TE ARA PAERANGI FUTURE PATHWAYS

SUMMARY OF SUBMISSIONS

PART 1 – ALL SUBMISSIONS & ENGAGEMENTS

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Te Kāwanatanga o Aotearoa
New Zealand Government

Contents

He Kuputaka Glossary

Key terms used in this report[1]

Impact – a change to the economy, society, or environment, beyond contribution to knowledge and skills in research organisations.

Innovation – the process of doing something new, which may be a new or improved product, process, or function. Innovation is a process that leads to new or better ways of creating value for society, businesses, and individuals. The value of innovation arises from the use and implementation of an idea. The value created may be commercial, social, or environmental. In some instances, innovation may be unplanned or even accidental.

Mātauranga Māori – the body of ancient and contemporary knowledge originating from Māori ancestors, including the Māori world view and perspectives, Māori creativity and cultural practices.[2]

Research – for the purposes of this report, when 'research' is used as a stand-alone term, it refers to activities for gathering, organising, generating, understanding, or recording knowledge. This definition should be read in its broadest sense, to include science, social research, research into the arts and humanities, and any other activities that may be commonly understood under the term.

Research and development – the systematic approach to activity taken with the purpose of creating new knowledge, or new or improved processes, services or goods that has a material purpose of resolving scientific or technological uncertainty.

Research infrastructure – the facilities, resources and services used by the research, science and innovation community to conduct research, foster innovation, and engage at the global frontier of knowledge. It includes working environments, cutting-edge equipment, technologies, vessels, computing systems and communication networks, and collections and databases.

Science – a particular way of conducting research ('research' as defined above as a standalone term). Science resists a strict definition but can usually be characterised by features such as structured testing of hypotheses, use of data derived from direct observation, and systematic experimentation.

Acronyms used in this report

Core Centre of Research Excellence

CRI Crown Research Institute

GDP Gross Domestic Product

IP Intellectual Property

IRO Independent Research Organisation

MBIE Ministry of Business, Innovation and Employment

NSC National Science Challenge

NSCDS Nationally Significant Collections and Databases

PBRF Performance-Based Research Fund

R&D Research and Development

RSI Research, Science and Innovation

STEM Science, Technology, Engineering, Mathematics

TEO Tertiary Education Organisation

[1] Note: this glossary replicates the Te Ara Paerangi – Future Pathways Green Paper glossary

[2] Note: this is provided as a general description and not as an authoritative Crown position or definition

Te Whakarāpopototanga Whakahaere
Executive Summary

The *Te Ara Paerangi Future Pathways* consultation paper (the Green Paper) sought the views of those within the broader research, science and innovation (RSI) sector on how to best position Aotearoa New Zealand's future 'public' research system.

Consultation occurred between 28 October 2021 to 16 March 2022. A total of 885 written submissions were received via an online form or via email, 442 of which were substantive submissions. The Ministry also hosted 12 'starting the conversation' online sessions as part of Phase 1, and 15 'problem-focussed' online sessions as part of Phase 2. These sessions discussed the contents of the Green Paper. Over 1000 participants attended the consultation sessions.

Targeted engagement with Māori through the specific wananga and hui consultation were supported and facilitated by Aatea Solutions and are elaborated in Part II of this report *Summary of Māori engagements and submissions*.

All submissions were coded to a thematic framework based on the topics of the Green Paper. Key, consistent themes were then drawn from both submissions and consultation discussions. A high-level summary of these themes follows below.

Section 1: Ngā Whakaarotau Rangahau Research Priorities

Submitters and workshop participants generally agreed with the proposition in the Green Paper to develop national research priorities (Priorities). A range of ideas were discussed regarding the scope and focus of such priorities. Suggestions included that the Priorities should:

- reflect the principles of Te Tiriti o Waitangi (Te Tiriti) and value mātauranga Māori
- be relatively broad with the ability to be broken down into tangible goals
- encourage collaboration and working in multi-disciplinary teams, and
- be long-term, potentially spanning decades.

Submitters also largely called for a balanced portfolio that enables mission-led and basic/fundamental research.

Submitters and workshop participants generally agreed that Priorities need to be developed and determined in partnership with Māori, with a few submitters emphasising equal Māori voice. Any process for setting Priorities would need to be transparent, open, enduring, and involve extensive engagement with a wide range of stakeholders. A group, such as an independent body, could be established to support decision making on Priorities. Submitters also saw value in a flexible process where Priorities can change to respond to emerging issues or opportunities. Submitters discussed having a regular review process in place so that Priorities remain relevant and fit for purpose. The same group or independent body could also be responsible for the monitoring and review of Priorities.

Submitters discussed potential criteria that could be used to decide Priorities and weigh up potential trade-offs. It was recommended that Priorities should prioritise areas of research that have clear public good and will deliver the greatest impact for Aotearoa New Zealand. Priorities should also align with the unique strengths and natural advantages of Aotearoa. However, this needs to be balanced against strengthening our global connectedness and position on the global stage. Submitters also considered it important to strengthen international linkages to increase knowledge exchange and improve the quality of research outcomes in Aotearoa.

There were diverse views expressed by submitters on how the focus of research and activities within each Priority could be driven. It was clear that there is no one-size-fits-all approach to strategy setting, and the approach to these activities will likely differ depending on the size and scope of the national Priority. Regardless, submitters and workshop participants emphasised the importance of developing strategies through engagement with stakeholders, particularly ensuring industry, end-user, and expert input. It was suggested that researchers have relative autonomy regarding the operationalisation of research once it reaches the programme level stage.

Section 2: Te Tiriti, mātauranga Māori me ngā wawata o te Māori Te Tiriti, mātauranga Māori and Māori aspirations

Submitters were generally eager to see more integration of mātauranga Māori into the RSI system. Many stated that upholding mātauranga Māori and tikanga Māori, while embracing the benefits of other knowledge systems, will allow Aotearoa New Zealand to better adapt to future challenges and strengthen our country in a world that is constantly changing. Some submitters argued that if mātauranga Māori is taonga, the Crown have a moral and legal duty (through Te Tiriti) to ensure it is not just protected, but encouraged to flourish and advanced as one of the key foundations of the RSI system.

A few submitters described the Vision Mātauranga policy as no longer fit for purpose. A Māori-led review of the policy, as well as the Wai262 findings, was recommended to inform future policy decisions around a national mātauranga Māori framework.

Māori regional knowledge hubs (hubs) were supported by many submitters, but concerns around appropriate funding allocation were discussed as crucial to enabling their full potential. Some submitters suggested alternative ways in which knowledge hubs could be set up that would better resonate with Māori and increase the effectiveness of these hubs.

Many submitters advocated for a separate Māori research commission or entity and more Māori representation across governance structures and leadership positions. Comments across the board in response to this chapter acknowledged the need for direct, stable, and self-managed funding to allow for appropriate tikanga-based engagement, protection of mātauranga Māori, regional knowledge hubs, and to achieve Māori research aspirations and priorities.

Submitters said that it would take time, and effort, to reach into and make meaningful connections with Māori communities who may be wary of sharing their insights and knowledge as a result of past misappropriations. An RSI system that recognises and allows time for this relationship building is necessary.

Section 3: Te tuku pūtea Funding

Submitters shared a wide variety of views in their responses to the funding questions, and opinions often differed across the range of submitter types.

Increasing overall investment for research and development (R&D) underlined the majority of submissions, with some discussing the need for Aotearoa New Zealand to match the OECD average of 2.5% of GDP invested across the RSI system.

Overall, individual researchers and other submitters from across the RSI sector felt disheartened by the current competitive funding process, which they commonly referred to as a lottery. Many of these submitters struggled with what they described as the disproportionate amount of time and resources required to prepare competitive grant proposals in an effort to access limited funds that have a statistically low chance of being successful. Submitters believed a mixed-model funding system could ensure the ongoing development of the RSI sector through the inclusion of new ideas, and the ability to appropriately respond to Aotearoa New Zealand's emerging needs.

Submitters supported stability of funding and proposed a range of approaches to address this including base grants and funding core functions. Divergent views were presented regarding what the objectives of a base grant should be and what it could be used to fund. The overriding themes across submissions around what base grants should cover was to fund the direct costs of research or overhead costs for a wide range of organisations.

There was no clear consensus across submissions over what core functions should comprise of. Submitters discussed both linking core functions to national priorities as well as funding core functions irrespective of shifting national priorities, such as maintaining datasets, laboratories, and other research services. Submitters generally agreed that core functions should be given long-term timelines to enable continuity of research and capability and be reviewed periodically to ensure relevance.

Section 4: Ngā hinonga Institutions

Submitters and workshop participants agreed that institutions need to operate in a way that is more collaborative, adaptive, and agile. The current RSI system was described as lacking in collaboration with research institutions who are largely disincentivised to work together due to competitive funding models, overlapping research priorities, and clunky layers of management and overheads. It was suggested that research organisations may need incentives to work more collaboratively, perhaps through funding mechanisms or performance requirements. Submitters suggested that learnings on incentivising collaboration could be drawn from existing models such as NSCs, CoREs and the Product Accelerator.

There were strong views that enabling greater mobility between research organisations – such as through secondments and internships – could support workforce capability and enable the research workforce to gain exposure to a diverse range of opportunities and skills throughout the RSI system. This could also support greater collaboration and connectivity. Improving mobility between international research organisations was also considered important for developing workforce capability, enhancing career progression, and attracting international talent.

Views on co-location were mixed, with some seeing how co-location could be valuable in fostering collaborative and more effective resource sharing. Others cautioned for co-location to only be pursued where this makes sense to all parties involved.

Submitters and workshop participants described how knowledge exchange is not working well in the current system. They pointed to a few issues in the current system, including the traditional view of research excellence as valuing publications over applied research; how there are poor connections between researchers and industry; and that there are differing views around intellectual property (IP). Improved knowledge exchange and impact generation could be facilitated by better connections with industry, more opportunities for research to be co-funded with industry, and greater levels of funding in general for commercialisation activities to address the common 'valley of death' (where commercialisation activities often fail due to insufficient funding).

Governance was considered a key aspect of designing Te Tiriti-enabled research institutions. Submitters noted that organisational boards should be responsible for creating a culture and work ethic that values Te Tiriti and mātauranga Māori. This may require cultural competency training for those in key leadership positions. It was also considered important for Māori to be visible at all levels to help set and drive the values of research organisations. Dedicated Māori research organisations could be established to support Māori interests in the RSI system and protect mātauranga Māori.

Views were largely mixed on organisational form, structure, and focus. Some submitters considered the current CRI company model to be perpetuating unproductive competition and hindering collaboration, whereas others saw benefits to the company model, such as financial stability. Some submitters supported having fewer and larger organisations, suggesting this could lead to a range of benefits including better collaboration and inter-disciplinary work. Others considered that smaller research organisations would be more flexible and agile. Submitters were also divided on the remit of institutions, with some in favour of broad and fluid boundaries between institutions, while others preferred a greater number of diverse and distinct institutions with clearly defined objectives.

Submitters and workshop participants generally agreed on the need for more coordinated approaches to decisions on property and capital investment.

Section 5: Te hunga mahi rangahau Research workforce

Submitters and workshop participants described a range of current issues and suggestions for improvement regarding the attraction, retention, and ongoing development of the research workforce.

It was acknowledged that Māori, Pacific Peoples, women, LGBTQI+, and disabled people are underrepresented in the current workforce and STEM disciplines, and that the current system does not enable a good work-life balance for those with young families, who require part-time work, or have other personal commitments. Māori researchers also experience a 'cultural double shift' where they are expected to provide cultural expertise on top of their research work, often leading to burnout. Submitters and workshop participants noted that more needs to be done to create a culturally inclusive workforce and encourage greater diversity. This could include providing greater support for parents with young children, adopting whānau-centric values across the system, appropriately resourcing Māori who provide cultural expertise, and ensuring all tauiwi (non-Māori) research staff are upskilled in cultural competency. Proactive measures will be necessary to engage Māori to enter the research workforce. This could include targeting early schooling years, expanding the Pūhoro STEM academy, and providing greater funding for existing wānanga.

Career precarity is a considerable issue for the research workforce. Submitters described how reliance on short, fixed-term contracts and highly competitive funding rounds drives income uncertainty. This can have a negative impact on mental health and the ability for research staff to plan for their future, such as obtain a mortgage or start a family. It can also result in an unnecessary loss of talent. Submitters and workshop participants also discussed limited opportunities for postdoctoral and early career research staff in Aotearoa. They described how Aotearoa currently trains many more PhDs than there are academic positions available, often driving talent to low value jobs or overseas. Submitters were concerned with the lack of development opportunities in Aotearoa compared to overseas. Overhead calculations were said to perpetuate these issues by making postdoctoral involvement in research teams significantly more expensive than PhD students.

Submitters and workshop participants generally agreed that a base grant that covered a proportion of researcher salaries could support greater long-term career stability and could enable research organisations to better plan for workforce capability development.

To improve the training and career pipeline, submitters considered it necessary to broaden the definition of research excellence beyond academic-only skills, and train the research workforce in skills that will support a modern RSI system. This could include a greater focus on skills in collaboration and connection building, grant writing and project management, cultural competency, and industry-relevant skills. Submitters also noted that there is poor awareness of alternative career pathways outside of the traditional academic pathway, such as industry research. There is also a lack of career progression options for those trained in technical roles. Diverse career pathways should be emphasised more to those interested in pursuing a science career. Greater institutional mobility could support existing research to explore alternative focus areas and develop diverse skills.

Submitters were generally supportive of the use of scholarships and research fellowships to support the attraction and retention of talent in Aotearoa. These funding mechanisms could specifically target and support postdoctoral and early career research staff, and Māori and Pacific researchers. However, it was also recognised that more support is needed for mid-career researcher staff to ensure they have opportunities for career progression. Leadership opportunities and mentorship were also considered essential for workforce development, particularly for Māori researchers and early career research staff.

Section 6: Te hanganga rangahau Research infrastructure

Submitters generally agreed that there is an opportunity to get more value out of research infrastructure through greater investment and support.

Submitters suggested that infrastructure investment should be aligned with national research priorities. The government was urged to take a wide view of what constitutes 'infrastructure' — in addition to capital equipment and expenditure, many supported the inclusion of datasets and emphasised the need for technical staff and other support operational services required to effectively use and maintain such infrastructure. They maintained stable funding for infrastructure would support research excellence and improve international linkages, as they commented that the current competitive funding environment is causing ineffective allocation of resources and perpetuating inequalities across the RSI system.

Many submitters considered funding across existing infrastructure as being highly fragmented. According to submitters, the issue is not only how much funding is set aside for infrastructure, but researchers' inability to maintain it — often infrastructure is set up under grant-funded programmes, but is impossible to maintain after the research grant finishes. Funding research infrastructure centrally was recognised by many as a way to ensure Aotearoa New Zealand's research infrastructure is future-proofed and ready to respond and adapt to future challenges, such as those posed by the COVID-19 pandemic. Most submitters were in favour of a centralised infrastructure coordination structure that would increase accessibility to fundamental resources across the RSI system and encourage collaboration between research organisations and industry bodies. They maintained that treating research infrastructure as national assets could also drive focussed capacity building in priority areas across the RSI system. Submitters were split regarding whether such a model should take place at the national or institutional level, but overall, most agreed it would have a positive impact on the RSI system.

Nationally significant collections and databases were discussed by submitters as a critical part of research infrastructure needing increased, long-term investment in order to promote their use and access across the RSI system. Māori data sovereignty was also supported by many submitters who advocated for the use of indigenous data sovereignty principles not just for mātauranga Māori and Māori data assets, but to inform all future processes that will be developed as part of the current review of the RSI system.

Te Whakamāramatanga Introduction

In October 2021, the Ministry of Business, Innovation and Employment (the Ministry) launched the *Te Ara Paerangi Future Pathways* consultation paper (the Green Paper). The Green Paper sought the views of those within the broader RSI sector on how to best position Aotearoa New Zealand's 'public' research system for the future.

The Green Paper was the first stage in an anticipated multi-year programme looking into Aotearoa New Zealand's RSI system. It specifically sought views on key issues and opportunities facing the system, and potential ideas to address them.

As such, the Green Paper was divided into six chapters, each representing a main area where the Ministry believed action could be taken within the RSI system. Each chapter outlined proposed opportunities for change and sought feedback on possible solutions. The six chapters included:

- Research priorities
- Te Tiriti o Waitangi (Te Tiriti), Mātauranga Māori, and Māori aspirations
- Funding
- Institutions
- Research workforce
- National research infrastructure.

The *Te Ara Paerangi Future Pathways* consultation process ran from 28 October 2021 to 16 March 2022. During this time, the Ministry hosted consultation sessions on each of the Green Paper chapters, and also invited people to provide written submissions. More information on the consultation process is captured under **Te Tikanga o te Mahi Methodology**. The Ministry would like to thank everyone who took the time to respond and engage with the Green Paper and share their thoughts and recommendations for the future of the RSI system.

The *Te Ara Paerangi Future Pathways* consultation process is one part of the policy process to consider a future RSI system for Aotearoa New Zealand. There is much more work to be done to shape what the future RSI system will look like.

Purpose of this report

This report presents the summary of submissions received on the *Te Ara Paerangi Future Pathways* Green Paper. The themes reflected in this report are submitters' views and are not representative of MBIE's view or policy position. The report also includes a summary of the discussions that occurred during the consultation sessions. This report has been prepared by Allen + Clarke in close consultation with MBIE.

Throughout this consultation, many different ideas and perspectives were shared by a broad range of people. This has been helpful in painting a full picture of the variety of views held within the RSI system. While every submission was read in full, it was not feasible to summarise each unique perspective. This report focusses on the key themes that were consistent, or talked about the most, across submissions and consultation session discussions.

As discussed in the **Ngā mahi ka whai ake Next steps** section below, all of the feedback received from submissions and consultation sessions will be considered carefully when exploring the next steps and direction of further work.

Report structure

This report has an executive summary, an introduction and methodology, key findings from the submissions and consultation sessions, next steps, and appendices. The key findings are structured to reflect the six topics set out in the Green Paper consultation document. As such, the key findings are separated into six parts, with each part representing a chapter of the Green Paper.

There are two appendices to the report. **Appendix 1: List of submitters** provides a list of all written submissions received and reviewed. **Appendix 2: Consultation sessions** outlines the schedule of consultation sessions that the Ministry undertook.

The Green Paper asked a total of 17 questions across each chapter seeking views and feedback. These questions were broad-ranging and interconnected. While some of the sections on key findings are loosely structured to follow the general direction of questions posed by the Green Paper, submitters and consultation participants often did not respond directly to the Green Paper questions. As such, some sections are structured in a way that follows key themes that were discussed, rather than the direct questions posed in the Green Paper.

Te Tikanga o te Mahi Methodology

Submissions

Written submissions were received either online, by completing an online submission form available on the Ministry website, or via email to the *Te Ara Paerangi Future Pathways* email address. Written submissions were open from 28 October 2021 to 16 March 2022. The Ministry allowed for a small number of late submissions to be received up until 23 March 2022. There were a further small number of submissions that were received outside of the consultation timeframe. These submissions have not been included in this summary report but will be considered when exploring the next steps and direction of further work.

A total of 885 submissions were received on the *Te Ara Paerangi Future Pathways* consultation. Of those, 442 submissions were considered substantive submissions. This included 95 submissions received via the online form, and 347 submissions received via email. The remaining 443 submissions consisted of two letters of support for other submissions and 441 emails advocating for the end of animal-testing in the RSI system. While these form submissions and letters of support will be considered as part of ongoing work, this report focusses on the substantive submissions received.

Submitter demographics

Of the 442 substantive submissions received, 169 submissions were received by individual submitters, and 273 submissions were received on behalf of a group or organisation, as depicted in Figure 1 below. The Ministry did not capture demographic information for the form submissions or letters in support of other submissions. These submissions are therefore not captured as part of the following demographics.

The Ministry further classified all substantive submissions received on behalf of groups or organisations into one of the following categories: CRI; IRO; group; government organisation; Māori-led organisation; non-government organisation (NGO); private enterprise or industry body; research collaboration; sector body; or tertiary education organisation. The proportion of submissions received on behalf of a group or organisation is depicted in Figure 2, below.

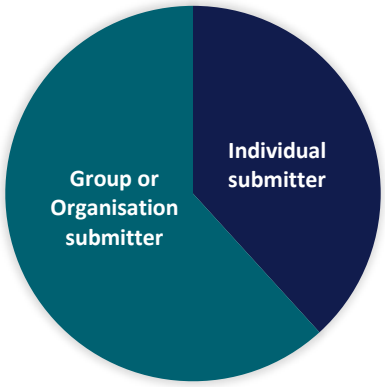


Figure 1: Proportion of individual and group or organisation submitters

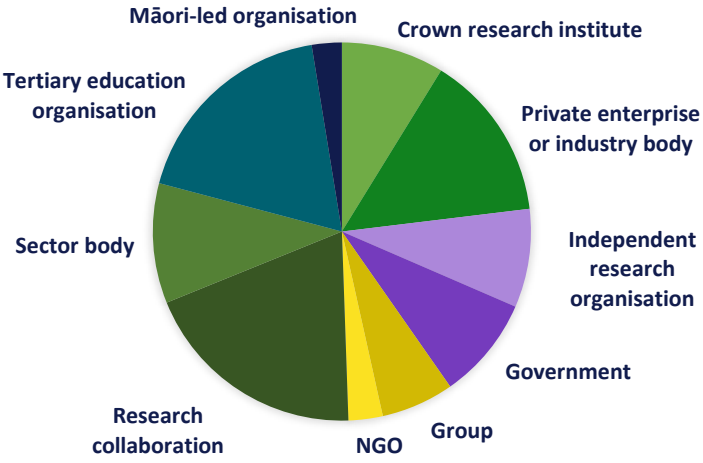


Figure 2: Proportion of group or organsiation submitter types

The Ministry received 38 submissions from Māori-led organisations, individuals who identified as Māori, and groups within other organisations with a strong Māori focus. These demographics are split across several submitter types. All submissions received by Māori-led organisations, individuals, and groups are summarised in Part II *Summary of Māori engagements and submissions* of this report.

The online submission form prompted submitters to provide personal, demographic information. However, the majority of submissions on the *Te Ara Paerangi Future Pathways* consultation were received via email, and demographic information was not always provided. The majority of submissions were also received from groups or organisations who have different demographic profiles compared to individual submitters. Therefore, it was not possible to analyse responses by any other attributes such as gender, location, or field of study.

The list of all submitter types, including definitions used for categorising submitters and total number of each submitter type, is outlined in Table 1 below.

Table 1: Submitter types

Submitter type	Description	Number of submitters	Approximate Percentage of total
Individual	Submissions on behalf of an individual, generally based on their individual opinions and experience of the RSI system	169	19.0%
CRI	Submissions on behalf of Crown research institutes	24	2.5%
IRO	Submissions on behalf of independent research organisations	23	2.5%
Group	Collection of individuals who submitted together through a common purpose, and not on behalf of an organisation	17	2.0%
Government	Includes submissions from central and local government organisations or Crown entities	24	2.5%
Māori-led organisation[3]	Organisations, or specific groups within organisations, that were identified as being Māori or iwi-led	7	1.0%
NGO	Non-government organisations such as charities and museums	8	1.0%
Private enterprise or industry body	Submissions on behalf of a private organisation or body that represents the interests and perspectives of RSI industry organisations	39	4.5%
Research Collaboration	Submissions on behalf of organisations where their function is typically to bring together research stakeholders from different parts of the RSI sector. This category also includes submissions on behalf of National Science Challenges and Centres of Research Excellence.	53	6.0%
Sector body	Submissions on behalf of organisations that represent specific areas of the RSI sector. These tend to be 'umbrella' type organisations such as forums or advocacy bodies, and generally do not conduct research themselves as an organisation.	28	3.0%
TEO	Submissions on behalf of tertiary education organisations, such as universities Te Pukenga, and other bodies that represent the views of universities. This category also includes submissions from groups who represent the views of specific areas of universities, such as specific faculties.	50	5.5%
Animal research submissions	Email submissions on behalf of individuals that advocate for ending the use of harmful animal-based research methods.	441	50.0%

[3] Note that many Māori-focussed groups are included within other submitter types, for example Ngā Kaimahi o Auckland University of Technology is included as a TEO submitter.

Consultation sessions

PHASE 1 – STARTING THE CONVERSATION

From 30 November through to 13 December 2021 the Ministry held 12 'starting the conversation' sessions as part of Phase 1. These initial sessions were to elicit feedback from participants on their experiences in the RSI system and stimulate discussion on the contents of the Green Paper.

PHASE 2 – PROBLEM-FOCUSSED SESSIONS

From the 24 February to 8 March 2022, the Ministry hosted a total of 15 'problem-focussed' sessions as part of Phase 2. These sessions built on the 'starting the conversation' sessions and had more in-depth and solution-focussed engagement to generate and test ideas. This included two sessions on each of the six topics in the Green Paper (Priorities, Māori Aspirations, Funding, Institutions, Workforce, and Infrastructure), two sessions with RSI Senior Leaders, and one session with Early Career Research Staff.

All consultation sessions in both Phase 1 and Phase 2 were run virtually via Zoom. People from across the research sector were encouraged to register their interest in attending any of the sessions. The Ministry was particularly interested in hearing from people with a range of skills and diverse career experiences across the RSI sector. When registering interest, participants were encouraged to think about the RSI system as a whole, rather than represent a specific organisation. Technical support regarding the registration process was provided by VERVE Consulting.

The Ministry also received support from Catalyze to facilitate the Research Priorities Phase 2 consultation sessions, and the Royal Society Early Career Researchers Forum to organise the Early Career Research Staff Phase 2 consultation session. The remaining sessions were facilitated by Collins Consulting.

For more information on the consultation session schedule, refer to **Appendix 2: Consultation sessions.**

MĀORI SPECIFIC ENGAGEMENT

The Ministry undertook targeted engagement with Māori through the specific Māori Aspirations consultation sessions in Phase 2. These sessions were supported and facilitated by Aatea Solutions and are summarised in Part II of this report entitled *Summary of Māori engagements and submissions* which should be read in conjunction with this part. However, views on how to give effect to Te Tiriti o Waitangi and elevate Māori aspirations in the RSI sector were also considered as part of all consultation sessions. These views are included in this report.

Consultation session demographics

PHASE 1 – STARTING THE CONVERSATION

The Phase 1 'starting the conversation' sessions were attended by 702 individual participants. Some of these participants attended multiple sessions. Participants work in locations across the country, with the largest participation from Wellington (190 participants), Auckland (131 participants) and Canterbury (95 participants).

Many participants work in Crown Research Institutes (CRIs), universities and independent research organisations. There was some representation from sector representative bodies, businesses, local government, Te Pūkenga and NGOs.

Participants ranged broadly across early, mid, and late career stages, with some overlaps. Mid-career participants made up the largest portion, about 35% of attendees, with early and late career stage attendees making up over 20% each.

PHASE 2 – PROBLEM-FOCUSSED SESSIONS

In the Phase 2 'problem-focussed' sessions, a total of 404 participants were in attendance across the 15 consultation sessions. Some participants attended more than one consultation session.

The demographics recorded for Phase 2 followed similar trends as participants for Phase 1. For example, Phase 2 participants ranged broadly across early, mid, and later career stages, with mid-career participants making up the largest proportion in attendance. Majority of Phase 2 participants indicated that they work in universities, CRIs, private organisations, and government agencies. There was also some representation from those who work in IROs, Te Pūkenga, Callaghan Innovation, Māori-led institutions and wānanga.

Throughout these sessions, we heard from a number of people the Ministry has typically found harder to reach in previous consultations including Māori, early career researchers, technicians, junior scientists, end-users and industry. The small breakout group format of the workshops allowed for in-depth discussion of the issues. A separate senior leaders workshop was held focussed on system level thinking.

Coding and analysis

All submissions were coded to a thematic framework based on the topics of the *Te Ara Paerangi Future Pathways* Green Paper. This meant that content from submissions was split into topics so that information could be grouped and analysed with information from other submissions about similar topics. All coding was carried out in Microsoft Excel. Common themes were then identified based on what submitters talked about within each topic.

Ministry note takers were present at each of the Phase 2 consultation sessions to record discussions that took place. Jam Board, an online collaboration tool, was also utilised to record and collate comments and ideas during the consultation sessions. Similar to the process for submissions, the Ministry staff reviewed the information from notes and Jam Boards and identified key themes that were talked about within each of the 15 Phase 2 consultation sessions.

The following report refers to 'submitters' when summarising key themes that arose via submissions, and 'workshop participants' when summarising the discussions that took place throughout the Phase 2 consultation sessions.

ATTRIBUTION OF FEW/SOME/MANY/MOST

Few/some/many/most has been used throughout this report to provide some context on the approximate quantity of submitters who shared the same view or spoke about the same theme. This approach is approximate only and does not reflect a precise quantitative measure of number of submitters. The below guide was used to apply approximations:

Table 2: Guide for applying approximate quantities to submitters who shared the same view

Classification	Approximate definition
Few submitters	Fewer than 10% of submitters
Some submitters	11%-25% of submitters
Many submitters	26% to 50% of submitters
Most submitters	More than 50% of submitters

Furthermore, the use of few/some/many/most has been used relative to the number of submitters who commented on a particular topic outlined in the report, not compared to the total number of submissions received. For example, not all submitters provided comments on the topic of national infrastructure. Few/some/many/most provides an indication of how many submitters shared the same view relative to the number of submitters that did provide comments on national infrastructure.

USE OF QUOTES THROUGHOUT THE REPORT

Direct quotes from submitters have been included throughout this report. Quotes were largely selected based on the way in which a theme discussed in the report was articulated by a submitter. While a relative balance was sought where possible, the use of quotes is not intended to reflect the exact proportion of each submitter type. The quotes selected often reflected the views of a range of submitter types who also discussed that theme – quotes were selected for the purposes of summarising the view presented.

Submissions on the use of animals in research

The Ministry received 442 submissions that advocated for the end of animal-based research methods in the RSI system. These comprised one substantive submission from the New Zealand Anti-Vivisection Society (NZAVS) and 441 emails from individuals. We have summarised those submissions here as they do not align with specific Green Paper questions or chapters.

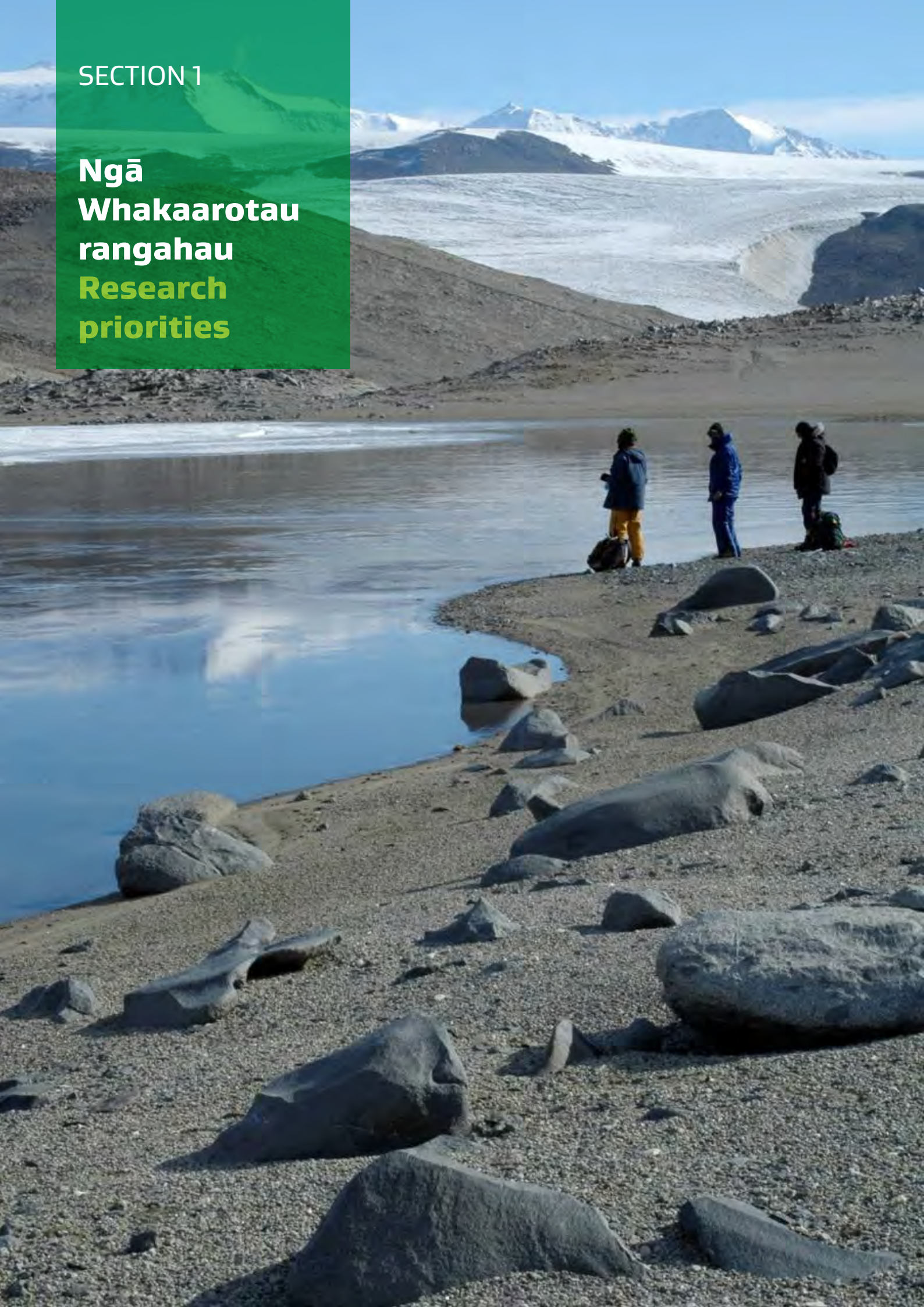
NZAVS sought a commitment from Government to phase out the harmful use of animals in research as technology permits. This included revisions to funding mechanisms to incentivise the use and development of non-animal-based research methods and to deprioritise animal-based methods. It also sought greater openness and transparency around the current use of animals in research, and the removal of existing regulations that require such methods.

The email submissions supported similar changes with approximately 80% comprising of the below quote. The remaining 20% used a variation of this quote or included similar anecdotes and comments.

> *"I am writing about the government's current review of the future direction for science in Aotearoa New Zealand. There's one key thing I want to see: a strategic plan to end animal experimentation and the harmful use of animals in science! In so many cases, there are already technologies where we could be replacing the use of animals in science. We need to start using those. Where the technologies do not yet exist, we need to develop them. We need to invest in transforming our current capacity, invest in developing new methods, invest in training our scientists, and create a comprehensive strategy for change."*

SECTION 1

Ngā Whakaarotau rangahau Research priorities



Section 1: Ngā Whakaarotau rangahau
Research priorities

Chapter 1 of the Green Paper discussed the role that clearly expressed, whole-of-system national research priorities (priorities) can play. The following questions were included in the Green Paper on research priorities.

1. What principles could be used to determine the scope and focus of research Priorities?
2. What principles should guide a national research Priority-setting process, and how can the process best give effect to Te Tiriti o Waitangi (Te Tiriti)?
3. How should the strategy for each national research Priority be set and how do we operationalise them?

The below sections capture the key themes that submitters and workshop participants discussed relating to priorities.

Scope and focus of national research priorities

PRIORITIES SHOULD REFLECT MĀORI NEEDS AND ASPIRATIONS

Some submitters noted that it was important that Priorities reflect Māori needs and aspirations, and recognise the value of mātauranga Māori. Priorities Workshop participants similarly discussed how the principles of te ao Māori should be a fundamental consideration that Priorities are based on.

> *Te Tiriti principles should be used to determine the scope and focus of research Priorities. From there, the priorities should be those required to achieve the impacts agreed between tangata whenua and tangata tiriti. (Crown research institute)*

> *Priorities need to empower and advance Māori priorities, needs and aspirations. Priority setting needs to be conducted by and benefit Māori. When setting national research priorities need to equally value Mātauranga Māori and indigenous knowledge systems equally alongside traditional RSI knowledge. (Individual submitter)*

PRIORITIES MAY NEED TO TAKE A BROAD FOCUS, WITH THE ABILITY TO BE MEANINGFULLY DEFINED, AND SHOULD INCLUDE MULTIPLE DISCIPLINES

There were different interpretations of the question about scope and focus of priorities. There was not a specific question about subject matter. Nevertheless, some of the examples that came through included:

- Priorities could focus on key problems or issues that are critically important or specific to Aotearoa New Zealand. A range of examples were given, such as climate change, sustainability, biodiversity, and risks to the health and wellbeing of New Zealanders.
- Priorities could focus on key opportunities for Aotearoa New Zealand, specifically in opportunities to build economic outcomes. However, it was suggested that opportunities should play a smaller role compared to exploring key problems.
- Priorities could focus on building capability, such as via technology. However, a few submitters were opposed to setting priorities for specific technologies by themselves.

> *I support placing greater emphasis on Priorities aimed at addressing major problems, since often the best science outcomes can result from multiple efforts aimed at single, major issues that are of widely-recognised importance. (Individual submitter)*

Some submitters described how Priorities will need to be broad in scope to ensure that the science is not constrained, longer-term complex research problems can be enabled, and meaningful outcomes can be achieved. They also saw a need for Priorities to take a broad definition of science and encompass multiple disciplines. They noted that much of the 'wicked challenges' and opportunities facing Aotearoa are not confined to discrete subject matter areas, and require working in inter- and transdisciplinary ways. As such, Priorities should encourage working together across disciplines to address such issues.

> *The setting of research priorities should be inclusive and diverse to facilitate research solutions to societal problems and avoid siloing [sic] by discipline. (Group)*

However, submitters also said that Priorities should be able to be broken down into areas or goals that are specific enough to provide actionable direction. Priorities Workshop participants also shared this view, noting that broad Priority areas will need to be dividable into concrete and tangible topics of focus. Climate change was used as an example of a large key issue

that Aotearoa New Zealand faces, but where the scope would need to be more clearly defined to result in meaningful research.

> *Goals should be quantifiable and time bound. For example Climate Change Research should be avoided because it is impossible to prioritise and assign timescales around. A better priority would be 'science to reduce NZ's greenhouse gas emissions with our COP21 commitments' (which are quantifiable and timebound). (Individual submitter)*

PRIORITIES NEED TO TAKE A LONG-TERM VIEW

Some submitters suggested that Priorities should be enduring and need to take a longer-term view. Māori-led organisations in particular noted that it would be good to see Priorities take an intergenerational approach. Submitters suggested that long-term Priorities could span one or more decades and described how a long-term view is necessary for research stability, capability development, strong relationships, and to realise impact and meaningful research outcomes.

> *Defined research priorities or research agendas tend to be responding to a much shorter timeline and assessed against KPIs on an annual or quarterly basis. Impact for Māori research can often be seen over generations and in ways that do not fit the conventional science measures of assessment. Often a research project might 'end' but the kaupapa does not. (Research collaboration)*

Priorities Workshop participants similarly emphasised that, while it is good to be ambitious when setting Priorities, addressing big and complex issues takes time. This means that Priorities should allow for long-term research to take place.

THERE NEEDS TO BE A BALANCE BETWEEN MISSION-LED AND BASIC RESEARCH

A few submitters called for publicly funded research to be mission-led. This would mean that research is focussed on an identified problem or opportunity, set at a national level, and receives funding that is tied to this specific mission.

However, other submitters – particularly tertiary education organisations – largely recognised the need for a balanced portfolio to support a more sustainable and future-proofed RSI system. In their view, this would include stable, long term, mission-led priorities, as well as the need for some research to occur outside of the set national research Priorities. This was often described as experimental, curiosity-driven, basic, fundamental, or blue skies research. This type of research was said to contribute to innovation and other beneficial discoveries.

> *Some balance between mission-led and curiosity-driven research is essential to future-proof NZ against the "unknown unknowns". (Tertiary education organisation)*

Process for setting priorities

PRIORITIES SHOULD BE DETERMINED THROUGH CO-CREATION AND PARTNERSHIP WITH MĀORI

A broad range of submitters indicated that Māori should be involved in all levels of the Priority setting process. This should include ensuring that the process is set-up alongside, and has ongoing involvement from, Māori in order to honour Te Tiriti. A few submitters suggested taking a co-development approach, while others, particularly Māori-led organisations, emphasised ensuring equal Māori voice in setting Priorities. Submitters generally recognised that an approach that honoured Te Tiriti would involve extensive engagement with Māori researchers and communities across the country.

> *Māori need to have an equal opportunity to set research priorities in the new system. To achieve this, consultation will need to be done differently than with other groups in the sector, with greater consultation throughout the regions. Consultation should be undertaken with diverse Māori groups: leaders in the Iwi Chairs Forum, CEOs in Māori businesses, Māori leaders in the science sector, tohunga, and kaumātua; rangatahi; and regional community groups. This is the right thing to do. (Research collaboration)*

Priorities Workshop participants echoed this suggestion, stating that Te Tiriti partnerships should form the starting point of a Priority setting process.

A few submitters recognised that for an effective Priority setting process to take place, Māori need to be appropriately resourced to participate in engagement and co-development. This could help mitigate the effects of consultation fatigue that Māori experience, as discussed in more detail in the section on **Meaningful engagement between Māori and Te Tiriti partners.**

A PRIORITY SETTING PROCESS SHOULD BE TRANSPARENT, ENDURING BEYOND POLITICAL CYCLES, AND INVOLVE EXTENSIVE CONSULTATION WITH STAKEHOLDERS

Submitters generally called for a priority setting process that was transparent and open, with a formalised methodology that is clearly articulated to stakeholders.

We agree a more open, transparent, deliberate and coordinated priority-setting process that gains input from a broad range of stakeholders is critical for the future research system. (Tertiary education organisation)

Submitters and Priorities Workshop participants also considered that widespread consultation and engagement among stakeholders will be necessary to support decision making and ensure that the process brings stakeholders on board. Priorities Workshop participants discussed how having a broad range of stakeholders involved could help balance out the views (and risks) of those who have vested interests in the RSI system. Submitters and Priorities Workshop participants indicated that a range of stakeholders and partners will need to be involved in the Priority setting process, including:

- Iwi and Māori leaders
- Scientists, researchers, and subject matter experts
- Industry players and business leaders
- End users and communities
- Local and central government, as policy makers

The process should be broad and involve all parts of society – from expert to layperson, from sector wide organisations through to individual companies. There should be broad consensus on what the research priorities are, including by those across the political divide. (Independent research organisation)

Priorities Workshop participants in particular raised the need to ensure there is social and community input into a Priority setting process as greater effort is required to hear from those that the RSI system does not always hear from.

A few submitters, particularly NSCs, highlighted how the NSC model has demonstrated some examples of success in using widespread consultation throughout the Priority setting process. This was said to have supported alignment of Priorities with the needs of end-users and communities.

We learnt early in the Challenge that achieving the partnership and involvement of Māori partners and stakeholders is critical to designing and developing a focus, scope and outputs that can be readily and usefully utilised by end-users. Involving them in setting our research priorities, approaches and proposed outcomes will ensure they are aligned to their aspirations and therefore addressing real-world needs. (Research collaboration)

A few submitters, particularly individuals, suggested that any process to select Priorities should strike a balance between a top-down approach (where government directs priorities) and a bottom-up approach (where those closest to the research and issues, such as researchers, industry, and communities direct priorities). Submitters suggested that this could help ensure research conducted remains relevant.

A few submitters and Priorities Workshop participants also highlighted the need for decisions about Priorities to be enduring and avoid disruptions based on political cycles.

The setting of New Zealand's research priorities should not be subject to the vagaries of political cycles. (Tertiary education organisation)

AN ESTABLISHED GROUP OF PEOPLE SHOULD BE RESPONSIBLE FOR SETTING NATIONAL RESEARCH PRIORITIES

Submitters were generally in favour of having a consistent mechanism to set and monitor Priorities. Specifically:

- A few submitters suggested that a panel made up of representatives from industry, research, government, and communities be established to support this function. This panel would also need co-leadership or equal representation of Māori and tauiwi (non-Māori).
- Some submitters suggested that an independent body such as an advisory group or research council be established with a mandate to set and review research Priorities.
- Some submitters discussed the establishment of an autonomous mātauranga Māori entity to directly and independently commission the research Priorities set by Māori. This entity could design and protect taonga knowledge and resources, and advance mātauranga Māori policy.

Independent and expert oversight is required and a body such as a National Research Council could be an effective mechanism for setting and monitoring research priorities (Tertiary education organisation)

A few submitters indicated that introducing a panel or independent body to set priorities would support a more consistent and cohesive priority setting process across the RSI system. Submitters emphasised that this mechanism would require appropriate representation to be effective, including incorporating a co-leadership approach with Māori.

A PRIORITY SETTING PROCESS NEEDS TO BE FLEXIBLE AND ADAPTIVE TO ENSURE AOTEAROA CAN RESPOND TO EMERGING ISSUES AND OPPORTUNITIES

While submitters were generally supportive of setting broad, long-term Priorities, they also highlighted that it is important for the Priority setting process to be flexible enough to respond and adapt to emerging issues or opportunities. This would mean allowing for Priorities to change where required. COVID-19 was raised as an example of a key unexpected issue that required quick adaptation and prioritisation of research.

These submitters discussed the need for a regular review process to reassess or revise Priorities where necessary and ensure Priorities remain relevant. Submitters proposed that this review process could occur every few years on a rolling cycle.

> *Priority-setting should not be a one-off event but the start of a cycle (identifying needs, taking action, evaluating progress, identifying gaps) which is eventually repeated. (Research collaboration)*

A few submitters also considered it important to have a means of measuring the progress of Priorities and evaluating research outcomes. They said that this could be included as part of the review process. A few submitters suggested that a panel or independent body could be responsible for undertaking such a review process and ensuring those delivering on Priorities are held accountable. This could be the same panel or independent body tasked with setting Priorities.

Submitters, particularly individuals, emphasised that where any Priorities are to be changed or removed, that this must be signalled transparently and early to those affected to reduce any negative impact on the research workforce.

Criteria for determining priorities

PRIORITIES SHOULD BE BASED ON OUTCOMES OF NATIONAL BENEFIT AND PUBLIC GOOD

Some submitters suggested that the RSI system should prioritise areas of research that have clear public good and will deliver the greatest impact or outcomes for Aotearoa New Zealand. These are likely to coincide with research areas identified as of critical importance to Aotearoa New Zealand.

A few submitters suggested that key outcomes to assess Priorities against could be research that:

- delivers greatest contributions to the health and wellbeing of population
- has the biggest potential for economic growth of NZ
- addresses issues of equity
- enhances or preserves our environmental sustainability (Te Taiao).

> *We should consider Priorities that have the biggest potential to help us grow as a nation and improve the lives of all residents. This means funding areas of potential high economic growth, rather than supporting industries that are already self-sufficient. When considering impact to New Zealanders on a personal level, this means identifying what needs to change to help the most vulnerable people thrive. (Individual submitter)*

PRIORITIES SHOULD ALIGN WITH THE UNIQUE STRENGTHS AND NATURAL ADVANTAGES OF AOTEAROA NEW ZEALAND, BALANCED AGAINST STRENGTHENING OUR GLOBAL CONNECTEDNESS

Some submitters suggested that the priorities for the RSI sector should align with and build upon our nation's strengths – areas where Aotearoa New Zealand performs well, has a natural advantage, or where Aotearoa can be world-leading.

> *Some principles [to] guide the selection of priorities would include (1) building upon our strengths, (2) areas where we have a natural or sustained advantage and (3) areas where we have a specific societal need. Some examples that come to mind are environmental and agricultural sustainability, Māori and indigenous knowledge, health/bio technology, and digital technologies. (Research collaboration)*

> *It is important that we continue to maintain and develop capabilities in areas where we might be able to lead the world and more importantly where the world will not provide a solution. (Private enterprise or industry body)*

However, some submitters noted that Aotearoa New Zealand is part of a wider, global research system. They highlighted that Priorities should consider issues of international significance or global importance where Aotearoa New Zealand might be able to contribute, or where we might be able to build international connections and raise our platform on the international stage. These submitters noted that Priorities will need to balance both national interests and international opportunities.

> *The process for setting priorities needs to consider both local and international factors. We agree that research priorities should be strongly linked to the issues that are most important for New Zealand and that can be addressed through the research system. At the same time, it is important that the*

process for setting priorities also considers how our research system enables us to build our global influence and contribution. (Government submitter)

Similarly, Priorities Workshop participants highlighted how Priorities need to be locally relevant but globally connected. They noted that, while Aotearoa New Zealand has unique problems and capabilities, benefits to Aotearoa can be realised through the ability to leverage our local context in internationally relevant areas. International benefit and local benefit should not be seen as mutually exclusive, but rather as a dynamic and inter-connected relationship.

Submitters also discussed the need to maintain strong international linkages and collaborate more with international research. They indicated this collaboration could support greater sharing of knowledge and learnings to input into Aotearoa New Zealand's own research efforts, thereby improving the quality of research outcomes.

As witnessed during the pandemic, enhanced cross-border collaboration and open science facilitates the rapid sharing of data and knowledge and is critical to further empowering research to solve social, environmental, and economic challenges. (Tertiary education organisation)

Strategy setting and operationalising priorities

STRATEGIES WITHIN EACH PRIORITY SHOULD STRIKE A BALANCE BETWEEN STABILITY AND FLEXIBILITY

Submitters expressed diverse views on how the focus of research and activities within each national research priority could be driven.

A few submitters generally spoke of how strategies within each Priority should address high-level goals of the Priority, broken down into manageable activities or actions. A few submitters noted that each Priority should allow for both long- and short-term goals. Having long-term goals could provide stability for the enduring research need, while short-term goals could provide the opportunity and flexibility to pivot and explore new areas of interest, or ways of addressing research activities relevant to the priority. Similarly, Priorities Workshop participants also discussed the need for a balance between stability and flexibility, where Priorities are designed to adapt and explore new opportunities as the research moves forward.

THERE WAS NO CLEAR VIEW ON HOW STRATEGIES SHOULD BE DETERMINED

It was noted that there is no one-size-fits-all approach to strategy setting. A range of suggestions were made about how strategies could be determined, including the following:

- produce a roadmap, alongside key stakeholders, in which a detailed strategy can be benchmarked against
- develop priorities and their corresponding strategies in tandem so they are linked
- develop strategies to be outcome-focussed, particularly outcomes that communities are most interested in
- ensure that there is a dedicated working team to set strategies, and that those involved in strategy setting are appropriately resourced to do so
- ensure that any strategy setting process is undertaken at arms-length from government
- recognise that different broad priorities may require different processes or mechanisms for setting strategies and prioritising activities within the priority

The strategy and operation of research priorities should be fit for purpose. There is no one size fits all answer here and priorities should be set, operationalised and implemented based on careful framing, definition and scoping of the issues and contexts related to that priority. (Government submitter)

STRATEGIES UNDER EACH PRIORITY SHOULD BE CO-DESIGNED WITH STAKEHOLDERS

When describing how key areas of research should be prioritised within each Priority, a few submitters said that it was important for strategies to be co-designed in partnership with Māori and with input from research experts and key stakeholders, particularly with industry and end-users. This would help ensure that strategies are closely aligned with the impact sought.

However, a few submitters and Priorities Workshop participants indicated that having expert, evidence-based input was particularly important when defining the scope of activities that sit within each Priority, including setting and operationalising strategies. This could include ensuring that senior researchers and scientists with expertise in relevant fields are extensively involved in setting strategies.

RESEARCHERS SHOULD HAVE AUTONOMY WHEN IMPLEMENTING STRATEGIES

A few submitters noted that, when it comes to implementation of strategies, there should be a high-trust model where researchers have the freedom to administer research as they see appropriate. This could be balanced with some oversight, such as reporting on key performance indicators (KPIs) or contract obligations.

In terms of operationalising and implementing the research priorities, devolve this to established fit-for-purpose programmes or existing research organisations to administer, with oversight from MBIE. Operate a high trust model, with relative autonomy regarding the administration of the research. (Research collaboration)

SECTION 2

Te Tiriti, mātauranga Māori me ngā wawata o te Māori

Te Tiriti, mātauranga Māori and Māori aspirations

Section 2: Te Tiriti, mātauranga Māori me ngā wawata o te Māori

Te Tiriti, mātauranga Māori and Māori aspirations

Chapter 2 of the Green Paper discussed how the research system can seek to understand and honour Te Tiriti o Waitangi (Te Tiriti) obligations and opportunities, reimagine how to give life to Māori research aspirations, and explores pathways to a modern research system for Aotearoa that is Te Tiriti led. The following questions were included in the Green Paper on Te Tiriti, mātauranga Māori and Māori aspirations.

4. How would you like to be engaged throughout the Future Pathways programme?
5. What are your thoughts on how to enable and protect mātauranga Māori in the research system?
6. What are your thoughts on regionally based Māori knowledge hubs?

The below sections capture the key themes that submitters and workshop participants discussed relating to Te Tiriti, mātauranga Māori, and Māori aspirations.

Achieving future Māori research priorities and aspirations

FUTURE RSI SYSTEM NEEDS TO GIVE EFFECT TO EACH ARTICLE OF TE TIRITI O WAITANGI

Many university and government submitters argued that any future RSI system should give effect to Te Tiriti by remaining accountable to each article, in order to enable Māori research priorities and aspirations, and embed power sharing:

- Article 1 – Kāwanatanga – providing opportunities for Māori and good governance through transparency, addressing power imbalances, and ensuring accessibility.
- Article 2 – Tino Rangatiratanga – providing for Māori to exercise authority over their own affairs, and physical, cultural, and social resources.
- Article 3 – Ōritetanga – providing equity for Māori.
- Article 4 – Whakapono – providing active protection of Māori customs through the respectful acknowledgement of te ao Māori worldviews.

Māori Aspirations Workshop participants shared this vision and advocated for the development of a framework for measuring Māori progress in the RSI system and holding RSI institutions accountable through regular reviews to ensure change is ongoing.

> *If we do things right, our moko will be able to move into this space and be recognised for who they are. (Māori Aspirations Workshop participant)*

A PROPORTION OF THE TOTAL RSI BUDGET SHOULD BE ALLOCATED TO MĀORI

Many submitters advocated for the allocation of appropriate proportions of the total research budget to Māori-led research which pursues outcomes valued by Māori. This was considered by many as a fundamental part of shifting approaches within the RSI system. Submitters emphasised that Māori research excellence often values continuity and sustainability of knowledge, so reliable funding allocation for Māori researchers is critical to any successful future system.

> *The quantum of science funding allocated specifically for Māori driven research (e.g., VMCF) has been woefully low and needs to be increased if New Zealand is to increase Māori research capability and capacity and deliver beneficial outcomes for Māori across the diversity of research areas required. (Crown research institute)*

MĀORI CAPABILITY NEEDS TO BE WEAVED THROUGHOUT ALL LEVELS OF THE RSI SYSTEM

Many submitters identified increased mana whenua capacity and capability as a critical requirement to ensure that Māori priorities and aspirations can be incorporated throughout research programmes. Embedding partnership with Māori from

the harakeke roots to the governance level of public sector and research organisations was also a common theme voiced by Māori Aspirations Workshop participants.

> *Our overarching vision is that in 30 years Māori are equal partners with the Crown determining the priorities and outcomes in the RSI sector […] Māori leaders and kaimahi are at all levels of the science sector, including in Director/co- Director and Manager positions. (Research collaboration)*

Based on their own models, some CoRE submitters recommended including Māori in governance structures through an equal percentage approach, rather than as co-designers or through the creation of separate kāhui. This recommendation was also discussed by Māori submitters. These submitters argued that a limited Māori workforce and the proliferation of boards across research organisations has made it challenging to know where Māori are best placed to sit in order to influence changes. Therefore, providing space for Māori within the highest governance structures is the best use of their time. If governance structures can secure tangata whenua capability, or including members with deep understanding of te ao Māori perspectives, this will mean te ao Māori concepts and values are fostered throughout the rest of the RSI system, and impacts will flow down organically from a basis of equality.

> *Moving to a Te Tiriti way of governing is not just about having Māori on the Governance Group but is fundamentally different in that they represent the strategic voices (equal) of the Governance Group. Te Tiriti embedding is a process, you need someone who can lead the process; but you also need a maturity in your governance board to go along with the process; to be open to a philosophy of change; because it can be challenging and a change from previous governance experiences. (Research collaboration)*

BEHAVIOURAL AND CULTURAL SHIFTS ARE CRITICAL TO EFFECT SYSTEM CHANGE

A few Māori submitters discussed critical, urgent shifts in mindsets that are needed to ensure the future RSI system is focussed less on what needs to be done 'for Māori', more on what non-Māori researchers need to learn 'from Māori', and what mahi needs to be led 'by Māori'. A shift to this type of thinking could also help protect mātauranga Māori and traditional knowledge systems.

> *To effect system change, there is a need for a behavioural and cultural shift. Te ao Māori and tikanga Māori provide the necessary framework for such a shift. Further, recognising and providing for tikanga Māori and mātauranga supports a value based and outcomes focussed RSI system that will also enable better focus to be placed on those matters that are priorities in the RSI system. (Māori-led organisation)*

Enabling and protecting mātauranga Māori

MĀTAURANGA MĀORI IS VALUED BUT A STRONGER COMMITMENT FROM GOVERNMENT IS NECESSARY

Majority of submitters strongly supported a refreshed approach that better integrates mātauranga Māori into the RSI system, and commonly advocated for further actions that will increase Māori participation in the research space. Mātauranga Māori was considered valuable for Aotearoa New Zealand and frequently recognised as being able to provide alternative perspectives and a holistic view of impacts for those core priority areas within the RSI system.

Many CRI, IRO, and research collaborations advised the Government to introduce bold policy statements, clear targets, and strong commitments to enable and protect mātauranga Māori. They maintained that setting up a national level framework would flow through the RSI system by providing a set of expectations that supports the burgeoning of the Māori workforce and mātauranga Māori.

> *Our view is that stronger statements and practices need to be introduced to ensure the prominence of Mātauranga Māori, particularly in light of widespread ill informed public discourse on this matter in 2021. (Independent research organisation)*

PARAMETERS MUST BE SET FOR HOW MĀTAURANGA MĀORI WILL BE APPROPRIATELY MANAGED

Māori submitters placed particular importance on the benefits of mātauranga Māori flowing back to the communities from which it comes from. Some submitters recommended an audit of Government-initiated activity in and around mātauranga Māori as a good starting place to inform policy decisions for the appropriate use and support of mātauranga Māori.

> *Aside from the establishment of a Māori entity, the other area of mātauranga Māori protection that we are concerned about is intellectual property rights. In our experience, there is a desperate need for some clear guidelines around the protection and culturally appropriate, ethical use of mātauranga Māori. (Tertiary education organisation)*

A few submitters stated that currently, Vision Mātauranga is no longer fit for purpose, and recommended a Māori-led revision of the policy to ensure it remains relevant and applicable to any changes made as part of the current review of the RSI system.

Some submitters also suggested reviewing the Wai262 findings to inform policy decisions and the development of a mātauranga Māori framework. The review of Vision Mātauranga was discussed as needing to be conducted by a Māori working group to understand the impacts it has had on Māori thus far, and to make recommendations for the future of the policy.

> *Preventing misappropriation of mātauranga Māori As I understand it, this was one objective behind the Vision Mātauranga initiative. It is better left to Māori to determine if this framework is still appropriate, even if it has not yet completely solved this problem. (Individual submitter)*

CULTURAL COMPETENCY TRAINING PATHWAYS MUST BE IMPLEMENTED ACROSS THE SYSTEM

There was confusion amongst a few submitters around the concept of mātauranga Māori and what it means for tauiwi (non-Māori). Individual researchers in particular urged the Government to create pathways to improve cultural literacy for those outside of big organisations, and to further encourage and build the capability of researchers as tangata Tiriti (generally, this term refers to those who seek to understand Te Tiriti and subsequent expectations). A few Māori submitters stressed the importance of not placing responsibility on Māori researchers and staff to improve the cultural competency of their tauiwi colleagues. The issue of Māori experiencing a 'cultural double shift' is discussed further in **Section 5: Te hunga mahi rangahau Research workforce**.

> *Māori researchers, at all career stages, cannot continue to be expected, directly or indirectly, to be responsible for the cultural competency development of their Tauiwi colleagues. (Independent research organisation)*

MĀTAURANGA MĀORI SHOULD BE ACCOUNTABLE TO UNIVERSAL STANDARDS OF KNOWLEDGE

A few submitters based in universities commented that mātauranga Māori can only be considered and embedded in the RSI system if it is able to be subject to scientific testing. If it cannot be equated with science enquiry because of its protected nature, these submitters believed that it must be distinguished as a separate consideration. A few others opposed giving space to mātauranga Māori and Māori processes and entities because of economic and/or system efficiency concerns.

Māori regional knowledge hubs

EMBEDDING RESEARCHERS IN THE COMMUNITY WILL ENSURE RELEVANCY AND INCREASED IMPACTS

Many submitters were supportive of the regional knowledge hubs proposal, recognising that co-location could uplift local mātauranga Māori and could indeed help include te ao Māori more broadly within the RSI system. Embedding researchers in the community would help promote whakawhanaungatanga, keeping research relevant to the local rohe, and ensuring that the Māori workforce does not have to divorce themselves from their community in order to pursue their career. Other benefits were also discussed by submitters, such as skills development and compensation for the use of mātauranga Māori, making sure it flows back into the right spaces.

> *As a general principle, CoCA supports the establishment or support of regionally-based Māori knowledge hubs. This would be one way to ensure that regional diversity, mana and regionally specific knowledge systems are acknowledged and represented. Regional hubs also provide opportunities for rangatahi to see research and career pathways: they are near, visible, and relevant to them. (Tertiary education organisation)*

Some submitters noted that regional hubs would provide a rationalised front door for potential collaboration opportunities for researchers to interface with Māori in their rohe, reducing fragmentation of research and hui fatigue, which is discussed further below.

REGIONAL KNOWLEDGE HUBS COULD HELP LINK LOCAL COMMUNITIES WITH THE WIDER RSI SYSTEM

Regional knowledge hubs were envisioned by many submitters as a vessel that could be used to set relevant areas of focus for individual communities, to commission research, and/or to conduct research themselves. These submitters were confident that the hubs approach could effectively achieve Māori research outcomes by delivering on the priorities set by the wider Māori research community, while also having a chance to define and be accountable to their own aspirations. Some submitters pointed out that the hubs could also help support stronger relationship development and create hononga between local Māori and the wider RSI system.

There was concern expressed by a few government submitters that the regional knowledge hubs would be difficult to implement without nationally consistent Māori research priorities. A centralised approach to Māori priority setting would need to be implemented prior to the establishment of any hub, so that hub research can be both relevant to their community but also in line with wider goals and aspirations.

Strategic development of Māori research priorities alongside the allocation of funding for research could be carried out by regionally based hubs governed by hapū/iwi and managed by local leaders. (Crown research institute)

GOVERNMENT SHOULD CONSIDER IMPLEMENTING MARAE, IWI, OR WAKA-BASED HUBS

Māori submitters and Māori Aspirations Workshop participants urged the Government to consider existing structures that could be utilised for the same purpose as the regional hubs, in order to streamline the rollout of such entities and avoid adding bureaucracy to an already challenging environment. The marae or wharenui was commonly discussed as a potential option as it could better support and mobilise mātauranga Māori systems and maintain the mauri of practitioners to support their communities. Iwi or waka-based hubs were also suggested by a few Māori submitters and Senior Leaders Workshop participants as a more relevant approach for Māori than arbitrary regional boundaries originally set by the Crown.

Schools of knowledge already exist in our wharenui, whakairo and tukutuku. Urupā are a source of māramatanga, mātaurangatawhito. The marae thrives on storytelling, being part of knowledge-based whakaaro. (Māori-led organisation)

The main concern submitters wanted the Government to consider was to ensure any regional hubs proposal integrates and respects existing ways of doing things within Māori communities, including the spaces of traditional Māori knowledge transmission and more modern educational institutes populated by Māori.

APPROPRIATE FUNDING IS CRUCIAL FOR THE HUBS TO BE SUCCESSFUL

A few submitters raised concerns around how hubs will be funded. Forming new research entities that need to be supported through the same funding pool that already struggles to support existing groups might mean than the hubs become isolated and find it difficult to gather appropriate financial support. Ensuring stable, long-term funding for the hubs was also discussed by a few submitters as critical to their success.

Māori knowledge hubs need to be decoupled from the election cycle and properly funded from a separate pool of funding from research to ensure this is truly empowering, can be properly established and maintained long-term. (Research collaboration)

Meaningful engagement between Māori and Te Tiriti partners

A TE TIRITI-BASED SYSTEM WILL MEAN PARTNERSHIPS WITH MĀORI ARE ESTABLISHED FROM THE BEGINNING

Many submitters supported embedding Te Tiriti into the RSI system to enable engagements that result in practical outcomes that reflect Māori aspirations and research priorities. Some submitters, including Senior Leaders Workshop participants, maintained that operationalising a Te Tiriti-based system will mean partnerships with Māori are established from the beginning of any process, and that appropriate amounts of time will be set aside to enable tikanga-based, meaningful engagements and consultations. Some submitters commented that this is currently not the case and often engagements with Māori are added to projects as an afterthought, not at the initiation or planning phase.

Māori should be involved from the inception of the project and not as a tag-on. Genuine co-design promotes strong relationships. The Māori voice must be privileged. (Tertiary education organisation)

ENGAGEMENT MUST REFLECT THE DIVERSITY OF MĀORI COMMUNITIES

Some submitters noted that engagements need to reflect the diversity of Māori communities and the depth and breadth of their interests and aspirations in order to be effective. This should include stepping away from only consulting Māori experts or large iwi, to encourage researchers to also engage with hapū and smaller communities. While some research institutes and organisations urged the Government to develop guidance around how to effectively lead engagements within the RSI system, others cautioned against creating a 'one size fits all' approach. These submitters argued that a centralised framework would not work because of the differences that characterise Māori communities, such as rohe-specific tikanga and the resources these groups preside over.

Furthermore, on the basis that not all hapū signed Te Tiriti, we advise against assuming Te Tiriti is the only or most appropriate frame for a conversation with Māori. The system needs to appreciate and be prepared for multiple perspectives and a plurality of approaches. (Crown research institute)

MĀORI SHOULD BE EMPOWERED TO DESIGN PRACTICAL TIMEFRAMES FOR ENGAGEMENT

An issue raised by a number of Māori submitters was consultation fatigue. This was best explained as the limited consultation capacity that is currently being experienced by iwi and Māori communities, which stems from the significant number of engagement requests and workload they receive. Because of the importance of kanohi ki te kanohi engagement, which was pointed out by many submitters as being of utmost importance, planning for and conducting meaningful consultations takes up a lot of time and resources for both parties. Some submitters recommended letting Māori design a set of mechanisms

that include realistic, practical timeframes for engagement with the Māori RSI community as the best way to appropriately plan for and mitigate the risk of consultation fatigue and/or burnout.

CRITICAL MINDSET CHANGES NEED TO OCCUR ACROSS THE BOARD TO IMPROVE ENGAGEMENT

Some submitters commented that certain shifts in thinking need to take place within the RSI system in order to enable meaningful engagement with Māori. These submitters maintained that researchers need to start viewing and recognising Māori communities as actively engaged and contributing to research, rather than treating them solely as end-users or passive recipients of policy reforms. A few submitters considered that recognising Māori as knowledge-making and knowledge-using partners in determining research needs and aspirations is a crucial aspect of any successful engagement activity.

> *However, under the RSI system we are considered 'end users' rather than part of the research community. This is particularly frustrating when Wakatū has been building R&D capability that is distinctively Māori led for over thirty years, primarily through our own investment. Hence this "end user" label needs to change. (Māori-led organisation)*

MORE CONSULTATION REQUIRED BEFORE POLICY DECISIONS ARE FINALISED

Some Māori submitters urged the Government to conduct more engagement prior to embedding policy options into the White Paper. Māori Aspirations Workshop participants were dissatisfied with the format of the workshops, with some conversations being dominated by tauiwi when the topic was of interest to Māori. Some submitters recommended conducting a national te ao Māori engagement (or series of engagements) to develop a shared vision of how RSI reform could accelerate Māori aspirations and priorities.

> *MBIE should view the consultation for Te Ara Paerangi as the beginning, not the endpoint, for engagement. (Sector body)*

SECTION 3

Te tuku pūtea
Funding

Section 3: Te tuku pūtea Funding

Chapter 3 of the Green Paper discussed possible ways to reshape the funding system for the future. It covered how funding could be used to give effect to whole-of-system Priorities, reduce unproductive competition, and ensure institutions can respond and adapt to emerging opportunities. The following questions were included in the Green Paper on funding.

7. How should we decide what constitutes a core function and how should we fund them?

8. Do you think a base grant funding model will improve stability and resilience for research organisations, and how should we go about designing and implementing such a funding model?

The below sections capture the key themes that submitters and workshop participants discussed relating to funding.

Investment in R&D and proportion of RSI funding

CURRENT ASPIRATIONS TO INCREASE INVESTMENT IN THE RSI SYSTEM STILL NOT SUFFICIENT

Many submitters pointed out that the Government's intention to increase R&D investment to 2% of GDP by 2027 has been a goal for almost 30 years. They noted that the current investment rate of 1.4% is not giving researchers a chance to get serious about knowledge and innovation. These submitters maintained that this is still short of the OECD average of 2.5%, which they considered should be the amount required to develop Aotearoa New Zealand into a small but advanced economy.

> *Simply put, there's nothing wrong with RSI in New Zealand that significantly greater government investment couldn't fix […] In a tree without enough acorns, squirrels start to eat their young. (Tertiary education organisation)*

> *We do not wish just to demand "more money", but at the same time research funding at a similar level of other OECD countries would certainly help tackle at least some of these problems. (Tertiary education organisation)*

LOW LEVEL OF FUNDING AFFECTS CAPABILITY RETENTION AND INTERNATIONAL COLLABORATION

Submitters attributed the low level of funding in the RSI system and the small amounts awarded in grants as the reason why institutions struggle to retain capability, they cannot offer comparable salaries to that of private sector organisations or other jurisdictions.

> *In New Zealand, the salaries of these positions often do not reflect the expertise and the time spent studying of those applying, resulting in many researchers going overseas or leaving research altogether. (Independent research organisation)*

A few submitters pointed out that another impact of this is that it disadvantages researchers who cannot live or travel overseas due to whānau, career, or other commitments to develop new skills and knowledge.

Funding Workshop participants stressed the need for a base grant or stabilised funding that covers workforce capability to be more consistent with international RSI funding. They maintained that the current lack of support for capability due to limited overall funding is a barrier to international collaboration. Some individual submitters also highlighted this issue and emphasised that increasing expenditure in the RSI system could make Aotearoa New Zealand a more desirable destination for the international RSI workforce.

GOVERNMENT SHOULD PROVIDE MORE INCENTIVES FOR PRIVATE SECTOR RSI INVESTMENT

Along with increasing the overall funding pot for the RSI system, a few submitters urged the Government to develop stronger incentives for the private sector to build its commitment to research investment, especially in sectors that offer the highest dividend for the application of new technologies and ways of thinking. Co-investment mechanisms with the private sector in the past have encouraged R&D under industry-identified priorities, which have resulted in growth for our economy.

> *Government needs to recognise a broader set of contributions from the private sector as part of incentivising more co-investment. For example: it may be easier for the private sector to come with capital to bear. (Crown research institute)*

Competitive funding

CURRENT COMPETITIVE FUNDING SETTINGS GENERATE INEFFICIENCIES AND SERVE AS A DISTRACTION FROM VALUABLE RESEARCH

Many submitters considered that the current settings of competitive funding in the RSI system are of little use since they were implemented over 30 years ago. One research collaboration[4] described participating in the current competitive funding model as a 'soul-destroying' exercise. There was a strong sense among submitters that the time-consuming nature of competitive funding only serves as a distraction from actual research and is not balanced with the uncertain outputs and results.

> *The current competitive model has unintended negative outcomes for the science which is carried out and the morale of the workforce, resulting in inefficiencies due to substantive efforts being spent on bidding for funding rather than carrying out research. (Crown research institute)*

Some submitters pointed out that in 2021, only 13% of all research funding applications received by MBIE were approved. This level of competition was described by many as unproductive. Many submitters wanted to see the current model rationalised as it adds significant costs to organisations, reduces productivity, and causes researchers to fear losing their jobs if funding cannot be secured. Base grant or stabilised funding was pointed to by some as potentially being able to alleviate much of this issue and free up researchers to focus on valuable project work.

COMPETITIVE FUNDING TIMELINES ARE TOO SHORT TO PROVIDE FRUITFUL IMPACTS AND OUTCOMES

Some submitters spoke about the short timeframes the current competitive funding model usually covers. They considered the short time frames to impede the potential of researchers to capture and utilise knowledge. These submitters also maintained that funding periods are too short for the type of future proof, 'public good' research Aotearoa New Zealand should be pursuing.

> *Funding is often provided for single year, or perhaps 5-year projects – for big questions, and for many biological and social science problems research should cover several seasons, or longer term trends [...] How can we tackle the big questions if we focus continuously on proposal writing on top of publishing? (Individual submitter)*

COMPETITION DISCOURAGES COLLABORATION ACROSS THE RSI SYSTEM

Some submitters highlighted that in their experience, competitive funding often results in institutions working in silos and creates uneasy alliances between researchers. These submitters pointed out that by preparing bids for contestable funds and resources that overlap, researchers and institutions become directly competitive with each other, even though a good RSI system thrives on open communication and sharing of ideas and knowledge.

> *In Ravensdown's view, the contestable funding model has failed to deliver on improving efficiency both within and between research providers or in providing industry with a cost-effective research capability to turn to. (Private enterprise or industry body)*

POSITIVE COMPETITION SHOULD BE RETAINED AND ENCOURAGED

Many submitters spoke about some of the positive aspects of competitive funding, such as how it can refresh the RSI system with new ideas and approaches, and that a contest of ideas can help drive science excellence. Funding Workshop participants noted that competitive funding could be used to address specifically defined problems for Aotearoa New Zealand, enabling researchers to compete for funding to develop the best solutions.

> *A certain level of competitive funding, possibly aimed at innovation and blue-sky science, is necessary in any research system. It provides a way to enable emerging issues to be addressed. (Government submitter)*

However, Funding Workshop participants and a few submitters also acknowledged that the current funding environment disrupts the delivery of mission-led research.

SUPPORT FOR A MIXED MODEL FUNDING ECOSYSTEM

Most submitters and Funding Workshop participants supported the idea of a mixed model funding system that would support collaboration and drive science excellence. The ecosystem of funds suggested by many submitters included:

- base grant funding to support, among other things, overheads, workforce, research, core functions, infrastructure, and outreach to Māori and stakeholders

[4] (171, Bioresource Processing Alliance, Research Collaboration)

- competitive innovation funds
- mission-specific funds for cross-sector collaboration
- response funds to forecast future needs instead of using funds from other workstreams
- R&D specific funding to build resilience in our economy.

Base grant funding

HIGH EXPECTATIONS OF WHAT BASE GRANT FUNDING COULD ADDRESS

The overriding theme in submissions on the proposal of a base grant was a call to increase the certainty and stability of funding available to fund research. While submissions were largely supportive of the idea of a base grant, there were divergent views about what the objectives of the grant should be and what it could be used to fund. Submitters suggested that base grants could fund, among other things: research, thereby reducing the resources needed to securing funding through competitive processes; overhead costs for organisations; core functions; improving workforce outcomes; infrastructure and associated capability, and supporting research organisations to work with Māori and other stakeholders.

Submitters mostly wanted to see base grant funding being supplied widely– not just to CRIs but also IROs and other research organisations. Individual submitters held particularly high expectations around what issues base grant funding should address.

Some submitters were unclear about what base grants would look like in practice and requested to see further information about the relationship between base grants and other funds within the RSI system, as well as national Priorities.

BASE GRANT FUNDING COULD BE USED TO COVER OVERHEAD COSTS AMONG OTHER THINGS

Some submitters noted that large portions of successful grants are currently used to fund overhead costs, sometimes leaving insufficient funding for project costs and placing pressure on researchers to bid for funding. Many submitters acknowledged that base grant funding could improve the current system by creating more stability and allowing researchers to focus on research. Some submitters supported base grant funding covering overheads, so that researchers could spend project funds in a more targeted manner.

There was a strong sense that organisations need to be transparent and held accountable for how base grant funding is spent when covering overhead costs. A few Funding Workshop participants raised concerns that base grants would be associated with substantial transaction costs and simply lift and shift perceived accountability issues with contestable funding. There was particular concern that base grants could create barriers to access for new entrants and that it could be challenging to hold organisations to account in relation to how they distribute base grant funding, and so ensure that research directly benefits base grand funding is distributed. Other submitters noted that base grant funding could help mitigate the risk of current recipients of public funding consistently outcompeting other smaller organisations or new industry players.

> *The use of a base grant to replace overheads would improve transparency and direct more external funding received by institutes to go directly towards research. (Group)*

LONG TIMEFRAMES AND FLEXIBILITY ARE CRUCIAL FOR MEANINGFUL ENGAGEMENT WITH MĀORI

Many submitters highlighted that any base grant mechanism needs to be designed with long timeframes in mind and adjusted to inflation to counteract increased cost pressures over time, which tighten the funding envelope for research and meaningful engagement. Timeframe flexibility was also discussed as a priority to enable tikanga-based relationship building and co-design with tangata whenua in areas for research investment. Funding Workshop participants recognised that relationship building is key and requires time, resources, and consistent attention. Participants supported directing base grants to Māori institutions or iwi to help build relationships and ensure their longevity.

> *Finally, relationship building with Māori communities takes an extended period of time, so stable long-term funding for research interacting with mātauranga is necessary to enable and protect it in the research system. (Group)*

POSSIBLE BENEFITS CREATED BY BASE GRANT FUNDING

Across submitter types and Funding Workshop participants, the main benefits of base funding were identified as:

- improving stability and enabling long-term research planning
- allowing organisations to offer more permanent employment and secure the skills currently lost to short-term resourcing
- improving industry participation and collaboration across the sector
- supporting core research infrastructure such as laboratory equipment, databases, and publishing costs

- reducing costs created by the competitive funding environment.

Making base grant funding a lever for achieving wider RSI system objectives, particularly in relation to the RSI workforce, was also raised by many submitters.

ACCOUNTABILITY FOR ORGANISATIONS THAT RECEIVE BASE GRANTS WILL ENSURE EFFICIENCY

Some submitters highlighted the need for transparency for how base grants would be used within organisations once allocated, including if base grants would only cover overhead costs, to ensure money is spent for its intended uses. Various organisations, institutions, and universities that have a direct line of sight over financial performance and investment discussed the need for accountability mechanisms. These submitters maintained that implementing a monitoring system with clearly defined deliverables is crucial to drive science excellence and keep the base grant model on track.

> *A base grant funding model will certainly improve stability but there needs to be accountability for deliverables, via KPIs and measures of success in order to avoid any research organisations becoming bloated and/or complacent. (Research collaboration)*

The possible inefficiencies that could be created by base grant funding were also discussed by private enterprise and individual submitters, a few of whom were against the model altogether, maintaining that it could result in insufficient scrutiny of research unless there is a monitoring and accountability mechanism in place.

Funding core functions

WIDE VARIETY OF VIEWS ON MAKE UP OF CORE FUNCTIONS, OBJECTIVES, AND HOW THEY ARE FUNDED

There were a wide range of responses to the section in the Green Paper on 'core functions'. There was no overall consensus on what constituted a core function; however it was clear from the breadth and variety of responses that submitters understood the scope of the term in a number of different ways.

Some submitters focussed on 'core' enablers of the RSI system such as funding people, infrastructure and data, and ensuring equity within the system. Others focussed on essential outputs from the RSI system such as key services or research ensuring the wellbeing of our country, and some suggested characteristics or principles to help identify what these core functions might be. Some submitters thought that core functions should be independent from national research Priorities to ensure consistent funding, whereas others thought that core functions should be aligned with and support the Priorities.

Many submitters talked about core functions and base grant funding together, with an assumption that a base grant would pay for core functions. The way core functions could improve stability was a consistent theme, and some submitters also pointed out the links between funding particular functions over the long-term and building enduring capability within the RSI system. The plurality of thinking around core functions also led to a range of different suggestions for solutions (not all of which are necessarily compatible with all interpretations of the term).

CORE FUNCTIONS SHOULD ENCOMPASS ESSENTIAL RSI SERVICES AND PRIORITISE 'PUBLIC GOOD' RESEARCH

Most submitters considered funding core functions as an appropriate way to provide greater stability within the RSI system. Submitters discussed both linking core functions to national priorities and continuing funding for core functions irrespective of shifting national priorities, such as maintaining datasets, laboratories, and other research services. Individual submitters observed that funding core functions would ensure other types of funding are used in a more targeted manner. Submitters commonly noted that funding core functions would take commercial pressure off 'public good' research that can grow Aotearoa New Zealand's prosperity and provide beneficial social and environmental outcomes.

> *Core function can be defined as the analysis and consulting unable to be provided by industry that is: - required by law or treaty, - essential for environmental, societal, or industrial functioning - Pure Public good research which is unable to provide profit or commercialization. (Individual submitter)*

SUPPORT FOR AN INDEPENDENT NATIONAL GROUP TO SET CORE FUNCTIONS

Many submitters discussed implementing a systematic national approach to setting core functions, one that would ensure bipartisan political support and therefore continuity of funding across changes of government. Some submitters argued that defining core functions could be conducted through an independent national group with representation from across the RSI system, to ensure resources are readily available to all.

> *These [core functions] should be identified by an independent national group, with representatives from across the science sector, including Māori independent research organisations. Representation of groups such as emerging researchers and community representatives (e.g. health service, business) is also important. (Research collaboration)*

Submitters commonly discussed basing the identification of core functions around the outcomes the future RSI system is looking to deliver, namely:

- embedding and upholding Te Tiriti o Waitangi (Te Tiriti) obligations and opportunities and improving equity
- meeting priority needs for Aotearoa New Zealand
- supporting science excellence and advancing innovation
- developing and retaining the capability Aotearoa needs now and for the future
- enabling connections, collaboration, and access to international knowledge.

CORE FUNCTIONS COULD FACILITATE RELATIONSHIP BUILDING WITH MĀORI COMMUNITIES

Funding core functions on a long-term basis was recommended several times by submitters, with some arguing that long timeframes would help establish better links with Māori who value continuity and the sustainability of knowledge systems. Funding Workshop participants mirrored this view, highlighting that core functions being funded long-term and for 'public good' research aligns well with te ao Māori principles.

REPRESENTATION ACROSS THE SECTOR IS KEY TO DEFINING AND REVIEWING CORE FUNCTIONS

If a national approach to setting core functions is to be pursued, submitters urged the Government to conduct a mapping exercise to identify gaps and include representation from across the RSI sector, including Māori organisations, emerging researchers, and community representatives. Many submitters discussed establishing a review process with involvement from the aforementioned groups when funding core functions, to ensure continued relevance for Aotearoa New Zealand and all the various components of the RSI system.

> *It would be excellent if the 'who decides' [what is a core function] question created opportunities for greater development of citizen science and engagement of the general population and in particular, involvement of Māori and our future leaders (young people). (Tertiary education organisation)*

MONITORING FOR CORE FUNCTIONS FUNDING SHOULD BE BUILT INTO THE SYSTEM

A few private enterprise submitters favoured a funding model based on performance incentives over funding core functions in order to avoid double dipping into industry funds. Some submitters suggested including clear KPIs and spending controls within any system that allocates core functions funding to mitigate this risk, and to ensure compliance and increased transparency.

> *Funding core functions should not be part of the contestable landscape, but sufficient checks and balances (i.e. independent international reviews) need to be in place to avoid institutional capture and non-delivery. (Research collaboration)*

SECTION 4

Ngā hinonga
Institutions

Section 4: Ngā hinonga Institutions

Chapter 4 of the Green Paper discussed the design of research institutions to enable them to give effect to whole-of-system priorities and be adaptable in a fast-changing world. The following questions were included in the Green Paper relating to research institutions:

9. How do we design collaborative, adaptive, and agile research institutions that will serve current and future needs?
10. How can institutions be designed to better support capability, skill, and workforce development?
11. How should we make decisions on large property and capital investments under a more coordinated approach?
12. How do we design Tiriti-enabled institutions?
13. How do we better support knowledge exchange and impact generation? What should be the role of research institutions in transferring knowledge into operational environments and technologies?

The sections below capture the key themes that submitters and workshop participants discussed relating to research institutions.

Designing institutions to be collaborative, adaptive, and agile

COLLABORATION SHOULD BE A CENTRAL ASPECT OF THE FUTURE RSI SYSTEM

Submitters and Institutions Workshop participants often described their experiences with the RSI system as lacking in collaboration, with research organisations that are largely disincentivised to work together. Submitters pointed to the following reasons why collaboration was poor:

- Competitive funding models – some research organisations were described as discouraging cross-organisational collaboration so that funding can remain in-house, rather than working together and utilising funding towards shared goals.
- Overlapping priorities – a few submitters observed overlapping priorities and duplicated effort among research organisations, resulting in little collaboration.
- Management layers and overheads – submitters and Institutions Workshop participants indicated that clunky layers of management and overly burdensome overheads and administrative processes are also barriers to collaboration.

> *Collaboration among scientists is inhibited under a competitive funding system when scientists must secure the funds to cover the costs of their salaries, operating costs, and overheads. Under these conditions, there is a huge incentive for the scientist to not involve other scientists. (Crown research institute)*

Reflecting on the issues of the current system, submitters generally expressed a desire to see research organisations operate in a way that is more collaborative across the system, adaptive to changing needs, and agile.

A few submitters indicated that in order to increase collaboration, research organisations need incentives to do so. This might be through organisational mandate, funding mechanisms, or including collaboration requirements into performance standards. Institutions Workshop participants also discussed the need for collaboration incentives to be designed into funding mechanisms, as funding uncertainty can promote unhealthy competition and make it difficult to establish meaningful and enduring collaborations. This could include incorporating tangible criteria for collaboration into funding bids, or ring-fencing funding for collaborative research.

A few submitters said that taking a 'best teams' approach where people with a broad range of skills are brought together into multi-disciplinary teams could support greater agility and more effective collaboration across the RSI system. These teams would operate across organisational boundaries towards a shared goal.

Submitters referred to existing models that have shown some success at encouraging multi-disciplinary and cross-organisational collaboration. Some well-known examples of these models mentioned included NSCs, CoREs and the Product Accelerator. A few submitters suggested looking to these models for ideas on what works well and not so well when incentivising and encouraging collaboration.

> *Lessons learned through the National Science Challenges show how we can fund and support transdisciplinary research. The National Science Challenges now have seven years' experience of trialling transdisciplinary research (Crown research institute)*

GREATER MOBILITY BETWEEN INSTITUTIONS COULD SUPPORT WORKFORCE CAPABILITY AND GREATER COLLABORATION

Some submitters spoke about how research organisations could be designed to support workforce capability. A few of these submitters suggested that research organisations should be enabled to coordinate capability development nationally and be able to take a long-term view for capability planning. A few submitters indicated that stable, long-term funding would support organisations to undertake long-term capability planning.

Some submitters, particularly sector bodies and early career research staff groups, suggested that designing the system to be flexible and enable greater movement between research organisations would support workforce capability. Being able to easily move between different organisations – including between research organisations, industry, and government organisations – would enable research staff to gain broad experience, develop a range of transferable skills, improve connectedness across the RSI system, and support knowledge exchange. Senior Leaders Workshop participants also echoed the need for institutions to have free movement of people between research organisations and other sectors. They noted that this would support more collaboration and agility across the RSI system.

As discussed in **Section 1: Ngā Whakaarotau rangahau Research priorities**, it was considered important to strengthen international linkages to support greater knowledge exchange and improved research outcomes. Improving collaboration and mobility between international research organisations was also considered important to support the development of workforce capability, enhance career progression, and attract international talent.

> *A research system that provides both the skills and opportunities to undertake research in different ways and in different organisations would do more to support the long-term reduction of a precariat workforce. It would also be a significant step to ensure our homegrown talent is able and willing to stay in Aotearoa New Zealand, while providing an attractive option to bring overseas talent here. (Tertiary education organisation)*

Submitters and Workforce Workshop participants suggested a range of mechanisms that could support institutional mobility, including secondments or short-term transfers, internships, the development of hybrid roles, moves that support working from home, or creating a single competency framework across all research organisations.

> *We are greatly in favour of specific mechanisms, including incentivising mechanisms, that enable researchers moving between different types of organisations, from academia to industry to government, such as short-term secondments, internships at a variety of levels from undergraduate to postgraduate and beyond, joint appointments, or longer-term shifts such as change of role, and all without penalty. (Sector body)*

> *Funded exchanges or secondments, or a mechanism by which experts can work for a fixed time at a different organisation, will help with capability retention, skills development, and greater connectedness across the science sector. This would also help organisations adapt to short-term issues by easily accessing capability. Ideally, such schemes are based on mutual exchange, and can support and facilitate better collaboration and sharing of infrastructure. (Private enterprise or industry body)*

VIEWS ON THE BENEFITS OF CO-LOCATION WERE MIXED

Some submitters discussed the Green Paper proposition of co-location. Views on the suitability of co-location to support greater collaboration and efficient use of resources were mixed.

Some submitters saw value in co-location and suggested that co-location of different research organisations could support greater utilisation of resources (including facilities, equipment, and personnel), relationship building and collaboration, and workforce capability development. They noted that co-location could work well where there is a shared strategic purpose to the co-location.

> *We are generally supportive of opportunities that allow CRIs and universities (as well as other TEOs) to co-locate where this has clearly understood and shared benefits, such as staffing and operational efficiencies and/or sharing of equipment and space, opportunities for large-scale shared capital and property investment across the system, and benefits for teaching and increased research supervision. (Government submitter)*

However, other submitters cautioned the idea of co-location, noting that co-location by itself does not necessarily deliver the suggested benefits like improved collaboration. They noted that co-location tends to already occur where this makes sense to the research organisations involved; however, co-location should not be forced in an attempt to realise benefits.

> *Co-location decisions are complex and will usually be specific to the characteristics of the parties involved. The driver for decision-making should, in each instance, be a consideration of where the most valuable collaborations and relationships can be developed. (Independent research organisation)*

Knowledge exchange

Knowledge exchange refers to the transfer of ideas, people, technology and relationships between entities conducting research such as universities, research institutes (e.g. CRIs) and businesses. This exchange is not linear but rather interactive and collaborative. Businesses are an important source of knowledge for universities and CRIs. Below outlines the key themes discussed by submitters and workshop participants relating to knowledge exchange.

KNOWLEDGE EXCHANGE AND IMPACT TRANSFER IS NOT WORKING WELL IN THE CURRENT RSI SYSTEM

Many submitters, across the range of submitter types, considered that the current RSI system does not put enough focus or value into effective knowledge exchange and impact generation, that is the transfer of knowledge into use of that knowledge to generate impact. A range of issues and barriers relating to knowledge exchange were raised.

Some submitters and Institutions Workshop participants spoke about the traditional definition of science excellence, and how the interpretation of this definition often means that publications and basic/fundamental research are valued more highly than applied research or industry experience. This can have a negative impact on the research workforce and perceptions of valid career pathways that researchers can take. Submitters described how publications are celebrated and are often a core aspect of promotions and career progression in current research organisations. This can disincentivise researchers from pursuing applied research that leads to impact generation.

> *One very significant obstacle to creating greater impact from research is the deeply imbedded perception of what constitutes research excellence. Few researchers, or research institutions, recognise impact generation as a valid measure of research excellence. Impact generation is rarely considered as an important criterion in promotion processes in universities or national research institutes, or in research quality assessment processes such as the PBRF. (Research collaboration)*

A few submitters and Institutions Workshop participants noted that there can be poor engagement and connection between institutions, universities, and industry. These submitters explained how businesses can find it challenging to enter the RSI system and are met by researchers who do not understand industry needs or experience tension from different approaches to undertaking research.

> *Private firms can find it difficult working with public research institutes because they use different research models and have different motivations to those of research institutes […] Many businesses find the bureaucracy required to work with the public sector overwhelming, too expensive, and too slow. Private firms believe the perspective and approach from the institutes is different. For the institutes, they have a great idea that then looks for a customer. For businesses, it is the other way around –they have a customer that is looking for a solution. (Private enterprise or industry body)*

A few submitters highlighted how there are limited opportunities for applied research as well as areas where this is disincentivised. Institutions Workshop participants similarly discussed a lack of support for those who wish to explore commercialisation but lack the skills and support to take ideas forward. Submitters also spoke of a lack of funding available for undertaking applied research and described commercialisation arms of CRIs and universities as being under-resourced.

A few submitters and Institutions Workshop participants thought that the current approach to intellectual property (IP) was a barrier to impact generation. There were a range of views around IP, with submitters describing a lack of trust between institutions, confusion around the purpose and value of IP, mixed views in the current system on who should own IP, and concern with how the current IP frameworks take a western view and do not align well with a te ao Māori view of kaitiakitanga.

> *The current model of IP rights creates distrust between institutes and researchers Within RSI, there is complexity around Intellectual Property rights of scientific discovery. Where cooperation is key to successful commercialisation, the understanding of who, why and what Intellectual Property falls where can drive distrust between the institution and its researchers. (Research collaboration)*

BETTER KNOWLEDGE EXCHANGE AND IMPACT GENERATION REQUIRES CLOSER CONNECTIONS WITH INDUSTRY AND FOCUSSED FUNDING

Many submitters suggested that stronger connections with industry are required to achieve greater knowledge exchange and deliver research that is relevant to the needs of end-users. As part of creating stronger connections with industry, submitters acknowledged that building relationships takes time and effort. They noted that current funding mechanisms do not recognise the level of engagement required and suggested that the process of engagement and co-creation of research with industry be appropriately resourced.

> *Future NZ research institutions must work together with industry more closely to see the benefits of research come to light. (Research collaboration)*

When considering the role of Callaghan Innovation, a few submitters expressed confusion around the purpose of Callaghan. It was suggested that Callaghan could play a greater role in connecting researchers to industry and supporting useful partnerships.

A few submitters noted working closely with industry also means that more opportunities for research to be co-funded with industry should be encouraged, including international investment into research in Aotearoa New Zealand.

> *Provide the ability for research organisations to conduct joint research with industry in order to draw in companies and maximise everyone's R&D funding. This will help to get research commercialised quickly and provides opportunities for future engagement. (Private enterprise or industry body)*

A few submitters recommended that funding for commercialisation should be taken more seriously. They discussed the 'valley of death', where commercialisation attempts can fail due to a lack of funding, and noted that more needs to be done to close the gap and support commercialisation. The Pre-Seed Accelerator Fund and Commercialisation Partner Network were spoken about favourably by a few of these submitters, who recommended that these initiatives could be expanded.

Te Tiriti-enabled institutions

ENSURE TE AO MĀORI IS EMBEDDED INTO THE GOVERNANCE OF RESEARCH ORGANISATIONS, AND THAT MĀORI ARE PRESENT AT ALL LEVELS

Some submitters, particularly Māori-led organisations, discussed governance as a key factor in designing Te Tiriti o Waitangi (Te Tiriti)-enabled research organisations. A few submitters identified the need for culture to be set at Board level, with greater cultural competency training for those in key leadership positions so that the value of Te Tiriti is upheld in organisational culture and across staff. This included ensuring there are policies in place in all research organisations regarding Te Tiriti and mātauranga Māori.

A few submitters and Institutions Workshop participants suggested that Māori need to hold positions at all levels of research organisations, including leadership and governance roles. This would help set the values of the research system and support the appropriate use of mātauranga Māori.

> *Māori must also have governance roles within key RSI institutions such as universities and Crown Research institutes. Such positions will ensure that the use and development of mātauranga is Māori led and controlled, which is integral to its protection. Further, these institutions must actively seek to decolonise and shift their approach to mātauranga and tikanga Māori. (Māori-led organisation)*

THERE WAS A VIEW THAT A MĀORI RESEARCH ORGANISATION COULD BE BENEFICIAL

A few submitters suggested that dedicated Māori research organisations should be established to support Māori interests in the RSI system and protect mātauranga Māori. These institutions would need to be designed in a way that gives Māori the power to make decisions on research that will benefit Māori communities.

Similarly, Senior Leaders Workshop participants discussed how the current system could devolve power and control so that Māori can undertake their own science and research following their own knowledge system.

> *Importantly, while co-design, co-development and co-governance are essential, to embed Te Tiriti there must also be separate spheres that recognise and enable "by Māori for Māori" RSI. For example, this will require separate Māori RSI institutions as well as devolution of funding that is allocated exclusively for Māori research and development, to enable Māori to exercise tino rangatiratanga in substance. (Māori-led organisation)*

Organisational form, structure, and focus

THERE WERE MIXED VIEWS REGARDING THE CURRENT COMPANY MODEL IN CRIS

Many submitters referred to the operational form of CRIs. There were mixed views regarding the suitability of the company model going forward, and differences in opinion across the range of submitter types who commented on this topic. Majority of these submitters considered that the siloed, profit-driven aspect of the company model of CRIs was not working well for the RSI system. They noted that this aspect of the model has contributed to unproductive competitive behaviour, hindered collaboration, and resulted in ineffective use of research infrastructure. Similarly, Institutions Workshop participants noted that commercially focussed structures can detract from public good outcomes.

> *The CRI model, where each CRI is aligned to a sector, and structured as a company, has reached the end of its productive life, and needs to radically evolve to embrace emerging sectors and increased agility. (Tertiary education organisation)*

The current funding model proliferates unhealthy competitive behaviour amongst CRIs. Similarly, the current company, commercially geared model under which CRIs operate conflicts with notions of collaboration and public good. (Crown research institute)

Conversely, a few submitters pointed out that some aspects of the current company model of CRIs have been positive. They described how some CRIs have continued to operate according to public good whilst following a company model, and that financial stability is an aspect of the company model that has been beneficial for the organisation.

A few submitters and Institutions Workshop participants suggested alternative models could be investigated, in particular exploring international examples of different models and considering the value these could add to our system. Some of the suggestions included:

- a not for profit (NFP) organisational model
- hub-based model that connects a range of differing research organisations together, such as through co-location
- other international models, including the model used in Max Planck research institutes in Germany, the A*STAR model in Singapore, and the Wageningen University model in the Netherlands.

VIEWS WERE MIXED ON THE FLUIDITY OF RESEARCH ORGANISATIONS

Some submitters spoke about the focus and core purpose of research organisations. A few submitters agreed with the Green Paper's suggestion to broaden and dynamise the focus and boundaries of research organisations. They agreed that grouping research organisations by function or discipline could lead to more collaboration and agility.

Other submitters indicated that the current lack of collaboration was driven more by overlapping priorities and a lack of clarity around purpose and objectives. These submitters instead suggested that the RSI system needs a range of diverse research organisations with distinct purposes and clearly defined objectives.

"This makes a further case for lowering the boundaries between different types of research organisation." The opposite is true, differentiation of organizations is the key. Each having its own dedicated function (long-term or short-term) rather than producing an ineffective smear of organizations that are 'jack of all trades, master of none'. (Individual submitter)

THE APPROPRIATE SIZE AND STRUCTURE OF INSTITUTIONS WAS DEBATED

Many submitters provided their views on the comments in the Green Paper about how international trends show that other countries are adopting a structure of fewer and larger research organisations. Again, there were mixed views regarding the suitability of adopting fewer and larger research organisations in Aotearoa New Zealand, and differences of opinion across the range of submitter types.

Some submitters supported the proposition for fewer and larger research organisations. These submitters discussed a range of benefits that could come from such a structure, including:

- greater levels of (and fewer barriers to) collaboration
- greater interdisciplinary work on research priorities
- less unproductive competition in the RSI system
- less money spent on layers of management
- more efficient sharing and use of resources and infrastructure
- more opportunities for professional development and capability building
- less duplication of research.

A full or partial merging of New Zealand's CRIs to create impact-focussed organisations would increase access to equipment, resources, funding, talent, and information, with the aim to facilitate collaboration and to reduce research costs, competition, and duplication of research. (Crown research institute)

However, some submitters were critical of adopting fewer and larger organisations and pointed out potential trade-offs of such a structure. They said that larger organisations could become more top-heavy and bureaucratic, less agile and responsive to changing priorities, and that larger organisations would not necessarily lead to greater collaboration. A few submitters noted that smaller research organisations are more likely to be collaborative, adaptive, and agile.

While larger research institutions might be more stable, they are also likely to be less agile and less responsive to practical local applicability. (Government submitter)

In our experience, larger research institutes have tended to be less collaborative, and have used Core funding to move between core functions and compete in other research areas. This often leads to a

double up in research effort between research providers. Smaller research institutes have tended to be more collaborative, adaptive, and agile. (Private enterprise or industry body)

Institutions Workshop participants considered that culture and people are as, if not more, important than formal structures in enabling research institutions to be agile and adaptive. They discussed how changing the structure of research organisations is only one part of designing institutions to be more collaborative and agile. Institutions are made up of people and the culture of each organisation needs to promote collaboration and agility across the RSI system, as well as having professional processes in place to facilitate collaboration at a system level.

RESEARCH ORGANISATIONS NEED TO BE GOVERNED BY THE RIGHT PEOPLE, WITH THE RIGHT SKILLS

A few submitters, particularly individuals, raised concern with the layers of management found in research organisations and those in management and leadership roles. Closely aligned to the discussion on the current company model in CRIs, submitters described management and leadership positions filled by those from a business background rather than a science background.

A few submitters indicated that good governance of research organisations requires the right people in leadership positions. For research organisations, submitters suggested that those with research or science expertise would be a better fit in leadership positions and that senior researchers should be encouraged into leadership and manager roles. However, others cautioned that not all senior researchers are best suited to leadership positions.

We need leaders in our research institutes that are high-calibre principal scientists, who are respected and trusted and can ensure the scarce R&D dollars are invested into the most appropriate capabilities to deliver against national economic, environmental, and societal goals. (Private enterprise or industry body)

Allocate 1/3 of the available board seats of CRIs to democratically elected science representatives (researchers working for a CRI, that are chosen by their fellow researchers), to help ensure that researchers have a better voice and vote in how CRIs are run and to give the other board members more direct insight into researchers' experiences and problems (Individual submitter)

A few submitters pointed to the NSC model, suggesting that much can be learned from the governance structures in place in NSCs, particularly around what does and does not work well.

Making decisions on property and capital investment

GREATER COORDINATION WOULD ALLOW FOR STREAMLINED INVESTMENT

Some submitters and Institutions Workshop participants generally agreed with the Green Paper suggestion that there is a need for a more coordinated approach to making decisions on property and capital investment. They noted that a more coordinated approach would lead to more streamlined investment.

Submitters suggested a range of ideas for how to approach coordinated property and capital investment decisions, including:

- establishing a centralised Infrastructure Council to determine priorities for infrastructure investment
- encourage joint ownership of major capital items, such as super computers
- undertaking a stocktake of property and capital across the entire RSI system to support prioritisation
- prioritising investment based on adaptability where possible, for example, research facilities that can adapt to changing needs
- aligning RSI infrastructure with wider Aotearoa New Zealand infrastructure via the Infrastructure Commission's pipeline of work
- including industry input into infrastructure decisions.

A few submitters indicated that greater levels of stable funding would support strategic capital investment. More detail on submitters views relating to research infrastructure is captured in **Section 6: Te hanganga rangahau Research infrastructure**.

SECTION 5

Te hunga mahi rangahau
Research workforce

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Research workforce

Chapter 5 of the Green Paper discussed how the research system can better support the development and retention of the research workforce and offer attractive and flexible careers and career pathways. The following questions were included in the Green Paper on the research workforce.

14. How should we include workforce considerations in the design of national research Priorities?

15. What impact would a base grant have on the research workforce?

16. How do we design new funding mechanisms that strongly focus on workforce outcomes?

The below sections capture the key themes that submitters and workshop participants discussed relating to the research workforce.

Equity, diversity, and inclusion

SOME GROUPS ARE UNDER-REPRESENTED IN THE RSI WORKFORCE, PARTICULARLY MĀORI

Echoing the issues raised in the Green Paper, some submitters pointed out that diversity and inclusivity are key components of an RSI system that is innovative and future-focussed; however, the current system has critical workforce gaps and under-representation of women, disabled people, LGBTQI+, and Pacific Peoples. This was particularly the case at senior levels of the RSI workforce, where women, Māori, and Pacific peoples were considered to be particularly under-represented.

> *The current science system is not inclusive and is not an attractive career option to women, Māori and Pasifika, and those from minorities (ethnic, cultural, people with disabilities, LGBTIQA+ community). (Sector body)*

> *The absence of Pacific researchers within the research system is an early warning that equitable outcomes for Pacific research and researchers are not being met within Aotearoa New Zealand, but it is also a sign that the system will be underserving other groups). (Tertiary education organisation).*

Māori in particular were identified by some submitters as being severely under-represented at all career stages in the RSI workforce, as well as in STEM disciplines throughout the education pipeline.

THE CURRENT SYSTEM IS NOT ACCOMMODATING OF THOSE WITH PERSONAL OR FAMILY COMMITMENTS

A few submitters and Workforce Workshop participants highlighted how the current system does not easily enable a good work life balance. This is especially true for those with young families, who choose to or can only work part-time, or have community, iwi and hapu responsibilities. These submitters noted that these circumstances tend to have a greater impact on Māori, Pacific Peoples, and women. Workforce Workshop participants also noted that employment contracts and funding grants are often inflexible, and it can be difficult to keep up with performance expectations which tend to be based on full-time work.

> *The pressure to perform is immense and clearly disadvantages people who aspire to have a family and/or a decent work-life balance, or who have substantial community engagement. Some women, Māori and Pasifika are disadvantaged by the current paradigm. This an equity issue. Redesign of research funding processes should include more flexible or holistic assessment of excellence and opportunities for researchers who take parental leave or have significant family and community responsibilities. (Tertiary education organisation)*

A few submitters suggested that the RSI system could attract more diversity and support the workforce by establishing whānau-centric values within the system and providing greater financial or other support mechanisms throughout study and early careers. This included raising PhD stipends to reflect living costs, extending the PhD stipend to cover four years, enabling parental leave for PhD candidates, and providing greater support to parents who return to work in the RSI system.

MĀORI EXPERIENCE ADDITIONAL WORKLOAD BURDENS THAT CARRY THE RISK OF BURNOUT

Many submitters and Workforce Workshop participants noted that workforce gaps coupled with a greater focus on mātauranga Māori approaches to research has meant that the small number of Māori researchers present in the workforce are often stretched, overloaded, or over-burdened beyond their core role. This was often described as Māori researchers experiencing a 'cultural double shift' with expectations to undertake core research work, as well as be a cultural expert within research programmes, despite not being renumerated to do so.

As Māori staff, we often find we are doing at least two jobs – the job we are employed to do as scientists and researchers and upholding our organisation's cultural capability. We get pulled in many directions, some beyond our core function, to provide necessary cultural support within our organisations that are not recognised or valued by the system. (Crown research institute)

Improved pastoral care of Kairangahau Māori is needed, too many demands leads to burnout, the double-shift can be draining. (Crown research institute)

MORE NEEDS TO BE DONE TO RECOGNISE MĀORI CONTRIBUTIONS AND CREATE CULTURALLY SAFE WORK ENVIRONMENTS

Submitters called for greater recognition of the unique skills and experiences Māori bring to the RSI system and suggested that those who provide cultural guidance and support should be fully resourced to do so.

A few Māori-led organisations and Workforce Workshop participants also suggested that greater mentorship opportunities, such as tuakana-teina relationships, mentorship networks, or an established Māori caucus group could provide better support for Māori and enable Māori to discuss and share advice on the challenges faced, and to support Māori to flourish in their career.

Some submitters suggested that the current RSI workforce requires upskilling in cultural competency and cultural safety of those who are tauiwi (non-Māori). However, one Māori-led organisation noted that Māori researchers should not be responsible for the cultural competency of their tauiwi colleagues. These submitters recommended that a formalised training programme or curriculum based on Te Tiriti o Waitangi (Te Tiriti) and mātauranga Māori should be required of all researchers in Aotearoa who receive public funding. This could contribute to culturally safe research organisations.

We recommend that training on Te Tiriti and cultural competency should be a required part of employment for all staff in organisations that receive public money across all science and research disciplines. (Sector body)

Submitters also emphasised the value of cultural competency training for the international workforce who move to or conduct research in Aotearoa as these groups do not have as much experience with the context of Aotearoa compared to the domestic research workforce.

PROACTIVE MEASURES ARE NECESSARY TO BUILD MĀORI CAPABILITY IN THE WORKFORCE

Submitters suggested that more proactive or targeted measures need to be put in place to develop Māori research workforce capability and encourage Māori to consider, enter, and remain in the RSI workforce. This included focusing efforts throughout schooling years to encourage interest in a science career. Senior Leaders Workshop participants echoed the need for Māori to be engaged in science at an early stage to encourage more Māori to enter a research career.

A range of recommendations were provided:

- A few submitters spoke favourably of the Pūhoro STEM academy, noting its relative success at developing Māori scientists and suggested this could be rolled out more widely.
- A few pointed to fellowships that could be used to build Māori representation, such as the FoRST fellowship, and utilising the selection criteria of the Science Whitianga fellowships.
- A few submitters indicated that base grant funding could be utilised to build Māori capability, such as through targeted funding for Māori researchers, and greater funding for existing wānanga.

Finally, we support the call for rangatahi-focussed initiatives to be supported so that more of our tamariki can see themselves as researchers, scientists, and innovators. We call for baseline funding for initiatives that have a proven track record and are supported and contribute to iwi and hapū aspirations. This includes our three whare wānanga, Te Wānanga o Raukawa, Te Wānanga o Aotearoa, and Te Whare Wānanga o Awanuiārangi; and initiatives such as Pūhoro, which now stands as an independent Māori driven initiative supporting tauira Māori within the secondary and tertiary education sectors. (Sector body)

Career precarity and stability

SHORT, FIXED-TERM CONTRACTS CAN DRIVE CAREER PRECARITY, WHICH HAS A NEGATIVE EFFECT ON PERSONAL LIVES

Career precarity was identified as a significant issue by submitters and Workforce Workshop participants. Some submitters, particularly individual researchers, spoke about how a reliance on short, fixed-term contracts has meant that researchers are subject to personal financial uncertainty as their income is unpredictable. They described how these short, fixed-term contracts necessitate a large amount of time spent on applying for highly competitive funding rounds to secure any form of

job stability and income security. This meant that the time and effort of researchers was often diverted to applying for funding rounds, instead of focusing on conducting research.

> *Our current system tends to undermine workforce security. Our people are uncertain about their futures, and whether the research they do will continue from one funding round to the next. (Crown research institute)*

> *Scientists are spending a huge amount of time applying for funding, competition for funds is so tight and expectations are so high that even small pools of funding require huge amounts of time and effort to apply for. (Individual submitter)*

A few submitters noted that Māori, Pacific Peoples, women, and those in the early stages of their career were more vulnerable and more likely to be over-represented in precarious employment situations.

A few submitters and Workforce Workshop participants described how income instability can have a negative impact on personal lives, such as taking a toll on mental health, and making it difficult to get a mortgage or plan for their personal future. Submitters and Workforce Workshop participants indicated that income uncertainty and low pay rates made it challenging to stay in the system without the financial means to support their career progression.

> *The current model provides an uneven degree of job security. While some workers in the sector have relatively secure work, others are subject to highly precarious working conditions that provide little certainty of ongoing employment. Precarity can affect all aspects of a worker's life, as it can impact on a worker's ability to plan for the future, obtain a mortgage or put down roots in their community. (Sector body)*

THERE ARE FEW OPPORTUNITIES FOR POSTDOCTORAL ROLES AND EARLY CAREER RESEARCH STAFF

Some submitters commented on a lack of opportunities and positions available for postdoctoral and early career research staff in Aotearoa New Zealand. They described how Aotearoa currently trains many more PhDs than there are positions available to support a career in academia. These limited positions are highly competitive, often driving young talent to low value jobs or overseas to progress their careers. Submitters noted that the disproportionate number of PhD students trained compared to positions available in Aotearoa greatly contributes to career precarity, which can have an impact on research outcomes through an unnecessary loss of talent.

> *Post-doctoral opportunities are severely limited in New Zealand. This means that the opportunities are highly competitive or that early career researchers need to compete for international opportunities – both are barriers to retaining a diverse workforce. (Crown research institute)*

> *An important component of a talent-based approach is the filtering of less talented participants during the postdoctoral phase. In our view, the problem right now is that extreme precarity is instead filtering participants based on their ability to tolerate precarity. Presumably this depends on gender, racial or socio-economic factors. (Private enterprise or industry body)*

A few submitters noted the value of moving overseas to further their research careers, however others were also concerned that the current system in Aotearoa does not provide comparable development opportunities. This can mean that career progression is limited for those who are unable or choose not to move overseas, for example due to strong cultural or family commitments.

A few submitters and Workforce Workshop participants indicated that the way overheads are currently calculated contributes to limited opportunities for postdoctoral and early career professionals. They noted that postdoctoral and early career research staff are disproportionately more expensive than PhD students due to being subject to overheads. This means that including postdoctoral or early career research staff is too expensive, and many institutions opt for cheaper labour through PhD students instead. This results in a significant career bottleneck for researchers following PhD training.

> *We need to invest more in our ECRs and to do this, institutions should not be charging crippling overheads that range from 115% to 135%. This makes employing ECRs near impossible on tight research budgets and creates a bottleneck where institutions use funding for PhD scholarships (generally no overheads) rather than postdoctoral positions - where do the PhD's that are trained go? (Research collaboration)*

It was suggested that the way overheads are charged should be amended as a way of making entry to a research career smoother for postdoctoral researchers. However, caution should be taken to not push the bottleneck up the career pathway chain, limiting opportunities for mid-career researchers.

A BASE GRANT COULD SUPPORT GREATER CAREER STABILITY AND WORKFORCE DEVELOPMENT

Many submitters agreed that introducing a base grant could lead to reduced precarity and improved long-term career stability. Much of submitters' discussion around base grants in relation to the research workforce were largely based on the assumption that a base grant would fund a proportion of research salaries. They described how a base grant could take

pressure off the continuous need for funding bids if base grants covered salary costs so that salaries are decoupled from research budgets.

> *The base grant idea would be good to stabilise long-term funding and improve career stability. (Tertiary education organisation)*

A few submitters and Workforce Workshop participants commented on how the existing short-term funding approach makes it difficult for research organisations to plan for, and invest in, workforce development. They noted that introducing a base grant that included some coverage of research salaries could support career stability through more permanent research positions. This could enable institutions to plan for long-term capability more effectively.

> *In a more stable funding environment the workforce can be adjusted as needed with little fear that valuable individuals will be lost due to the arbitrariness of the fund allocation system. (Individual submitter)*

A few submitters were hesitant regarding the impact a base grant could have on career stability. They suggested that the extent of any impact would depend on the size of the base grant, how the base grant is implemented, and whether there are protections in place to ensure the base grant goes towards researchers doing the research, rather than to inflated institutional administration.

> *Base grant funding may improve stability, but the detail of its implementation needs to be modelled (including the impact of reduced overheads) and widely consulted upon. (Research collaboration)*

Training and career pipeline

THE RESEARCH SYSTEM NEEDS TO BROADEN ITS DEFINITION OF EXCELLENCE, AND TRAIN THE WORKFORCE IN SKILLS THAT WILL SUPPORT A MODERN RSI SYSTEM

A few submitters noted that there is not always good alignment between the capability that research organisations and businesses are seeking and the skills that recent PhD graduates possess. This can result in organisations looking to overseas candidates instead, and Aotearoa-based postdoctoral and early career research staff struggling to secure a place for themselves in the RSI system.

> *Some fields are over-saturated with PhD students, without adequate job opportunities – or students are not made aware of the diverse pathways they could take post-PhD. Whilst other areas are sorely lacking in trained PhD students and we are forced to source employees from overseas. This suggests that we are not training our PhD students with the skills required to address CRI research priorities. This disconnect leads to some PhD students leaving research as they are not trained for the opportunities available, which is a loss of highly skilled workers (Group)*

A few submitters and Workforce Workshop participants pointed to the current definition of science excellence used to measure performance and drive career pathways in the system. As discussed in **Section 4: Ngā hinonga Institutions**, the current system values and heavily rewards academic outputs and research publications over other factors such as collaboration or industry research. Submitters noted that this can drive a greater focus on more narrow academic-based skills and career pathways.

Some submitters indicated that a modern and sustainable RSI workforce is one that considers and values a diverse range of skills. This might include skills that have not traditionally been considered necessary in the RSI system, but that are seen as valuable moving forward. This included:

- skills that foster collaboration such as communication, engagement and relationship building with research partners, industry, and local iwi and communities
- grant writing and project management skills, such as budget management
- cultural competency and knowledge of mātauranga Māori
- industry-relevant skills, such as IP development and commercialisation skills
- greater digital competencies.

> *The new science system needs to take a workforce model that encompasses the future needs. This includes reshaping how graduates are trained for a modern research environment. Training graduates at university require more diverse approaches, working on transferable skills rather than a single academic model. (Tertiary education organisation)*

> *Skill sets generated by learning pathways in tertiary organisations reflect deep disciplinary silos, with a focus on traditionally defined 'excellent science'. However, addressing complex problems today requires more adaptive professionals who can operate in multi-disciplinary contexts, have*

communication and engagement skills, and are equipped to work in cultural contexts. (Crown research institute)

DIVERSE CAREER PATHWAYS OUTSIDE OF THE TRADITIONAL ACADEMIC MODEL SHOULD BE EMPHASISED

Many submitters pointed out that the current traditional academic career pathway is not the only viable career pathway that should be focussed on. They described how many non-academic or alternative roles are critical to the success of the RSI system and that these pathways should also be emphasised among students interested in pursuing a science career. In particular, submitters and Workforce Workshop participants discussed having poor awareness of industry roles during study and lacked the necessary skills to move to an industry role later in their career. They discussed the need for alternative career pathways via industry and private sector research, and that these opportunities should be made clearer to researchers earlier in their career.

The research workforce also needs to be conceptualised far more broadly than it is at present. Whilst a PhD is usually a prerequisite for an academic role, academic roles are not the only career pathway for those with PhDs, nor should they be. (Tertiary education organisation)

Non-academic pathways into science are necessary for a more diverse science system. Practical skills and non-traditional science knowledge are often poorly valued in the science system. However, there is a need for these types of people to create an Aotearoa-representative RSI and to realise the full potential of the RSI system. (Individual submitter)

As part of facilitating diverse career pathways, submitters wanted to see a range of roles valued as part of the research workforce, such as technical roles and other roles that are not strictly academic. Submitters reported that currently there can be limited career progression opportunities available to technical roles without retraining into academic roles.

As discussed in **Section 4: Ngā hinonga Institutions**, greater mobility between research organisations via secondments and internships could support the development of skills needed in a modern RSI system and expose research staff to career opportunities across the wider system.

STABLE FUNDING AND OTHER MECHANISMS COULD SUPPORT CAPABILITY BUILDING AND THE ATTRACTION AND RETENTION OF TALENT IN AOTEAROA

While it was recognised that some competition can be good for career progression, submitters saw value in having long-term, stable funding to support ongoing capability building of the research workforce. Some submitters suggested that more funding could be targeted towards attracting and retaining diverse talent in the RSI workforce.

Long-term and stable science funding builds confidence. Greater confidence in the importance of science and research to New Zealand's future will ensure that scientists stay within the sector and encourage students to pursue science subjects. (Crown research institute)

Submitters specifically pointed to establishing funding mechanisms such as scholarships and fellowships to support attracting and retaining talent in the workforce. Submitters were generally in favour of increasing fellowship schemes or other means of ring-fencing funding to support career development. They suggested a range of fellowships that have shown success that could be examined further. These included:

- Science Whitianga Fellowship
- Technology in Industry Fellowship
- Rutherford Discovery Fellowship.

Senior Leaders Workshop participants also highlighted the need for more fellowships for early career research staff, but noted that a greater variety of fellowships need to be available, such as mission-led or industry-focussed fellowships.

Submitters recommended that postdoctoral and early career professionals should be a key focus for fellowships, and that dedicated scholarships and fellowships should be established or expanded to facilitate Māori and Pacific Peoples career progression.

I strongly endorse the concept of internships and fellowships, potentially supported by base grants, to provide early career researchers a secure and stable step into a science career. The post-doctoral fellowship scheme, formally funded by Foundation for Research Science and Technology, was the catalyst for my personal career (Individual submitter)

Although there was general support for increasing scholarships and fellowships, submitters also noted concern that these schemes tend to only cover certain career periods, such as early career. Introducing such schemes could result in shifting the burden of career precarity 'down the road', from early career research staff to mid-career research staff. A few submitters noted that mid-career research staff can also struggle with opportunities for career progression. They highlighted a need for dedicated funds or fellowships for researchers at all stages of their careers, not just for those in the early stages. However,

submitters noted that focusing on scholarships and fellowship schemes does not necessarily address the issue of a lack of long-term career development opportunities.

LEADERSHIP OPPORTUNITIES ARE ESSENTIAL FOR WORKFORCE DEVELOPMENT

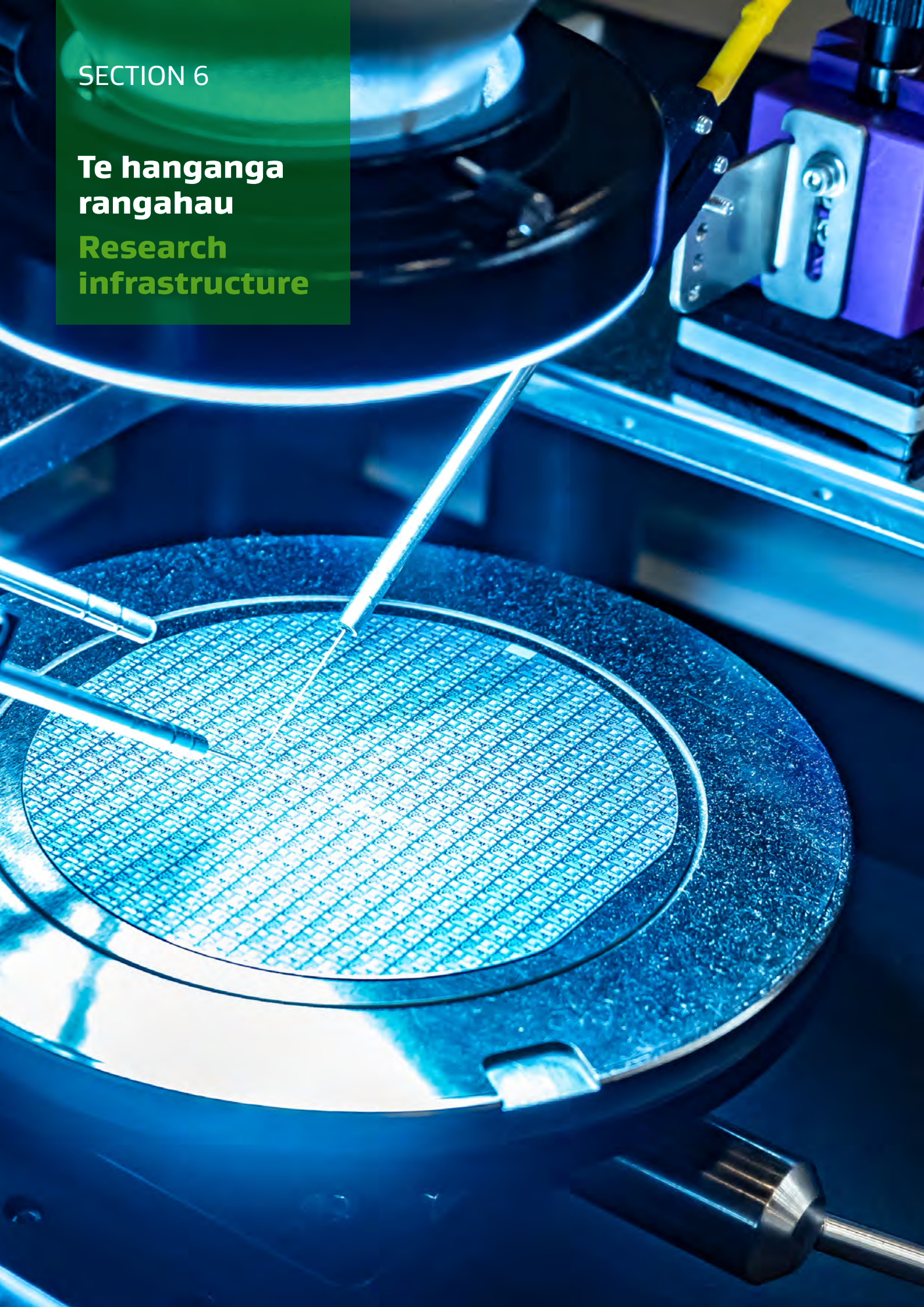
Some submitters described how opportunities to develop leadership skills are essential for the development of the research workforce. This was considered particularly important for early career and mid-career research staff as the current system greatly lacks opportunities for these groups to lead research. Mentorship was raised by submitters and Workforce Workshop participants as an effective avenue for developing future leaders, particularly for early and mid-career research staff, and Māori. However, it was also noted that senior or other experience researchers need to be encouraged, incentiviased, or otherwise enabled to provide such mentoring. Otherwise, this important role is not always prioritised.

A few Māori-led organisations emphasised the need for more opportunities for Māori to hold leadership positions throughout the RSI system. They stated that having Māori in leadership positions was essential for ensuring that Māori have oversight and influence over the research, systems, and processes throughout the RSI system. However, one Māori-led organisation cautioned that Māori should not be thrust into leadership too early in their careers, but instead should have the opportunity to be successful and have rangatiratanga over their career before taking up a leadership role.

> *Recruitment of Pūkenga Māori into strategic leadership positions is required such as pou ārahi, kaihautū, associate professors and professors throughout the RSI sector to provide Māori research leadership (Crown research institute)*

SECTION 6

Te hanganga rangahau
Research infrastructure



Section 6: Te hanganga rangahau
Research infrastructure

Chapter 6 of the Green Paper discussed future funding, governance, and ownership arrangements for national research infrastructure, and how we can maximise our infrastructure investments. The following question was included in the Green Paper on research infrastructure.

17. How do we support sustainable, efficient and enabling investment in research infrastructure?

The below sections capture the key themes that submitters and workshop participants discussed relating to Research Infrastructure.

Supporting infrastructure investment

INFRASTRUCTURE INVESTMENT SHOULD BE ALIGNED WITH NATIONAL PRIORITIES

Many submitters argued that once national research Priorities have been set, infrastructure investment should be aligned with said Priorities. Some submitters recommended adopting the approach taken in Australia through their National Research Infrastructure Roadmap, whereby national infrastructure requirements and needs are assessed based on a set of principles, including research priorities, and refreshed every five years to ensure continued relevance. A few submitters supported the establishment of a national body to undertake the allocation and funding processes.

> *Setting national priorities must include research infrastructure requirements, including datasets, archives and other forms of digital research infrastructure. Deciding where and how to invest should be the responsibility of the new research council based on the national research strategy. (Sector body)*

OPERATIONAL CAPABILITY SHOULD BE CONSIDERED ALONGSIDE PHYSICAL ASSETS

A large number of submitters urged the Government to take a wide view of what constitutes 'infrastructure' — in addition to capital equipment and expenditure, the inclusion of datasets was mentioned by many submitters and many others supported the inclusion of the technical staff and other operational support services required to effectively use and maintain such infrastructure. These submitters argued that including infrastructure workforce in any investment decisions would optimise the efficiency and effectiveness of infrastructure, and support increased access to it.

> *It is crucial that infrastructure and work force are not divorced, sometimes because complex equipment required highly skilled operators, but also because the development of that personnel capability is immensely valuable. (Research collaboration)*

STABLE FUNDING FOR INFRASTRUCTURE WOULD SUPPORT RESEARCH EXCELLENCE AND IMPROVE INTERNATIONAL LINKAGES

Some submitters maintained that implementing stable, inflation adjusted, long-term funding for infrastructure could help enable high research quality and improve impacts. Submitters spoke about this both in terms of a possible base grant that covers infrastructure or another form of stabilised funding. The need to increase the overall funding pool for infrastructure across the RSI system was discussed by submitters across the board.

Some submitters highlighted that without any dedicated fund for infrastructure investment, and therefore no centralised repository, there is limited available information regarding existing, under development, or required infrastructure. This can sometimes lead to duplication of investment and lost opportunities for collaboration. Government co-investment was seen by some Infrastructure Workshop participants as a tool for improving funding stability and a powerful incentive for coordinating infrastructure investments.

Some submitters supported a system that enhances international infrastructure connectivity through stabilised funding, or a system that increases international investment or co-investment in infrastructure. They argued that reliable funds or more opportunities for international funding would allow researchers greater access to international infrastructure and vice versa, and encourage greater engagement with international researchers.

> *The Government may also want to include investment in international collaborative ventures that can benefit Aotearoa New Zealand research goals in this category. Equally, international coinvestment in our national facilities may also help with cost effectiveness. (Crown research institute)*

I also feel that international cooperation is important if we wish to expand the reach of our research, which may also include agreements on the use of facilities overseas to establish better collaboration and access for our research community. (Individual submitter)

COMPETITIVE INSTITUTIONAL MODEL PERPETUATES INEQUALITIES AND LIMITS OPPORTUNITIES TO COLLABORATE

Competition between research institutions was discussed by some individual and sector body submitters as causing ineffective allocation of infrastructure resources and perpetuating inequalities across the RSI system. Infrastructure Workshop participants noted that competition between institutions currently reduces coordination on infrastructure and makes it difficult to consider RSI system Priorities and equity and access issues. They argued that centralising the approach to infrastructure investment gives Aotearoa New Zealand an opportunity to be more connected amongst our research institutes, organisations, universities, and individual researchers.

Shared resource model

SUPPORT FOR CENTRALISED INFRASTRUCTURE COORDINATION MODEL

Many submitters advocated for the creation of a centralised infrastructure coordination model where large items or kit would be added to a central pool that researchers can access, schedule, and use as appropriate for their work. While there was no consensus around what the threshold should be for this central pool of infrastructure, a few submitters suggested including items over $500,000. Submitters maintained that a national governance and kaitiaki structure that views large research infrastructure as national assets would not just be beneficial, but necessary for a country as small as Aotearoa New Zealand. Government was seen by various submitters to have a role in:

- determining governance planning and funding of infrastructure
- location and ownership of infrastructure
- establishing a register of centralised infrastructure
- facilitating access to international infrastructure.

Infrastructure Workshop participants discussed the establishment of a common platform or register, such as a website, to make shared infrastructure more visible. This could include a simple booking system that minimises transactions and removes dependency on individual connections and favours.

NATIONAL APPROACH WOULD ENCOURAGE COLLABORATION AND ACCESS

Submitters argued that designing a centralised system that encourages a greater degree of sharing infrastructure could also enable equitable access to infrastructure across regions and industries and more targeted allocation of investment funds, preventing any unnecessary duplication. While there was mixed support for complete open access to infrastructure: some submitters supported enhanced access for Māori researchers, industry, and IROs specifically, while a few others were against any form of privileged access altogether.

It is our observation that the lack of coordination around capital investments is leading to replication of expensive infrastructure that then does not get the critical mass of utilisation required to fund its operation. If there was greater sharing and managed access to infrastructure, including with industry, this would be far more beneficial in terms of return on investment. (Independent research organisation)

Other benefits of a national infrastructure coordination approach discussed by submitters included enhanced collaboration within and between research organisations; enabling multidisciplinary networks of excellence; improvement of research outcomes through increased access to infrastructure by larger pool of experts; optimising the use of infrastructure and enabling maintenance and long-term technical support; and helping to bring overhead costs down by centralising key facilities and resources where appropriate.

SHIFTING TO A CENTRALISED MODEL MIGHT SEE SOME PUSHBACK

Some submitters acknowledged the potential benefits of shared use and coordination of infrastructure in principle but pointed out that a move to a centrally organised system could add significant complexity to an already challenging environment. Specifically, a few submitters suggested that some individual researchers and research institutes would most likely be opposed to shifting hard-earned infrastructure into a central pool to support the system overall, unless access to research funding is challenging for them.

While efficiencies of scale can be achieved in the centralised model it is not always in the best interests of individual researchers to include 'their' laboratory, equipment, or hard-won research money in a central pool to support staff [...] The tensions that we experience at our institutional level will be echoed at a national level. (Tertiary education organisation)

A few submitters commented that any shift to a centralised model would need to ensure researchers and institutions still have the autonomy to invest in infrastructure that would drive their own research programmes, in order to avoid impeding commercialisation activities.

> *Institutions also need to retain a good level of autonomy to support their needs and can indeed make some funding decisions themselves. (Sector body)*

Nationally significant collections and databases

MAINTAINING COLLECTIONS AND DATABASES REQUIRES LONG-TERM FUNDING COMMITMENTS

Many submitters spoke about nationally significant collections and databases (NSCDs) as different from other types of infrastructure due to their need for preservation and long lifetimes. There was a general sense amongst submitters and Infrastructure Workshop participants that NSCDs have been neglected as their funding has not been adjusted to inflation over the years; long-term maintenance funding was a key theme across all submitter types.

Another issue associated with the low level of funding for NSCDs discussed by some submitters was regarding the important datasets and collections that are not currently covered or part of the NSCDs. More funding in this space would result in additional important and long-term data being included in the nationally significant category, adding value for researchers across the RSI system.

> *Stable, long-term funding has been largely beneficial for the designated Nationally Significant Collections and Databases, but the exponential data and technology growth means that management of important datasets in general is not well supported with the current limited funding model. Moreover, an absence of national leadership and coordination of existing disparate research data have led to a diverse – and therefore not fully interoperable – approaches how individual datasets are managed. (Research collaboration)*

NATIONAL STRATEGY WHICH UNITES COLLECTIONS AND DATABASES FOR FUTURE CAPACITY AND CAPABILITY PLANNING IS NEEDED

Some submitters highlighted that while extremely useful and valuable, NSCDs currently have no established national scope. Infrastructure Workshop participants discussed the need for a national strategy to articulate the importance of these assets — something that could be designed by a national governing organisation. Infrastructure Workshop participants and some submitters argued that such a strategy should include data management standards, governance boards with Māori representation, national guidance around Māori data sovereignty, and a common informatics system to facilitate access and discoverability of collections and databases.

> *The nationally significant collections are to be maintained, developed and made available to the nation; however, they have no clearly articulated national purpose beyond being 'significant' and labelled 'infrastructure'. (Individual submitter)*

A SYSTEM NEEDS TO BE DESIGNED TO FACILITATE ACCESSIBILITY AND DISCOVERABILITY OF COLLECTIONS AND DATABASES, GIVING EFFECT TO TE TIRITI O WAITANGI (TE TIRITI)

Some submitters argued that Aotearoa New Zealand needs a stable, easy to navigate, digital platform to access or find information about NSCDs to help drive science excellence. Submitters considered that funding and resourcing for the skills needed to set up such a system is holding the country back from fully utilising these resources. Some submitters strongly argued that collections held outside of CRIs should be included in such a database and the centralised infrastructure system.

> *Ensuring discoverability, accessibility, and interoperability of data is critical to ensure that central and local government investment in research and monitoring delivers best value and evidence to inform decision-making. (Government submitter)*

Data sovereignty and governance

LEADERSHIP SOUGHT FROM MĀORI FOR STEWARDSHIP OF DATA

Many submitters expressed an interest in keeping data and digital assets generated by, for, or about Māori protected while appropriately enabling access and utilisation for the present day and into the future. Submitters valued and advocated for leadership from Māori in this area, who value mātauranga Māori data and other types of data as taonga, to design an effective, efficient, and ethical RSI system that appropriately manages Māori data sovereignty issues and adheres to Te Tiriti obligations. Most submitters that spoke about Māori data sovereignty, including Senior Leaders Workshop participants, supported a Māori governance structure or entity to meet envisioned data sovereignty outcomes.

Māori data sovereignty needs to be designed by Māori and where Māori are kaitiaki of Mātauranga data. Ideally, cultural data would be managed appropriately, protected and shared in accordance with tikanga, the development of Māori data infrastructure and security systems that monitor quality Māori data collection, access and control. (Tertiary education organisation)

CURRENT RSI TRENDS RAISE DATA SOVEREIGNTY AND PRIVACY ISSUES

Some submitters highlighted that recent trends such as outsourcing data storage and discussions around centralising infrastructure raise serious data sovereignty issues for Māori. Senior Leaders Workshop participants discussed the pressures put on Māori by the international expectation that all data be available to the research community. One way to manage this is to encourage Māori to develop a national strategy or framework for the use of data and protection of mātauranga Māori (this was also discussed in **Section 2: Te Tiriti, mātauranga Māori me ngā wawata o te Māori Te Tiriti, mātauranga**). A few submitters suggested building Māori data sovereignty into the review and assessment processes across the RSI system to help achieve this goal. The findings from WAI262 could offer a starting point for designing mātauranga Māori and data sovereignty frameworks across the RSI system.

Māori interests in relation to data access and data sovereignty should be represented and incorporated in these activities. These should be maintained in a way that enables them to evolve through time as new research foci and technologies emerge. (Government submitter)

PRINCIPLES OF INDIGENOUS DATA SOVEREIGNTY NEED TO BE BUILT INTO RSI SYSTEM

While many agreed that Māori should be able to uphold sovereignty over their own data assets, a few others maintained that the principles of data sovereignty could also be beneficial if applied across the RSI system more broadly. Principles of indigenous data sovereignty such as Traditional Knowledge Labels, FAIR (findable, accessible, interoperable, reusable), and CARE (collective benefit, authority to control, responsibility, ethics), developed through Māori collaboration with the Global Indigenous Data Alliance, would ensure Aotearoa New Zealand remains in control of all our data, digital traces, and digital identities.

Ensure people remain in control of all their data and digital traces, and have their digital identity and assets protected, irrespective of where they use digital services, consistent with the principles of Māori data sovereignty. (Research collaboration)

MĀORI SHOULD HOLD THE PEN AND DESIGN DATA PROCESSES ACROSS THE SYSTEM

Some submitters recommended that any framework that embeds data sovereignty into the RSI system needs to be designed by Māori as kaitiaki of anything that contains, generates, or derives from mātauranga Māori. Submitters acknowledged that the design of ethical processes around data governance across the RSI system also need meaningful Māori involvement from the beginning, as Māori are best placed from having a deep understanding of the principles of data sovereignty.

Te ao Māori is extremely well positioned to embed Māori data sovereignty into RSI sector reform, and in ways that could be world-leading. (Sector body)

Ngā mahi ka whai ake Next steps

As mentioned in **Te Whakamāramatanga Introduction**, the Green Paper consultation was the first stage in a multi-year programme looking into Aotearoa New Zealand's RSI system. There is much more work to be done to shape what the future RSI system will look like.

All feedback provided through the consultation process has been read and is being considered carefully. All feedback is valuable and is being considered as part of the further work that still needs to be done. This does not mean that decisions will necessarily follow the majority of feedback received; decisions on the future RSI system will also be informed by other evidence, analysis and judgement. The Ministry now has a broad range of ideas, preferences, and experiences to draw from.

A summary of feedback will be provided to Ministers and Cabinet. Following the Green Paper consultation, Cabinet will determine the high-level direction of the *Te Ara Paerangi Future Pathways* programme and the options that will be considered further.

There will be future opportunities for those interested to engage in the ongoing process, and discuss and explore options in more detail.

Appendix 1: List of submitters

Submitter ID	Submitter Type	Name of Group or Organisation	Submission method
101	Individual		Email submission
102	Individual		Email submission
103	Individual		Email submission
104	Organisation	The BHU Future Farming Centre	Email submission
105	Individual		Email submission
106	Individual		Email submission
107	Individual		Email submission
108	Individual		Email submission
109	Individual		Email submission
110	Individual		Email submission
111	Organisation	Seafood Innovations Ltd	Email submission
112	Individual		Email submission
113	Individual		Email submission
114	Individual		Email submission
115	Individual		Email submission
116	Individual		Email submission
117	Individual		Email submission
118	Organisation	Science for Technological Innovation, National Science Challenge	Email submission
119	Individual		Email submission
120	Individual		Email submission
121	Organisation	Universities New Zealand - Te Pōkai Tara	Email submission
122	Individual		Email submission
123	Organisation	Heavy Engineering Research Association	Email submission
124	Organisation	Better Border Biosecurity (B3)	Email submission
125	Individual		Email submission
126	Group	Food System Integrity Team - AgResearch	Email submission
127	Organisation	Ravensdown Ltd	Email submission
128	Individual		Email submission
129	Individual		Email submission
130	Organisation	Seafood New Zealand	Email submission
131	Individual		Email submission
132	Individual		Email submission
133	Individual		Email submission
134	Individual		Email submission
135	Organisation	West Coast Regional Council	Email submission
136	Individual		Email submission
137	Organisation	Environment Canterbury Regional Council	Email submission
138	Individual		Email submission
139	Individual		Email submission
140	Individual		Email submission
141	Organisation	Tertiary Education Commission	Email submission
142	Organisation	Tertiary Education Action Group Aotearoa (TEAGA)	Email submission

143	Individual		Email submission
144	Organisation	Grasslanz Technology Ltd	Email submission
145-146[5]	Individual		Email submission
147	Individual		Email submission
148	Organisation	Software Innovation NZ	Email submission
149-150[6]	Organisation	New Zealand Product Accelerator	Email submission
151	Group	Department of Public Health, University of Otago	Email submission
152	Group	School of Linguistics and Applied Languages Studies, Victoria University Wellington	Email submission
153	Organisation	Insurance Council of New Zealand - Te Kāhui Inihua o Aotearoa	Email submission
154	Organisation	Gillies McIndoe Research Institute	Email submission
155	Organisation	New Zealand Synchrotron Group Ltd	Email submission
156	Group	Council of New Zealand University Librarians (CONZUL)	Email submission
157	Group	University of Auckland, Faculty of Medical and Health Sciences Postdoctoral Society	Email submission
158	Organisation	New Zealand Food Safety Science & Research Centre	Email submission
159	Group	Pan CRI Social Science Network	Email submission
160	Individual		Email submission
161	Group	Department of Anatomy, University of Otago	Email submission
162	Organisation	KiwiNet	Email submission
163	Group	Manaaki Taiao, Manaaki Whenua Landcare Research rōpū Māori	Email submission
164	Individual		Email submission
165	Individual		Email submission
166	Organisation	Bioprotection Aotearoa	Email submission
167	Group	University of Auckland, Faculty of Medical and Health Sciences Postgraduate Students' Association	Email submission
168	Group	Longitudinal Birth Control Studies	Email submission
169	Individual		Email submission
170	Individual		Email submission
171	Organisation	Bioresource Processing Alliance	Email submission
172	Group	Language in the Workplace team, Victoria University Wellington	Email submission
173	Organisation	NZ Food Composition Database	Email submission
174	Individual		Email submission
175	Group	College of Creative Arts Toi Rauwhārangi, Massey University	Email submission
176	Group	Emerging Innovators Fellows	Email submission
177	Group	Group of individuals	Email submission
178	Organisation	Genomics Aotearoa	Email submission
179	Organisation	University of Waikato	Email submission
180	Organisation	New Zealand Council of Christian Social Services (NZCCSS)	Email submission
181	Individual		Email submission
182	Organisation	Auckland UniServices	Email submission
183	Group	Department of Psychology, University of Otago, Early Career Researchers	Email submission
184	Individual		Email submission

[5] Two separate documents were received from this submitter as part of their overall submission. The documents were assigned separate ID numbers for coding purposes, however are only counted as being received from one submitter.
[6] The above situation also applies to this submitter.

185	Individual		Email submission
186	Individual		Email submission
187	Organisation	Otago Polytechnic	Email submission
188	Organisation	New Zealand G2G	Email submission
189	Organisation	New Zealand Conservation Authority	Email submission
190	Organisation	New Zealand Council of Deans of Education	Email submission
191	Group	School of Biomedical Sciences, University of Otago	Email submission
192	Organisation	Centre for Research, Evaluation & Social Assessment (CRESA)	Email submission
193	Individual		Email submission
194	Organisation	University of Otago	Email submission
195	Organisation	Nelson City Council	Email submission
196	Organisation	Plant & Food Research	Email submission
197	Organisation	University of Auckland	Email submission
198	Organisation	FoodHQ	Email submission
199	Group	University of Otago, Christchurch Research Committee	Email submission
200	Organisation	Our Land and Water National Science Challenge	Email submission
201	Organisation	Maurice Wilkins Centre, Centre of Research Excellence	Email submission
202	Individual		Email submission
203	Organisation	Whakauae Research Services Ltd	Email submission
204	Group	Faculty of Education and Social Work, University of Auckland	Email submission
205	Group	Rutherford Discovery Fellowship Awardees 2010-2013	Email submission
206	Individual		Email submission
207	Organisation	Ageing Well, National Science Challenge	Email submission
208	Organisation	Antarctica New Zealand	Email submission
209	Organisation	High Value Nutrition National Science Challenge	Email submission
210	Organisation	Manaaki Whenua Landcare Research	Email submission
211	Organisation	Te Taumata	Email submission
212	Group	Department of Biochemistry, University of Otago	Email submission
213	Organisation	Malaghan Institute	Email submission
214	Organisation	Federated Farmers of New Zealand	Email submission
215	Organisation	Ngā Hapā e Toru Trust	Email submission
216	Organisation	Institute of Environmental Science and Research (ESR)	Email submission
217	Organisation	Independent Research Association of New Zealand (IRANZ)	Email submission
218	Organisation	Building Better Homes Towns and Cities (BBHTC), National Science Challenge	Email submission
219	Organisation	Building Better Homes, Towns and Cities (BBHTC), National Science Challenge, Governance Group	Email submission
220	Organisation	National Energy Research Institute (NERI)	Email submission
221	Organisation	Venture Taranaki	Email submission
222	Organisation	WSP	Email submission
223	Individual		Email submission
224	Organisation	Oceanum	Email submission
225	Individual		Email submission
226	Organisation	New Zealand Council for Educational Research	Email submission
227	Group	Manaaki WhenuaLandcare Research, Early Career Researchers	Email submission
228	Group	Post-Doctoral Society, Victoria University of Wellington	Email submission
229	Organisation	Association for Women in the Sciences	Email submission

230	Individual		Email submission
232	Organisation	PGG Wrightson Seeds	Email submission
233	Group	Royal Society Te Apārangi Early Career Research Forum	Email submission
234	Organisation	Lincoln University	Email submission
235	Group	Data Science Group, Plant & Food Research	Email submission
236	Organisation	Callaghan Innovation	Email submission
237	Organisation	Coastal People: Southern Skies, Centre of Research Excellence	Email submission
238	Organisation	Precision Driven Health	Email submission
239	Individual		Email submission
240	Organisation	Marsden Fund Council	Email submission
241	Organisation	Skellerup Holdings Ltd	Email submission
242	Individual		Email submission
243	Group	National Early Career Researchers collective	Email submission
244	Organisation	Rauika Māngai	Email submission
245	Organisation	Te Korenga, early career Māori and Tagata o le Moana	Email submission
246	Individual		Email submission
247	Group	Rutherford Discovery Fellows working group	Email submission
248	Group	HRC Sir Charles Hercus Fellows	Email submission
249	Individual		Email submission
250	Individual		Email submission
251	Individual		Email submission
252	Individual		Email submission
253	Individual		Email submission
254	Organisation	New Zealand Association of Gerontology	Email submission
255	Group	Māori strategy, Partnerships and Enterprise group, Plant & Food Research	Email submission
256	Organisation	Marine Farming Association	Email submission
257	Individual		Email submission
258	Organisation	Christchurch NZ	Email submission
259	Group	Building New Zealand's Innovation Capacity (BNZIC)	Email submission
260	Individual		Email submission
261	Group	School of Food and Advanced Technology, Massey University	Email submission
262	Organisation	Advisory Committee of NZ ORCID Consortium	Email submission
263	Group	International PhD students and early career researchers collective	Email submission
264	Individual		Email submission
265	Group	Outputs Repositories and Archives,, Plant & Food Research	Email submission
266	Group	Science Leaders of Shellfish Aquaculture and Seafood Safety SSIF Platforms, Cawthron Institute	Email submission
267	Group	School of Food and Advanced Technology, Massey University, early and mid career researchers	Email submission
268	Organisation	Toha Foundry Ltd	Email submission
269	Organisation	Sociological Association of Aotearoa New Zealand (SAANZ)	Email submission
270	Group	Veracity Lab Victoria University of Wellington	Email submission
271	Organisation	Massey University	Email submission
272	Group	A collective of researchers from a Plant & Food Research site	Email submission
273	Individual		Email submission
274	Organisation	Department of Pathology, Dunedin School of Medicine, University of Otago	Email submission

275	Organisation	The National Institute of Water and Atmospheric Research (NIWA)	Email submission
276	Organisation	Weather Radar New Zealand Limited	Email submission
277	Organisation	Science New Zealand	Email submission
278	Organisation	Aotearoa Brain Project	Email submission
279	Organisation	Te Uru Kahika – Regional and Unitary Councils Aotearoa	Email submission
280	Group	Te Ara Pūtaiao	Email submission
281	Organisation	The Building Research Association of New Zealand (BRANZ)	Email submission
282	Organisation	Bioprotection Aotearoa, Centre of Research Excellence	Email submission
283	Individual		Email submission
284	Organisation	New Zealand Marine Sciences Society (NZMSS) - Te Hunga Mātai Moana ō Aotearoa	Email submission
285	Group	AgResearch Science Council	Email submission
286	Group	Centre of Neuroendocrinology, University of Otago	Email submission
287	Organisation	Antarctic Science Platform	Email submission
288	Group	Edgar Diabetes and Obesity Research Centre, University of Otago	Email submission
289	Organisation	Food Transitions 2050	Email submission
290	Organisation	Research Education Advanced Network New Zealand (REANNZ)	Email submission
291	Individual		Email submission
292	Organisation	The Institute of Geological and Nuclear Sciences Limited (GNS)	Email submission
293	Organisation	CRI Impact Planning and Evaluation Network (iPEN)	Email submission
294	Group	Department of Biochemistry, University of Otago, early and mid career researchers	Email submission
295	Individual		Email submission
296	Organisation	The Dodd-Walls Centre, Centre of Research Excellence	Email submission
297	Group	University Technology Transfer Offices collective	Email submission
298	Individual		Email submission
299	Organisation	Environment Southland	Email submission
300	Group	Academy of the Royal Society Te Apārangi	Email submission
301	Organisation	PlantTech Research Institute	Email submission
302	Organisation	Horticulture New Zealand	Email submission
303	Group	Division of Education, University of Waikato	Email submission
304	Organisation	MacDiarmid Institute, Centre of Research Excellence	Email submission
305	Organisation	AgriTech New Zealand	Email submission
306	Individual		Email submission
307	Organisation	Aquaculture New Zealand	Email submission
308	Individual		Email submission
309	Organisation	Waikato Regional Council	Email submission
310	Organisation	GeoDiscoveryNZ	Email submission
311	Organisation	Dunedin School of Medicine, University of Otago, postgraduate and early career researchers committee	Email submission
312	Organisation	Meat Industry Association	Email submission
313	Organisation	Robinson Research Institute, Victoria University Wellington	Email submission
314	Organisation	Food and Fibre Sector	Email submission
315	Organisation	Riddet Institute, Centre of Research Excellence	Email submission
316	Group	Centre for Sustainability, University of Otago	Email submission
317	Group	Joint CRI Early and Mid-Career Researchers Forum	Email submission

318	Organisation	Malaghan Institute, early career researchers	Email submission
319	Organisation	ExportNZ	Email submission
320	Organisation	Lincoln Agritech	Email submission
321	Organisation	Margot Forde Forage Germplasm Centre	Email submission
322	Organisation	Bank of New Zealand (BNZ)	Email submission
323	Organisation	New Zealand Institute for Minerals to Materials Research (IMMR)	Email submission
324	Group	Te Wāhanga Pūtaiao- Faculty of Science, Victoria University of Wellington	Email submission
325	Individual		Email submission
326	Organisation	Auckland University of Technology (AUT)	Email submission
327	Group	Ngā Kaimahi Māori o AUT	Email submission
328	Organisation	Victoria University of Wellington (VUW)	Email submission
329	Group	A collective of eResearchers	Email submission
330	Group	Division of Health Sciences, University of Otago	Email submission
331	Organisation	Auckland Unlimited	Email submission
332	Organisation	Te Pūkenga - New Zealand Institute of Skills and Technology	Email submission
333	Organisation	Investment Insights Team, AgResearch	Email submission
334	Organisation	New Zealanders for Health Research (NZHR)	Email submission
335	Organisation	Taumata Aronui	Email submission
336	Organisation	The Deep South, National Science Challenge	Email submission
337	Group	Vision Mātauranga Engagement Team, Deep South National Science Challenge	Email submission
338	Organisation	Ngāti Rangiwewehi	Email submission
339	Organisation	Resilience to Nature, National Science Challenge	Email submission
340	Organisation	Species Aotearoa	Email submission
341[7]	Organisation	University of Canterbury	Email submission
342	Organisation	Auckland War Memorial Museum	Email submission
343	Organisation	Sustainable Seas, National Science Challenge	Email submission
344	Organisation	BioTech New Zealand	Email submission
345	Group	Te Ao Māori Research Group, Scion	Email submission
346	Organisation	The Health Research Council of New Zealand (HRC)	Email submission
347	Group	The Māori Health Committee (MHC) of the HRC	Email submission
348	Group	AgResearch Early Career Group	Email submission
349	Organisation	Scion	Email submission
350	Organisation	OnionsNZ	Email submission
351	Individual		Email submission
352	Individual		Email submission
353	Organisation	Te Hautū Tertiary Education Union (TEU)	Email submission
354	Individual		Email submission
355	Organisation	Ministry for the Environment (MfE)	Email submission
356	Organisation	Wood Processors & Manufacturers Association	Email submission
357	Organisation	Healthier Lives – He Oranga Hauora, National Science Challenge	Email submission
358	Individual		Email submission
359	Organisation	Wellington UniVentures	Email submission

[7] An online submission was also submitted by this submitter as part of their overall submission. The documents were assigned separate ID numbers for coding purposes, however are only counted as being received from one submitter.

360	Organisation	Dairy NZ	Email submission
361	Group	A group of Research Software Engineers	Email submission
362	Individual		Email submission
363	Organisation	Indigenous Genomics Institute	Email submission
364	Organisation	AgResearch	Email submission
365	Organisation	AgResearch - Workforce	Email submission
366	Organisation	AgResearch - International	Email submission
367	Organisation	New Zealand Apples & Pears	Email submission
368	Organisation	Wakatū Inc	Email submission
370	Organisation	Otago Museum	Email submission
371	Group	Manaaki Whenua Landcare Research Technicians	Email submission
372	Individual		Email submission
373	Individual		Email submission
374	Organisation	Natural Health Products	Email submission
375	Organisation	Elshire Group Limited	Email submission
376	Individual		Email submission
377	Organisation	Public Service Association (PSA)	Email submission
378	Individual		Email submission
379	Organisation	Physicians and Scientists for Global Responsibility	Email submission
380	Group	Ngāi Tahu Centre, University of Canterbury	Email submission
381	Organisation	Bioenergy Association	Email submission
382-392[8]	Group	Group of researchers	Email submission
393	Organisation	Cawthron Institute	Email submission
394	Individual		Email submission
395	Group	University of Canterbury, Early Career Researchers	Email submission
396	Organisation	Nelson Regional Development Agency	Email submission
397	Group	Manaaki Whenua Landcare Research - Support Staff	Email submission
398	Individual		Email submission
399	Group	Computational Media Innovation Centre, Victoria University of Wellington	Email submission
400	Organisation	Forest Owners Association	Email submission
401	Organisation	NZ Anti-Vivisection Society	Email submission
402	Organisation	Te Pūnaha Matatini, Centre of Research Excellence	Email submission
403	Organisation	Deepwater Group	Email submission
404	Group	National Environmental Data Centre	Email submission
405	Individual		Email submission
406	Individual		Email submission
407	Organisation	Bragato Research Institute	Email submission
408	Individual		Email submission
409	Organisation	Predator Free NZ	Email submission
410	Organisation	Takarangi Research Ltd	Email submission
411	Organisation	Cure Kids	Email submission
412	Individual		Email submission
413	Organisation	Fonterra	Email submission

[8] Eleven separate documents were received from this group of researchers as part of their overall submission. The documents were assigned separate ID numbers for coding purposes, however are only counted as being received from one group.

414	Organisation	Parliamentary Commissioner for the Environment	Email submission
415	Individual		Email submission
416	Organisation	NZ Biological Heritage	Email submission
417	Group	Data in Research Group	Email submission
418	Group	Otago Innovation	Email submission
419	Organisation	National eScience Infrastructure (NeSI)	Email submission
420	Group	Komiti Pasifika - Universities New Zealand	Email submission
421	Organisation	NZ Institute of Agricultural and Horticultural Sciences	Email submission
422	Organisation	Amazon Web Services	Email submission
423	Individual		Email submission
424	Group	Toihuarewa, Victoria University Wellington rōpū Māori	Email submission
425	Organisation	NZ Association of Scientists	Email submission
426	Individual		Email submission
427	Organisation	MetService	Email submission
428	Group	College of Science, Massey University	Email submission
429	Individual		Email submission
430	Individual		Email submission
431	Organisation	Ngāti Whātua Ōrākei Trust	Email submission
432	Group	Māori Business Research and Development Team, Cawthron Institute	Email submission
433	Individual		Email submission
434	Organisation	Te Pūtahitanga, Māori scientists and researchers collective	Email submission
435	Individual		Email submission
436	Individual		Email submission
437	Organisation	Te Tira Whakamātaki	Email submission
438	Organisation	Te Kāhui Amokura, a sub-committee of Te Pōkai Tara New Zealand Vice Chancellors Committee	Email submission
439	Individual		Email submission
440	Organisation	Artificial Intelligence Researchers Association	Email submission
442	Organisation	Mātai Medical Research Institute	Email submission
443	Organisation	Tāne Mahuta NZ Limited	Email submission
444	Organisation	A Better Start, National Science Challenge	Email submission
445	Organisation	New Zealand Geothermal Association	Email submission
446	Organisation	Earthquake Commission	Email submission
447	Organisation	Federation of Māori Authorities Incorporation	Email submission
448	Group	Ferrier Research Institute, Victoria University Wellington	Email submission
449	Group	Nationally Significant Biological Collections and Databases collective	Email submission
450	Organisation	Te Apārangi Royal Society	Email submission
451	Organisation	Economic Development New Zealand	Email submission
452	Organisation	New Zealand Police	Email submission
453	Organisation	New Zealand Bankers Association	Email submission
454	Organisation	Te Hunga Rōia Māori o Aotearoa - the Māori Law Society	Email submission
455	Organisation	National Library	Email submission
456	Individual		Email submission
457	Organisation	Irrigation New Zealand	Email submission
458	Organisation	McGuiness Institute	Email submission
459	Organisation	Ministry of Primary Industries (MPI)	Email submission

462	Individual		Email submission
463	Group	Cawthron Institute, early career researchers	Email submission
464	Group	Kahui Māori of the Science for Technological Innovation, National Science Challenge	Email submission
13089448063	Individual		Online submission
13089464276	Individual		Online submission
13089604482	Individual		Online submission
13089694138	Individual		Online submission
13107398891	Individual		Online submission
13126302254	Individual		Online submission
13144555904	Individual		Online submission
13222125623	Individual		Online submission
13250639480	Individual		Online submission
13266719918	Individual		Online submission
13274474696	Individual		Online submission
13278409447	Individual		Online submission
13279462545	Individual		Online submission
13279664332	Individual		Online submission
13284305059	Individual		Online submission
13296307868	Individual		Online submission
13298328996	Individual		Online submission
13298617952	Individual		Online submission
13298952210	Individual		Online submission
13304229896	Individual		Online submission
13310676876	Individual		Online submission
13328330318	Individual		Online submission
13339942709	Individual		Online submission
13340251109	Individual		Online submission
13345667227	Individual		Online submission
13348187310	Individual		Online submission
13353292934	Individual		Online submission
13353499061	Individual		Online submission
13356085192	Individual		Online submission
13356130109	Individual		Online submission
13366914187	Individual		Online submission
13367322087	Individual		Online submission
13368966267	Individual		Online submission
13369782564	Individual		Online submission
13377025060	Individual		Online submission
13377478591	Organisation	Aimer Development	Online submission
13377791109	Individual		Online submission
13380683664	Individual		Online submission
13383033715	Organisation	Predator Free 2050 Limited	Online submission
13383224184	Individual		Online submission
13386345274	Individual		Online submission
13386543315	Individual		Online submission
13386577461	Individual		Online submission

13386952404	Organisation	The Soil & Health Association of New Zealand Inc	Online submission
13389224895	Individual		Online submission
13389624470	Organisation	Bay of Plenty Regional Development Organisation	Online submission
13389727737	Individual		Online submission
13389762018	Organisation	Blue Cradle Foundation	Online submission
13389770879	Individual		Online submission
13389981233	Individual		Online submission
13393628946	Individual		Online submission
13393683243	Individual		Online submission
13393740882	Individual		Online submission
13394489406	Individual		Online submission
13394500867	Individual		Online submission
13394603274	Individual		Online submission
13394661028	Individual		Online submission
13394756428	Individual		Online submission
13394842973	Organisation	Terra Moana Ltd	Online submission
13394884606	Individual		Online submission
13394891285	Individual		Online submission
13394898420	Individual		Online submission
13395001638	Organisation	Otago Museum	Online submission
13396748944	Individual		Online submission
13396775698	Group	School of Biomedical Sciences, University of Otago	Online submission
13396840352	Individual		Online submission
13396950165	Individual		Online submission
13397000201	Individual		Online submission
13397053653	Individual		Online submission
13397228606	Individual		Online submission
13397314137	Individual		Online submission
13397430214	Individual		Online submission
13397432767	Organisation	High-Value Nutrition, National Science Challenge	Online submission
13397756101	Individual		Online submission
13398018718	Individual		Online submission
13399393594	Organisation	NZ Leather & Shoe Research Association (LASRA)	Online submission
13399546481	Organisation	Precision Driven Health	Online submission
13399548540	Individual		Online submission
13399602674	Individual		Online submission
13399666179	Individual		Online submission
13399676538	Individual		Online submission
13399751795	Organisation	Te Titoki Mataroa MedTech Research Translator Future Leaders Module	Online submission
13399807865	Individual		Online submission
13399924764	Individual		Online submission
13400004333	Individual		Online submission
13400219090	Individual		Online submission
13400392312	Individual		Online submission
13400399702	Individual		Online submission
13400424881	Individual		Online submission

13400425960	Individual		Online submission
13400451998	Individual		Online submission
13400461291	Individual		Online submission
13400556721	Organisation	Cure Kids	Online submission
13400559497	Individual		Online submission
13400767918	Individual		Online submission

Appendix 2: Consultation sessions

As mentioned in **Te Tikanga o te Mahi Methodology**, the Ministry hosted 12 virtual 'starting the conversation' sessions, and a further 15 'problem-focussed' virtual consultation sessions as part of the *Te Ara Paerangi Future* Pathways consultation. This included sessions on each of the topics in the Green Paper, plus separate sessions with RSI Senior Leaders and Early Career Research Staff. Table 3 below outlines the schedule of all consultation sessions held.

Table 3: Consultation session schedule

Consultation session (workshop) theme	Consultation session (workshop) dates	
Phase 1 - Starting the conversation sessions		
Funding	1	Tuesday 30 November 2021
Māori Aspirations	2	Wednesday 1 December 2021
	3	Monday 6 December 2021
Research Workforce	4	Friday 3 December 2021
	5	Monday 13 December 2021
Stakeholders	6	Tuesday 7 December 2021
Institutions (including knowledge exchange)	7	Friday 10 December 2021
Infrastructure	8	Monday 6 December 2021
	9	Monday 13 December 2021
Research Priorities	10	Wednesday 1 December 2021
Early Career Researchers	11	Tuesday 30 November 2021
	12	Tuesday 7 December 2021
Phase 2 - Problem-focussed sessions		
Māori Aspirations	1	Friday 4 March 2022
	2	Wednesday 9 March 2022
Research Priorities	3	Thursday 24 February 2022
	4	Monday 28 February 2022
Funding	5	Monday 7 March 2022
	6	Thursday 10 March 2022
Institutions (including knowledge exchange)	7	Thursday 3 March 2022
	8	Wednesday 9 March 2022
Research Workforce	9	Tuesday 1 March 2022
	10	Tuesday 8 March 2022
Early Career Research Staff Workshop	11	Tuesday 8 March 2022
Infrastructure	12	Wednesday 2 March 2022
	13	Thursday 10 March 2022
Senior Leaders Workshops	14	Wednesday 2 March 2022
	15	Thursday 3 March 2022