Data Strategy and Roadmap For New Zealand

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Stats NZ Tatauranga Aotearoa

New Zealand Government

Acknowledgements

Many people have contributed to the development of the Data Strategy and Roadmap.

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Lastly, we would like to thank the many agencies that support the direction of this work. We look forward to what the future has in store as we collectively work towards unlocking the value of data for all New Zealanders.

There is a need for greater alignment and coordination of effort across the system

Background

There is an increasing demand for better, more wide-spread use of data across New Zealand. There is work underway which will help to build a foundation to enable greater use of data, however there is an opportunity for greater coordination and cohesion across the system.

In July 2017, Statistics NZ (Stats NZ) was given a Functional Leadership role for data and analytics across government. As part of this role, Stats NZ aims to provide leadership and coordination across the wider system to maximise the value of data for all New Zealanders.

Stats NZ has worked with key stakeholders to develop a Strategy and Roadmap for New Zealand's data system to provide a shared direction and plan that organisations within and outside government can collectively work towards.

Purpose

- The Strategy and Roadmap is intended to provide a shared direction and plan that organisations within and outside government can collectively work towards and align their efforts to generate maximum impact.

Scope

- The ambition outlined in this document is far-reaching and describes the benefits of greater data use for all New Zealanders - including communities, businesses, government and non-government organisations.
- The strategies for enabling the ambition are described through the perspective of government's role within the data system as 1) a steward of data and 2) setter of rules and legislation. The scope of activity is key areas where government can have the most influence and impact.
- The scope of this document is broad and covers all constituent parts of the data system including:
  - **System actors -** people and organisations that collect and use data;
  - **Data -** includes but is not limited to survey data, administrative data and research data;
  - **Supporting components -** data access, common practices and people capabilities; and
  - **Enablers -** public trust and protection mechanisms that ensure data within the system is used in a safe way.
- This document takes a 3-5 year view and is expected to be updated annually.

Global data growth is enabling innovative data uses that are transforming the world we live in

Global data growth

Data continues to be generated at an unprecedented rate. Ninety percent of the data in the world today has been created in the last two years - 2.5 quintillion bytes of data is generated every day[1].

The number of connected devices and internet users that are constantly generating data has grown by over a billion in the last five years – the internet traffic now includes over 3.7 billion humans[2]. As the world rapidly becomes more connected, the growth in data shows no signs of slowing down.

The value of data lies in its use

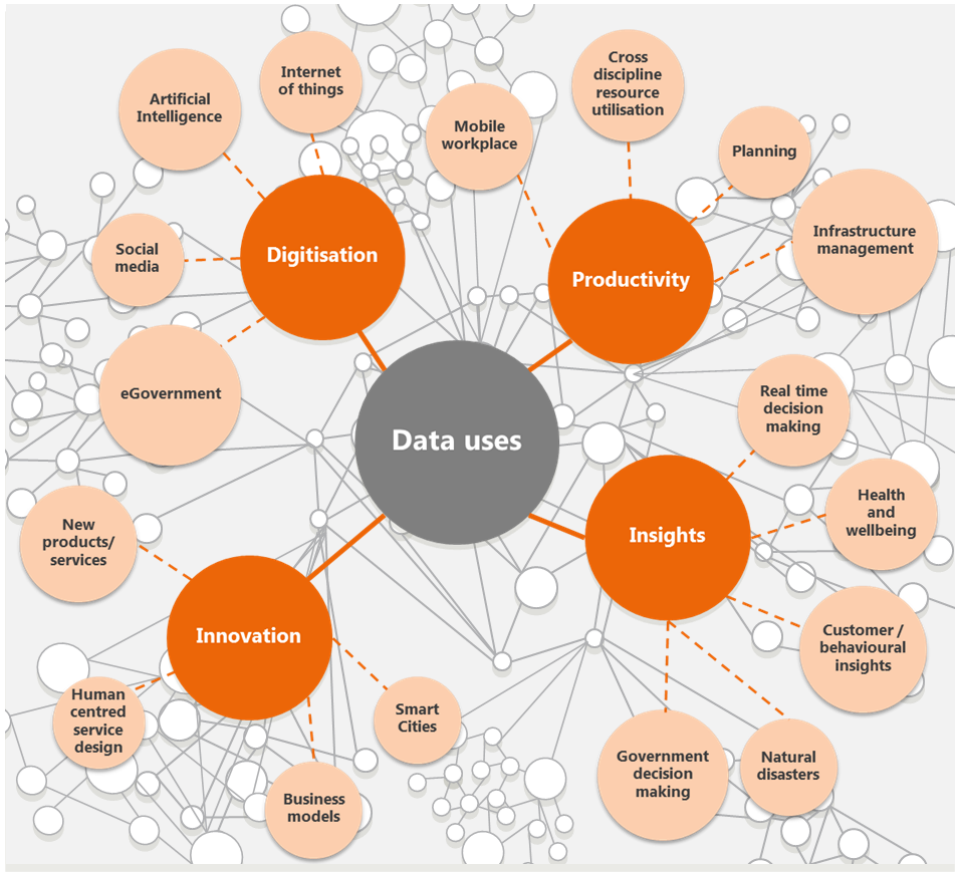
The availability of new data sets and sophisticated technologies has enabled new and exciting data uses that continue to transform how individuals see, act and engage with the world.

Data fuels the digital economy, modernising our way of life and enabling innovation across industries and sectors. We are increasingly seeing new uses of data that will impact our world in profound ways in the near future.

The rapid growth in data and advancements in technology and analytical techniques have redefined what we can do with it. The uptake in new technologies such as cognitive computing and Artificial Intelligence (AI) are enabling new and innovative data uses that continue to transform how individuals see, act and engage with the world.

As momentum and capability builds for the use of data, we need to keep pace with the ever changing data landscape – and support others to do the same. This means striking a balance between enabling greater data use whilst ensuring the protection of privacy rights and ensuring that data is treated ethically, securely and safely.

Figure 1. Examples of innovative data uses



In New Zealand, we are uniquely positioned to maximise the value of data

Figure 2. Characteristics unique to New Zealand

A connected and innovative culture

New Zealand has a highly connected population - 90% of people are able to access the internet[3]. Information spreads quickly and increasingly people expect to be able to access and transact with services online in a safe and secure manner. Globally, New Zealanders are known for being creative, ambitious and experimental - boasting pockets of excellence in innovation across industries. New Zealand is also seen as a desirable place for software firms, social networks and app developers to test new products. This includes technology firms such as Yahoo, Microsoft and Facebook[4].

Growing data economy

In New Zealand a burgeoning data industry is supporting economic growth. Data driven innovation represents a multi-billion dollar opportunity for the New Zealand economy. Data driven innovation is projected to contribute to over $4.5 billion dollars of additional output to the New Zealand economy by 2020[4]. Banks, insurances companies, government and retailers are significant data users. These organisations rely on data to improve efficiency and effectiveness of product and services; and to drive growth through targeted marketing and investment efforts. There is also a growing market of service providers to advise, broker and analyse data to support the data economy.

Commitment to the Crown-Māori Treaty Partnership

New Zealand recognises the importance and value of the Treaty of Waitangi that establishes Māori as Partners with the Crown. There are new opportunities for the Crown to engage with Māori on the full breadth of issues in the current environment to ensure the Crown is meeting its Treaty obligations and supporting Māori to activate their full potential in a new world of possibility. Two Māori values in particular will support a trusted data system: manaakitanga (data users show mutual respect) and Kaitiakitanga (all New Zealanders become the guardians of our taonga by making sure that all data uses are managed in a highly trusted, inclusive, and protected way).

A safe, open data environment that can be built on

The New Zealand Government continues to be a global leader in transparency and openness. It has signed the International Open Data Charter and currently ranks 7th in the Global Open Data Barometer[5]. It also has a strong history of democracy and is rated the least corrupt country in the world[6] [7]. We recognise the need for a regulatory environment that can keep up with rapid changes in the digital and data landscape, with work already underway to modernise the New Zealand Privacy Act and the Statistics Act. Recently the Privacy Commissioner and Stats NZ have published principles for the safe and effective use of data to underpin the development of guidance to support agencies on best practice for the use of data for decision making.

Government has a unique role to play in laying the groundwork for the future data system

Understanding government's role

We, as government, have a unique role to play within the data system. We steward and use data on behalf of all New Zealanders, as well as being responsible for setting rules for their benefit and protection. These parts of our role are described in more detail in Figure 3 to the right.

The immediate focus of activity in the Strategy and Roadmap is on what we can influence and enable as a result of our unique role.

By nature of our role, we have to look across the data system and direct efforts towards key areas for the benefit of all. This includes leading and coordinating activity across all system components to support others to participate in and benefit from the data system.

Figure 3. Key parts of government's role in the data system

Stewarding and using data on behalf of New Zealanders

Government holds and uses data on behalf of, and to benefit, New Zealanders. It is a custodian of some of the country's most important data assets. For example, Inland Revenue is responsible for New Zealand's tax data and Land Information New Zealand is the custodian of New Zealand's land survey data. With this comes a duty to ensure that these national data assets are used, maximised and protected. As functional lead for data and analytics across government, Stats NZ plays an important role working with agencies to ensure that they have the capability and resources to fulfil this duty.
Government also has a role in opening up and making data available to the public (under the International Open Data Charter).

Setting the rules for the benefit and protection of New Zealanders

Government has the responsibility to set appropriate rules and legislation to ensure that data use is based on public trust and consent. Government has to look beyond its own interests and balance the interests of all system actors to ensure that everyone can participate within the data system in a safe way that promotes the ethical, positive use of data. It must guarantee the privacy and security of data for individuals and maintain appropriate data quality and independence.

Greater data use needs to be balanced with the protection of privacy rights and ethical use

Just because data can be used in new, and innovative ways, does not always mean that it should be…

We live in an exciting era where the opportunities for data use are constantly expanding. The uptake in new technologies such as cognitive computing, algorithms, and Artificial Intelligence (AI) are pushing the boundaries of what we can do with data.

As momentum and capability builds for data use, governments are looking at how to keep pace with the ever changing data landscape. Key to keeping pace is treating privacy rights and considerations for safe data use not as a roadblock, but rather as an opportunity to ensure responsible and safe data use.

Whilst data use poses a significant opportunity for New Zealand, it is critical that we are prepared for, and able to address the associated risks and concerns.

Figure 4. Considerations for safe data use

We envisage a future where data is regarded as an essential part of New Zealand's infrastructure…

"Data as infrastructure"

To unlock the value of data for all New Zealanders, we need a future where data is highly valued and treated as an essential part of New Zealand's infrastructure.

Data is as important as our road, energy, and communication networks. Just like our physical infrastructure, data underpins and plays an integral role in supporting our society.

Treating data as infrastructure means that we take a strategic and holistic view in how we identify, manage, and use our data resources to deliver maximum value and impact. In doing so, we can ensure that we have the right data available now and for future needs. Taking a holistic approach will also ensure greater consistency and interoperability of data that will enable greater integration and sharing of data. Greater integration and sharing of data will support new data uses and generate new insights. Data that is consistent and interoperable can also enable scalability for future growth.

When treated correctly and managed effectively, data can generate extraordinary amounts of economic and social value for New Zealand.

Figure 5. Characteristics of data when it is treated as infrastructure

…and where data use is underpinned by public trust and confidence

Public trust and confidence

Public trust and confidence is fundamental in achieving our ambition to unlock greater value of data for all New Zealanders. We rely on a high trust environment, whereby the public enables a broad range of organisations to use and share data for individual and collective benefit.

We envisage a future where we operate in a culture of trust, openness, and transparency. We will maintain the trust and confidence of those who provide us with their data - that it will be kept safe and secure and that it will be handled legally, responsibly, and ethically. We will have modern legislation that facilitates innovation and new discoveries while still safeguarding the rights of all New Zealanders. We will engage with people to share what data we are using, and why and equip people with the tools and knowledge to question and interpret the information presented to them.

We will maintain and enhance trust through safe practices and deliberate engagement with the public and businesses.

Figure 6. Characteristics of a high trust data environment

Clear rules and protection mechanisms. People and businesses have confidence that safeguards are in place to protect their privacy and ensure safe and ethical use of their data [12].

Transparency and openness. People have visibility into what data is collected and understand what it is being used for and why[12].

Active engagement. People are actively engaged with on matters relating to data use and have channels to voice their concerns [13].

Value is demonstrated. People understand and see the value generated from sharing their data and its use [13].

Our ambition is to unlock the value of data for the benefit of New Zealanders

Our ambition

Our ambition for New Zealand is far-reaching – to unlock the value of data for all New Zealanders.

When we use data effectively and with the trust and confidence of the public, we can generate positive outcomes that people can really see and feel.

In government, we are committed to building a future where data is highly valued and treated as an essential part of New Zealand's infrastructure. This will enable us to take a holistic approach to how we identify, manage, and use our data resources to deliver maximum value and impact.

We are also committed to making sure that data is used and shared in a way that maintains the highest levels of trust and confidence from the public. We want everyone to be able to use and benefit from data – and understand the value that it brings to our society as a result.

We aspire to a future in New Zealand where:

- New Zealanders are empowered to use data to make positive and informed decisions in their daily lives. Individuals and communities have the information they need to actively participate in government and hold government to account, as well as to support decisions to improve the quality of life for themselves and those around them.
- Services are truly people-centric, responding to the unique needs and preferences of those who use them. Tailored services are seamlessly delivered together by government, businesses, and non-government organisations. Organisations have the information they need to provide the best service to customers at the best time.
- People are encouraged to use data for discovery and innovation. People and organisations collaborate together to solve problems, create efficiencies, and invent new products and services that push the boundaries of what we imagine is possible with data.
- Government decisions are enabled and underpinned by data. Data provides a basis for sound decision-making and allows government to be forward-looking in how it tackles the biggest issues facing the country. It helps direct resources to where they will make the biggest impact and enables government to evaluate and track progress towards outcomes.

We will start by directing activity in focus areas to deliver the most impact

Focusing activity

To realise our ambition for New Zealand we need to take a deliberate and holistic approach to the data system.

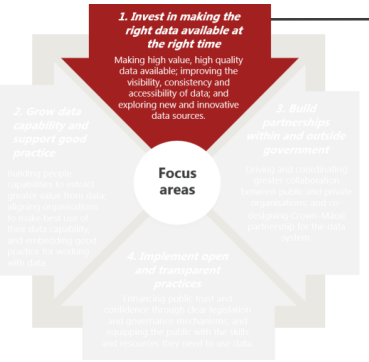
We are starting from a good base – there is positive work already underway that we will build on. In addition to the work already underway, we will focus activity to address key improvement areas and where we can create maximum impact and momentum towards a sustainable and responsive future data system.

We will:

1. Invest in making the right data available;
2. Grow capability and good practice;
3. Build partnerships; and
4. Implement open and transparent practices.

The four focus areas will guide key initiatives over the next 3-5 years. These proposed initiatives are outlined in more detail on the next page.

Figure 7.The four focus areas



We have a number of barriers hindering our ability to use data

A massive amount of data exists across the system

Government collects, holds, and uses a large number of New Zealand's key data assets. This includes business data, personal data, scientific, and environmental data.

Government depends on a range of data to make critical decisions. For example to answer policy questions, design services and invest public money.

Where we are now

We hold a significant number of valuable data assets on behalf of New Zealanders. We are committed to using these data assets to benefit all New Zealanders and opening them up where possible for more people to use. Agencies are accelerating the release of their data.

We do experience a number of challenges that serve as barriers to data use as outlined in Figure 8 below. There is a lack of visibility over what data is available so it is not clear what data already exists, and there are critical gaps where essential data does not exist altogether.

Where data is available it is not always easy to access. It can be hard to find, take a long time to access, and come at a high cost.

Figure 8. Key barriers to data use

	Issue	Impact
Visibility & availability of existing data	Existing data is hard to find and there is no clear view on what data is available or held by government	People do not use existing data because they do not know what is available so source their own instead
Rights to access	People are not clear on what rights they have to access different types of government data	People do not use existing data because they are unsure or unaware of what they are entitled to access
Processes for requesting data	Processes for requesting data are inconsistent and inefficient	Responding to data requests can be burdensome for agencies and it can take a long time to receive the data
Cost of data	Charging mechanisms can restrict access by creating inequities for certain individuals or organisations	Access to existing data is not always equitable and inclusive

Barriers to data use

Our goal is to improve availability and accessibility of government data

What we are working towards

We will provide visibility of key data sets and proactively address gaps

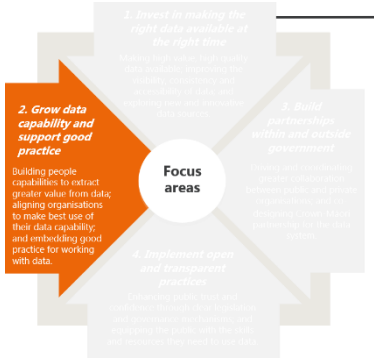
- We have visibility over what data assets are held by who and what data we need now and in the future.
- We have a clear view of data gaps and a coordinated approach to how we address them.

We will enable improved accessibility of government held data

- We support people to understand who holds what data, what rights they have to access it, and how they make data requests.
- We are also transparent and consistent in how much we charge for government-held data.

We will open up more non-sensitive, non-confidential data to the public

- We support openness and transparency by making as much of our data available as possible (when it is safe and appropriate to do so).
- We have an "open by design" culture and release data in a format that allows businesses, communities and, the public to use and benefit from our data assets.



Data capability is currently varied and inconsistent data practices exist

Data capability refers to a range of skills, processes and tools required to effectively work with and use data

Data capability includes technical specialist skills for working with data, translator skills to present insights in meaningful ways, and data literate decision-makers that use information to make better decisions.

Data capability also extends to the processes and practices that support and enable how organisations manage and use data.

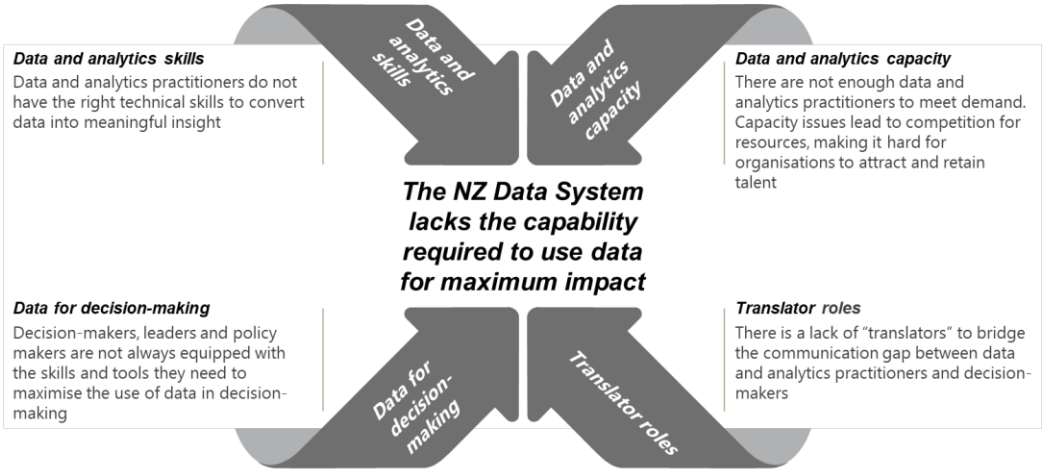
Where we are now

Data capability is varied across the system. We have pockets of excellence in data capability across government. We also have instances where organisations lack both the skills, and capacity to use data effectively.

We would benefit from a coordinated approach to how we build data capability across government. This will enable us to have consistent data practices and processes, enabling us to better share capability and data. There is an opportunity to build on existing work taking place at an organisational level to scale these at a system level. For example, the Ministry of Business, Innovation and Employment has run a number of initiatives to build its data capability that can be learnt from.

Through consultation with data users, we have identified a number of key data capability gaps as shown in Figure 9. below.

Figure 9. Key data capability challenges across the system



Our goal is to establish sustainable data capability across government

What we are working towards

We will take a strategic and coordinated approach to uplifting capability across the public sector

- We have visibility of data capability across government and understand the degree and type of capability challenges that are prevalent.
- We have a coherent plan for addressing capability challenges and uplifting capability across the public sector.
- We uplift capability in a way that supports greater digital uptake across government.

We will make better use of existing data capability

- We take a holistic view of the data capability across government to enable us to identify and leverage existing expertise and make best use of our talent pool.
- We establish mechanisms to make it easy to share capability across the system.
- We support data leaders and decision-makers to effectively use data and data capability to make informed decisions.

There is collaboration across the system but it often occurs informally

Partnerships within and outside of government are key in enabling innovative data uses.

Working better together across the system enables us to share expertise, capability, and new perspectives.

Effective partnerships between Māori and the Crown are fundamental to achieving positive outcomes for Māori. Having the right data available is essential to support Crown-Māori relations.

Where we are now

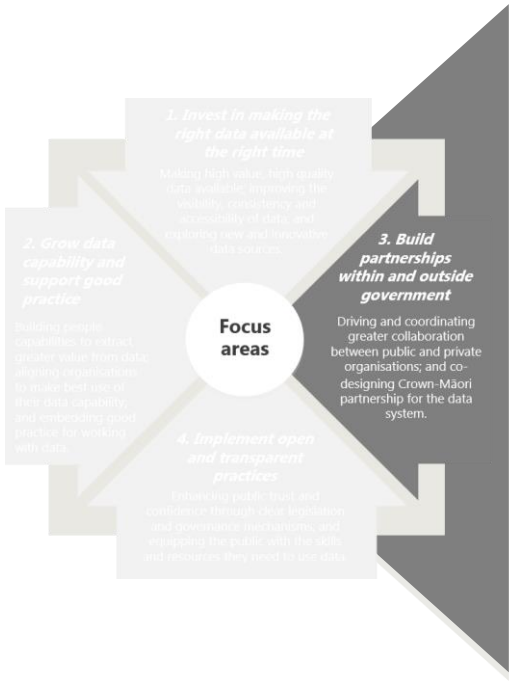
We have demonstrated the value and impact of working together within and outside of government. The Data Futures Partnership is a good example of how we can realise and achieve greater use and value from data by working together. The Partnership was an independent Ministerial advisory group that was created to drive trusted data use and strengthen New Zealand's data system by taking a cross-sector approach.

Collaboration exists across the system, however it occurs predominantly in an informal manner. There is an opportunity to take a deliberate approach to how we partner so that we can be more connected across the system to share data, insights and capability. We can benefit from increased partnering to foster innovation and solve complex problems impacting New Zealand.

We are committed to partnering with Māori to build a data system that reflects Te Ao Māori and demonstrates respect for Māori as Treaty partners and tangata whenua. In the past Māori have often been treated as stakeholders, rather than treaty partners – impeding their ability to effectively partner with government and drive positive outcomes for Māori.

Our goal is to establish partnerships to innovate with data and solve complex problems

What we are working towards



We will co-design the future data system and work together to maximise use and impact of data

- We have a system that supports and enables data use for all New Zealanders. The system represents and incorporate the views and data needs of all data users.
- We have formal networks and arrangements within and outside of government that support and promote greater use of data to foster innovation and solve complex problems.
- We champion and incentivise collaboration to support sustainable participation.

We will commit to co-design with Māori across the data system

- We commit to partner with Māori to provide the right data at the right time so that Māori can make evidence based decisions through their own world view.

We are committed to maintaining and enhancing public trust and confidence

Public trust and confidence are important for a thriving New Zealand data system

High levels of trust and confidence among the public support innovation and value generation by allowing different uses, collection methods, and data management practices to be unlocked.

Public trust and confidence cannot be built into the data system – it must be earned and maintained through deliberate and continued engagement with the public.

Where we are now

In New Zealand we operate from a high degree of public trust which serves as an enabler for data use. This trust needs to be maintained and enhanced to allow further benefit to be generated from new and innovative data uses.

We recognise that our legislation, particularly the Privacy Act and the Statistics Act, has not kept pace with the extraordinary changes in the data landscape in recent years. As a result, we are in the process of modernising it to enable greater use and innovation with data, whilst continuing to safeguard public interests.

The current review of the Statistics Act 1975 also revealed a number of key findings relating to data system governance:

- A range of actors are carrying out governance functions, both in specific domains and across them.
- The establishment of system leadership roles (eg. Government Chief Data Steward; Government Chief Digital Officer, etc.) need to be considered and defined in relation to the overall system governance functions.
- There are potential issues and gaps particularly in the governance approach to dealing with novel questions and responsive accountability.

We are proactive in engaging with the public around data issues and have enabled a number of channels through which the public can raise their concerns. For example the Data Future Partnership engaged with over four thousand New Zealanders to understand how they feel about their data being used and shared in different situations.

Our goal is to create a safe, high trust data environment that is supported by public confidence

What we are working towards

We will establish appropriate accountabilities and protection mechanisms

- We have modern legislation that balances enabling innovative data use with protecting public interest.
- We have the right set of roles, mechanisms, and tools to enable decision making across the system whilst keeping New Zealand-held data safe.

We will build public knowledge and understanding of how they can benefit from data use

- We maintain high public trust and confidence through safe practices and deliberate public engagement.
- The public understand how their data is being used and can see the benefit that it creates. Trust and confidence is an enabler for new and innovative data uses.

Appendix A: References

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