

Section D: Enablers / Ngā rawa e tika ai te pūnaha

10 Enablers introduction / Ngā rawa e tika ai te pūnaha tīmatanga

Introduction

The future health and disability system proposed in this report is intended to improve equity and health outcomes by being fairer, more connected, more responsive, more population focused and more consumer and whānau-centred than the system is now. To achieve this a strong infrastructure is needed that can:

- ▶ adapt to changing health needs
- ▶ be resilient to new circumstances and threats
- ▶ make full use of data and digital technologies, and leverage new technology
- ▶ ensure financial and clinical sustainability.

Three key system enablers are needed:

- ▶ **Workforce** – kaiāwhina, surgeons, nurses, lab technicians, cleaners, managers and the hundreds of other categories of workers employed throughout the health and disability system, without which it could not function.
- ▶ **Data and digital technologies** – the ways of working and platforms required for a digitally enabled, information rich, data-driven system, and tools that are easy to use, inclusive and provide confidence to consumers and clinicians.
- ▶ **Facilities and equipment** – from hospital campuses and buildings, to equipment such as linear accelerators and MRI machines that enable care to be provided safely and effectively.

Common across all three of these is the need for cohesive, coordinated and longer-term planning across the system, new ways of working, and investment in long-term capacity and capability. The enablers are also deeply interrelated. For example, unless a new hospital campus is properly digitally enabled and encourages new ways of working, the investment would not be effective.

The detailed proposals for the system enablers are set out in the following chapters.

System-wide planning for workforce, assets, digital and data

The health and disability system will only function well if the right foundational elements are in place, starting with cohesive and coordinated planning. Currently, decisions about workforce training are made without reference to an overall plan and, partly as a result of this, the system is facing severe workforce shortages for some professions. Capital planning has not been managed as a long-term, robust pipeline and DHBs have not been doing a good job of maintaining assets and equipment. Data and digital proposals are currently not prioritised according to a long-term investment plan and DHBs and other organisations are often investing in fragmented and incompatible systems. What planning does take place currently is not well integrated across the three enablers, despite the interrelationships.

A cohesive planning framework to align actions across the system

The proposed changes to the system should make planning simpler and more coordinated. There would be greater stakeholder engagement to better inform and improve the quality of planning and decisions, and Māori would have more input.

The preceding chapters have described the proposed planning framework that would enable the system to act and be managed as a single, integrated system: from the New Zealand Health Strategy, through the NZ Health Outcomes and Services Plan (the NZ Health Plan) and across local and regional planning by DHBs and by other decision-makers.

The NZ Health Plan should reduce inconsistency and the amount of planning needed by individual organisations. It would encompass capital, facilities and major equipment, modern ways of working and models of care, data and digital technologies, and workforce.

The following chapters describe how better planning for the three enablers would complement and complete a cohesive system. This includes developing the following interconnected plans.

- ▶ **A workforce plan** to enable a longer-term view of the health and disability workforces, and collective, innovative thinking about how to make best use of available skills. More detailed planning, such as a Pacific workforce plan, would also enable better system-wide planning.
- ▶ **A national asset management plan** to support DHB asset management practices (building on and expanding work to date), set asset performance standards, monitor performance and prioritise key capital investments.
- ▶ **A digital and data plan** to set out actions and responsibilities for building digital capabilities and implementing data standards, systems interoperability, and cybersecurity standards as well as data and digital governance and stewardship.

New ways of working

To improve the equity of health outcomes, the Review considers that significant changes are needed in how services are planned and delivered, the workforces that are needed and the types of technology they use. New models of care and different ways of using all workforces are also needed for the system to be more sustainable.

New technologies such as genomics, artificial intelligence and digital therapeutics are already opening the way to new types of health care services and other digital technologies such as mobile, social media and the cloud are changing the way services are delivered and used. For example, artificial intelligence and

machine learning for cancer screening; simulation for remote training; genomics and targeted treatments for chronic diseases; through to simple remote clinics and better evidence-based practice using a fuller picture of a person's health history.

Used well, with a deliberate emphasis on equity and inclusivity, digital services and technologies could reduce barriers to access and improve accuracy and safety, free up staff to focus on caring for patients, and deliver more consumer and whānau-centred service experiences. Similarly, effective use of data, analytics and research would support better and smarter care, such as:

- ▶ personalised medicine
- ▶ evaluated and regulated tools for self-management
- ▶ opportunities to provide services at home, in the community and other non-traditional settings
- ▶ proactive use of prediction and better use of prevention to keep people well
- ▶ differentiated and targeted services to those that need it most.²⁴⁴

Just as more culturally safe and aware care would be needed to flow through the whole system to improve the equity of health outcomes, data and digital technologies should flow through the whole system to improve outcomes for everyone. This would require a staged approach with service providers, starting with getting the basics right for effective data sharing for providers using processes that are still largely paper based or who have low levels of confidence and expertise, while enabling those with high digital maturity and expertise to be innovative and make best use of data and digital.

For the workforce, deliberate strategies would be needed to ensure there is the digital literacy, skills, capability, capacity and support available to make full use of data analytics and technological advances. Progress is already being made, such as through the Clinical Informatics Leadership Network and Waitematā DHB's Digital Health Academy, but a system-wide approach is needed. Different training would also be needed for decision-makers, planners, those in dedicated data and digital roles and the clinical and non-clinical health and disability workforce.

Investing in capacity and capability for the long term

To enable the proposed changes to the system, considerable investment would be needed in both data and digital technologies, and facilities and equipment. Given under-investment in both areas, and the need for cohesive prioritisation decisions, the Review recommends that the capital decision-making processes for both these enablers be integrated (see discussion in relevant chapters).

Delivering services to a growing and ageing population with more complex needs, and improving equity and outcomes for people that have not been well served by the current arrangements, would require greater capacity and capability in the system. This includes facilities and equipment that are safe, fit for purpose and able to accommodate growth in demand. Investment in data and digital technologies and the capabilities, skills and new roles required to support new ways of working would enable the way services are provided to be transformed.

Investment should be supported by robust decision-making, good governance and best practice procurement, and project and programme management. These capabilities would be essential, and are discussed further in the Facilities and equipment chapter.

11 Workforce / Te tira kaimahi

The people who make up the health and disability workforce are the backbone of the system. No health service can be delivered, no person cared for, no health outcome achieved without the input from a large group of workers whether they are kaiāwhina, surgeons, nurses, lab technicians, cleaners, managers or any of the other hundreds of workers employed throughout the health and disability system.

In line with worldwide trends New Zealand is experiencing growing clinical workforce shortages. The system will not be sustainable unless models of care and workforce roles change. This should include more learn-as-you-earn options and shorter cumulative training courses to encourage non-traditional participation and, particularly, to facilitate more participation from rural trainees. Regulatory authorities should ensure workforce competency and safety but should also work more collaboratively to support changes in models of care.

The focus of workforce planning and development needs to widen to include all people working in the system, not just those directly employed by DHBs. A diverse and representative health workforce is critical to deliver equitable health services that improve health outcomes. It will take time and considerable effort and investment to grow the health workforce to match the population. Increasing the number of Māori and Pacific people in clinical, non-clinical and governance roles at all levels should be supported by system-wide workforce planning, modelling and investment across the pipeline, and pay equity.

Commissioning and contracting policies should be used to encourage more secure employment, particularly for the workforces involved in home-based care and other outreach services. All parts of the system should be encouraged to become disability confident, drawing disabled people into a variety of roles and supporting them to thrive.

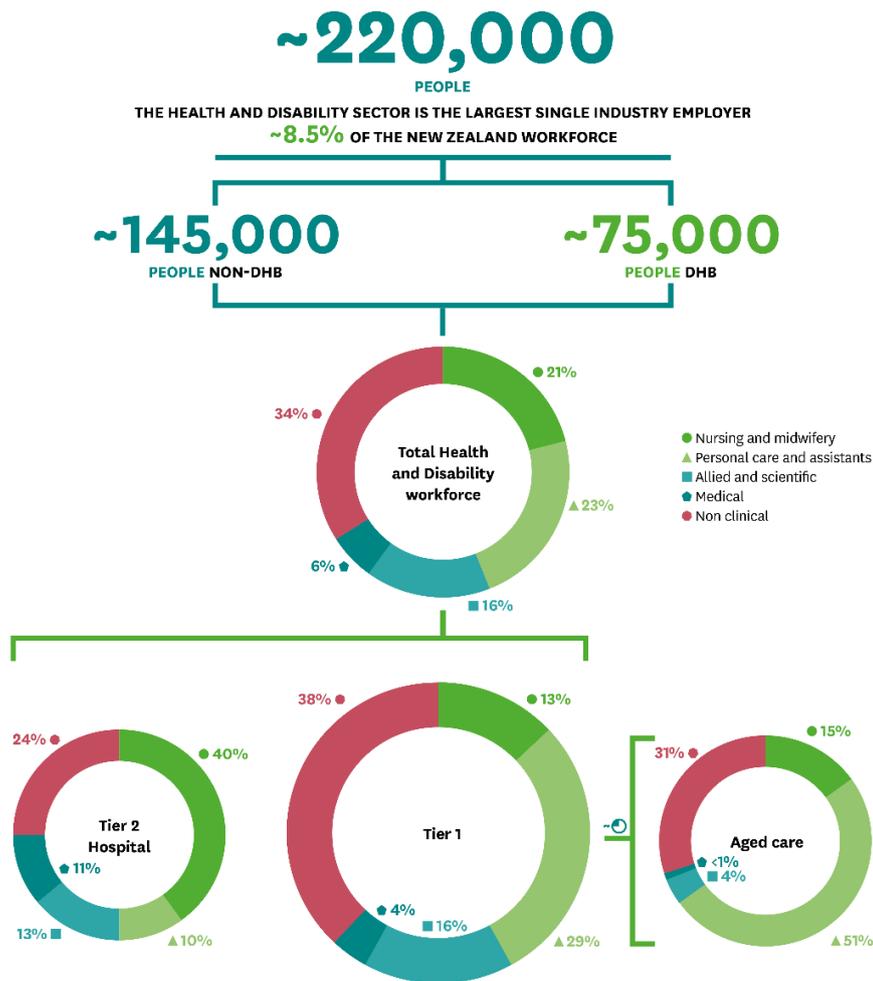
The workforce should also be well supported by technology and business processes so that it can work to its potential, to release time to care and to work in more team-based and flexible ways.

Strategic employment relations management needs to be centralised, drawing on better data and aligning with workforce plans.

The workforce is key to improving outcomes

There are approximately 220,000 people in the New Zealand health and disability workforce, making it the largest single industry. Volunteers and unpaid whānau carers also play an important role in the system (refer Figure 11.1).

Figure 11.1: People in the New Zealand health and disability workforce



SOURCE: Census 2013; Stats NZ Quarterly Employment Survey March 2019; TAS DHB Employed Workforce Quarterly Report to March 2019; 2019 Annual Reports on Registered Health Practitioners.

The DHBs are often the largest employer in their locality. DHBs employ 34% of the total health and disability workforce. The remaining people work in non-DHB roles. More networked service delivery will require workforce planning, modelling, training, regulation and employment relations changes across the system.

While the workforce is passionate, hard working, highly skilled and many people go above and beyond what is asked of them, it is a workforce under pressure and stress levels are high. Persistent shortages already exist in a number of workforces and rural areas generally find it more challenging than urban areas to recruit and retain staff.

The workforce supply challenge should not be underestimated. Conservative modelling suggests an additional 6,500 to 8,600 people will be needed in the workforce annually, on top of replacing those who retire or leave the system (an estimated 4% of the workforce annually). There are global shortages for many health workforces, which are forecast to increase. This will place further stress on the system as New Zealand relies heavily on overseas-qualified health practitioners, particularly doctors (42% are overseas trained – the second highest percentage in the OECD) and nurses (26% are overseas qualified – the highest in the OECD). The current workforce model is not sustainable.

The future workforce will need to work differently with more teamwork between professions and greater cultural diversity. The pace of change in clinical practice means roles will alter rapidly and more technology such as artificial intelligence will be used.

Institutional racism must be acknowledged and addressed. Cultural safety that supports diverse world views will need to be embedded in all service delivery models. Services need to be much more person and whānau focused and be open for extended hours. More services will be delivered virtually and in more diverse settings.

The current health and disability system is inherited. The types of regulation, professional silos, provider-based system, treatment, and highly medical model that has evolved will not meet future needs.

There is a need to:

- ▶ develop a comprehensive workforce plan
- ▶ improve the training environment
- ▶ encourage the regulatory environment to evolve to become more flexible
- ▶ adopt a more constructive approach to employment relations
- ▶ increase accountability for the system to be a good employer.

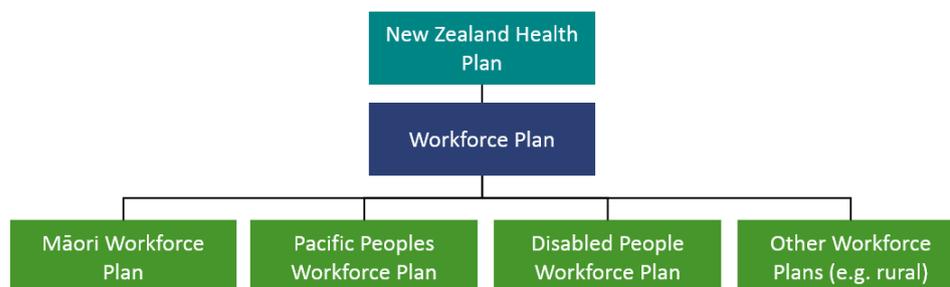
A strategic approach to grow, train and regulate the workforce

A Workforce Plan to guide action across the system

As a priority, a health and disability sector workforce plan should be developed that is both informed by the NZ Health Plan and enables delivery of the NZ Health Plan. Strong central leadership will be required to:

- ▶ turn both plans into action
- ▶ leverage different skill mixes and workforces across the whole health and disability system
- ▶ develop a workforce that better reflects New Zealand's diverse communities.

While the Ministry would be responsible for developing the workforce plan, it will need to involve unions, employers, Health NZ, the Māori Health Authority, the Health Workforce Advisory Board, the Tertiary Education Commission and the key entities being established through the Reform of Vocational Education (RoVE).²⁴⁵ Specific plans for particular workforces including Māori, Pacific and disabled people and, possibly, rural people will be needed to complement the workforce plan. DHBs will also be expected to develop their own workforce plans that align (refer Figure 11.2 overleaf).

Figure 11.2: Developing workforce plans for the future

Expanding the workforce is not just an issue for tertiary and vocational education. The health and disability system should be actively attracting secondary school students into the workforce and supporting them to be successful.

Taking a strategic approach to expanding and developing the kaiāwhina workforce over the next five years will be necessary to achieve the changes needed to deliver services.

Better workforce data

Developing workforce plans will require more comprehensive and accurate data than is currently available. Sector-wide workforce data is not routinely collected, accurate or consistent, making it difficult to access and use this information. More is known about some workforces than others. For example, there is much better data for the DHB, medical and regulated workforce, but not for the non-regulated or non-DHB workforce. Ethnicity and disability data is patchy.

Investment will be required in systems that enable up-to-date and readily accessible data. Priority should be placed on gathering data in areas where less is known (eg non-regulated workforces and allied health) before adding more depth in areas where there are comparatively more detailed views. The Ministry is taking steps to improve data collection about the non-regulated workforce but it will take some time before this is sufficiently robust to use for long-term planning and modelling.

Comprehensive long-term planning and modelling

Planning and modelling should initially focus on looking 10 to 15 years out and then work back to identify short and medium-term actions needed to grow a sustainable workforce. The workforce plan must provide clear direction, guidance and actions.

Modelling should explore:

- ▶ alternative ways of working – the impact of deploying alternative workforces and working differently in teams under new models of care rather than assuming the status quo
- ▶ demographic and geographic linkages – how the future New Zealand and overseas workforce will impact supply modelling
- ▶ targeted growth – how targets for Māori, Pacific, rural and disabled workforces might be achieved and how long this might take
- ▶ retention and re-entry – actions to improve retention, encourage re-entry and how much investment could be justified.

Planning and modelling should also incorporate:

- ▶ international trends on best practice and technological innovation and its impact on future skill needs in New Zealand
- ▶ increased focus on population health, prevention and wellbeing
- ▶ changing needs for the non-clinical workforce, for example, data scientists, change management and commissioning capability
- ▶ the support needed to measure, shift and improve workplace culture and staff engagement.

More influence over health and disability workforce training

Concerns were raised during the Review about the apparent autonomy of training organisations and providers and the lack of influence that employers have to shape the work-readiness of new graduates, the courses offered or the number of places available. This is an issue for a sector where many clinical staff (who make up 66% of the workforce) receive their initial training from universities, polytechnics and other training providers. While some courses, such as medicine and dentistry are offered only at universities other courses, such as nursing and physiotherapy, are offered at universities and polytechnics.

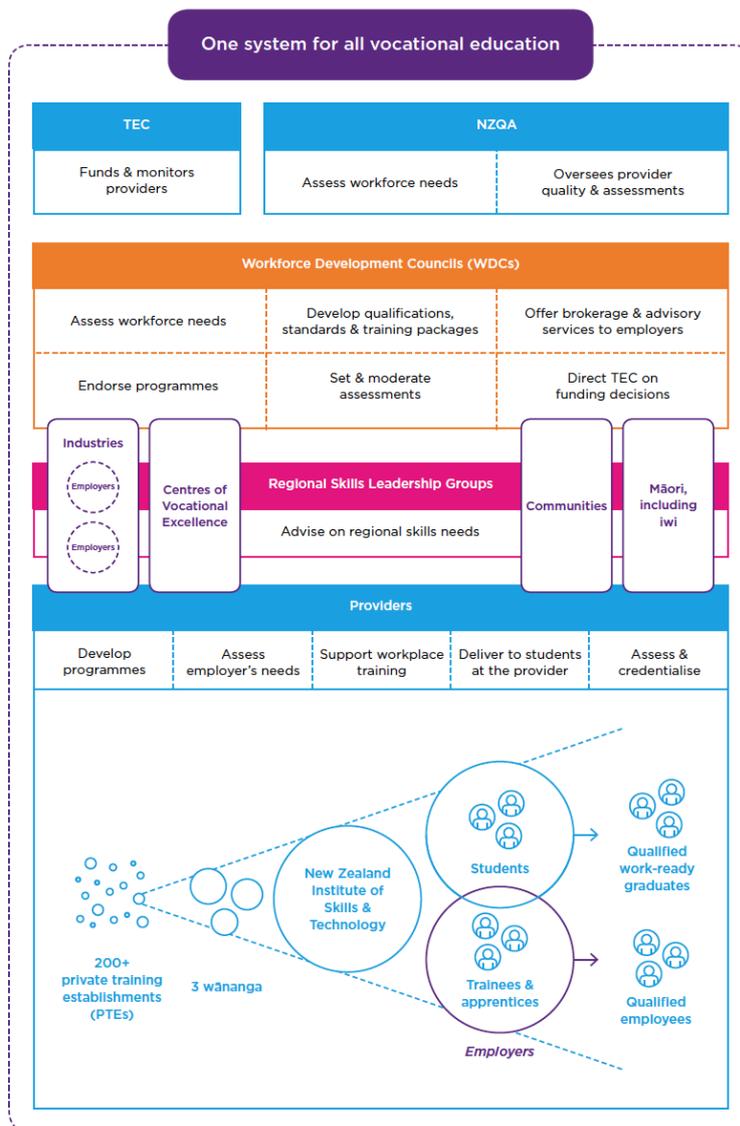
The large numbers of organisations and providers has made it hard to determine where decisions are made and who is accountable for training the workforce that New Zealand will need in the future. There has also been a traditional focus on training for particular professions, rather than on the competencies needed to fulfil particular roles and functions. Universities and other training providers are making decisions about programmes without reference to the rest of the system. With the absence of a health and disability workforce plan and associated plans this is perhaps not surprising.

There is considerable scope to improve the training system to influence how and where students are trained, how many are trained and what skills they will need.

The Tertiary Education Strategy does not currently have a formal position on tertiary training for the health workforce. In future, it should have a more explicit plan to grow the health workforce, in line with the health and disability workforce plan, as it has done for other workforces such as engineering. Government should determine course numbers where students are being offered guaranteed employment on graduation

The recent Reform of Vocational Education recognised the growing need for work-integrated learning to align training with the changing needs of workplaces and allow students to learn-as-they-earn. The reforms will bring together on-the-job and off-the job training. All institutes of technology and polytechnics will be replaced by a single organisation - currently named the New Zealand Institute of Skills & Technology (the Institute). Workforce Development Councils will assume responsibility for leadership and standard setting. Regional Skills Leadership Groups will provide advice about the skills needed in their region.²⁴⁶

The changes set out in RoVE provide an opportunity for more consistency and clarity of direction for vocational training and a good platform for the health and disability system to engage with at national, regional and local levels. Integrating off-the-job and on-the-job training also aligns with the system’s need to explore different pathways for training and growing its future workforce.



Source: Summary of Change Decisions, RoVE

Training to support system objectives

The primary objective of education and training is to provide the right number and mix of appropriately skilled and competent health and disability workers. Under the Health Practitioners Competence Assurance Act 2003 (HPCA Act) regulators ensure health practitioners are competent and safe to practice. They also have inherent flexibility to adjust scopes of practice, and change standards and competencies with changing needs. This creates opportunities to work collaboratively and look beyond traditional professional boundaries to focus on the competencies the community needs and enable flexibility as to who is best placed to meet them.

Developing a workforce plan and more effective central engagement with the Tertiary Education Commission and New Zealand Institute of Skills & Technology has the potential to make a significant difference in growing the right pipeline of future workers, but this will not be enough. Other issues consistently raised during the Review need to be addressed and are summarised in Table 11.1 below.

Table 11.1: Summary of key training issues that need to be addressed

Curriculum development and course duration	
<p>Issue</p> <p>There are lengthy training requirements for some professions, particularly when compared with other countries.</p>	<p>Opportunity</p> <ul style="list-style-type: none"> ▶ The Ministry (working closely with the Tertiary Education Commission, Responsible Authorities, the Institute, DHBs, other employers and other stakeholders) should take the lead on giving a health perspective on setting and changing course curriculums. ▶ Workforce training pathways and scopes should be more consistently aligned across professions and internationally. ▶ Course completion timeframes should be more flexible to reflect different training pathways. For example, a three- to five-year bachelor's degree apprenticeship is being trialled in engineering to reduce workforce shortages and support those with family and financial constraints to pursue a degree while earning money. Different approaches like this could be used for courses like midwifery where completion rates are currently low
Interdisciplinary training, modular learning and micro-credentialing	
<p>Issue</p> <p>Future service delivery models will rely more on teamwork and a mix of specialist and generalist roles. Training pathways need to support this change and help personnel build a greater understanding of the skills of their peers.</p>	<p>Opportunity</p> <ul style="list-style-type: none"> ▶ Explore opportunities to structure courses differently to facilitate interdisciplinary learning that allows students to gain a broader understanding and trust of other disciplines and reduce professional silos. ▶ Adopt a more modular approach to training, supported by micro-credentialing which : <ul style="list-style-type: none"> ▶ has the potential for students to share common content ▶ can better recognise prior learning and shorten some training pathways by allowing people to work to partial scopes until further training is completed. ▶ offers an easy and quick way for people to retrain, upskill, or return to the workforce, via small, stand-alone credentials that certify the achievement of specific skills, experience or knowledge ▶ can support learners to access specific knowledge and skills and to meet an immediate need in a cost-effective and timely way.²⁴⁷ <p>In 2013, the Ministry proposed a multidisciplinary education framework for more than 40 allied health, science and technical workforce professions. This allowed students to complete an initial qualification in health sciences and/or technology, then complete the specific occupational domain skills and/or specialised learning through on-the-job experience or additional study.²⁴⁸</p> <p>Some countries have taken novel approaches to address service gaps where they have insufficient highly qualified health workers. This can include combining shorter training courses, internships and technology to increase quite different and cost-effective workforces. For example, in South Africa²⁴⁹ and in Malawi, clinical officers who can perform some surgical procedures.^{250 251} It may not be appropriate to replicate this in New Zealand, but there is a need to think differently about how the workforce can be trained and used.</p>

Table 11.1: Summary of key training issues that need to be addressed – continued

Workplace-based and staircasing training	
<p>Issue</p> <p>Growing workforces at the pace required to support demand and to better reflect New Zealand communities will require different training pathways</p>	<p>Opportunity</p> <p>The health system will need to broaden its use of learn-as-you-earn training if the future workforce is to grow at the pace and scale required to meet future demand. Experience from other countries demonstrates that effective initiatives include:</p> <ul style="list-style-type: none"> ▶ workplace-based and apprenticeship models that lessen the financial burden of training ▶ retaining trainees in their own community ▶ promoting greater workplace relevance and readiness on completion of training. <p>There is considerable scope to increase workplace roles that allow the workforce to specialise or extend their capabilities and scope over time while in paid employment and, at the same time, adding value to their communities. For example, the potential for kaiāwhina to become nurses while maintaining employment.</p> <p>Staircasing is an approach that enables people who did not initially pursue higher education to flexibly create and enter a pathway to complete higher education. It can have multiple points of entry and exit, and allows integration of vocational courses with academic degrees.</p> <p>Building on the learn-as-you-earn concept, some employers could provide the initial training programme for some staff. Health NZ may have the scale and resources to provide in-house training and development for relevant roles (eg, laboratory assistants and technicians).</p> <p>For example, in New Zealand, dental assistants can gain on-the-job skills while completing a one-year modular online correspondence certificate, working alongside a dentist. Providing a smaller scope of activities than dentists, dental assistants can work efficiently and effectively to support oral hygiene and care.</p>
Training settings	
<p>Issue</p> <p>Traditional placement models are unlikely to keep pace with student numbers. Alternative training settings will need to be explored to ensure work-readiness on graduation.</p>	<p>Opportunity</p> <ul style="list-style-type: none"> ▶ Virtual training and simulation can augment on-site workforce capability development. For more specialised workforces which serve multiple communities, training using virtual and telehealth technology enables more timely and efficient services to be delivered. ▶ Training placements where people are needed can improve work readiness and workforce retention. Training in rural areas can improve retention in those communities.²⁵² <p>Recent Australian examples include graduates who had Rural Clinical School placements in New South Wales of at least one year were more than six times more likely to be practising in a rural location in their postgraduate years three to five.²⁵³ Trainees who grew up in or have family ties to these regions have even greater retention rates.²⁵⁴</p> <p>The Australian Government Rural Health Multidisciplinary Training Programme has encouraged the recruitment and retention of rural and remote health professions by funding networks of training organisations and hubs. The NSW Rural Resident Officer Cadetship programme provided bonded scholarships for two years postgraduate work in rural locations.²⁵⁵</p> <p>The Ministry is currently exploring options for interprofessional rural learning hubs to address rural health workforce issues and promote professional learning between professions. The Ministry continues to run the Voluntary Bonding Scheme to reward eligible health professionals who agree to work in hard-to-staff professions, communities and/or specialties.</p>

A safe, competent and flexible regulatory system

The training system works closely with the regulatory system to ensure the health and disability workforce is clinically and culturally safe, competent, and able to meet high quality standards.

Responsible Authorities and professional bodies

The principal purpose of the HPCA Act is to protect the health and safety of the public. It includes mechanisms to ensure that practitioners are competent and fit to practise their professions for the duration of their professional lives and it restricts some activities to registered health professionals. Currently, 17 Responsible Authorities are responsible for the 24 regulated professions.

Table 11.2: Profile of Responsible Authorities, 2018¹

Responsible Authority	Professions served	APS ²
Dental Council	6	4,073
Dietitians Board	1	697
Medical Council of New Zealand	1	16,346
Medical Sciences Council of New Zealand	2	4,435
Midwifery Council of New Zealand	1	3,033
New Zealand Chiropractic Board	1	640
New Zealand Medical Radiation Technologists Board	1	3,268
Optometrists and Dispensing Opticians Board of NZ	2	1,133
New Zealand Psychologists Board	1	2,800
Nursing Council of New Zealand	1	56,356
Occupational Therapy Board of New Zealand	1	2,589
Osteopathic Council of New Zealand	1	519
Paramedic Council of New Zealand (to be established)	1	
Pharmacy Council	1	5,133
Podiatrists Board of New Zealand	1	439
Psychotherapists Board of Aotearoa New Zealand	1	546
Physiotherapy Board of New Zealand	1	3,787
Total	24	105,794

Notes

- 1 Paramedics are formally recognised and registered under the HPCA from 1 January 2020.
- 2 Annual practising certificates

Responsible authorities:

- ▶ describe scopes of practice
- ▶ accredit training programmes and providers
- ▶ register local and international members
- ▶ manage annual practising certificates
- ▶ set standards for clinical competence, cultural competence, and ethical conduct
- ▶ investigate complaints and run disciplinary processes.

In addition, the regulated workforce has many voluntary professional bodies (eg, societies, associations and colleges) that provide advocacy and influence over setting standards, training requirements and, in some cases, the supply of graduates. Most have a high degree of autonomy and focus on their own profession without broader consideration for other professions or system needs.

There are also Māori organisations that have a national coordination role for the Māori health workforce for example, Te Ohu Rata o Aotearoa – Māori Medical Practitioners Association (Te ORA), Nga Maia Māori Midwives Aotearoa, and Te Rau Ora aim to strengthen health workforces, decrease Māori inequity and increase Māori wellbeing and potential.

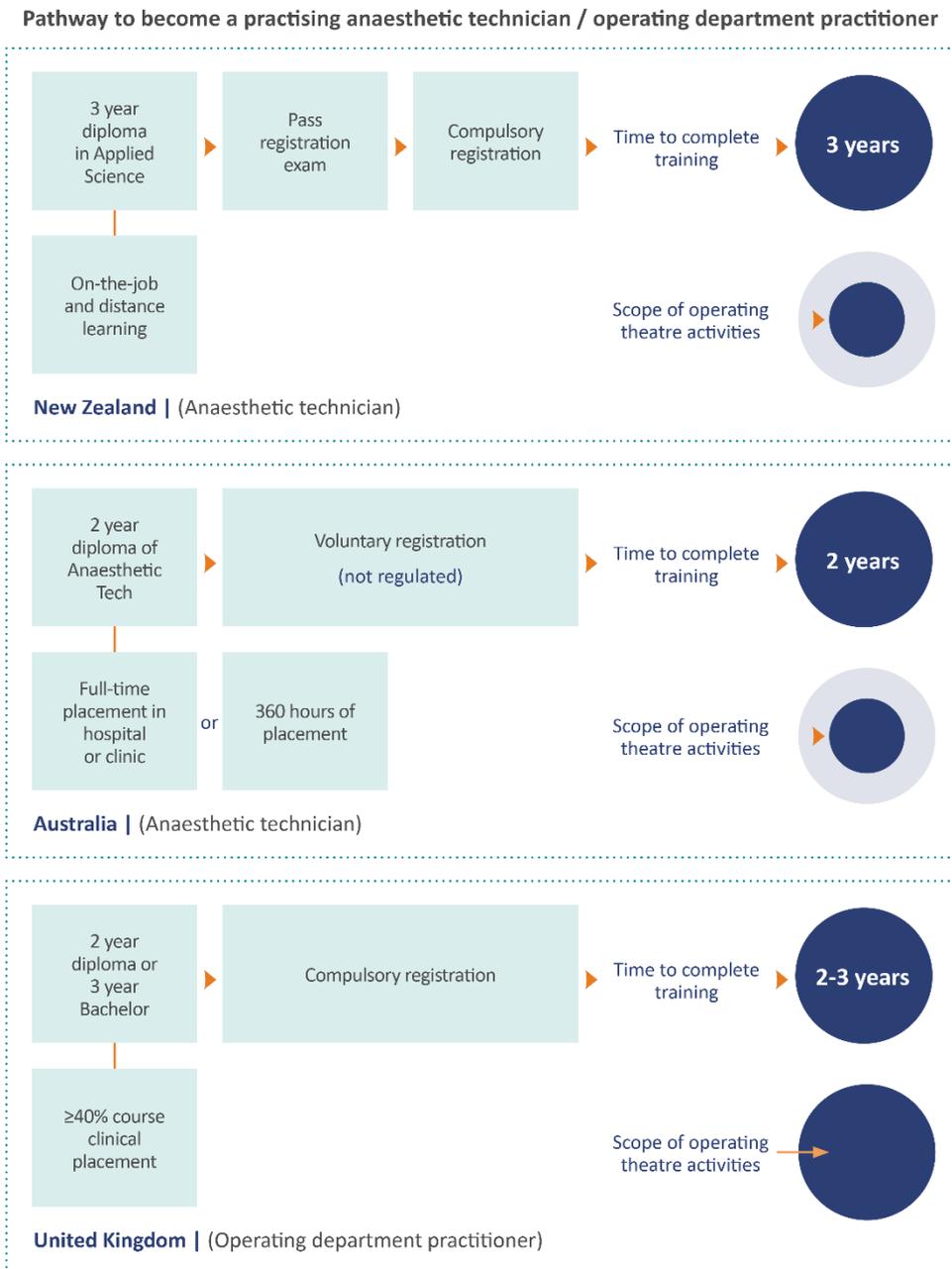
The large number of organisations, the focus on individual professions and inflexibility regarding scopes of practice have been cited as hampering teamwork, innovation, and impacting service delivery for the regulated and non regulated workforce.

In addition there are concerns that New Zealand’s professional bodies, Responsible Authorities, and training organisations have created higher training and entry barriers than other countries as illustrated in Figure 11.3 below.

New Zealand has a comparatively long training duration (three years) to become an anaesthetic technician with a narrower scope of practice than other countries. There are plans to increase training duration to four years and become degree level. Australia’s anaesthetic technicians have a similar scope but shorter training timeframes, and the UK’s operating department practitioners have greater scope and the possibility of shorter training.

Similarly, as shown in Figure 11.4, New Zealand MRI technicians have a relatively long training duration compared with Australian and overseas trained technicians who are required to complete more hours of clinical experience before they can practice in New Zealand.

Figure 11.3: Comparisons of sample training and registration requirements



Sources: NZ: <https://www.msccouncil.org.nz/for-practitioners/new-zealand-graduates/anaesthetic-technician/>

Australia: <https://tafeqld.edu.au/courses/17792/diploma-of-anaesthetic-technology>

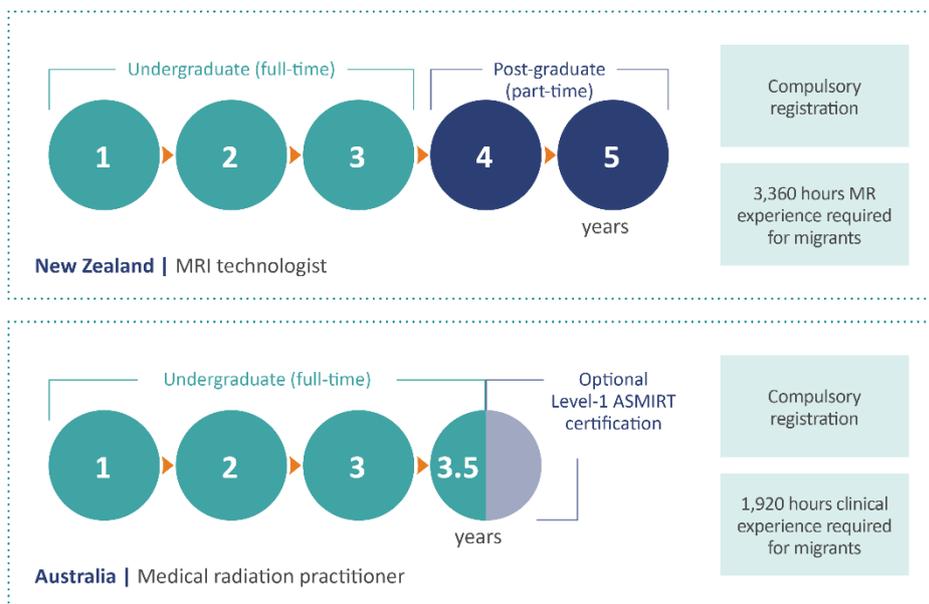
UK: <https://www.healthcareers.nhs.uk/career-planning/course>

[finder?field leading to a career in tid=192&field qualification type tid=All&field study mode tid=All&field region tid=All&field provider name tid=All&temp=All](https://www5.uclan.ac.uk/ou/aqasu/coursedocumentation/student_handbooks/sh_bsc_hons_operating_department_practice_2020.pdf)

https://www5.uclan.ac.uk/ou/aqasu/coursedocumentation/student_handbooks/sh_bsc_hons_operating_department_practice_2020.pdf

Figure 11.4: Magnetic resonance imaging (MRI) technologist pathway

Fastest possible time to work independently using MRI and registration requirements



New Zealand | MRI technologists must complete a 3 year undergraduate degree, then register under a trainee scope of practice. To register as an MRI technologist and practice independently, trainees must then complete a 2-4 year part-time post-graduate diploma. Overseas trained graduates must satisfy qualification requirements and demonstrate 3360 hours of relevant MRI experience.

Australia | Must complete a 3.5-4 year degree. Must register as medical radiation practitioner (diagnostic radiography). ASMIRT certification is not compulsory, but expected if working in public settings. ASMIRT certification requires a written exam + 300 MR examinations. Overseas trained graduates must satisfy qualification requirements and demonstrate 1920 hours of clinical experience for registration.

Sources:

Medical Radiation Technologists Board (webpage). <https://www.mrtboard.org.nz/for-practitioners/profession-of-radiation-technology/magnetic-resonance-imaging-technologist/>

RMIT University (web page). <https://www.rmit.edu.au/study-with-us/levels-of-study/undergraduate-study/bachelor-degrees/bachelor-of-applied-science-medical-radiations-bp321>

University of South Australia (web page). <https://study.unisa.edu.au/degrees/bachelor-of-medical-radiation-science-medical-imaging>

HealthcareStaffing (web page). <https://www.healthcarestaffing.com.au/news/working-as-radiographer-in-australia/37717/>

Australian Society of Medical Imaging and Radiation Therapy. Policies & Procedures Manual - Magnetic Resonance Imaging (MRI). 2019. <https://www.asmirt.org/media/1127/1127.pdf>

Self-regulation

Over half of the workforce that support the system with a broad range of health and disability related activities are not regulated under the HPCA Act. Kaiāwhina, traditional Māori health practitioners, practice managers, receptionists, counsellors, policy advisors, data analysts, cultural advisors, nutritionists, and dental assistants are just some of the workforce that play a critical role in the system.

Some of this workforce voluntarily self-regulate under professional associations to promote quality, safety, and credibility of their members. The associations can also provide professional leadership, advocacy, manage consumer complaints and discipline for their members, and can set minimum qualifications or experience requirements. However, there is variability regarding the strength or degree of self-regulation. Some occupations have multiple associations, each with their own requirements, or in some cases there is no clear entity that performs self-regulation activities.

As many of this workforce are involved in the delivery of health and disability services directly to consumers, including those who are vulnerable, it is important that the public are confident that the non-regulated workforce is competent and supported to deliver safe and high-quality services. The system needs growth in this workforce and higher levels of skills, scope and competence to address service gaps that cannot be met by the regulated workforce. This requires coordinated workforce planning with key stakeholders and may require strengthening of self-regulation in areas of higher public risk.

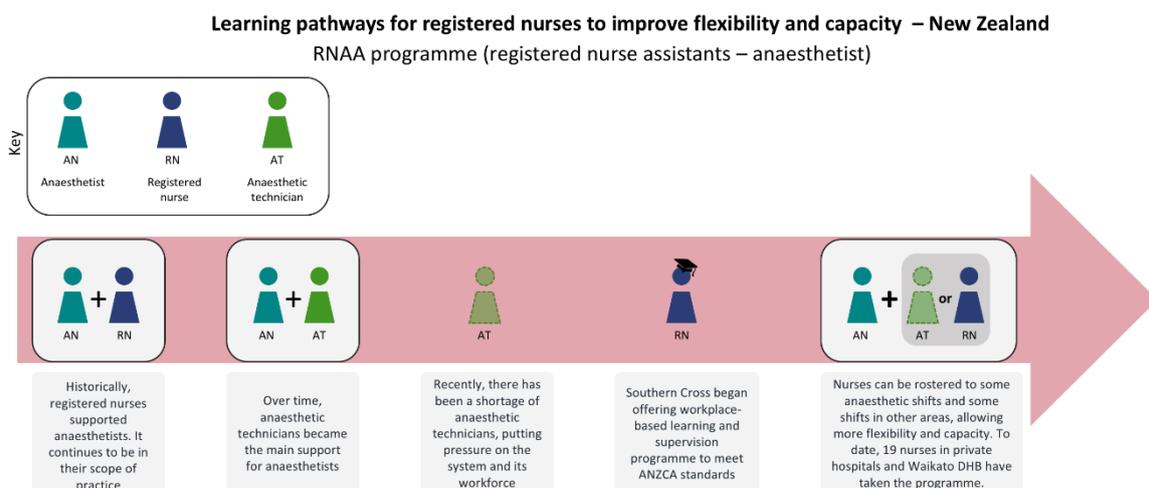
An opportunity to change

The regulatory system needs to take a cohesive and strategic approach to the future workforce that is less bound by professional scopes of practice and is more flexible to meet the diverse needs of New Zealanders, while maintaining quality standards. It is important that the future workforce represents the communities it serves, is safe and competent, works in a culturally safe way, and can work well as a team to provide high-quality person and whānau-focused care. There should be a systematic response to changing workforce needs, and regulators and trainers should be more accountable to the health and disability system.

Other countries have managed to train and deploy their workforce into roles traditionally done by other workforces. For example, surgical care practitioners in the United Kingdom can perform end-to-end surgical care for minor surgeries (such as facial skin cancer excisions and skin grafts). They are experienced non-medically trained healthcare professionals (such as nurses and Operating Department Practitioners) who have completed a two year master’s degree and clinical programme accredited by the Royal College of Surgeons.

New Zealand is progressing the development of some new or more flexible roles and learning pathways as illustrated below. Registered nurses are supporting anaesthetists following a workplace-based learning and supervision programme, giving hospitals more flexibility in how they use staff and giving nurses more variety and opportunities for development. Figure 11.5.

Figure 11.5: Learning pathways



There are however issues with doing this at scale and in a sustainable way which the system will need to find ways to address in the future.

Alternate ways of delivering regulatory functions

Other countries have taken different approaches to increase the system's influence over regulatory functions: from quasi-regulation to co-regulation and legislation. Options that other countries have adopted include:

- ▶ strengthening self-regulation
- ▶ introducing pan-professional regulatory structures and functions
- ▶ merging Regulatory Authorities.
- ▶ While these options may have merit in the longer term, focusing solely on reshaping the oversight of the regulated workforce would likely delay the foundation work that needs to be done on developing the workforce plan for the entire health and disability system and identifying gaps that need to be addressed.

Capability frameworks such as the Calderdale Framework should be adopted to align existing and new competencies with patient need and foster collaborative working, role flexibility, cultural safety and career development.^{256 257} The frameworks should cover a range of domains and could leverage work already done for the wider public service (eg, the Māori Crown Relations Capability Framework)²⁵⁸ and internationally (eg, the NHS Simplified Knowledge and Skills Framework - a locally adaptable tool designed to make it easier for staff to identify the core skills needed to do their jobs and their career development needs).²⁵⁹ International frameworks will need to be adapted to fit the New Zealand cultural context.

The Review proposes that while this foundation work is being done, no additional Responsible Authorities should be established and the current regulators should be encouraged to work more collaboratively in a way that is consistent with the workforce plan and to better support agreed health and disability system objectives. The ongoing arrangements for managing the regulated workforce should be reconsidered in three to five years' time to determine whether further changes are required. It is envisaged that over time there would be fewer Responsible Authorities, rather than more.

Strategic employment relations

The health and disability employment relations system is complex with 20 DHBs, many large unions and numerous multi-employer collective agreements with varying pay and conditions for different groups of staff. A tripartite accord, the Health Sector Relationship Agreement, has been in place for many years but has been largely ineffective in recent times.

Discussions with both unions and management representatives acknowledge that the current state of employment relations in the public health system is not producing the best health system that New Zealand can afford. The system was also disrupted by a significant number of strike days in 2019.

Unions expressed concern that change is being driven by a desire to cut costs, potentially to the detriment of their members. Employers express concern that protracted or persistent strike action imposes real costs on patients, significantly increasing some waiting lists and adding to the stress of staff.

The Review is not in a position to resolve such differences but notes that the chances of building a more robust employment relations environment would be enhanced by having a more professional and centralised employment relations function within Health NZ. This function would draw on more consistent

data from around the health and disability system and would have a longer-term vision in line with the workforce plan derived from the NZ Health Plan.

The health and disability sector will need to facilitate more differentiated job descriptions and an ability to see change as the norm, not a threat. All parties agreed that the Health Sector Relationship Agreement should be reinvigorated so that there can be more engagement between the parties outside multi-employer collective agreement negotiations.

Along with driving more differentiated commissioning and contracting models within agreed parameters, the system needs to have a clearer strategy on relative salary scales and employment terms and conditions across the sector. This should include working with unions on the best ways to encourage the flexibility needed to facilitate new roles and responsibilities and the employment model that will best suit the development of the future workforce.

It will also mean that the system should seek to address pay parity issues for professions working in different parts of the system, for example, nurses working in Tier 1 and staff of Māori providers should expect pay parity with Tier 2 staff.

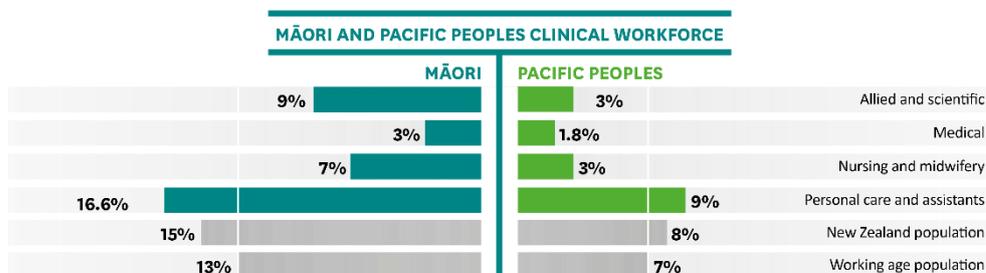
Increasing accountability for being a good employer

The health and disability system could have a significant impact on the health and wellbeing of the entire population both by being a good employer and by ensuring the system workforce properly reflects the population it serves. Leveraging the system’s ability to create employment opportunities for those who have traditionally found it hard to find employment (particularly those with mental health conditions and disabled people) and growing the Māori and Pacific workforce is a must.

Growing the workforce to better represent communities

A diverse and representative health workforce is critical to deliver equitable health services that improve health outcomes. Māori make up 15% of the New Zealand population, but only 12% of the workforce and 8% of the DHB workforce. Pacific peoples make up about 8% of the New Zealand population but only just over 4% of the DHB workforce. Māori and Pacific people are underrepresented in medical, nursing and midwifery, allied health and scientific, and many other roles. Refer Figure 11.6 below.

Figure 11.6: Māori and Pacific workforce populations



Sources: Census 2013, Stats NZ population projections (2017), TAS: DHB employed workforce quarterly report to March 2019.

It will take time and considerable effort and investment to grow the health workforce to match the population. Increasing the number of Māori and Pacific people in clinical, non-clinical and governance roles (including in key agencies) at all levels should be supported by system-wide workforce planning, modelling and investment across the pipeline, and pay equity.

Māori workforce

Increasing the number of Māori working in the health and disability system and providing them development and leadership opportunities are crucial components of the strategy to improve outcomes for Māori.

Developing and implementing the Māori Workforce Plan should be a key function of the Māori Health Authority. The proposed role of the Māori Health Authority in developing the Māori workforce and some case studies were discussed in the Hauora Māori section.

While work has been done in the past to expand and develop the Māori workforce, by various parts of the sector, work has often been piecemeal, has not been connected to any agreed national plan and there is no consistent information to support it. While some Māori workforce intake and student numbers are increasing, it is not at the pace or scale needed to drive real change.

Activity is needed across the pipeline, in line with the Māori Workforce Plan that will be developed including:

- ▶ Training
 - Working with the Ministry of Education and supporting local initiatives to encourage Māori and Pacific students to achieve in primary school and high school and take health, science and maths-based subjects at high school
 - Exposing Māori and Pacific students to potential careers and linking them with mentors and internships
 - Making it an expectation that more Māori and Pacific people are accepted into tertiary, polytechnic and other courses and making those courses welcoming for Māori and Pacific students and supporting timely completion and balancing of other commitments
 - Offering learn-as-you-earn training and development opportunities (eg to upskill kaiāwhina), flexible, low-cost, closer to home and rural training opportunities
 - Investing in more kaupapa and matauranga Māori training opportunities.
- ▶ Recruitment, retention and development
 - Reviews of recruitment policies to remove any biases and ensure they value the cultural and other skills that Māori staff can offer
 - Considering targets for employment of Māori staff
 - Māori provider development and pay equity
 - Providing mentoring, leadership training and development for Māori and involving them in developing, monitoring and evaluating solutions
 - Opportunities and encouragement to return to the workforce after a break.

The Māori Workforce Plan should build on the national, regional and local initiatives that have been shown to be effective in building the Māori health and disability workforce.

Examples of Māori Workforce Programmes

- ▶ Māori and Pacific Admission Scheme (MAPAS) at the University of Auckland supports timely completion of tertiary study²⁶⁰
- ▶ Ngā Mataapuna Oranga, a Whānau Ora collective, runs a regional clinical and non-clinical practice education and support service in the Western Bay of Plenty as part of a strategy to build whānau prosperity and wellbeing
- ▶ Tumu Whakarae (the National DHB GM Māori Strategic Reference Group) provides leadership and guidance to grow the Māori workforce and realise cultural competence throughout the entire workforce to accelerate health gain for Māori and reduce health inequities
- ▶ Ngā Manukura is a Māori health leadership programme that hundreds of front line staff have been through over the last 10 years.
- ▶ Otago University's Mirror on Society Selection Policy, funding, and the supporting Te Whakapuawai programme is increasing the number of students from underrepresented groups such as Māori and Pacific people studying health sciences
- ▶ National Kia Ora Hauora Māori health workforce development programme.

Partnerships with iwi groups will be important, as will engaging Māori families and communities, improving the information base, identifying and addressing barriers, developing solutions that are framed within Māori worldviews, demonstrating commitment to equity, identifying best practice examples, and evaluating, monitoring and building up a solid understanding of what works.²⁶¹ The workforce measures included in DHBs' Māori health scorecards could continue to be used to track progress.

Pacific workforce

There are a relatively low number of Pacific peoples working in most fields in the health and disability system, which also restricts numbers in leadership positions. For example, as shown in Table 11.3 below, the Pacific medical workforce remains well below population representation at 1.8% despite an increase of 21 more Pacific doctors between 2012 and 2016.

Table 11.3: Pacific health workforce change from 2012 to 2016

	2012 count (proportion)	2016 count (proportion)	Change in proportion
Pacific medical workforce ²⁶²	250 (1.8%)	271 (1.8%)	0.0%
Registered nurses ²⁶³	1,469 (3.1%)	1,742 (3.6%)	0.5%
Nurse practitioners	1 (1.1%)	3 (1.9%)	0.8%
Midwives ²⁶⁴	69 (2.2%)	65 (2.2%)	0.0%
Dentists ²⁶⁵	20 (0.9%)	20 (0.8%) [^]	-0.1%
Pharmacists ²⁶⁶	24 (0.7%)	32 (0.9%)	0.2%
Kaiāwhina ²⁶⁷	5,226 (8%)*	-	-

[^]latest report only goes to 2015 *latest report only goes to 2013

Achieving a representative Pacific workforce to improve health equity and ensure Pacific health perspectives, knowledge and practices are available and accessible, will take concerted effort and investment across health and education systems to achieve. Workforce development will also bring economic and health literacy benefits for Pacific peoples and improve the cultural competency and safety of the broader health and disability workforce. Increasing the number of Pacific peoples in leadership and senior leadership roles will also ensure Pacific views, needs and aspirations for health are included at the governance level of the system. The Aniva Postgraduate Nursing Programme is an example of a programme that has considerably enhanced the leadership capacity in this workforce.

An updated Pacific Health Action Plan is being developed by the Ministry to replace 'Ala Mo'ui: Pathways to Pacific Health and Wellbeing. It is likely to include workforce actions. These actions should align with the overall workforce plan and the Pacific workforce plan.

Examples of Pacific workforce programmes

- ▶ The Taea o Tautai: Pacific Public Health Workforce Development Implementation Plan (2012–2017) was developed by the Ministry to upskill and retain the Pacific health workforce, strengthen Pacific leadership, support effective practice and enhance cultural competency.²⁶⁸
- ▶ In 2016, Le Va reviewed the results of its efforts to develop the Pacific public health workforce in line with the Implementation Plan. They pointed to more Pacific peoples going through public health and leadership programmes and more people completing Pacific cultural competency programmes - raising awareness of Pacific public health issues.²⁶⁹
- ▶ Scholarships, such as those provided by the Ministry of Health, Le Va and the Ministry for Pacific Peoples, to support uptake of science, technology, engineering and maths (STEM) subjects should continue and be enhanced to increase the number of students with the pre-requisites needed to study health subjects at tertiary level and to build interest. Scholarships should be combined with appropriate mentorship, coaching, cultural and pastoral care, as well as giving support in identifying employment and career pathways.²⁷⁰
- ▶ The Futures that Work Scholarship Programme has awarded 521 scholarships over the past 11 years and has contributed to growing the size and skills of the Pacific workforce.



Pacific leaders should be involved in developing and reviewing the workforce plans and activity that occurs under them. As an early priority, the plans should lead to increased investment for Pacific peoples to develop the skills needed to become leaders of the system. The plans should also lead to an investment in nursing, kaiāwhina and other outreach roles to better meet the needs of communities that are not currently well served by the system. This could include leveraging the RoVE changes that support the development of different training pathways, including more learn-as-you-earn options, funding and/or on-site training at night. To ensure services are appropriate for Pacific peoples, and because the Pacific health workforce is currently small, there is a need to enhance the cultural safety of the general workforce. The current competency of the non-Pacific workforce in relation to Pacific cultural safety, perspectives, approaches and methods is lacking and needs to be improved.

Reducing barriers and creating employment opportunities

The health and disability system can reduce barriers and create employment opportunities for those who have traditionally found it hard to gain employment, such as people with mental health conditions and disabled people; and help support people to thrive at work and stay connected to their workplaces if they do face challenges. This will benefit employees and their whānau, improve workplace diversity, reduce workplace stigma and may have economic benefits.

Demand-side approaches that are focused on making employers 'disability confident' have been found to be most effective in pulling disabled people into the workforce. It is one of the goals of the New Zealand Disability Strategy 2016 to 2026.²⁷¹

Programmes could be used to raise awareness in the health and disability system and present the value of employing disabled people and provide guidance on disability confidence that helps ensure employment practices and workplaces are inclusive and accessible. This should be supported by Health NZ or a lead DHB that could share what they learn with other DHBs and employers.

A talent pool could help match disabled people to roles and be supported by programmes. For example, the DXC Dandelion programme finds and trains people with autism for specific roles, removes barriers to recruitment and helps employers support staff.

Best practice recruitment, onboarding, development and retention

To support improved and sustainable health service delivery, employers will need to continue to focus on adopting best practice recruitment, onboarding, development and retention. Some examples of opportunities are set out in Table 11.4 below:

Table 11.4: Opportunities to strengthen best practice employment processes

Stage	Opportunity
Recruitment	<ul style="list-style-type: none"> ▶ Programmes that engage young people in science, maths and health-based subjects in school and link into training and employment to widen the pool of candidates. ▶ Recruitment processes should value different skills and experience and be more open to considering ‘fit’ as being critical when trying to grow a workforce that better reflects the communities being served (eg, approach taken by Nuka in Alaska). ▶ Actively managing a talent pool database of candidates. ▶ Graduate programmes to attract students whose skills could be applied in any industry to the health and disability system, eg, data scientists and accountants.
Onboarding	<ul style="list-style-type: none"> ▶ The Health NZ charter will set out the culture and behaviours for all workforces in the health and disability system. Embedding these values from the outset and ensuring that onboarding clearly defines the role, sets expectations about supervision and autonomy, and supports this with materials and mentoring, will enhance workplace readiness.
Development	<ul style="list-style-type: none"> ▶ Salaried models of employment signal a greater commitment to retaining and developing employees. The expectation is that there will be greater use of salaried models, rather than piece rate employment contracts, particularly where vulnerable workers are working with vulnerable populations. ▶ Staff development in areas such as digital and data literacy, evidence-based decision-making, better commissioning, change management, and other emerging areas. ▶ Programmes to upskill kaiāwhina, in line with the Kaiāwhina Workforce Action Plan and to staircase into other roles such as nursing, Well Child/Tamariki Ora, social work, medical practitioners and management roles. ▶ Career paths are mapped out with system-wide rotation in urban and rural locations.
Retention	<ul style="list-style-type: none"> ▶ Active evidence-based strategies to reduce staff burnout and improve wellbeing eg, increasing employee control and opportunities for flexibility or different roles. ▶ Alumni system to actively encourage staff to remain in and return to the health and disability system. ▶ Develop mechanisms that allow more movement and secondments between DHBs, or between DHBs and NGOs.

In addition, the right enablers will need to be in place. As a large employer, the health and disability system should have core workforce systems that effectively support workforce development and day-to-day activities such as rostering and leave management. The system should provide robust information about staff numbers, training, ethnicity, iwi affiliations and disability status. This information could be used internally and linked with resource scheduling, and with appropriate de-identification by Health NZ, the Māori Health Authority, the Ministry and others for planning, modelling and research.

Working effectively to improve equity

Cultural safety and competence

Cultural competence and safety needs to be a core requirement of the entire workforce. All staff must develop cultural safety and competence to work effectively with Māori, Pacific peoples and others. Embedding cultural safety is one approach to eliminate institutional racism in the system.

The workforce plan should set an expectation for all leaders to develop and maintain the Māori cultural competence and capability of the workforce (including the international workforce working in New Zealand) to:

- ▶ engage with Māori and to understand Māori perspectives
- ▶ understand and respect te Ao Māori concepts, knowledge, values and perspectives
- ▶ understand and, where appropriate, use tikanga Māori
- ▶ develop some te reo Māori (Māori language).²⁷²

Each person entering the workforce should either have, or quickly gain, a base level of cultural safety and competence to work effectively with Māori, Pacific peoples and people from other cultures and backgrounds, and refresh their capabilities continuously. To improve cultural safety and the equity of health outcomes, reflective self-assessment is necessary for all the workforce. This should consider relative power, privilege and biases in relation to their role, the role of the system, and broader socio-economic factors.²⁷³ There are some good examples of efforts to build cultural safety capability. The Nursing Council made it a requirement in 1992 and the Medical Council of New Zealand introduced new cultural safety standards in 2019.²⁷⁴ Progress is being made but needs to continue.

Teamwork and adapting to change

Changing demographics along with increasing comorbidities and technology will continue to increase the demand for all parts of the system to act in more multidisciplinary, collaborative ways. Providing services where they are most needed by consumers and in ways which are most accessible will require flexibility on the part of the workforce. Ensuring such behaviours are the norm rather than the exception will require the workforce to look beyond traditional professional scopes of practice and work together in different ways. This will include the following.

- ▶ **Increasing dependence on teams** – a growing number of health and disability services will need to be delivered by interprofessional teams that provide integrated, person/whānau-focused care.²⁷⁵ Scope flexibility needs to be encouraged to enable cost-effective, person-focused and safe care, while training needs to expose professionals to other types of practitioners and team-based practices. Technology should facilitate communication and provide opportunities to involve and access virtual team members with the right skills to support peoples' diverse needs.²⁷⁶
- ▶ **Change management** – Organisations will benefit significantly when change is well planned and managed. Pathways should exist to develop and recruit change and project management capabilities to bring contemporary service design, project and change management approaches that can help the system implement more person and whānau-focused services. There is also an opportunity for health to learn from and adopt approaches to managing change that have worked well in other sectors.
- ▶ **Greater adoption of technology** – Working differently to adopt advances in technology such as artificial intelligence and machine learning (when systems use a large number of data points for decision-making) will streamline workflow, reduce clinicians' time spent on administration and lead to more accurate diagnoses and more personalised treatment. The workforce should be encouraged and trained to use these advances to enable more precise and targeted interventions and capitalise on time efficiencies. The culture should embrace technology, data and digital change that releases time to care.
- ▶ **Developing digital skills and competence throughout the system** – The challenge for the sector is to ensure the workforce has the skills to make full use of potential advances. The competencies needed by the New Zealand workforce should be defined, and NHS and Canadian examples provide some direction.²⁷⁷ Training should be coordinated by Health NZ, with lead DHBs and partnerships with training organisations. Foundations of digital and data literacy should be included in initial training and should be developed further during employment. The workforce plan could define core digital capabilities and set minimum capability expectations across the system to be updated regularly with input from key stakeholders. A system wide approach is needed to join up activity and help the workforce keep pace with technological advancements.
- ▶ **Leadership development pathways** – Leaders are exposed to different ways of working, in different environments and supported to develop and apply their leadership skills through deliberate career planning and pathways. Greater emphasis needs to be placed on leaders' roles to prepare their organisation for innovation and constant change by facilitating a culture that embraces it. Potential leaders should be developed early, for example rangatahi youth.

Building the future

The Review proposes the following changes

Workforce Plan

- ▶ The Ministry should lead the development of a workforce plan with input from unions, employers, Health NZ, the Māori Health Authority, the Health Workforce Advisory Board, TEC, the NZ Institute, regulators, professional associations and other training providers. The Ministry should also work closely with stakeholders to develop specific workforce plans for Pacific peoples, disabled people and rural communities.
- ▶ The Māori Health Authority should develop and lead the implementation of the Māori workforce plan and manage the associated funding.
- ▶ The Workforce Plan should take a 10- to 15-year view. It should incorporate plans to increase the representativeness of the workforce, increase accountability for being a good employer, gather better workforce data and a present system-wide view of required workforce competencies.

Training

- ▶ The Ministry should work with TEC, Health NZ, the NZ Institute and other regulatory authorities and training establishments to ensure training is consistent with achieving the goals of the NZ Health Plan and accompanying strategies.
- ▶ Training providers should be encouraged to develop shorter-term training modules and micro-credentials; provide more development opportunities to kaiāwhina; offer more online training courses; deliver more training in rural locations; support more Māori, Pacific and disabled students; and develop more learn-as-you-earn pathways.
- ▶ Where there is a guarantee of employment on the completion of training, the workforce plan should stipulate the numbers of available training places.
- ▶ The Ministry should work with the Ministry of Education to promote clinical and non-clinical health and disability careers and increase the uptake of science, maths and health-based subjects in secondary schools, with a particular focus on increasing the numbers of Māori, Pacific and disabled students.
- ▶ All parts of the health and disability system should be cooperating to develop more learn-as-you-earn options and shorter cumulative training courses to encourage more non-traditional participation, and particularly to facilitate more participation from rural trainees.

▶ *Continued*

Building the future – continued

The Review proposes the following changes – continued

Regulation

- ▶ The regulatory system should support the NZ Health Plan and associated workforce strategies. It should be encouraged to move towards more interdisciplinary, flexible, consumer-focused and competency-based approach to regulation, over a profession-based focus.
- ▶ The effectiveness of voluntary changes by regulatory bodies should be reviewed after five years.

Strategic employment relations

- ▶ Health NZ should manage strategic employment relations, drawing on better data and aligning with the workforce plan and the NZ Health Plan.
- ▶ The tripartite accord should be reinvigorated and commit all parties to working constructively to achieve the long-term objectives of the system, fostering more effective dispute resolution and developing a clearer strategy on relative salary scales and employment terms and conditions
- ▶ The workforce should reflect the community it is serving, and all parts of the system should be accountable for implementing specific Māori, Pacific and disabled workforce strategies.
- ▶ Health NZ should prioritise developing better and more consistent workforce intelligence from all parts of the system.
- ▶ The system should be encouraged to become disability confident, drawing disabled people into a wider variety of roles and supporting them to thrive.
- ▶ Employers should be expected to adopt best-practice staff recruitment, onboarding, development and retention practices, including more flexible learning options and developing staff in leadership roles.
- ▶ Commissioning and contracting policies should be used to encourage more secure employment and, therefore, more opportunities for career development, particularly for the workforces involved in home-based care and other outreach services.

12 Digital and data / Te matihiko me ngā raraunga

To enable a data-driven, digitally-enabled ecosystem that supports modern models of care, investment is required in more than just technology. The system needs to work differently to accelerate the digital transformation toward safer, more productive care delivery resulting in better experiences and more equitable outcomes for people.

People should be more empowered with more trusted access to and control over their health data. Sector stakeholders should be able to more readily share and access health data using newer, nationally consistent approaches, supported by more streamlined procurement. Decision-makers and researchers should have better access to data and digital technologies to support decision making and innovation. This should be enabled through a more centrally-led approach, particularly with regard to standards, data governance, Māori Data Sovereignty and common national systems. Building system-wide digital literacy capability also needs to be accelerated.

What digital means for the health and disability system

Achieving the future direction proposed by the Review would be heavily dependent on modern and effective use of data and digital technologies across the health and disability system.

Digital is a way of working and many of us interact with businesses, organisations and governments through digital means. It is becoming the 'new normal' for managing our lives. New Zealand businesses and consumers have generally been fast to adopt new technologies and there is relatively high internet use and uptake of mobile devices.

Digital is a large part of people’s day-to-day activities. To date, the health and disability system has not rapidly adopted digital technologies and modern ways of working and needs to accelerate the implementation of solutions to find effective, sustainable and modern ways to do things that are now typical for other businesses and organisations.

Many people expect to be able to manage and update their personal details and conduct transactions online. However, in the health system people cannot even update the address that is linked to their National Health Index (NHI) number. A barrier to this is authenticating the individual. Other New Zealand organisations have overcome the challenge of proving identity online, as demonstrated by the Department of Internal Affairs electronically processing 60% of adult passport renewals.

Large volumes of data are transacted securely and in reusable digital formats that can be used across businesses. For example, around 150 million EFTPOS transactions are processed monthly between industry partners with different systems and consumers with different banks. In addition to the transactions completed, data associated with these transactions becomes part of industry partners’ financial systems, and, part of consumers’ banking records. The health and disability system currently does not have platforms in place to support equivalent reliable data exchanges happening.

Many commentators have discussed the transformative role that data and digital technologies could play in the health and disability sector. Some see these technologies as a natural business-as-usual progression for a sector that is clinically driven. Others are concerned about the disruption and the ethical and governance challenges that may result. Many are optimistic:

“If any industry has more to gain and less to fear from robotics, cognitive augmentation, digital disruption, and artificial intelligence, it is health care. The powerful combination of data and analytics is fuelling precision and personalised medicine and pushing genomics to new scientific frontiers.” ²⁷⁸

New Zealand’s health and disability system is large and complex and it is one of the largest users of information technology in the country. It is not realistic to think that one system,^{279 280} either nationally or across all aspects of service delivery in a locality, would be possible given the current data and digital technology environment. Neither would the answer be the continued use of thousands of standalone applications that are often heavily customised. If people are to take more control of managing their health, if services are to be more connected and decision-making better informed, a deliberate and staged plan would be required to transform the system.

As the health and disability system becomes more reliant on data and digital technologies it would be important to

- ▶ ensure there is good connectivity between systems
- ▶ have sufficient resilience in the system and have robust business continuity planning to ensure that digital systems do not become a point of failure.

Moving the health and disability system to a point where it can adopt digital technologies and data to deliver more equitable health outcomes would require a well-planned and staged transformation. The Review has proposed that all planning should derive from the NZ Health Plan and digital and data is no exception. The system needs a clear long term digital and data strategy and plan to ensure a cohesive, effective modern health and disability system. Continued piecemeal approaches will not be sufficient. Regardless of the details of the plan, implementation should start with a focus on getting the basics²⁸¹ in place across the system rather than aiming to excel in a small area of the system.

Using digital and data to enable a connected system

Interoperable, connected and shared health data and information

The Interim Report identified good data as a foundation, signalling that:

- ▶ ‘The system needs to be better informed at every level by robust and timely data that is readily accessible to all who work in the system and all who use the system. Better data and more use of digital solutions is not only a necessity, but it also provides an opportunity to free up clinician time to focus on more caring and to support those people who wish to use technology to help take greater control of managing their own health and wellbeing.’

Throughout the Review, the need for ready access to reliable, up-to-date, joined up data was a consistent theme endorsed by consumers and everyone engaged in ‘the ecosystem’. The importance of data and the obstacles faced is set out below.

Quality standardised data is critical for:	Current challenges:
<ul style="list-style-type: none"> ▶ Consumer empowerment: supporting consumers to actively manage their own health by accessing their own health records to gain information and contribute to them, to support targeted wellbeing and education advice, research information and choice ▶ Better patient safety, care and outcomes that enable clinicians to see complete, up-to-date patient data, across the continuum of care ▶ New models of care that require multiple clinicians in different locations to access real-time patient data to support multidisciplinary care ▶ Decision-making and research that require timely access and analytical capacity to extract meaningful information from large datasets ▶ Effective data and information flow through the health and disability system. 	<ul style="list-style-type: none"> ▶ Most patient information is in inconsistent machine-readable formats, so it is difficult to access and share ▶ Privacy is cited, often incorrectly, for withholding patient information and other data that would help inform patient care, performance improvement, policy and funding and investment decisions ▶ Many contracts do not clearly set out data or interoperability requirements. Organisations generally understand their responsibilities regarding clinical data, but do not see it as a requirement to routinely share data ▶ Some compliance requirements are costly and burdensome, sometimes requiring system upgrades and lost productivity ▶ There is no national agreement on consistent implementation of standards.

A first step to address these challenges would be to ensure that appropriate data governance and stewardship arrangements are in place.

	Description	Why it matters
Data governance	<ul style="list-style-type: none"> ▶ Leadership and rules on how data and information is collected, managed, shared, accessed and used. 	<ul style="list-style-type: none"> ▶ Ensures that data is consistent, trustworthy and doesn't get misused.
Data stewardship	<ul style="list-style-type: none"> ▶ Management and oversight of data assets. 	<ul style="list-style-type: none"> ▶ Ensures proper and secure management and distribution of data and information.

Adopting a more deliberate approach to developing national collections, setting data and data sharing standards and the architectural design of systems, would also be important, as discussed further below.

Development and use of nationally standardised datasets

Collecting data and information should be designed to benefit all stakeholders across the health and disability system. Data and information standards should enable data collection to be in meaningful, useful formats and the system should aim to, where possible, adopt the principle of 'collect once, use many times.' It should also be clear in contracts with providers that the expectation is that data should, with the appropriate approvals, be more routinely and consistently shared with consumers, other providers, policy makers and those responsible for ensuring the system performs well and meets population health needs. This type of approach would also apply to national registries.

While there are a number of existing national collections, this data is generally only used for 'statistical information, clinical benchmarking, and planning and funding'.²⁸² The collections are not granular enough for the purpose of sharing data and information for clinical care provision,²⁸³ or clinically led research and improvement.²⁸⁴

There is a comparatively high degree of compliance for submitting data into some national collections (eg. National Minimum Inpatient Dataset) that are curated and used quite extensively. In other instances, there is less visibility of a collection and lower compliance with submitting data, which lessens the usefulness of the collection.

Prioritise a minimum or core Tier 1 dataset

There are also significant gaps in the coverage of our national collections. For example, there is currently no mandated standard primary health care dataset, let alone a wider Tier 1 dataset. While nearly all primary providers use computer systems, the sector is made up of many independent providers all using different information technology systems. Systems and data are not sufficiently joined up to support provider collaboration or provide an upwards flow of consistent primary health care data to inform research, policy or service development.

Work is being progressed on a National Primary Care Data Set (NPCDS) and Primary Care Digital and Data Strategy, but the focus appears to be on secondary uses of primary health care data (reporting and statistics) with limited sector engagement. Limited progress has been made in improving primary health care data and information sharing to support clinical care and to promote innovation and research. Given the emphasis on more networked and accessible Tier 1 services, it must be a priority to agree what data should be collected at the point of care.

The breadth of Tier 1 services is wide, so a pragmatic first step might be to focus on agreeing a dataset and data standards for general practice, community pharmacy, community diagnostics and other high volume digitised datasets that could be more easily, and most usefully, shared.

Developing a mandated Tier 1 dataset could be accelerated by using learnings and resources from current data sharing approaches, for example, the GP2GP²⁸⁵ provider-to-provider solution used in New Zealand to transfer records when consumers change GP practices, and by using and adapting international approaches and resources developed in Australia,²⁸⁶ the United Kingdom,^{287 288} the United States,²⁸⁹ Europe²⁹⁰ and elsewhere.²⁹¹ Over time the dataset should be extended to incorporate a broader range of Tier 1 services.

Māori data governance and sovereignty

Internationally, there is increasing recognition of the interests and rights of indigenous people regarding data.²⁹² In the Interim Report, gaps were identified surrounding this issue and regarding the central leadership and responsibilities of governance and sovereignty relating to Māori data.

	Description	Why it matters
Data sovereignty	<ul style="list-style-type: none"> ▶ Data about people is subject to the laws and governance structures within the jurisdiction it is collected. ▶ Collection, representation and use of data about indigenous people. 	<ul style="list-style-type: none"> ▶ Ensures that data is used properly and safely to benefit the people of the jurisdiction in which the data is collected. This is particularly important for indigenous communities.

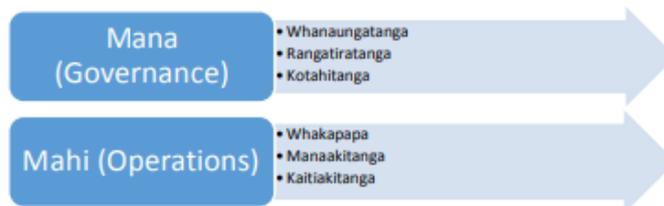
It is important that the process of developing and determining national data and information strategies is done in partnership with Māori.

There are Māori data governance structures in place within government and the health and disability system. Networks of researchers and practitioners such as Te Mana Raraunga should be used to ensure that responsibilities of Māori data governance and sovereignty are fulfilled.

Te Mana Raraunga

Te Mana Raraunga advocates for Māori data sovereignty at a national level. Te Mana Raraunga is open to participation from Māori and iwi data users, ICT providers, researchers, policy makers and planners, businesses, service providers and community advocates.

Mana-Mahi Framework



- ▶ This network aims to support discussions about Māori data sovereignty at governance and operational levels and has developed a charter and framework (mana mahi) to guide this work.
- ▶ The work that has been done to develop a charter could be useful in developing and implementing data and digital standards across the system.

Source: www.temanararaunga.maori.nz/

It is anticipated that the Māori Health Authority would partner with the Ministry and Health NZ to ensure that Māori data and digital interests are represented and that Māori-specific issues are appropriately addressed. These approaches would also extend to Māori population health analysis and capabilities.

Data sharing, interoperability and standards

The Health Information Standards Organisation (HISO) was established within the Ministry in 2003 and has developed and published a range of data standards. While these standards are well defined, they are not widely, consistently or easily implemented and are poorly maintained resulting in inconsistent data quality and accuracy. HISO's role would need to be strengthened to deliver the work programme likely to be required in the immediate future.

National identifier data

New Zealand already has a good foundation to support interoperability and data sharing across the health and disability system, using the National Health Index (NHI) and across agencies via the Integrated Data Infrastructure (IDI).

However, the value that could be derived from the NHI is not maximised. Some of the data standards within the NHI are either poorly implemented or insufficiently defined for specific population groups. The NHI could be strengthened by improving ethnicity data standards and disability data standards. This would help make data about underrepresented population groups more visible and better inform the development of policy that is aimed at addressing inequities.

Identity management

A fundamental building block for the health and disability system is robust identity management processes that identify and authenticate who (or what) wants to access the requested information and ensure they have a legitimate purpose and authority.

	Description	Why it matters
Identity management	<ul style="list-style-type: none"> ▶ Ensuring that the right people have the right access to systems and information. Also having a single identity across systems so people don't need lots of different usernames and passwords. 	<ul style="list-style-type: none"> ▶ Need to be sure that people (consumers, whānau, clinicians, etc.) can access and update only the information they are supposed to. ▶ Minimises privacy, security and clinical safety risks. ▶ Simplifies system access for users.

Verified digital identities are needed for consumers, whānau and workforce and these need to be linked to the context in which information can be accessed and shared. When identity is stored in different ways in different applications, in a system that has thousands of applications, a workforce of more than 200,000 and a population of nearly 5 million people, it is complicated and unwieldy.

As the number of consumers wanting to access their information from multiple systems increases, it would become important to have a single credential that proves their identity and associates it with their NHI number. The solution would also need to support consent and delegation for each information request.

A single credentialing process for consumers would reduce the number of:

- ▶ places that identity information needed to be updated
- ▶ systems in which changes would need to be made when, for example, data standards are updated.

This challenge is similar for providers whose identity is managed through the Health Provider Index (HPI). Currently, most providers (especially clinicians working in DHBs that have thousands of applications) have different usernames and passwords for different systems. Many cite managing these (and logging on and off a dozen or more systems at a time to find and enter information) as being a major overhead. Having a single credential and a mandate that all provider systems support single sign-on has the potential to generate a significant productivity gain and improve staff engagement.

The Department of Internal Affairs is progressing its digital identity trust framework that will allow trusted partners such as the Ministry to establish their own digital identity management solutions which, if they support the agreed identity standards, would federate into the overall ecosystem. The health and disability system should draw on this work and, in parallel, progress the additional health-specific elements that are required to ensure robust identity management is in place across all systems.

Effective data sharing

Data and information should follow and be easily available for people's needs. The current design of existing systems, registries, warehouses and collections makes it difficult to aggregate or access data and information in a meaningful way that assists in decision-making.

Lack of investment and leadership toward a nationally consistent approach to achieving interoperability has resulted in a poorly connected health and disability system. Legacy systems that are non-standard with poor interoperability lag behind the current agreed standards. This results in poor consumer and user experiences, clinical safety and quality issues and poor health outcomes. A standards-based approach, supported by strong central leadership, governance and stewardship would enable a more connected health and disability system.

Processes and systems that need to be in place to support improved data sharing are set out below.

	Description	Why it matters
Data standards	<ul style="list-style-type: none"> ▶ Rules that define how data and information is captured in computer systems. 	<ul style="list-style-type: none"> ▶ Ensures complete and consistent data across the system. ▶ Enables data sent by one system to be captured in a digital format in another system so that it can be more readily used. ▶ Enables advanced technologies (eg, AI and genomics) to more easily make sense of data.
Interoperability	<ul style="list-style-type: none"> ▶ Systems can access and share information. 	<ul style="list-style-type: none"> ▶ Enables the flow of data across systems to support joined-up business processes. ▶ Enables access and sharing data between people and systems, eg, clinicians collaborating on shared care plans; consumers accessing all their data from one place.
Application Programming Interface (API)	<ul style="list-style-type: none"> ▶ Connects applications and systems 	<ul style="list-style-type: none"> ▶ Enables improved data and information connection, improving secure access and sharing to inform decision-making.

The challenges of solving interoperability for health care are internationally recognised²⁹³ and, while good adoption of recognised open standards is required to achieve this, it must not be to the detriment of safe, quality health care and outcomes, or the usability and utility of systems.

Appropriate and secure exchange of health information must become a consistent characteristic of the system. This would enhance decision-making at all levels.

Consumer access to information

There is a need to provide consumers with easy access to all their own health information allowing them, where appropriate, to manage, update and contribute to their own data and to consent to their data being shared with whānau and caregivers.

Benefits to providing consumers with access to their health records include:

- ▶ improved consumer satisfaction and convenience
- ▶ more patient-centred care delivery and improvements in effectiveness, safety and efficiency²⁹⁴
- ▶ behaviour change and more active self-management, particularly where consumers can contribute their own data and information to their records.²⁹⁵

Access to and controlling their own data and information is a common expectation for many people in many aspects of their lives (eg, banking, travel, education). To deliver on a truly person-centred approach to health, this needs to be enabled within the health and disability system.

Providing consumers access to their records is contributing to changes in provider behaviour. OpenNotes²⁹⁶ is an international movement which aims to allow consumers to access all the notes that providers enter into systems about them. Uptake of this by providers is increasing and represents a positive culture shift of health providers becoming more open and transparent during treatment and care of people. This transparent approach to providing care is endorsed and should be encouraged by central functions and health professional regulators.

Progress has been made using patient portals in primary health care. However, there has been inconsistent uptake and use of portals across the country. A concerted focus and application to enable consumers and whānau easy access to their own health data and information would be a significant step in the staged transformation of the system. While a number of technical changes and approaches can facilitate access, changes to strengthen the Health Information Privacy Code (HIPC) could reinforce consumer and whānau access as a basic requirement within the system.

Cybersecurity

Increasing digitisation and data sharing requires consumer confidence and trust that their information is being stored securely and viewed only by people with appropriate need and authority. Also, as the health and disability system becomes more reliant on digital technologies to operate effectively, it is critical that technology cannot be exploited to disrupt the system. But there are cybersecurity issues across the health and disability system including ageing and fragile infrastructure, and lack of resources to maintain good security hygiene and robust practices for security operations management.

The lack of a centralised identity management solution means most systems do not have audit capabilities to monitor and report on inappropriate access to information. Getting this right would be critical to build whānau and community trust to improve data accuracy and sharing across the system.

	Description	Why it matters
Cybersecurity	<ul style="list-style-type: none"> ▶ Protecting physical assets (networks and systems) and information from unlawful access, theft, disruption or damage. 	<ul style="list-style-type: none"> ▶ Maintaining confidentiality of consumer and business data. ▶ Ensuring consumer information is safe and can be confidently trusted to inform decision-making. ▶ Ensure systems cannot be disrupted or damaged.

To prevent cybersecurity incidents that could paralyse the health and disability system and to maintain legal compliance and consumer confidence, all organisations should maintain cybersecurity practices that are appropriate to their size and scope and the data they handle. This issue is not unique to health. There is considerable work being done across government that the health and disability could draw on, including:

- ▶ the New Zealand Information Security Manual,²⁹⁷ which is the Government’s manual on information assurance and information systems security
- ▶ National Cyber Security Centre (NCSC)²⁹⁸ bulletins that provide practical guidance and timely advice
- ▶ Cyber Emergency Response Team (CERT) updates. This is part of a global network of CERTs that tracks cybersecurity threats and incidents and provides practical advice, including a list of 10 critical controls²⁹⁹ that would prevent or, at least, detect and contain most incidents.

Managing cyber risk is challenging in our current digital ecosystem that includes many legacy applications and aged infrastructure. It is also particularly challenging for small organisations like community providers, who often lack the resources and the knowledge to manage cybersecurity effectively.

It is expected that Health NZ would play a key role in developing and mandating approaches to better manage cybersecurity and would assist with the implementation of consistent cybersecurity throughout the health and disability system.

National reference architecture

Core infrastructure that supports new ways of working and health care delivery is currently not centrally defined or provided. A nationally standardised reference architecture and common design and accessibility standards would help ensure that as new systems are added, they work together and improve service delivery and performance.

	Description	Why it matters
Reference architecture	<ul style="list-style-type: none"> ▶ A system-wide blueprint of common systems and how they all fit together. 	<ul style="list-style-type: none"> ▶ Provides clarity over what the overall system looks like, what the component systems are and how data flows between them. ▶ Streamlines procurement by pre-defining system components. ▶ Common system-wide view supports future consolidation and rationalisation of systems to improve data flow.
Design and accessibility standards	<ul style="list-style-type: none"> ▶ Ensuring that systems are built in a way that is useful and easy to use. 	<ul style="list-style-type: none"> ▶ Systems need to support people to do their jobs and focus on consumers, not computer screens. ▶ Equity of access for all users.

Establishing clear consistent design standards and accessibility standards would also be an important step in ensuring that in the future interoperability between systems is enhanced and that systems better meet user and consumer requirements. The National Health Information Platform (nHIP), discussed below, supports a national reference architecture approach.

Virtual networks

Design and accessibility standards would also be important in shaping virtual platforms (such as telehealth) and tools that will be required to enable networks of service providers to work effectively together and support rapid improvements, particularly in Tier 1.

Capabilities supporting telehealth and virtual care – whether it’s clinician led or consumer self-service – currently have significant gaps, both technically and in terms of the health and disability system’s preparedness.³⁰⁰ Mechanisms for funding and incentivising providers to offer these services (eg, telehealth, virtual appointments, and virtual waiting rooms) need to be designed, implemented and sustained.

Provider job descriptions, scopes of practice, performance metrics, codes of practice and so on would need to be recalibrated to support the increasing use of telehealth. None of this is technically challenging but would require a significant shift in mind set and behaviour from parts of the system. It would require collaborative re-design of service provision and subsequent change management for providers and consumers.

National health information platform actions

Mandated standards for data and interoperability would take years to fully implement across the health and disability system. Upgrading or replacing the tens of thousands of different systems in current use would take several years, possibly up to a decade or more for some of the larger DHB systems. However, better systems interoperability and data sharing could be achieved relatively quickly by using technology to source and connect data from across different non-compliant source systems and present it in a coherent, standardised way.

As noted in the Interim Report, the Ministry is leading the National Health Investment Platform (nHIP) that would provide a powerful platform for data integration and systems interoperability across the health and disability system.

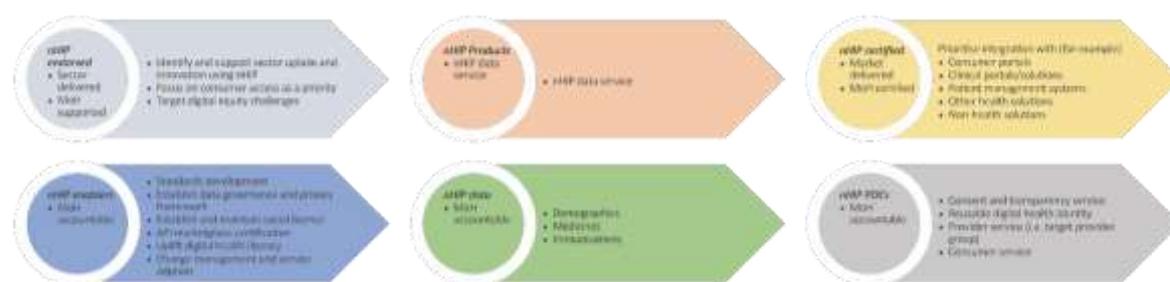
There is no question that this investment is urgently required. Since the Interim Report, the Ministry has further developed a programme business case that was shared with the Review. The programme is based around delivering capability in flexible value-based tranches that seek to solve specific user (consumers, providers and decision-makers) problems. To ensure that value is delivered quickly, the implementation has been phased into tranches and, within each tranche, the intention is to design and deliver a minimum viable product (MVP) quickly then make iterations from testing and piloting the MVP with users.

Tranche 1 of this work programme is focused on connecting demographic, medicines and immunisation data and sharing it with providers and consumers so that consumers can see all their data in one place, as can providers when making clinical decisions. The proposed Tranche 1 scope is summarised in the following figure.

Tranche 1: nHIP – Launch (July 2020 to July 2023)

Tranche 1 would design and build the nHIP data service and foundation enablers, and other necessary activities, including sourcing of foundation capabilities. Access to initial datasets for demographics, medicines and immunisation would be delivered and key sector exemplar services would be identified and supported to aid service uptake, with a focus on consumer access. Developing standards, targeted digital health literacy initiatives, data governance and a privacy framework would be implemented.

Figure 12.1: Summary of the Tranche 1 scope



The value created by Tranche 1 would be:

- ▶ improved connection and communication between service providers, leading to more accurate and timely information sharing
- ▶ reduced risk of errors due to improved medicines information
- ▶ better provider workflows owing to better information for decision-making at the point of care.
- ▶ Consumers could view and update their relevant demographic information, view their immunisations history, and medicines prescribed and dispensed by multiple providers. Tranche 1 would also deliver improved preventive health capability, through improved immunisation data sharing across the system.

Source: Ministry of Health, nHIP Programme Business Case

This tranche aligns well with the Review’s proposed direction, from both a digital perspective and from its early focus on Tier 1 implementation. Investment to accelerate this programme of work should be supported.

Addressing equity through data and digital

The Interim Report noted that the health and disability system lacks integration and systems thinking. This means there are areas where it fails to meet population needs. As medical technologies advance, data becomes more widely used and more sophisticated interventions become available. So too does the risk of introducing more inequity due to factors^{301 302} such as a person’s ethnicity, socioeconomic status, age, and where they live.

The same is currently true of health care but done well, population-level, data-driven policy and planning and individualised, digitally enabled service models offer a way to reduce inequity, improve outcomes and improve individual consumer experiences into the future health and disability system. As this future state is built, it is critical that Māori are engaged around data sovereignty, solution design and deployment to minimise the risk of digital exacerbating inequitable outcomes.

Improving digital access

While 81% of New Zealand adults use a smartphone,³⁰³ affordability of cellular data is a challenge for many. The Ministry is involved in a Department of Internal Affairs led collaboration³⁰⁴ which, in partnership with New Zealand’s telecommunications companies, is piloting zero-rated data (to consumers) for five websites and is exploring how to develop a permanent solution based on this pilot. The Ministry is taking the lead on this and has built it into the nHIP business case. Notwithstanding a more formal evaluation, approaches like this have shown a considerable impact as well as return on investment overseas. Serious consideration to expanding this approach within New Zealand should be considered.

Coverage remains an issue for some consumers. Network provider estimates of population coverage are set out below.

Figure 12.2: Estimated population coverage of mobile voice and data services

	SPARK	VODAFONE	2 DEGREES
	97% coverage	98.5% coverage	98.5% coverage

It is estimated that currently there are up to 75,000 people³⁰⁵ without access to mobile data. These are areas and people that are typically also underserved by health care services so alternative solutions need to be found for these consumers.

The Ministry of Education has rolled its Network for Learning out to 98% of the country’s schools and, in partnership with technology companies and community trusts, now provides connectivity to students outside of the school grounds in many areas.

The health and disability system should work with the Ministry of Education and other parties to develop a similar model. This is likely to be particularly relevant for Tier 1 networks in rural areas, where connectivity to schools, marae and other community facilities could also be used by the health and disability system to better serve local community needs.

There are many other barriers to access³⁰⁶ and reasons for digital poverty³⁰⁷ so it is also critical that, wherever possible, health and disability services are also available in non-digital form or, where this is not possible, assistance is available to help consumers use digital services.

Māori

Barriers for Māori accessing equitable health care have been noted throughout the Review. The Interim Report noted that it is vital that Māori data is fully incorporated into the evidence used to develop genome-based interventions and algorithms. To fail to do so has the potential to increase inequity in health outcomes for Māori. It is important that principles, such as those set out in the Te Mana Raraunga charter, underpin the development of digital policy and the design and implementation of data and digital standards and services.

It is proposed that the Māori Health Authority would partner with the Ministry and Health NZ in the digital and data domain to ensure that Māori interests are represented and that Māori-specific issues are appropriately addressed. These approaches would also extend to Māori population health analysis and capabilities.

Pacific peoples

There are difficulties with the way health data is collected, governed and analysed that impacts on the ability of the system to achieve equity for Pacific peoples. Current approaches to Pacific health analysis involve homogenising diverse Pacific populations into one group, or in some cases results for Pacific are not reported at all. This results in broad assumptions of Pacific health outcomes and system responses needed to support action, where specific and targeted action could be better placed.

The new health system would need to address the issues identified for Pacific health data if it is to make headway towards achieving equity. This would need to include developing capabilities to perform high quality data analysis and sophisticated data reporting of Pacific health data to support equity actions. The pathway to making changes needs to be developed in collaboration with Pacific health researchers and analysts to ensure Pacific health data is treated respectfully, with standards being accepted and normalised throughout the health system.

Other population groups

The Digital Inclusion Blueprint³⁰⁸ also offers valuable insights into how to overcome digital inclusion challenges for disadvantaged populations. This cross-agency work should be prioritised.

Digital service models offer many opportunities to increase access and equity for different groups.

- ▶ Older people and people with chronic and complex conditions can benefit from remote monitoring, telehealth, shared care planning and management and digital therapeutics to get better access to services and help them manage their conditions better and avoid hospital admissions.
- ▶ Pacific peoples and other groups where there are cultural needs that are not met by the current system can benefit from personalised and culturally adapted digital services through apps, websites and platforms, and can have easier access and greater choice of providers they are comfortable speaking with through telehealth services.³⁰⁹
- ▶ Disabled people can enjoy greater independence and access to services through remote monitoring and telehealth. Accessing appropriate health services can also be enhanced through digital enablement. Digital services must be accessible to meet individuals' needs.³¹⁰

Case Study: Le Va - Aunty Dee online wellbeing tool

Aunty Dee is an online wellbeing tool targeted at young Pacific and Māori people.³¹¹

It is also freely available for everyone to use. Developed using co-designed approaches and based on Cognitive Behavioural Therapy techniques, it is a tool aiming to help improve coping mechanisms and problem-solving capabilities of younger people managing stressful experiences. Evidence for this approach has been proven to minimise symptoms of depression in both adults and younger people and has also shown to work well with helping young people cope.³¹²

For these benefits to be realised, appropriate, standardised ethnicity and disability data needs to be collected and available across the health and disability system in a way that permits disaggregation and identification of need.

Tier 1 focus

Digital foundations required for Tier 1 networks

While nearly all Tier 1 providers use computer systems in their practices, the thousands of independent providers use different systems and even where they are using the same system, there are different versions and customisations that add to the complexity of getting these systems to work together. This component of the health and disability system lacks overall coherence. The systems and data are not sufficiently connected to support a service delivery model that centres on consumers. Nor does it readily support the appropriate flow of data extracts to inform decision-making or monitor system performance.

Digitally enabled Tier 1 service networks would provide face-to-face and virtual services³¹³ to consumers with a joined up consumer experience, new ways to access services, and increase the availability and efficiency of Tier 1 services to improve access and address equity.

Networks would need to use a variety of digital tools to support new ways of working, including:

- ▶ telehealth platforms with virtual waiting rooms to enable booked and ad-hoc virtual (chat, voice or video) consultations
- ▶ virtual health platforms to support planning and managing shared care
- ▶ secure messaging tools
- ▶ peer and community support platforms, self-service and self-care platforms.³¹⁴

The suggested approach has an initial focus on Tier 1, but applies to the whole system. Establishing virtual networks and platforms that support new ways of working and greater integration between Tiers 1 and 2 would help address barriers that are often cited as contributing to poorer health outcomes for some populations. Of particular importance would be the ability to access Tier 2 specialist advice and services remotely in community settings. This would enable earlier intervention where needed and reduce the travel and time cost burden for consumers and their whānau.

Case study – The Ontario Telehealth Network (OTN)

The Ontario Telehealth Network (OTN) is an independent not-for-profit organisation funded by the Government of Ontario. Its focus is telemedicine or virtual care across networks of providers covering urban and rural areas. Services include secure text, audio or video conference visits between patients and providers, remote patient monitoring and coaching, remote collaboration between providers and digital therapeutics.

‘Virtual care makes accessing health care more convenient, minimises time spent travelling and provides better support for people living with chronic disease. The result is better outcomes and less time spent away from the people and things that really matter.’³¹⁵

Overall, OTN claims more effective delivery of services and better distribution and use of resources which improves availability of services and reduces inequity for underserved and disadvantaged populations. Achievements set out in OTN’s FY18/19 annual report³¹⁶ include:

- ▶ use of Telehomecare to deliver remote monitoring and intensive, motivational coaching to 3,372 patients with congestive heart failure and chronic obstructive pulmonary disease (COPD), avoiding an estimated 3,007 emergency room visits and 2,792 hospital admissions over the 2018/19 financial year
- ▶ an eVisit (virtual visit) primary care pilot enabled patients to securely message their own primary care provider with health questions and issues. The providers could respond through return messaging or escalate to an audio or video call as needed. The pilot involved 278 primary providers serving 32,000 patients. Of the surveyed patients, 98% felt that virtual care was the same as or better than in-person care and 99% said they would use virtual care again. Ninety percent of interactions were through secure messaging only, without the need for a voice or video call. Sixty-seven percent of eVisits replaced in-person visits, 15% replaced walk-in clinic visits and 4% replaced emergency department visits. Patients preferred to use the messaging service because it provided the most flexibility and convenience.

New Zealand evidence

Pilots and trials of virtual health appointments are under way in different areas of New Zealand.³¹⁷ One was conducted in Waitematā DHB by an outpatient service. Early results show improvements in consumer satisfaction, decreased waiting times and cost savings to both consumers and providers.

‘Over 80% of these patients that chose a telehealth appointment described their experience as the same or better than a traditional in-person visit, with 88% said they would book more telehealth appointments in the future. By eliminating travel, telehealth users saved \$9,500. In addition, the group also eliminated a potential loss of earnings of \$5,300.’³¹⁸

Supporting Tier 1 locality service delivery

The Review is recommending developing connected locality-based networks for Tier 1 services but it is not proposing one single pathway to achieve this connectivity. It would be important to build on the technology that already exists. Accordingly, a mix of implementation approaches would be required, including the following.

- ▶ **Leverage existing systems** – Where there are existing data sharing, information exchange platforms or collaboration tools in place, these should be leveraged and extended or expanded as necessary to improve consumer access, bring additional or new providers into the data sharing framework and onto collaboration platforms.
- ▶ **Greenfields approach** – If the baseline assessment shows no existing services that can be leveraged, then a DHB-led and funded greenfields approach would be proposed, including potential industry partners to enable rapid deployment.
- ▶ **Hybrid approach** – This would expand existing capabilities but leverage DHB leadership and bring in aspects of the greenfields approach as required.

The nHIP programme of work would support the deployment of solutions within Tier 1. Health NZ should ensure that the deployment of solutions for Tier 1 networks are consistent with requirements and standards to operate within the nHIP.

A digitally capable system with strong leadership

Investment in digital and data is typically directed toward more tangible technology assets such as hardware and infrastructure. For the health and disability system to maximise value from investment in digital transformation, investment would be needed in people, processes and technology. Investment in building human capability is one of the most important areas to drive digital change.³¹⁹

There is a need to:

- ▶ increase digital literacy and capability
- ▶ grow digital leadership and support new ways of working.

Increase digital literacy and capability

The health and disability system is not the only sector working to increase the digital literacy of its consumers and workforce. While the system would need to develop health-specific approaches, it should actively participate in all-of-government approaches to lift digital and data literacy and capability. The early focus of this work, being led by the Department of Internal Affairs, has been increasing the pace of digital transformation and attracting and retaining digital talent in the public service. With the recent release of the Digital Inclusion Blueprint, this work is now being extended to consumers and whānau, which is also a focus for the health and disability system.

While local initiatives are emerging, there is currently no clear framework or definitive strategy, goals or approaches to building digital literacy and capability across the health and disability system. Internationally, more concerted effort, particularly in the NHS, is being taken to build these capabilities.

Grow digital leadership and support new ways of working

As set out in the Interim Report, there is some scepticism in the workforce about digital change and some concerns that rather than releasing time to care it slows them down.

As digital technologies become more ubiquitous in health care delivery, they can augment and enhance their ways of working.

‘A digital transformation is a complex, system-wide change that requires leadership as well as sustained investment. However, investment need not be in hardware or infrastructure. The most pressing areas include building human capital and expertise, adapting processes and workflows, and modernising policy and governance frameworks. It also means reshaping fundamental policy settings such as payment models, which influence incentives and behaviour across a health system.³²⁰

Accelerating digital transformation would require strong clinical, technical, project and change management leadership. New Zealand should learn from international approaches to growing digital leadership, but would need to localise these approaches. There would need to be some dedicated clinical and digital roles but, in many cases, digital leadership would be part of wider leadership roles. Consideration should also be given to the extent to which New Zealand wants to introduce standard workforce education programmes and certifications which are emerging internationally.

It should be an early priority in the digital and workforce planning processes to determine the competencies and leadership skills required and consider how international and current local approaches could be adapted to develop the leaders that would drive digital change throughout the health and disability system.

A recent assessment by one DHB chief information officer using the Skills Framework for the Information Age (SFIA)³²¹ – an internationally recognised framework used to describe IT and digital skills and competencies – has shown that their current team’s skills and capabilities are in traditional IT and they lack many softer, more ‘digital’ skills such as design thinking and user experience design, as well as capabilities in newer and emerging technologies such as cloud, data science and artificial intelligence. Anecdotally, this situation is replicated to some extent across all DHBs and across public sector organisations that often struggle to recruit and retain digital skills and capabilities nationally. While there is awareness of the gaps across the system, there is currently no clear framework or definitive strategy that highlights goals or approaches to build digital capability.³²²

Training in new skills and ways of working would need to be embedded in a workforce strategy and development plan. New roles, such as data scientists and user researchers would be required and the health and disability system would need to make these roles attractive, as demand is significant across the economy. Complementary strategies that build capabilities at all levels of the system would need to be defined and prioritised. Work being done by the Ministry, Health Informatics NZ and the Clinical Informatics Leadership Network should be accelerated, with strong leadership from Health NZ.

Clarifying system roles and procurement and investment management processes

While innovation has occurred in pockets,^{323 324 325} progress towards implementing more robust data and digital technologies has been slow. Strong leadership would be required to support the design, development and implementation of data and digital standards that supports the models of care and new ways of working that are being proposed. This would require strong national leadership, mandated standards and timelines set to adopt these standards.

There has been confusion over roles and who has decision rights over what. Different countries have taken quite different approaches to centralised or decentralised decision-making, mandated standards and systems and formal splits between setting standards, design and delivery roles. There does not appear to be one right answer, rather it appears to be very context specific and, on some occasions, based on historic rather than current contexts.

There are few who dispute that decision-making processes for digital and data are cumbersome and delay progress. Further work is required to determine what functions should be undertaken by who in the proposed new system arrangements, but should mirror those being proposed for the overall health and disability system.

This would, for example, mean that:

- ▶ the Māori Health Authority would take a leadership role on Māori data sovereignty, Māori population health analysis / analytics and ensure that the digital plan includes priorities that would help address equity issues for Māori
- ▶ the Ministry would continue to be accountable for national collections and the Health Information Standards Organisation
- ▶ Health NZ would focus on those aspects of digital that are required to manage and support improved delivery and performance of the system. This would include activities ranging from developing and implementing the digital plan, accelerating and driving the adoption of standards, through to ensuring that appropriate cybersecurity management is happening and providing support to organisations that require support to achieve this.

Given the increasing role that digital and data is expected to play in the future, key processes associated with it would increasingly need to be integrated into and follow the same processes used for procurement and facilities and equipment management. Some observations of what this would mean for digital and data are discussed below.

Contracting with service providers

Many of the contracts that are currently in place with service providers do not explicitly set out what data needs to be collected and shared with who or in what format. In future, any provider that enters into a publicly funded contract should expect it to include specific data obligations.

Including these requirements in contracts can ensure providers adopt a minimum set of standards. Other countries have found that some initial funding has been required to support provider investment in systems that meet minimum standards. Incentives to adopt standards in a timely manner could also include phasing out current contract terms over an agreed period of time, after which contracts may not be renewed.

Digital procurement processes

Similarly, industry partner procurement processes also provide a mechanism to improve compliance with various standards. Approval to procure a new system could be made contingent on complying with standards, with any exceptions requiring explicit approval by Health NZ.

Adopting a digital procurement framework that aligns procurement processes with the scale and risk associated with the investment would streamline system procurement. For example, systems that comply with the reference architecture, data and interoperability standards, and that present lower financial and commitment risk (eg, cloud-based services) should be subject to a far less rigorous process than core infrastructure (eg, a DHB-level Patient Administration System) that involves multi-million dollar capital investment and a multi-year commitment. The procurement framework should support the relevant delegated authorities being put in place to streamline the procurement process.

This approach would need to be supported by architecture and conformance testing processes for new systems that are procured using public funding. This should be led nationally, but may be supported by regional resourcing to work with DHBs and other providers to undertake conformance testing, and product and service certification. International examples include the UK's Health Systems Support Framework (HSSF),³²⁶ ONC Health IT Certification Program³²⁷ and Canada Health Infoway's approaches.³²⁸

Common asset management and capital investment processes for digital and data

Planning and standards development

An early priority for Health NZ would be the development of a Digital Plan that is informed by and enables the delivery of the NZ Health Plan. Health NZ should draw on international best practice as a starting point. Many of the industry partners and application developers working internationally would also be part of the New Zealand digital ecosystem.

Some examples that could be leveraged are outlined below.

- ▶ **Governing principles**³²⁹ – outline responsibilities and expectations for those developing, deploying and using data and digital health technologies. An example is the UK Government's Code of Conduct for data-driven health and care technology.³³⁰
- ▶ **Standards and interoperability** – International examples include US ONC,³³¹ Canada Health Infoway,³³² NHS digital, data and technology standards framework,³³³ NHSX's mandate to set standards,³³⁴ the Australian Digital Health Agency's Framework for Action³³⁵ and Draft Interoperability Roadmap, the Global Digital Health Partnership³³⁶ and other OECD countries³³⁷ leading strong mandates for accelerating standards adoption.
- ▶ **Implementing health data and information strategies, governance and stewardship** – International examples include recommendation of the OECD Council on Health Data Governance,³³⁸ NHS Digital,³³⁹ US ONC³⁴⁰ Great North Care Record.³⁴¹

Investment and asset management processes

The Interim Report noted significant under-investment in data and digital, citing an estimate by NZHIT that only 2.3% of the total health spend goes into IT, compared with the global health industry average of 4.6%.³⁴²

‘OECD countries typically invest only under 5% of health budgets on managing information. In other sectors investment is four times higher.’ OECD Report - Health in the 21st Century

To lift digital capabilities and achieve the required digital transformation in the health and disability system, additional funding is required,³⁴³ especially for Tier 1 networks, remediation or replacement of aged and fragile infrastructure, as well as system-wide leadership and workforce development over the next three to five years.

There is a clear need for digital applications and asset management plans to be developed and for a long-term investment plan to be developed, with prioritised investments identified that can inform future allocations of capital funding.

This is consistent with the landscape for facilities and equipment, discussed in the following chapter. Given the under-investment in both areas, some challenging prioritisation decisions would need to be made between digital investments, and between digital and facilities and equipment investment proposals.

Accordingly, the Review is recommending that the capital decision-making processes for these enablers should be integrated. There would need to be specialist digital knowledge and expertise to ensure that there is a good understanding of all digital investment proposals. Also, given the weight that the Review is placing on implementing digital and data system changes it is recommended that some capital funding is dedicated to digital investments in the short to medium term to enable investments to be accelerated and legacy systems replaced with systems that better support proposed new ways of working.

Building the future

The Review proposes the following changes

Connected and shared health systems, data and information

- ▶ A national reference architecture should be defined and agreed to support consistency across the system.
- ▶ National standardised datasets and interoperability standards should be agreed and implemented so that data flows across the system and supports better clinical outcomes, empowered consumers, and data-driven decision-making.
- ▶ The Ministry should be responsible for determining data policy, strategy and setting standards; Health NZ should be responsible for implementation and ongoing stewardship.
- ▶ Health NZ should invest in data collection, research and analytics capabilities to understand need, prioritise resources, and measure benefits using clear data ethics frameworks.
- ▶ Researchers, decision-makers and innovators should have secure access to public datasets provided by Health NZ to inform the development of new products, services, care models and treatments.
- ▶ The Ministry, Māori Health Authority and Health NZ should ensure high levels of trust in privacy and security of data are maintained.
- ▶ Consumers should be able to control access to their own health data and information. Changes to the Health Information Privacy Code (HIPC) should be considered to facilitate this.
- ▶ A pragmatic approach to use existing databases such as the National Health Index (NHI) and Health Practitioners Index (HPI) should be adopted and enhanced to drive interoperability. A change to the HIPC should be considered to narrow the meaning of the word 'assign' to enable health care organisations to use the NHI more.

Tier 1 services connected as a network

- ▶ Consumer data should be shared across Tier 1 within provider networks if approved by consumers.
- ▶ Providers within networks should have collaboration tools to enable delivery of consumer-centred shared care.
- ▶ A Tier 1 standardised reporting dataset should be developed over a two- to three-year period.
- ▶ Consumers should have the tools to manage their own health and navigate the system.
- ▶ Virtual (telehealth) services should be established to provide consumers with greater access to services.
- ▶ Services should be built that enable seamless interaction between Tiers 1 and 2 and supports long-lining of specialist Tier 2 services into Tier 1 networks.

A commitment to ensuring equitable access to services

- ▶ The Māori Health Authority should partner with the Ministry, Health NZ and DHBs to ensure that Māori interests are represented and that Māori-specific issues are addressed in the design of digital standards, services and data strategies. These approaches would also extend to Māori population health analysis and capabilities.
- ▶ Digital standards and service models should be designed to meet the access and equity needs of other groups, including older people, people with chronic or complex conditions, Pacific peoples and others with specific cultural needs, and disabled people.
- ▶ Services should be designed to reduce inequities using methods and data that is representative and unbiased.

▶ *Continued*

Building the future – continued

The Review proposes the following changes

Strong leadership and system-wide digital literacy, capability and maturity

- ▶ Decision-making capability of executive-level leaders should be strengthened by building improved data and digital literacy and capability, and encouraging enhanced partnerships with clinicians, consumers and digital leaders.
- ▶ The workforce should have the capability, tools and resources needed to effectively transition to and deliver modern models of care.
- ▶ Consumers should have trusted, flexible access to a range of services via accessible, inclusive digital channels.
- ▶ A long-term plan should include modern ways of working with data and digital technologies as core to enabling a sustainable, adaptable, future-proof health and disability system.
- ▶ The Ministry and Health NZ should set governing principles and responsibilities regarding expected behaviours for those developing, deploying and using data-driven technologies.

Clearer decision-making and procurement and investment processes

- ▶ Core national digital infrastructure criteria should be more consistent and should be centrally sponsored.
- ▶ Procurement and contracting models should support agility and speed to value by differentiating between types of products and services, and applying only as much process as is needed for the level of risk involved.

13 Facilities and equipment / Ngā rauhanga me ngā taputapu

The state of current assets and the lack of integrated forward planning for investments has left the system with a significant challenge. While additional investment is needed, for it to be effective, changes are proposed in how capital planning is linked to outcomes and services planning, how investments are prioritised and how projects are managed.

There should be central prioritisation of nationally significant investments and business cases should not proceed unless there is prior agreement.

The design and construction of the hospital buildings the health system is currently undertaking and planning for the next 10 years is considered to be the largest and most complicated vertical construction programme that New Zealand has ever undertaken. Programme and project governance should be streamlined and standardised to ensure expertise is used strategically and project and programme governance is strengthened at all levels in the system.

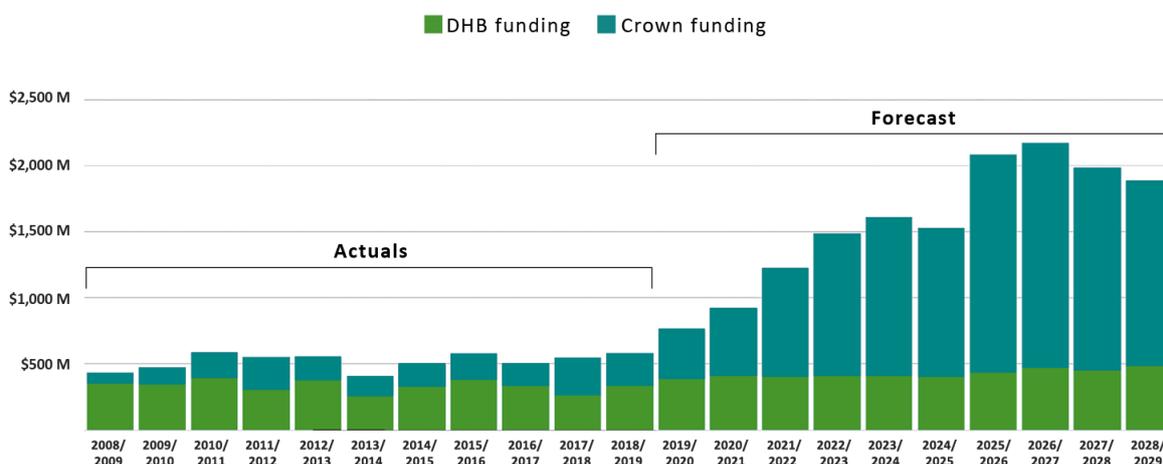
The Review supports the establishment of the Health Infrastructure Unit (HIU) and proposes that HIU continues as part of Health NZ providing centralised expertise and support for investment management, asset management and delivery of major investment programmes.

Introduction

Safe, fit-for-purpose facilities and equipment are essential for a well-functioning health and disability system. The location, size and design of facilities can either hinder or help new ways of working for decades.

The system currently faces significant need for investment with the Ministry of Health estimating more than \$14 billion (excluding repairs and maintenance) will be required over the next decade.³⁴⁴ This level of investment is due to the age and condition of the current estate, combined with the demands generated by a growing and ageing population.³⁴⁵ Figure 13.1 shows a projected scenario for future capital investment based on current information.

Figure 13.1: DHB capital expenditure forecast on a cash-flow basis



NB: The above Forecast represents expected cash flows in an ‘unconstrained environment’. In reality, due to supply constraints for construction and capacity to run multiple large scale projects, it is expected that the capex spend on large projects would effectively slide/defer into out years.

Source: Ministry of Health DHB capital modelling, September 2019

This level of investment may be daunting, but it also presents an opportunity. The health and disability system could look at replacing ageing facilities with ones designed and planned for the future. New facilities can use technology to support new ways of delivering specialist services, embrace the shift of services closer to home and be a great place for the future health workforce to work in.

Realising this opportunity would require integrated services and investment planning, combined with modern facility design and using new technologies.

The challenge noted in the Interim Report

- ▶ The Interim Report noted there was considerable frustration with current processes, including concerns about drawn-out decision-making, the impact of the capital charge regime and a lack of capacity and capability to manage and deliver major health capital investment projects.³⁴⁶

Update on recent steps

Recent changes made by government that impact well on the health and disability system include the following.

- ▶ Improving the information base for capital decision-making by starting to develop a National Asset Management Plan (NAMP), which has required all DHBs to improve their transparency about the state of their assets. The first stage of that process has been completed and describes the current state of DHB-owned assets.
- ▶ Establishing a central Health Infrastructure Unit (HIU). The HIU has four main functions: national asset management planning and prioritising capital funding; monitoring capital projects; developing national design standards for hospital facilities; managing the delivery of major projects and providing support to DHBs to deliver projects.
- ▶ Supporting longer-term planning by allocating Crown capital funding over multiple years instead of one year.³⁴⁷
- ▶ Mitigating a downside of the capital charge regime by matching the higher capital charge expense of new facilities with increased operational funding.

The Review endorses these changes and proposes that the HIU continues as part of Health NZ.

Challenges still to be addressed

Some challenges remain, including:

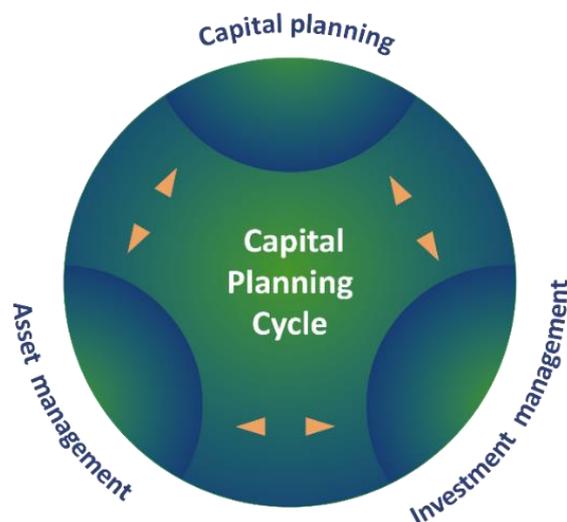
- ▶ Linking capital planning to long-term service planning and ensuring a streamlined prioritisation process.
- ▶ The lack of good long-term maintenance of assets arising from the under allocation of depreciation.
- ▶ The process for developing business cases.
- ▶ The variability of programme and project delivery and governance.

The capital cycle

A good capital cycle is built around three functions.

- ▶ Capital planning that links to service planning and sets the direction for change.
- ▶ Investment management that makes the case for and delivers change.
- ▶ Asset management that monitors and reports on the condition and effectiveness of assets.

Figure 13.2: Capital planning and investment cycle



Capital planning

Capital planning should be an integrated part of long-term system planning

Capital planning needs to be derived from the integrated NZ Health Plan to ensure that investments in facilities, equipment, ICT and new workforces are complementary and aligned with future service requirements.

The Interim Report noted the issues with the current approach, including the lack of a long-term services plan and that the health and disability system has not done a good job of measuring or accurately reporting its infrastructure needs.³⁴⁸ The planning section earlier in the report, sets out the national, regional and local approaches to planning recommended by the Review.

A critical component of the planning process is a credible, prioritised pipeline of major health sector projects. Such a pipeline would:

- ▶ give the government a more credible estimate of future capital funding requirements under different scenarios
- ▶ allow DHBs to more effectively plan minor facility works and service delivery around major projects
- ▶ help the HIU to plan business case support and project delivery
- ▶ inform procurement planning and the construction sector of the scale and location of future projects to enable a better chance for the construction sector having the capability and capacity to deliver.

With a clear long-term plan for major health sector projects, individual DHBs would be better positioned to plan investments for their local area. Local investment plans would be expected as part of DHB and regional strategic plans.³⁴⁹

Health capital planning also needs to be integrated with other national and local government planning. Connected planning of facility locations, transportation links and future housing developments can ensure services are conveniently located for both consumers and the system's workforce. A credible pipeline of major health sector projects would support such integrated planning.

An important connection also needs to be made with the New Zealand Infrastructure Commission – Te Waihanga, the infrastructure body established to ensure New Zealand gets the quality infrastructure it needs to improve long-term economic performance and wellbeing.³⁵⁰ The Review's recommendation for integrated long-term planning is strongly aligned with the Commission's goal of lifting infrastructure planning and delivery to a more strategic level.

Supporting investment in Tier 1 services

As set out in the Tier 1 chapter, the Review envisions ambitious changes for Tier 1 that would require sustained, greater investment over time. This would require DHBs to give much more consideration to Tier 1 services when making decisions, including capital investment decisions.

Access to capital for Tier 1 services was raised as an issue throughout the Review, particularly for Māori health providers. DHBs can access Crown capital for Tier 1 services but this has previously not been prioritised. In future this would be expected to be considered as part of each DHB's investment plan.

Capital charge and depreciation concerns

The Review heard considerable frustration with the previous capital charge regime, which meant that after any major hospital redevelopment was completed, the capital held by a DHB increased significantly, leading to a sharp increase in both capital charge and depreciation requirements. Because of the large and infrequent nature of hospital redevelopments, this results in a steep jump in expenses that are difficult for DHBs to manage and can force DHBs into deficit.

In 2019, the government took a significant step towards addressing this by providing additional funding to cover the capital charge associated with new investments.³⁵¹

This does not, however, address the issue of lumpy depreciation costs when large new buildings become operational, nor does it address the fact that boards have been diverting depreciation expenses to other operating expenditure.

There is an opportunity for Health NZ to manage this volatility across the system. Nationally, Health NZ could be positioned to manage changes to capital charge and depreciation, which might otherwise push individual DHBs into deficit. The Review believes a balanced solution could be found that avoids DHBs moving into deficit as a result of requiring a significant rebuild or new capacity, but still ensures that DHBs have enough capital for business-as-usual asset replacement. The Treasury is currently working to refine and improve capital funding, and the Review expects the health system to work collaboratively with them to develop solutions.

The recommended changes to DHB governance, articulated in earlier sections should also improve investment decision-making and encourage more longer-term thinking locally.

Investment management

Investment management is the step following capital planning and involves:

- ▶ developing business cases
- ▶ designing facilities
- ▶ programme and project governance.

Developing business cases

The Interim Report noted the need to streamline business case and decision-making processes. Business case development is often time consuming and resource intensive, in part due to lack of effective capital planning. For example:

- ▶ business cases are often started without proper service and asset planning being completed
- ▶ business cases too often are developed locally for projects that are not high priority nationally and, subsequently, do not get funded
- ▶ low approval thresholds and delegations across the board can be inappropriate for DHBs with billion-dollar balance sheets and high capability.

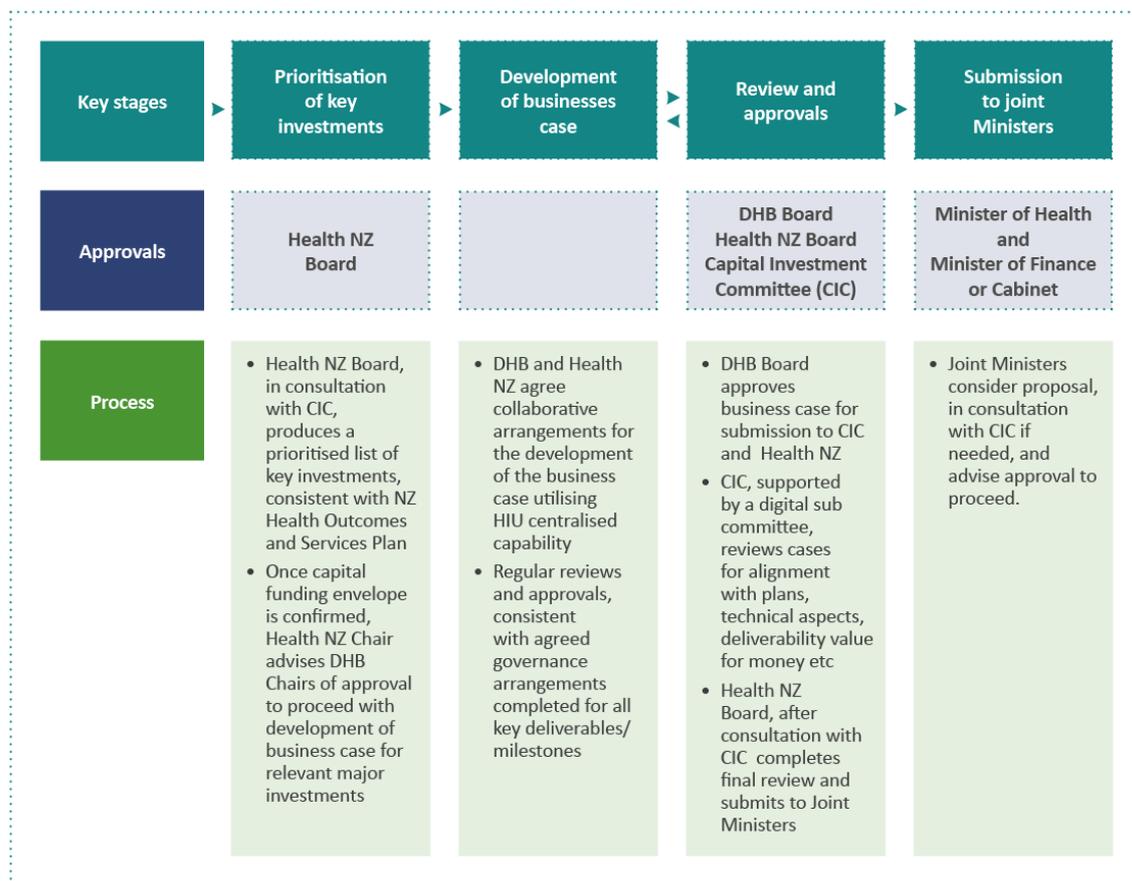
To address these issues, the Review proposes that:

- ▶ Health NZ should be responsible for developing a prioritised nationally significant investment pipeline so that unless a project has been prioritised, business case development would not proceed
- ▶ delegation levels be reviewed with the objective of providing more flexibility in the rules.

In addition, developing a health facility business case requires expertise and skills that are in limited supply in New Zealand.³⁵² There is an opportunity for the HIU to help develop these skills across the sector by providing health-specific guidance, consistent datasets and modelling assumptions, templates and training.

An outline of the proposed process for development and approval of business cases for major investments that would require health capital envelope funding is set out in Figure 13.3 below.

Figure 13.3: Business case approval process for major investments requiring health capital envelope funding



Health NZ would be expected to consult with CIC on prioritisation and planning and CIC would continue to provide independent advice to joint Ministers on business case approvals.

Final decisions on major investment approvals would remain the responsibility of joint Ministers or with Cabinet, as appropriate. The new arrangements should deliver more timely, robust and investment-ready advice to the Government.

The business case process should be designed to make well informed decisions effectively, in a more timely manner and with lower transaction costs than are associated with current processes.

This set of changes should give local system leaders:

- ▶ clarity on when business cases should start
- ▶ the support to do them
- ▶ a faster and more rigorous process to get major investments approved.

Designing facilities

One reason for the high cost of hospital developments is that each facility is a bespoke design. This increases costs in design, procurement and construction. Having bespoke designs can also mean that each project is ‘redesigning the wheel’ and might lead to poorer design outcomes, and is unlikely to share best practice designs.

Environmental and financial sustainability can be improved through standardisation, leading to a consistent grade of better-quality facilities and by making continuous improvements through every new build and redevelopment. For example, facilities that are more efficiently built and higher functioning in terms of green sustainability, deliver a reduced carbon footprint and lower running costs.³⁵³

An important function of the HIU would be the development of national design standards. New Zealand is part of the Australasian Health Infrastructure Alliance that develops the Australasian Facility Guidelines. The HIU would have the opportunity to increase New Zealand’s contribution to these guidelines and develop further guidance on areas not covered. For example:

- ▶ New Zealand-specific guidance on digital
- ▶ New Zealand green sustainability guidance
- ▶ Māori design perspectives and whānau views
- ▶ more detailed design standards to support clinical, workforce and financial sustainability.³⁵⁴

The Review supports the development of stronger guidance and standards to benefit and better enable delivery of the forecast capital pipeline.

Programme and project governance

The Interim Report and Figure 13.1 noted the large level of investment now forecast for health infrastructure.³⁵⁵ It also noted the limited capability and capacity to deliver health infrastructure projects.

The complexity of delivering the investment plan was further amplified in discussions with the current Chair of Capital Investment Committee.

- ▶ The design and construction of the hospital buildings that the health system is currently undertaking, and planning for the next 10 years, will be the largest and most complicated vertical construction programme that New Zealand has ever undertaken.’

Evan Davies, Chair of the Capital Investment Committee and Managing Director
Todd Property

There is considerable variability in the quality of governance arrangements for current project and programme delivery. Current programme governance arrangements are fragmented, including:

- ▶ the Capital Investment Committee (CIC) provides independent advice to Ministers on capital prioritisation and business case approvals. CIC also has the role of developing the NAMP, supported by the Ministry³⁵⁶
- ▶ for major facility redevelopments that are managed by the Ministry, projects are overseen by Ministerial-appointed partnership groups, with each project and programme having their own partnership group. The Ministry has contractual liability for all work on these projects, and the individual DHB has accountability for change management and benefit delivery
- ▶ DHB-managed projects are governed by individual DHB boards or delegated steering groups, with monitoring by the Ministry
- ▶ the CIC receives updates on DHB projects during the delivery phase but has limited ability to change decisions in this phase.

These complex arrangements make the already difficult task of managing the capital investment programme harder. Standing up new partnership groups for each project does not make for efficient use of scarce expertise, makes it harder to transfer knowledge from one project to the next and makes it harder to oversee the overall investment programme.

To consolidate, build expertise and ensure the timely delivery of projects, Health NZ would be expected to have responsibility for the delivery of an increasing number of major projects through the HIU. Programme delivery would be governed by a Health NZ board sub-committee. This should house the best expertise at a health infrastructure governance level. Individual projects managed by HIU would be governed by separate steering groups, which would all report to the board sub-committee. Where DHBs are delivering large projects, the Health NZ sub-committee would provide an independent monitoring function to take advantage of the limited capability and capacity that has been centralised.

- ▶ This would ensure that the planning and delivery of projects are properly aligned and that programme governance can be more directly accountable through to the Health NZ Board.

Asset management

The Interim Report included comments from both the Office of the Auditor-General and The Treasury raising concerns about asset management practices. It did note some positive steps have been taken but these were not widespread or comprehensive.

Since the Interim Report, important progress has been made towards developing the NAMP for DHBs. A draft current state assessment has been completed that, for the first time, gives a comprehensive and nationally consistent view on the 1,200 facilities, supporting infrastructure (such as pipes) and major IT systems that DHBs own.³⁵⁷

Preliminary results from the initial assessment of the current state of major assets on hospital campuses are set out in the figures below.

Figure 13.4: Proportion of buildings that have an earthquake risk

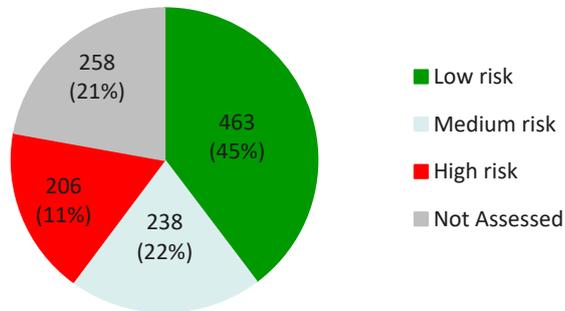


Figure 13.5: Condition of supporting site-wide infrastructure over 30 hospital campus

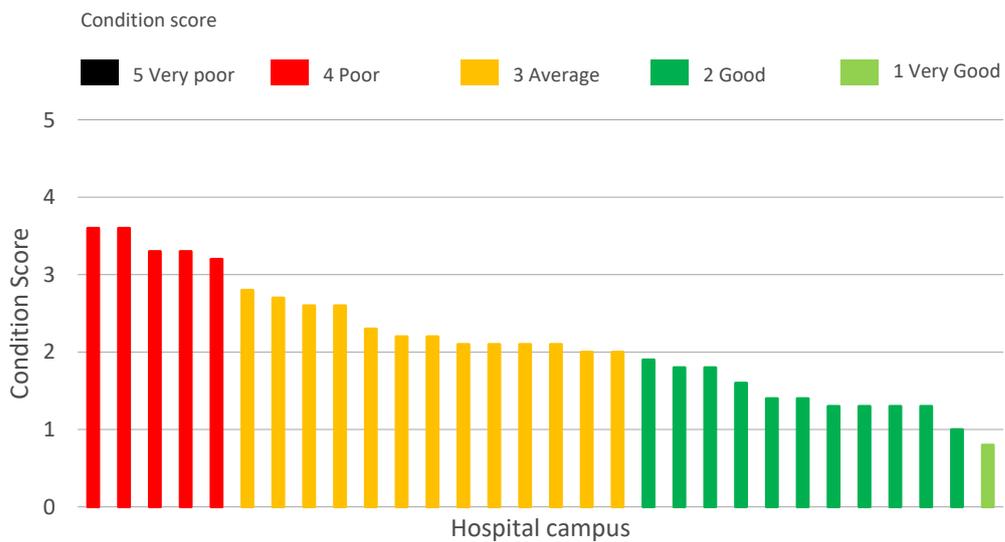
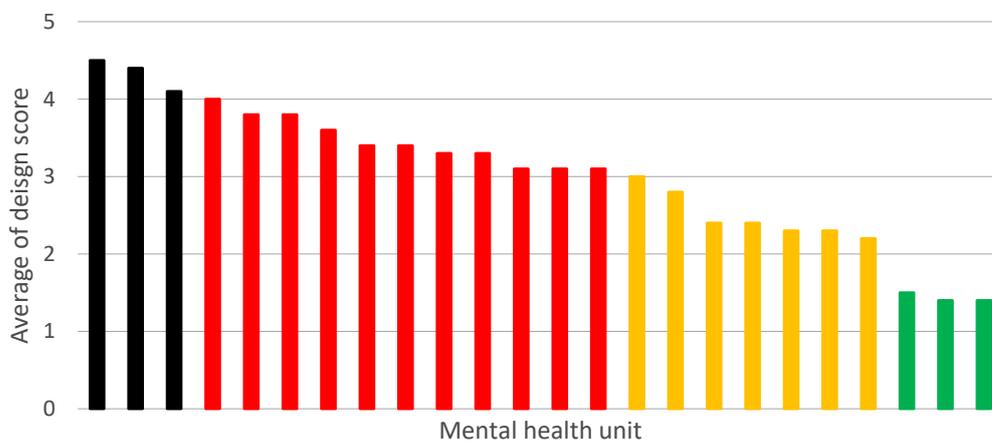


Figure 13.6: Average score of design principles for mental health units



The draft current state assessment:

- ▶ confirms the need for investment to replace or upgrade ageing facilities
- ▶ confirms concerns with some DHBs' asset management practices
- ▶ provides an initial view of the relative need for investment.³⁵⁸

The Review recognises the importance of good asset management practice at DHB level and the requirement for a NAMP as a core component of the NZ Health Plan. Next steps should include developments such as future capacity planning and the modelling of investment scenarios.

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.³⁵⁹ The Review expects the HIU to build on work done to date, including the creation of a robust and transparent asset monitoring framework. As the HIU develops, there may be opportunities of regional asset management support to be provided for smaller DHBs

Building the future

The Review proposes the following changes

Capital planning

- ▶ Health NZ, through the Health Infrastructure Unit (HIU) should be responsible for developing a long-term investment plan for facilities, major equipment and digital technology derived from the NZ 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.
- ▶ 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.