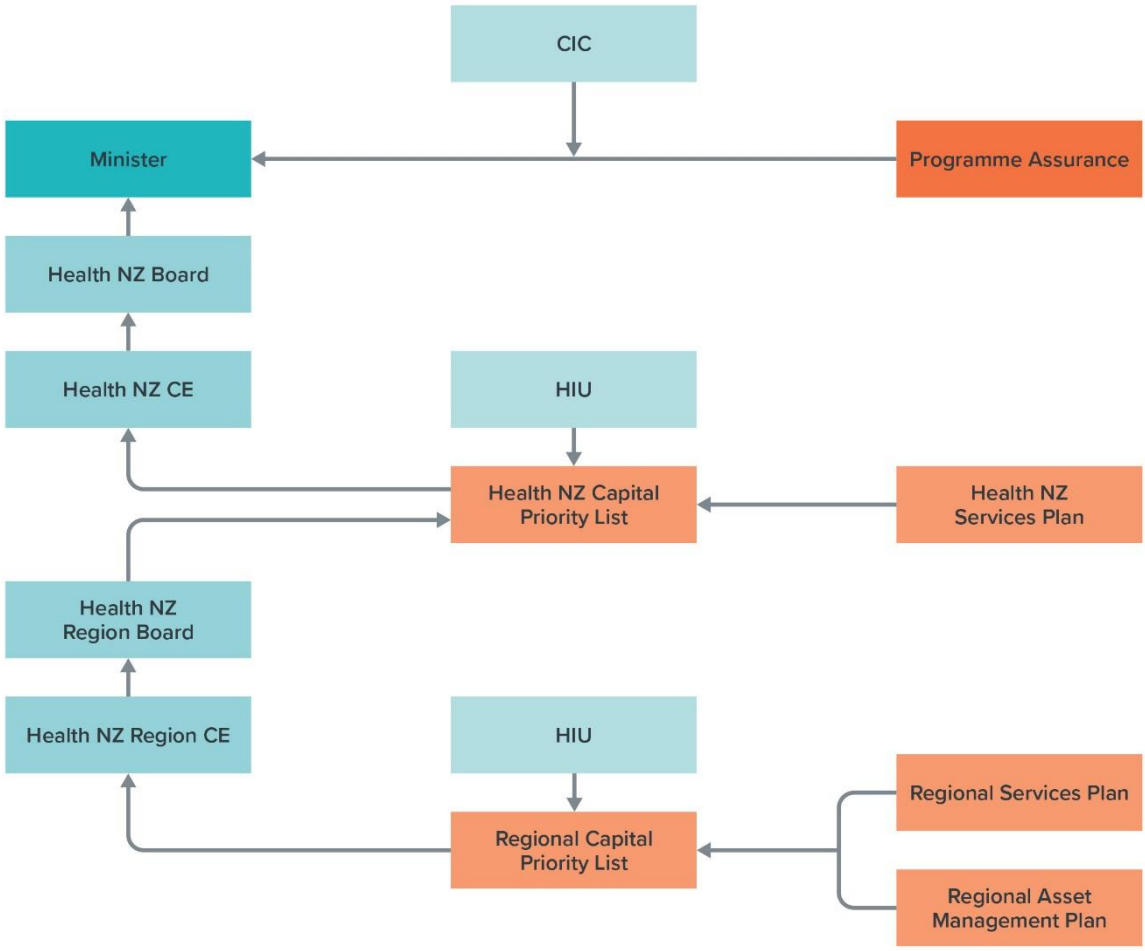
Programme governance

As outlined, finalisation of the Health NZ Capital Priority List, which determines the capital investment plan (the programme), should be agreed at government level.

I would envisage that, as indicated by the HDSR, the Programme Board that governs the programme will likely contain members of the Health NZ Board. The Health NZ Board membership will likely, and quite rightly, be health service centric and may not have members with significant infrastructure experience. If this is the case, members of the HIU Governance Board could also sit on the Programme Board, providing the necessary infrastructure expertise.

The programme governance structure could look like figure 8. Programme assurance for the Minister and Ministry of Health could be provided by the CIC or an equivalent independent group.

Figure 8: Programme governance structure



Note: CE = chief executive; CIC = Capital Investment Committee; HIU = Health Infrastructure Unit; NZ = New Zealand.

Project governance

Having a project governance structure that is light touch while projects are proceeding to plan but allows immediate intervention as soon as projects become problematic is critical to the success of the HIU.

The Major Infrastructure Project Governance Guidance developed by Te Waihanga broadly identifies the following features of major project governance arrangements:

- Cabinet has investment decision rights on all investment proposals where the investment requires new Crown funding or funding that exceeds the responsible Minister or Chief Executive's delegation. Major projects will inevitably fall into this category.
- Proposed investments will have a business case that is the vehicle for the thinking and planning phases, the reference point during the doing phase to support delivery, and the review phase to determine whether the investment benefits have been achieved.
- The Senior Responsible Owner (SRO) is the single point of accountability. The SRO 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.
- The SRO may chair the project Governance Board and is the link between the organisation's executive and the project.

- The project Governance Board operates within predefined terms of reference specific to the needs of the project. These make clear the Government's expectations for the investment with reference to the business case.

The approach to governance of future major (or high risk) health projects is proposed to be a replica of the arrangements at the New Dunedin Hospital, summarised in the diagram "Proposed Governance of overall New Dunedin Hospital Investment'. This of course reflects current arrangements under the DHB structure, and will have to be adapted to suit the new structure. Consideration will need to be given to the role Health NZ will have in these arrangements, given its responsibility for delivery of the New Zealand Health Plan.

Under this model, a distinction remains between the new hospital build and the transformation programme, including having distinct SROs.

Major health projects are complex. They involve:

- a strategic element, that is, the services to be provided and the volume of those services
- a facility development element, that is, delivery of a fit-for-purpose facility within the time and budget allocated
- an operational element, that is, transitioning to operations and providing the anticipated services with the appropriate staff and within the budget allocated.

First, I consider that a single peak body should manage the development of the project, including both the build and transitioning the facility to successful operations. While I agree the HIU SRO should chair this peak body, I believe a representative of Health NZ and of the regional division should also have key roles and to be able to make decisions relating to their aspect of the project, within the parameters established in the final business case. The Executive Steering Committee should fulfil the function of peak body.

I am not sure of the benefits the other proposed members of the Executive Steering Committee can bring where the project is largely defined through the business case process, and accountability for scope, cost, budget and fitness for purpose sits with the HIU. These stakeholders should be properly represented and empowered through the various user and other such groups. I agree that the Treasury and any other government groups should continue as observers.

The Health NZ representative should be responsible for ensuring the project continues to deliver the strategic outcomes anticipated in its planning and to control services creep.

The regional division Chief Executive should ensure the facility is constructed in the manner anticipated, that the facility can be clinically commissioned, services can start on completion, and the region can successfully operate the facility within the recurrent operating budget and with the appropriately skilled staff.

The HIU Deputy Director General should be responsible for developing a fit-for-purpose facility within the budget and timeframes anticipated and to control scope creep.

Each of the representatives should have delegations consistent with their roles and apply them in decision-making. The Executive Steering Committee is the forum to bring all affected parties together to ensure all decisions are properly considered.

As is contemplated in the New Dunedin Hospital Governance Cabinet Paper, each major project should have an Executive Steering Committee.

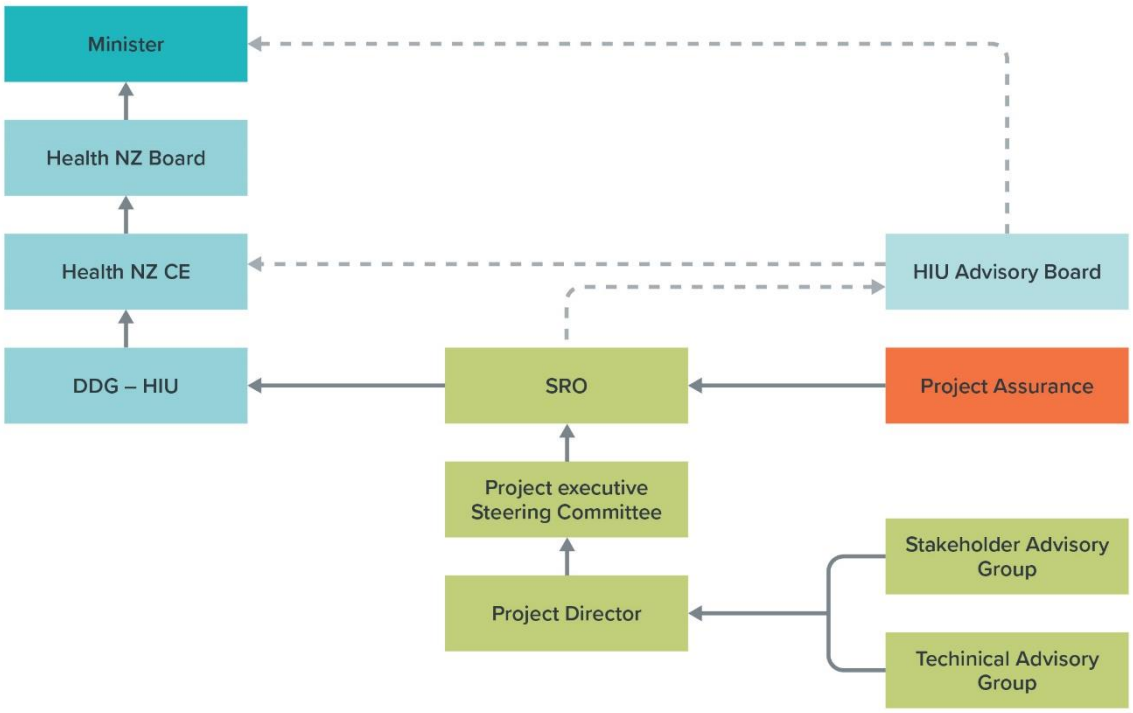
The scope, budget and programme will have been established in the DBC and signed off by Health NZ, the HIU and the region. The Executive Steering Committee should be careful not to make decisions outside of the parameters agreed within the approved business case.

If the project runs into financial or programme difficulties, the Executive Steering Committee should first intervene, and if a budget increase is required this should be sought from the Treasury with the appropriate justification in the normal manner. The Government should be kept up to date on the anticipated completion date, if the project is delayed.

Scope should not be removed from the project except with the approval of Cabinet by way of an amended business case.

Changes indispensably necessary to the successful completion of the project should be within the authority of the HIU (until budget is at risk). Discretionary changes in scope should only be allowed if sought and approved via an updated business case through the normal channels. Assurance should be provided via the Gateway process for major projects and by the HIU Project Management Office for region-delivered projects.

Figure 9: Recommended Governance structure for major or high-risk projects



Note: CE = chief executive; DDG = deputy director-general; HIU = Health Infrastructure Unit; NZ = New Zealand; SRO = senior responsible owner.

For projects not assessed as major or high risk, the governance model can be simplified, with the Executive Steering Committee not required. These projects will tend to be delivered by the regions, unless capability deficit means they are better managed by HIU to meet project requirements. The recommended governance structure for these more routine projects is shown in figure 10.

Figure 10: Recommended Governance structure for low- to medium-risk projects

Note: CE = chief executive; NZ = New Zealand; SRO = senior responsible owner.

Recommendation

16. Fit-for-purpose governance structures for the HIU, capital programme and all Health NZ projects be implemented as soon as possible, to provide sufficient and necessary oversight to existing and planned health infrastructure investment.
17. Fit-for-purpose programme and project assurance structures be implemented as soon as possible, to provide sufficient 'guard rails' for the revised governance and associated delegation structures.

Service planning

The HIU is still developing and has identified it is building capability across the core function of service planning, including:

- working towards strategic national service planning and development of models of care to optimise heath service delivery and related investment now and into the future
- leadership of standards, guidelines and tools for service planning and capacity modelling.

I do not consider it necessary that a capital works agency be involved in service planning. The urgency of this task may have come from the apparent lack of centralised direction in this area in the current health structure. However, Health NZ has clearly been earmarked to be the body responsible for the New Zealand Health Plan and the Services Plan, and because this work is an integral part of that task it should fall within its responsibility and control. It is not impossible to combine the two functions, but it does involve an organisation principally involved in capital works making decisions about the delivery of health care, which may alienate some stakeholders.

Recommendation

18. The HIU should not be responsible for centralised health service planning, as is currently the case, with this function best provided by a separate centralised dedicated function within Health NZ. The current arrangement is necessary and to be supported until the dedicated health service planning function is formed.

National Asset Management Plan

As noted, it is proposed that responsibility for the delivery of the NAMP be assigned to the CIC.

I believe the HIU is best placed to manage the development and ongoing updating of the NAMP. The skills and capacity to carry out this work will be embedded within the HIU, and the NAMP is an integral part of function the HIU has been established to provide.

The HDSR notes that:

> …the further development of the NAMP, setting asset performance standards, monitoring performance and support for DHB asset management practice would be functions of the HIU. The Review expects the HIU to build on work done to date, including the creation of a robust and transparent asset monitoring framework.[131]

Priority Action No. 14 – fully implement the asset management framework for the DHB sector –would form part of this task and I am aware the HIU has already started work on this.

I also recommend that, at a point in the future, the requirement for regions to have a proper asset management plan in place and to certify their compliance with this plan on an annual basis should be enshrined in government policy, as has occurred in NSW and Victoria.

Recommendations

19. The HIU should continue to manage the development and ongoing updating of the National Asset Management Plan.
20. The requirement for each region to have in place a strategic asset management plan that is certified annually for compliance, with attestation from each regional chief executive, should be enshrined in government policy.

6.3.2. Level of autonomy of the Health Infrastructure Unit

Efficient processes and procedures within the HIU are a matter within its control. However, being provided with the authority and flexibility by the Government to move quickly will be critical to the HIU's success. The traditional checks and balances that the Government tends to impose on its agencies, and those agencies impose on their own management in respect of budgets, delegations of authority, procurement of consultants and contractors and engagement of staff, will likely need to be streamlined to meet desired outcomes. Providing this efficiency and flexibility will be critical if the HIU is to attract high calibre senior executives, particularly those from the private sector.

I consider that, for the HIU to be successful, the Government and Health NZ should empower the HIU with more independence than is normal for government agencies in the following areas.

[131] Health and Disability System Review. *Health and Disability System Review: Final Report*.

Delegations

The HIU should aim to become the employer of choice for people wishing to involve themselves in major infrastructure works within government. To do this, managers need to have genuine responsibility and authority to carry out their work, particularly if the HIU is going to attract high calibre people from the private sector or overseas. Financial delegations will need to be significantly greater than personnel in equivalent roles in operational agencies, and gradings need to recognise that staff, even in senior positions, will have few reports.

Funding

Once projects to be carried out by the HIU are funded for design and delivery, the funding should be provided directly to the HIU. The funding should be accompanied by sufficient delegations of authority, such that a project being developed and delivered within budget should not require approvals from Health NZ, the Ministry of Health or broader government to progress. Exceptions to this should be limited to those significant issues that are required to be approved by Cabinet or the Minister, such as the award of contracts for construction, as necessary. Obviously, where a project is over budget, is it is appropriate that a more significant level of external oversight is implemented.

The HIU's budget needs to be ringfenced within the broader Health NZ budget. A situation cannot be allowed to occur where unspent funds from an infrastructure project are used to shore up operational deficiencies, the HIU's budget is reduced as part of a broader government cost-cutting exercise, or payments are delayed because of wider health cash-flow issues.

Budget and contingency

It is important that budgets are established initially on a robust estimate of the project cost during the prioritisation process. They should then be based on the completed business case and not on available funding or optimistic cost estimates designed to boost the Benefit Cost Ratio and therefore the attractiveness of a project.

Estimates should include all costs associated with a project, including IT, major medical equipment, FF&E, hospital commissioning and establishment and transition costs. If the latter are not included, then separate budgets need to be established for these tasks.

Adequate contingencies that reflect the stage of development, level of knowledge and risks of the project at that point in time need to be included in estimates.

Given the potential for latent conditions, the requirement for betterment of existing services and the need to update existing systems and equipment in brownfields development to cause significant cost blowouts, these items need to be properly estimated during the business case process or increased contingency provided.

A project contingency should also be held at a programme level to deal with strategic and governmental risks associated with facility development. Contingency relating to the planning, design and construction processes should be held at the project level.

Annual spend

One of the main issues that will confront the HIU is fully using each year's capital allocation, while remaining within budget. Predicting cash flows on a project is a complex task. It is made more difficult by issues such as when contingency might be spent (if at all), but more particularly establishing an accurate programme, given the propensity of project managers to be overly optimistic in their assumptions. Timeframes associated with complex matters, such as stakeholder discussions, land

acquisition and the formal planning approval process, and delays in the delivery of any project, are difficult to assess even in ideal circumstances.

It is a source of constant frustration to governments, Ministers and executive management when projects that are announced are slow to market or slow to start work. The HIU needs to be proactive in its dealings on all its projects, constantly anticipating where delays might occur and ensuring it can mitigate them as far as is practicable. It should always have sufficient projects in the pipeline so that, when priority projects are delayed or additional funding becomes available, projects are waiting in the queue that can be advanced.

Anticipating a level of underspend at the start of a financial year is often necessary, if the full spend is to be achieved in that year.

Payments

The HIU should manage payment of its consultants and contractors and/or have the capacity to authorise payments at any point and in a timely manner. A situation cannot be allowed to arise where payments to consultants and contractors are being delayed because of process issues within an agency payment system. The ability to offer immediate or prompt payment is often an important part of managing contracts or negotiating settlements. Requiring the HIU to comply with payment processes developed for an operating business, and not necessarily suited to major capital works, where this results in delays to payments, will negatively affect the reputation of, and consultants' and contractors' desire to work for, the HIU.

Processes and procedures

The HIU should be able to develop its own contractual documentation for the engagement of consultants and contractors. These should be standard form as far as possible, based on an equitable risk allocation and capable of being adapted to various consultant and contract procurement strategies that may be adopted. Burdening the HIU by requiring it to comply with broader governmental and agency procurement strategies not suited to major capital works contract delivery can lead to inappropriate risk allocation, delay and suboptimal outcomes.

Direct employees versus contractors

The HIU should aim to have as many direct employees as possible to develop a workforce with the skills and experience to carry out major health infrastructure projects, and to retain and manage the knowledge it develops in carrying out its works. However, it needs to be recognised that most similar organisations struggle to find individuals with the skills and expertise needed to carry out major projects in the market, particularly when in competition with a buoyant private sector market and nearby countries also investing heavily in health infrastructure. Flexibility must be provided to engage consultants at short notice for varying periods to supplement permanent staff, particularly for unusual, large and complex projects and programmes. The same is true for contractors to fill roles within the HIU for fixed terms.

Interaction with private sector

The HIU will need to work proactively with the private sector to develop more sophisticated and competitive consulting, contractor and subcontractor markets capable of delivering the volume of projects anticipated. To do this, management will require more discretion than is normally available to the public sector to engage with these market sectors by way of conferences, peak body functions, boardroom briefings, industry presentations and the like, and this should be a significant part of their role. Obviously, the normal policies in respect of accepting gifts, personal entertainment, conflicts of interest and so on will need to be maintained.

Communications

Government may also want to consider enabling the HIU to have its own dedicated communications and engagement capability where it relates to the design and construction of health facilities. Often, little benefit is gained in passing capital works-related communications through Health NZ, which is likely to be more experienced in and focused on recurrent health-related matters.

The Government will also need to be supportive in terms of its communications around the HIU. Several legacy projects are working their way through the system, and it is likely the HIU will be required to finish delivery of those projects. In circumstances where these projects incur cost or time overruns, it is important to reassure key stakeholders that these were not projects developed under the new HIU model, otherwise it will affect the credibility of the organisation.

Recommendation

21. Government and Health NZ empower the HIU with necessary autonomy to perform its operations.

6.3.3. Health Infrastructure Unit structure

In the current organisational structure, the HIU is led by a Deputy Director-General who has two direct reports:

1. Group Manager, Health Infrastructure – Capital Investment
2. Director, Health Infrastructure – Delivery.

The Group Manager, Health Infrastructure – Capital Investment has five direct reports:

1. Manager Service Planning
2. Manager Investment Strategy
3. Manager Asset Management and Analysis
4. Manager Facility Design and Policy (consistent with Priority Action No. 17 – establish a design authority to provide advice and confirm design standards)
5. Manager Investment Monitoring.

The direct reports to the Director, Health Infrastructure – Delivery will be dictated by the number of major projects that are in progress but currently includes:

1. Manager, Project Management Office (presumably responsible for Priority Action No. 13 – complete work on risk and assurance (critical infrastructure and building systems)
2. Programme Director New Dunedin Hospital
3. Project Director Delivery (other major projects as necessary).

Given the importance of asset management and, in particular, improvements to maintenance practices and asset condition, I would create a report purely focused on this task. This group would manage the development of the Asset Management Plans, establish the framework, strategy, policies and procedures for maintenance works, develop the Asset Register and Condition Reports and carry out an audit role across the regions.

The HIU is currently relying on the Ministry of Health for most of its administrative functions, such as finance, legal, human resources, commercial, procurement and communications. As outlined, I believe many of these functions need to be brought partly, if not wholly, within the HIU and, in particular, the HIU should have a corporate function that controls:

- finance – including consultant and contractor payments and cash-flow forecasting
- human resources – including sourcing and engagement of staff
- commercial – consultant and contractor terms of engagement and negotiation, claims resolution
- procurement – consultant and contractor engagement.

I also consider the HIU should have a substantial stakeholder and communications function that works closely with Health NZ and the Māori Health Authority, and includes:

- a government liaison role that manages the HIU's own intergovernmental relations with relevant Ministers and central agencies on infrastructure-related matters
- external communications (infrastructure related)
- stakeholder management (infrastructure related) – including regional boards, clinicians, Health NZ staff and the public
- change management.

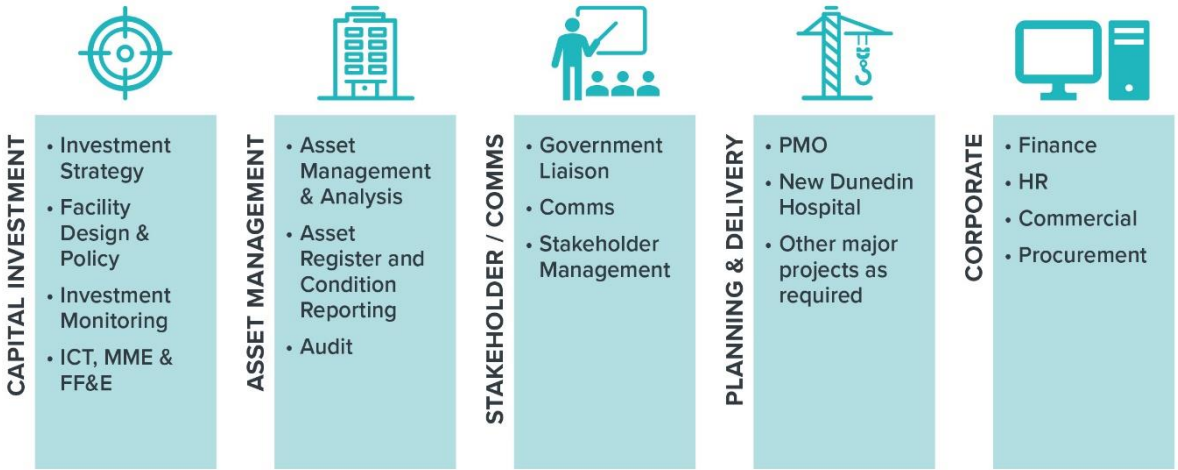
While it is implicit in the activities the HIU carries out, I would separately identify a work health and safety function within the organisation, answering through to the Deputy Director-General, to assure independence.

I would also identify an ICT role responsible for liaison with Health NZ within the capital investment function. This role could also manage the major medical equipment and FF&E aspects of projects.

These additional functions should preferably report directly to the Deputy Director-General, creating a flatter structure.

The high-level functional groupings I would therefore recommend for HIU are illustrated in Figure 11 below:

Figure 11: Health Infrastructure Unit organisational structure



Note: FF&E = furniture, fixtures and equipment; HR = human resources; ICT = information communication technology; MME = major medical equipment; PMO = project management office.

The two Australian jurisdictions examined in this review have the capabilities listed above, although the number of people dedicated to each capability vary:

- VHBA has six functional groups covering the areas above reporting to the Chief Executive, and a single delivery group that manages all VHBA-led projects.
- Health Infrastructure NSW has a similar corporate grouping of these capabilities, but its delivery group is divided into three regions, each with an executive director reporting to the Chief Executive.
- HI previously had the centralised model of delivery, however, it changed to a geographic model two years ago to build closer relationships with the regions for which it was building facilities.

It is not unusual that a new business starts with a tightly managed functional structure, and then, as it matures and improves its ability to execute the operating model, moves to a more devolved model.

My recommendation is that HIU should maintain a tightly managed functional structure with a single delivery group for the foreseeable future, or until the new operating model is working effectively, and delivery of projects is largely on scope, time and budget. It can then assess whether it considers a devolved model might better respond to the regional structure.

Building capability

Developing the capability to deliver major projects on scope, time and budget will be a difficult task and take time. To do this, the HIU will need to attract and build programme and project capability in constructing health facilities. The pool of people in New Zealand who have the large vertical infrastructure experience, especially in health facilities, is not large. And, of that pool, many will be attracted to higher paying jobs in the private sector or overseas. For the HIU to be successful, it must be resourced with highly competent people.

The Ministry of Health has recently received a D rating for its Investor Confidence Rating (ICR). As a matter of urgency, Health NZ, through the HIU, needs to develop asset management and project delivery systems and processes so, when assessed, Health NZ is rated at an ICR of B or greater.

To offer career growth opportunities for programme and project delivery, the HIU will need to be managing a range of sizes and types of projects so an individual early in their career can learn on a small project, progress to medium-size project and, in time, be ready for the big projects.

Under the current proposal, the HIU would be managing just the bigger and more complex and risky jobs, clearly not projects where an individual early in their career can obtain leadership accountability. The regions and districts, however, will have smaller projects.

The HIU will need to carefully consider how to provide a seamless transition between the two, to provide an attractive career path for individuals wanting to work in the health capital sector.

Recommendations

22. Health NZ to consider the proposed HIU structure contained within this review when considering how the HIU is organised within the reformed Health System.
23. Health NZ, through the HIU, develop asset management and project delivery systems and processes so, when assessed, Health NZ is rated at an ICR of B or greater.
24. The ICT and FF&E procurement, in particular, major medical equipment, to be provided by a separate centralised specialist function within Health NZ. The HIU will provide a co-ordination function to liaise with these specialist capabilities and integrate these requirements into project delivery.

6.3.4. Health Infrastructure Unit processes and procedures

While the HIU will likely be well under way in the development of its processes and procedures, my recommendations on some approaches, which I believe will improve the efficiency of its operations, include the following.

Capital works development process flows

The process for the planning and delivery of major infrastructure is well known and documented. Adapting those processes for major health infrastructure is well understood and reasonably consistent across the jurisdictions considered in this review.

One thing I would prioritise within the HIU is finalising the development of its processes and procedures. This includes standard form documentation for the design and construction of health facilities – a national project delivery framework – and the production of flow charts, from strategic planning and prioritisation through to post-commissioning activities, which describe this framework in detail. The national project delivery framework should be mandated for all Health NZ projects. This framework, or at least a cut down version, should then be condensed for the lesser value projects delivered by the regions.

Both Health Infrastructure in NSW and the VHBA provide detailed flow charts describing their processes and procedures. Also included are several standard form documents and detailed instructions on to how to prepare the requisite documents, as part of the information available to those looking to develop facilities.

The need for this is identified in HIU Priority Action No. 21 (launch of HIU website providing access to planning and investment tools) and Priority Action No. 18 (publish a framework for HIU delivery of projects of scale, risk and complexity and where DHBs lack capability).

Thin client or full service

I would recommend that the HIU operates under a thin-client model where it provides strategic direction in relation to programmes and projects, but that it contracts out the bulk services to external consultants and contracting organisations.

While it will take time to develop the skills and expertise needed to carry this out, the model is serving both NSW and Victoria well. It avoids the organisation becoming too large and unwieldy if it tries to carry out too many of these functions using its own resources.

Separation of facility planning

Once the strategic assessment for a project has been prepared and government decides to proceed, the project moves into the planning phase, and the HIU should take control of the process. A major health project generally requires around 18 months to plan, during which time expenditure is minimal relative to the overall cost.

It is beneficial to separate out this planning phase from the construction phase, from a budgeting point of view. As identified, it is likely some projects will suffer delays during the planning phase because of difficulties in the consultation process with stakeholders, issues around land acquisition, issues with planning approvals and general delays that occur. Separating out the planning phase allows the HIU to start planning on upcoming projects in the 10-year Capital Investment Plan and have upcoming projects ready to move straight to delivery. Having an excess of projects ready to proceed to construction also gives government alternatives from which to choose should the opportunity arise as part of the annual budgeting process or because of additional funding commitments.

The Government could announce those projects moving into planning as part of the budget announcements, although this requires careful management of the expectations that are created.

Planning and delivery – separate or combined teams

Notwithstanding the recommendation to separate planning from delivery from a budgeting viewpoint, the question remains whether the HIU should have a single team take a project all the way through design and delivery or if these two activities should be separated. The natural break point is on awarding of a contract for the construction of a facility.

Health Infrastructure NSW initially separated the planning and delivery functions on the basis that the two disciplines required a different skill set. In addition, keeping a team together and preparing contracts that cover the entire lifecycle of a project's development is difficult because a high level of uncertainty is involved early on as to timeframes, procurement methodology and preferred scale and complexity of the facility.

However, in dividing projects into two stages, a certain amount of corporate knowledge is lost in the transfer.

I would recommend the two stages initially be separated, until such time as the processes and procedures for design and delivery of facilities have been bedded down and the organisation has a better understanding of the project lifecycle.

Supply panels

The need for supply panels is identified in HIU Priority Action No. 19 (establish supply panels for construction services (health planners, architects, cost and risk estimators, design, engineering and project managers)) to meet expectations for higher quality and more efficient service delivery. This should occur as soon as possible.

To the extent that a scheme exists to manage contractors bidding for projects based on track record, such schemes must be sufficiently flexible to allow and encourage the introduction of new entrants, particularly those from offshore with skills not readily available locally.

Standard form contracts

Standard forms of contract, adapted to health's particular circumstances and with consideration to the Construction Sector Accord principles, should be developed and used in all contracts to speed up procurement, reduce bidding costs, standardise risk allocation and simplify contract administration. The contractor and subcontractor market will also be far more likely to respond to tenders where it is comfortable it understands the risk allocation and the manner in which contracts will be administered.

Australasian Health Facility Guidelines

As proposed, it should be mandatory to use the Australasian Health Facility Guidelines as the basis from which planning and design progresses for new or refurbished facilities, unless an exemption is sought in the business case. New Zealand is already party to these guidelines, and they are under constant review and improvement. This is consistent with Priority Action No. 16 (implement conditions of funding to include adoption of standardised facility design guidelines).

Information communication technology funding

The ICT-related infrastructure required to successfully bring online and operate a facility should be detailed in the business case so it can be properly funded as part of the project and integrated into the design, construction and commissioning. Care needs to be taken that any legacy systems requiring upgrade to support new infrastructure are also included.

It will be critical that the HIU and regions engage with Health NZ's digital and data function throughout the process of development and delivery of health facilities. This will ensure contemporary ICT equipment and infrastructure are provided.

Recommendation

25. The HIU develops and maintains a national project delivery framework, which is to be mandatory for the delivery of all Health NZ infrastructure projects.

6.3.5. Summary of recommendations

The health infrastructure system change recommendations are summarised in table 4.

Table 4: Summary of recommended changes to the health infrastructure system

No.	Recommendation
	Asset management and maintenance
1	All Health NZ regions to develop regional asset management plans to enable them to realise the full value of assets over their lifetime and provide a basis for infrastructure investment. The Health Infrastructure Unit (HIU) is to provide a common, best practice framework for these plans.
12	All Health NZ regions are to manage all minor project and facility maintenance on existing assets that are funded from recurrent operational funding. The HIU is to provide best practice asset management functional leadership, processes and procedures and ongoing monitoring of these business-as-usual type activities.
13	The transition from the asset management systems within the DHBs to a regionally managed centrally led system is to be adequately and discreetly funded, with timing determined by Health NZ considering its other investment priorities.
19	The HIU should continue to manage the development and ongoing updating of the National Asset Management Plan.
20	The requirement for each region to have in place a strategic asset management plan that is certified annually for compliance, with attestation from each regional chief executive, should be enshrined in government policy.

	Capital planning and investment management
2	The HIU to develop and maintain an investment management framework to inform the prioritisation process that informs the 10-year Capital Investment Plan.
3	The HIU to evaluate the continued effectiveness of the Investment Management Framework and ensure alignment with the Government Policy Statement and New Zealand Health Strategy, as well as advising Health NZ on any necessary improvements to the framework as required.
4	The HIU to work with the Treasury to customise the Better Business Case process and associated guidelines to suit health infrastructure investment requirements, including the addition of a strategic assessment that informs the prioritisation process, replacing the current district health board capital intentions process.
5	Prioritised projects scheduled to start within the initial three years of the 10-year Capital Investment Plan should be funded to move promptly to subsequent business case stages, to ensure investment decisions are delivered in time to maintain promised delivery timeframes.
6	The HIU to administer a central pool of funding for all business case development including co-ordinating necessary planning inputs to the strategic assessment.
7	The Treasury to provide Health NZ with a 10-year capital envelope within which to reliably plan future health infrastructure projects.
8	The HIU to compile a 10-year Capital Investment Plan.
9	Health capital funding for new capital investment to move from an annual budgeting cycle to a three-year budget cycle, which is to align with the Government Policy Statement.
	Project delivery
15	The HIU is to deliver new facility projects that have been assessed by the HIU as being, considering size, risk and/or complexity, in excess of a given region's delivery capability. The balance of projects is to be delivered by the regions.
23	Health NZ, through the HIU, develop asset management and project delivery systems and processes so, when assessed, Health NZ is rated at an ICR of B or greater.
25	The HIU develops and maintains a national project delivery framework, which is to be mandatory for the delivery of all Health NZ infrastructure projects.
	Infrastructure deficit of hospital estate
14	The remediation of the existing infrastructure deficit across the national hospital estate should be consolidated into a nationwide programme of works, with the programme co-ordinated by the HIU and timing determined by Health NZ considering its other investment priorities.

The HIU operating model recommendations are summarised in the table 5.

Table 5: Summary of recommendations for the Health Infrastructure Unit operating model

No.	Recommendation
10	The Health Infrastructure Unit (HIU) to be a business unit within Health NZ, reporting directly to the Health NZ Chief Executive.
11	The HIU to have a governance board to oversee its activities.
6	The HIU to administer a central pool of funding for all business case development including co-ordinating necessary planning inputs to the strategic assessment.
17	Fit-for-purpose programme and project assurance structures be implemented as soon as possible, to provide sufficient 'guard rails' for the revised governance and associated delegation structures.
18	The HIU should not be responsible for centralised health service planning, as is currently the case, with this function best provided by a separate centralised dedicated function within Health NZ. The current arrangement is necessary and to be supported until the dedicated health service planning function is formed.
21	Government and Health NZ empower the HIU with necessary autonomy to perform its operations.
22	Health NZ to consider the proposed HIU structure contained within this review when considering how the HIU is organised within the reformed Health System.
24	The information communication technology and furniture, fixtures and equipment procurement, in particular, major medical equipment, to be provided by a separate centralised specialist function within Health NZ. The HIU will provide a co-ordination function to liaise with these specialist capabilities and integrate these requirements into project delivery.

Appendix A: Brief

Health Infrastructure Review – Brief

In March 2020, a Health and Disability System Review (HDSR) was completed. The review, led by Heather Simpson, 'was charged with recommending system-level changes (to the New Zealand Health System) that would be sustainable, lead to better and more equitable outcomes for all New Zealanders and shift the balance from treatment of illness towards health and wellbeing.'

The report found that 'The current system for planning and delivering capital projects is not cohesive or effective. While the Government has recently introduced improvements, such as establishing a health infrastructure unit and changing the capital charge regime, the system still encourages duplication and spreads scarce expertise too thinly.'

In response to recommendations from the HDSR, the MoH has requested that Te Waihanga undertake a review of equivalent nearby health infrastructure organisations , HI and the VHBA, that were established in the last decade to address similar infrastructure issues currently faced by New Zealand's health sector.

It is considered assessment of best practise aspects of how these organisations and the Health Infrastructure Unit are structured should provide a good basis in recommending how a New Zealand central government health infrastructure function could best organise itself to successfully meet the challenges in the decade ahead in health infrastructure delivery (Review).

On 21 April 2021, in response to the Health and Disability System Review, the Government announced major health system reforms to make healthcare accessible for all New Zealanders. Key points including:

- All DHBs will be replaced by one national organisation, Health New Zealand
- A new Māori Health Authority will have the power to commission health services, monitor the state of Māori health and develop policy
- New Public Health Agency will be created
- Strengthened Ministry of Health will monitor performance and advise Government

Alongside the announcement, Government proactively released redacted Cabinet papers and related Cabinet minutes detailing the proposed health system reform. The 'Future State' related recommendations from this review will consider reform decisions and assumptions as provided in the Cabinet paper and related minute [CAB-21-MIN-0092].

Review Scope

Mapping Current State

1. Review and describe how health infrastructure programmes/projects, at a systems level, are currently being delivered in the following jurisdictions:
    a. New Zealand
    b. New South Wales; and
    c. Victoria

    Detail the various government entities involved within each jurisdiction (Health Infrastructure Organisation, Ministry of Health, the Treasury, Health Boards etc) and their functions within the

system of delivering programmes/projects from inception to commissioning. Business processes that make up the system include but are not limited to the following:

- Overarching national/state health service and investment planning;
- National/state Asset Management Planning frameworks;
- Capital planning processes for facilities, major equipment and digital technology considering service planning and asset management requirements/inputs to prioritise programmes/project considering public health need and facility risk;
- Management of linkages between service planning, asset management, investment strategy, project/programme prioritization and delivery;
- System and portfolio governance, management, support and advisory structures to manage capital planning and investment pipeline;
- Investment management framework including all business case processes;
- Programme and project governance processes, boards and advisory processes;
- Stewardship of Programme/project delivery, health design, delivery model and contract frameworks including standards, settings and guidance;
- System and project monitoring, reporting and assurance;
- Delivery of programmes and projects.

2. For the NSW and Victorian jurisdictions, the established Health Infrastructure Organisations (HIO) are:

- Health Infrastructure New South Wales (HINSW); and
- Victorian Health Building Authority (VHBA).

For each HIO, within the context of the wider jurisdictional health infrastructure programmes/projects system detail:

- How, since the formation of each HIO, they have impacted their jurisdictions health infrastructure delivery system, in particular detailing systemic benefits/disbenefits.
- How they intend to continue to evolve in response to changing health system infrastructure requirements over the next 10 years.

3. For HINSW and VHBA, detail the rationale behind the mandate of which programmes/projects are centrally delivered (by an HIO) and which programmes/projects are delivered by the local Health Boards, considering project size and complexity against available capability and capacity. Provide assessment on the strengths and weaknesses behind each jurisdiction's mandate in the context of their jurisdiction's circumstances.

4. HINSW and VHBA are autonomous entities, whereas the HIU currently sits as a business unit within the Ministry of Health (NZ). Although the HDSR and Health System Reform both envisage the HIU being a unit within a newly formed Health NZ in the future, provide an analysis of the strengths and weaknesses of a NZ health infrastructure function being an autonomous entity versus continuing to be a unit within a parent entity.

The way forward

Considering best practise elements of HINSW and VHBA, recommendations from the HDSR and the forecast capital pipeline over the next decade, provide recommendations on how a New Zealand central government health infrastructure function could best organise itself to successfully meet the challenges in the decade ahead. In particular:

5. Recommend operating model options for a centralised NZ HIO that will most efficiently and effectively deliver forecast health infrastructure and meet NZ health service requirements.

6. Recommend organizational structures that will adequately support the recommended operating model options.

7. Recommend a mandate and framework detailing which programmes/projects are best delivered by a centralised HIO and which are best managed regionally.

8. Recommend (with a rationale) whether it would be better for the HIO to be an autonomous entity or to remain a business unit within either the Ministry of Health (current) or Health NZ (future).

Exclusions

Implementation of any change in response to this review is excluded from the review's scope.

Appendix B: Interviewees

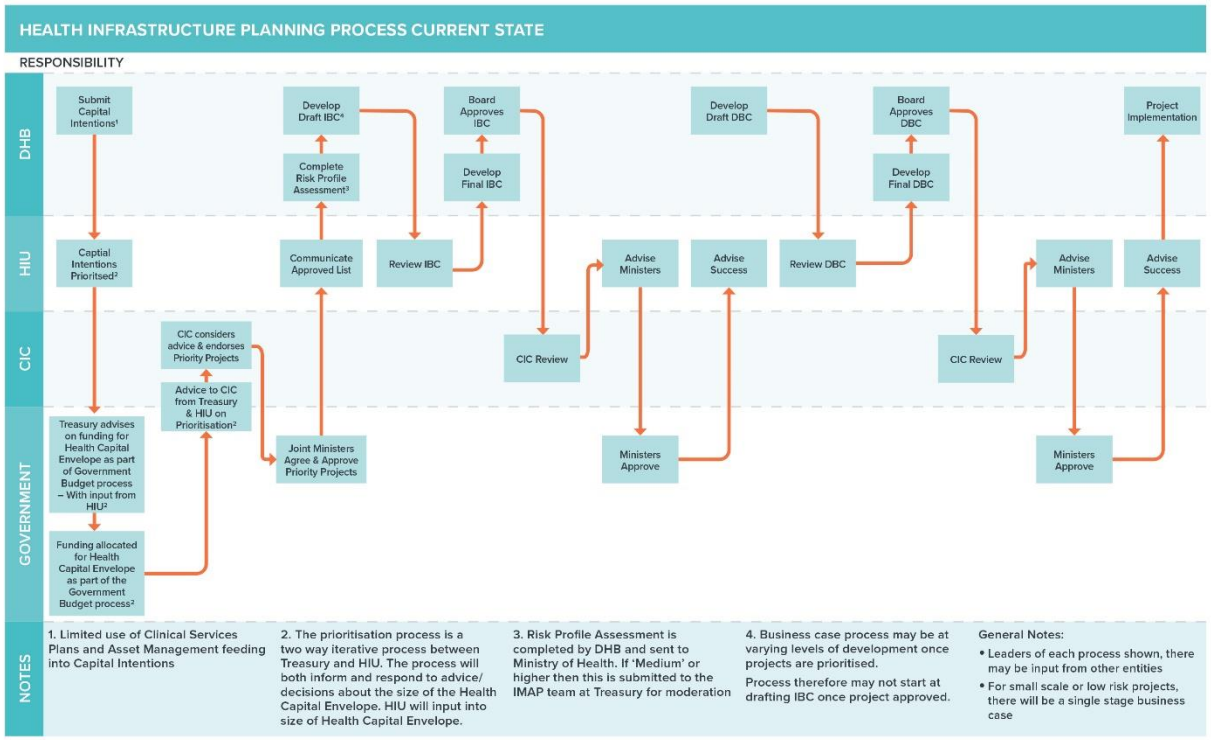
Interviewee	Role
New South Wales	
San Midha	Deputy Secretary, Policy and Budget Group, New South Wales Treasury
Sean O'Shannassy	Associate Director, Health, New South Wales Treasury
Helen O'Loughlin	Social Commissioner, Greater Sydney Commission
Natalie Camilleri	Executive Director City Planning Infrastructure, Greater Sydney Commission
Jasmine Glennan	Program Manager, WSHA – Campbelltown City Council
Ally Dench	Executive Director Community and Corporate, Wollondilly Shire Council
Bruno Zinghini	Executive Director, Western Region – Health Infrastructure
Vince McTaggart	Executive Director Health System Planning and Investment, Health
Elizabeth Kim	Principal Planning and Policy Officer, Service and Capital Planning Unit, Health
Peter Dicks	Director, Asset Management, Health
Ellie Kallianis	Manager, Asset Strategy, Health
David Ryan	Director, Capital Works and Infrastructure, South Western Sydney Local Health District
Athena Venios	Executive Director, Assurance, Health Infrastructure
Emma Skulander	Chief Operating Officer, Health Infrastructure
Victoria	
David Ballantyne	Executive Director, Capital and Infrastructure, Monash Health
Robert Fiske	Chief Executive Officer, Victorian Health Building Authority
Tony Michele	Executive Director, Victorian Health Building Authority
Mathew Boelsen	Director, Health and Human Services Branch, Department of Premier and Cabinet
New Zealand	
Helen Anderson	Health and ACC, Senior Analyst, Treasury
Sebastian Doelle	Health and ACC, Team Leader, Treasury
James Dehamel	Analyst, Health Capital, Treasury
Chris Fry	Director, Capital Investment, Health
Karen Mitchell	Deputy Director of Infrastructure, Health
Steven Pazin	Capital Investment Management, Health

Jo Strachan-Hope	Manager, Investment Strategy, Capital Investment Management, DHB Performance, Support and Infrastructure, Health
Karl Wilkinson	Director, Health Infrastructure, Health
Astuti Balram	Manager, Service Planning – Capital Investment, Health
Tony Lloyd	Programme Director, Health
Tony Phemister	Portfolio Manager, Northern Regional Alliance
Mark Harris	Manager, Regional Capital Programme, Northern Regional Alliance
Monique Fouwler	Manager, Asset Management and Analysis, Health
Evan Davies	Chair, Capital Investment Committee
Mhairi McHugh	Principal Advisor, Health and Disability Review Transition Unit, Department of the Prime Minister and Cabinet
Adam Naiman	Director, Strategy and Transactions, Ernst & Young
Margie Apa	Chief Executive Officer, Counties Manukau District Health Board
Alan Greenslade	Acting Director of Infrastructure, Counties Manukau District Health Board
Andrew Stitt	Director, Investment Office, Ministry of Education
Sharyn Pilbrow	Associate Deputy Secretary Strategy, Investment and Policy at EIS – Ministry of Education

Appendix C: Summary of key health organisations

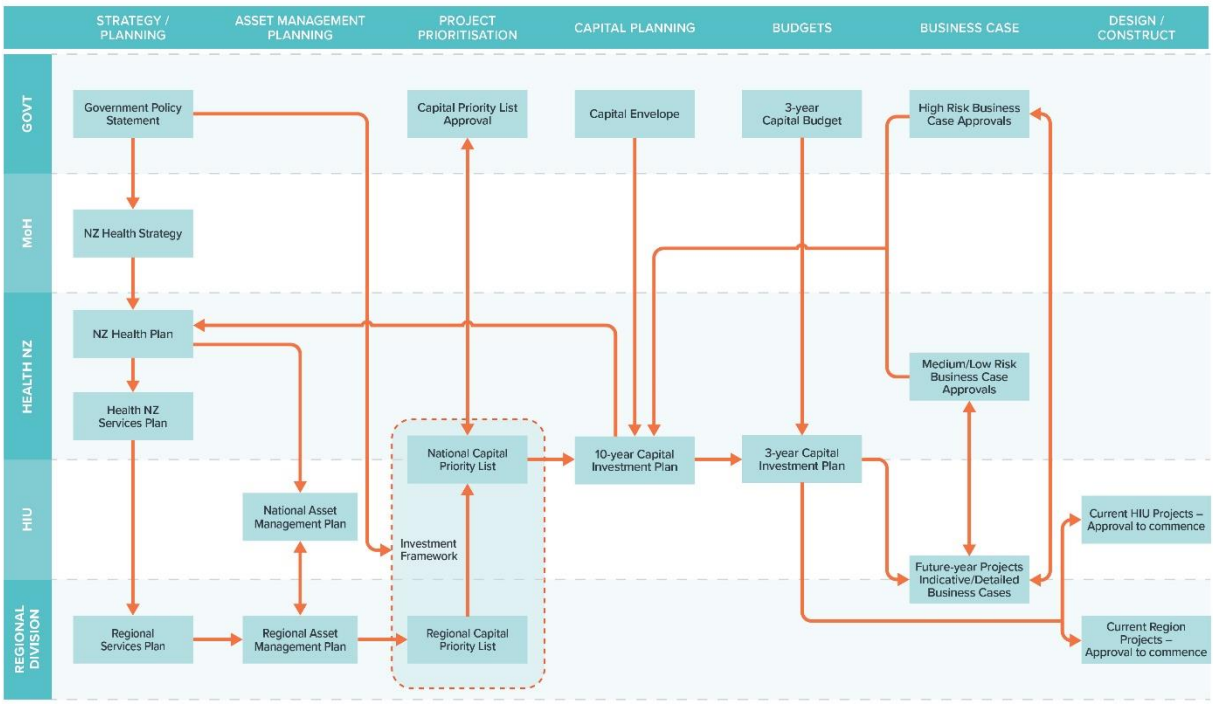
Organisation(s)	Description
District health boards (DHBs)	DHBs are responsible for providing or funding the provision of most health services in their district. They are governed by boards of elected and appointed members that are accountable to the Minister of Health. DHBs manage buildings with a replacement value of around $24 billion, and there is also considerable investment in clinical equipment and information technology.
Capital Investment Committee	The Capital Investment Committee is a section 11 committee pursuant to New Zealand Public Health and Disability Act 2000 that provides advice to the Ministers of Health and Finance on the prioritisation and allocation of funding for capital investment and health infrastructure.
Treasury	The Treasury is the Government's lead economic and financial adviser. There is also a dedicated Vote Health team within Treasury focused on New Zealand's health and disability system (including health capital funding) and the Accident Compensation Corporation. The team provides advice to the Ministers of Health and Finance on the future pipeline of capital projects, which is used as an input to the annual budget allocation of capital to health. It includes an Investment Management and Asset Performance (IMAP) group that manages the Investor Confidence Rating (ICR) and provides information and advice to Ministers on the investment performance of public entities.
Ministry of Health	The Ministry leads New Zealand's health and disability system and has overall responsibility for its management and development. The Minister's functions, duties, responsibilities and powers are specified in the New Zealand Public Health and Disability Act 2000 and other legislation, which includes providing strategic and policy advice to the Government on health and disability issues and on the management and development of the system, and managing the health services statutory framework and regulations. The Ministry ultimately oversees and funds the 20 district health boards (DHBs) in New Zealand in addition to monitoring DHB and non-DHB Crown entity performance on behalf of the Minister. The Ministry convenes the Capital Investment Committee.
Minister of Finance and Health	The Ministers of Finance and Health (joint Ministers), in association with the Treasury and Cabinet, allocate annually the amount of capital available to the health sector for major capital works.
Health Infrastructure Unit	The Health Infrastructure Unit (HIU) within the Ministry of Health was formed in 2019 with a twin purpose: enhancing the Ministry's stewardship role (leading health investment through the planning, prioritising and monitoring of projects) and standardising the way projects are designed and delivered. The goal is that the HIU will enable infrastructure projects to be completed faster, to a higher quality and to a greater environmental sustainability standard.

Appendix D: Funding and investment decision processes – current state



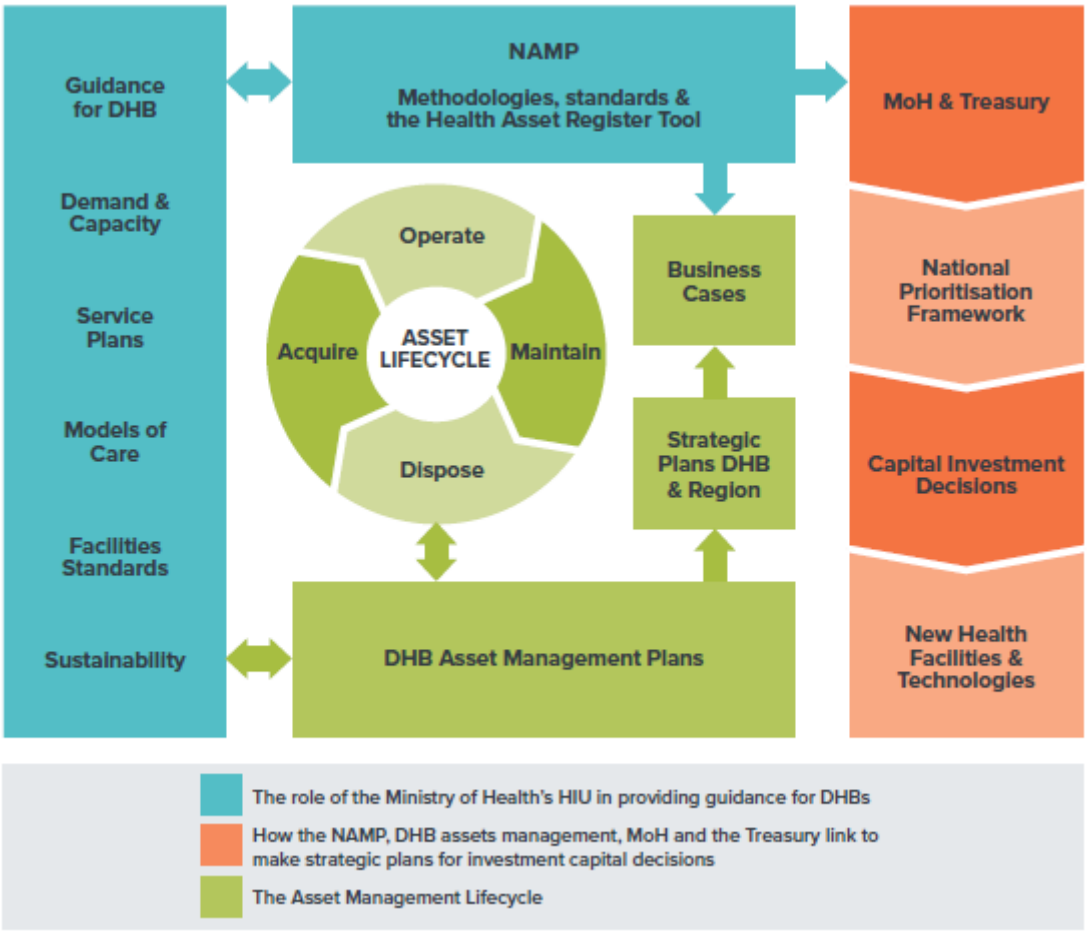
Note: CIC = Capital Investment Committee; DBC = Detailed business case; DHB = district health board; HIU = Health Infrastructure Unit; IBC = Indicative business case; IMAP = Investment management and performance; MoF = Minister of Finance.

Appendix E: Health infrastructure planning process – future state



Note: HIU = Health Infrastructure Unit; MoH = Ministry of Health; NZ = New Zealand.

Appendix F: National Asset Management Programme interactions[132]



Note: DHB = district health board; HIU = Health Infrastructure Unit; MoH = Ministry of Health; NAMP = National Asset Management Plan.

[132] Ministry of Health, *The National Asset Management Programme for district health boards. Report 1: The current-state assessment*, 19.

Appendix G: Key themes and policy implications

Key theme	Policy implication
1. Historic under-investment in infrastructure, resulting in buildings in poor conditions, site-wide infrastructure issues, and clinical facility condition.	Funding, governance and regulatory system that plans for, incentivises and funds appropriate level of capital investment.
2. Health inequities resulting from socio-economic status, gender, disabilities, geographic place of residence and ethnicity.	Funding, governance and regulatory system that addresses inequities via, for example, investment in facilities, and new models of care that meet diverse population needs.
3. Significant and sustained disparities in health access and outcomes between Māori and non-Māori populations.	Te Tiriti o Waitangi (the Treaty of Waitangi) obligations and Māori perspectives need to be incorporated into long-term infrastructure planning and investment.
4. Current funding models do not support an efficient and effective health system nor are they sufficiently equity based.	Funding models need to be adjusted so they incentivise appropriate capital investment, to ensure New Zealand has flexible, fit-for-purpose facilities.
5. Demographic change is resulting in an ageing, growing and more ethnically diverse population.	Planning is needed so health infrastructure is sufficiently flexible and able to respond to geographic shifts and urbanisation of demand and changing models of care (more integrated and community-based care).
6. Facilities are not fit for purpose due to inability to keep pace with growing demand and changes in models of care, poor strategic asset management, lack of investment, growing diversity, rising rates of chronic disease, and the growing complexities of care.	Improved infrastructure planning and prioritisation at a national level, including better capital appropriation pathways, investment in modern models of care, enabled by new facility design standards, to meet future demand and consumer expectations.
7. Workforce challenges, such as attraction and retention, remuneration disputes, limited access to training, ageing workforce, and impact of the COVID-19 pandemic.	Long-term planning and investment in digital technologies and supporting infrastructure to provide an environment and tools that are easy to use, inclusive and provide confidence to clinicians and other health care staff.
8. Issues with governance and regulatory structures, such as the need for clearer accountability systems, more focused leadership throughout the system, inefficient division of functions and structures, a better reflection of Te Tiriti o Waitangi principles, and a lack of cohesive and structured planning frameworks.	Restructured governance and regulatory frameworks to enable better long-term planning, discourage duplication, and support co-ordinated investment in infrastructure to deliver services. This includes the creation of new authorities, such as Health NZ and the Māori Health Authority, as well as more structured long-term planning through a New Zealand Health Plan that looks ahead at least 20 years.
9. Technological advancement is disrupting the sector. For example, artificial intelligence and big data are resulting in increased treatment options, improved diagnosis, and rising costs of technology investments.	Policy and regulatory settings that support investment in: data infrastructure and integration, including consultation with Māori to consider Māori data sovereignty, and the need to adopt agreed digital standards and regulations virtual care offerings.
10. The impact of climate change on human health and system infrastructure.	Incentivise and fund investment and a shift towards carbon-neutral infrastructure via, for example, facility design standards.

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