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This submission is made in response to the invitation expressed in Te Ara Paerangi - Future Pathways Green Paper on the future of New Zealand's Research, Science and Innovation system.

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Research Priorities

Key Questions:

1. *What principles could be used to determine the scope and focus of national research Priorities?*
 - National benefit: this is necessarily a broad principle, but the essential criterion should be that the research serves a purpose that has an explicit public element or positive externality, rather than serving as a subsidy for private gain.
 - Core research priorities should reflect broad-based societal aims and concerns. This is necessary in order to sustain coherent research programmes and institutions that are resilient to changes of government and can thus operate sustainably, with long-term horizons. This principle is essential if the problems of fragmentation, excessive competition, short-term, project-based funding and burdensome governance requirements are to be reduced.
 - Scientific merit: originality of contribution to knowledge; rigour of research design.
 - Feasibility: likelihood of research achieving its aims; record and qualifications of the research team.
2. *What principles should guide a national research Priority-setting process and how can the process best give effect to Te Tiriti?*
 - The process should be guided by the principles of contestability, transparency and public accountability.
 - The process for setting and revising national research priorities should be non-political, to the extent this is consistent with democratic responsiveness. The policy aims and programmes of successive governments may of course include research funding priorities, but the system should include mechanisms for independent and non-partisan analysis of priorities and initiatives.
 - The process should not aim to 'give effect to Te Tiriti'. If applied as an over-arching principle, this would politicise the research funding system and compromise the scientific integrity of publicly-funded research. The conflicts between a Te Tiriti-led research funding system and one that meets universal standards for the pursuit of knowledge are elaborated below.
3. *How should the strategy for each national research Priority be set and how do we operationalise them?*

On Page 20-21, the Green Paper sets out some generic features of high performing research and science-funding systems in other countries. The Green Paper does not give a systematic assessment of the ways in which our current system does or does not resemble such systems, or match proposals for future reform to these models, amended as appropriate for New Zealand's circumstances. Such an

evidence-based assessment should be the starting point for thinking about institutional and strategy reform. I urge MBIE to undertake such an assessment using its own resources. While the views of participants and stakeholders are important, they are inherently partial and reflect the particular perspectives and interests of different players. The purpose of a national public service organization is to provide a more encompassing assessment of these pluralistic perspectives.

The current Green Paper refers to reports that the current NZ system suffers from:

- Excessive fragmentation
- Unproductive competition among research teams and institutions
- Too many competing strategies and priorities
- Over-reliance on short-term, project-based funding
- Weak connectivity
- Weak responsiveness to Māori
- A proliferation of governance

One additional problem that recipients of research, science and innovation funding frequently report is the burden of paperwork required, even for small funding amounts. The inefficiency and distorted incentives that cumbersome application and monitoring systems create should be recognized in the design of a future system.

A national system for setting research priorities and operationalizing them needs to take into account both the strengths and weaknesses of the current system. It is therefore important for future development of a White Paper that MBIE provide a more specified description and analysis of these problems.

Te Tiriti, Mātauranga Māori and Māori aspirations

Key Questions:

4. *How would you like to be engaged?*
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?*

These questions are subsidiary to the overriding issue presented in Chapter 2 of the Future Pathways Green Paper. The Green Paper assumes that New Zealand's national research, science and innovation funding system should seek to embed a Te Tiriti-led approach to the strategy, processes and research objectives of publicly-funded research. Yet the Paper does not provide any compelling, evidence-based analysis for why this is necessary in order to achieve its stated broad goal, which is described as **'to create a modern, future-focused research system for New Zealand. It needs to be adaptable for a rapidly changing future, resilient to changes, and connected: to itself, to industry, to public sector users of research, and internationally.'**

Chapter 2 describes some specific problems with respect to the **engagement of Māori researchers and the benefits accruing to Māori** from publicly-funded research. To the extent we have data that demonstrates the under-representation of Māori in science and research, or a lack of research that is conducted for the benefit of Māori (the Green Paper p. 25 identifies a lack of data on both of these

points), it is important to develop strategies and systems that can address both potential deficiencies. The first step should be to gather more systematic data on both the current situation and trends over time. In the case of **under-representation of Māori in the research workforce, it is essential to have accurate data on graduates from secondary and first degree tertiary science programmes.**

The strategies and systems that will best develop Māori engagement and ensure that a proportionate share of publicly-funded research is directed to the benefit of Māori need to be evidence-based. There is already research-informed evidence that exists with regard to taking a kaupapa Māori approach in education and other settings. Findings on these matters are, like all social science, inherently contestable and should be open to future revision as new evidence is gathered. At present, on the basis of the material cited in the Green Paper, there seems to be no evidence or even clear argument as to why embedding a Te Tiriti-led approach across the national research funding system would serve the goals of promoting Māori participation in the science and research workforce or benefit to Māori. We should not seek to change the foundations of the entire research and science funding system without clear evidence that the changes are likely to advance the goals of reform.

Largely, the Green Paper treats a **Te Tiriti-led research system as a goal in itself.** Although there remains a lack of specificity in what exactly a Te Tiriti-led research, science and innovation system entails, some elements are reasonably clear. They invite an assessment of the conflicts between the goal of a Te Tiriti-led research system and one that meets the other declared objectives for New Zealand's publicly-funded research: to advance knowledge that serves to increase national prosperity and well-being.

Conflicts between mātauranga Māori and universalist, scientific knowledge

One conflict arises from **the way mātauranga Māori is placed within the public research, science and innovation system.** The Green Paper makes the claim that: 'Enabling mātauranga Māori in our research system gives effect to the obligations and opportunities embodied in Article 3 of Te Tiriti.' Leaving aside the contentious nature of this interpretation of Article 3, and the question of whether it does or should create obligations in the present day, this and other claims in the Green Paper suggest that the protection and advancement of mātauranga Māori is a core component of a Te Tiriti-led research system at the whole-of-system level.

This is very different from directing resources to the advancement and protection of mātauranga Māori as a distinct research priority. Rather, it appears from the Green Paper that the goal is to embed mātauranga Māori at the system level, in the design and operation of the entire research, science and innovation system. This calls for a fundamental change to the ways our public system will understand and promote knowledge, because mātauranga Māori differs in important ways from science. As a system of cultural knowledge that encompasses the cultural, spiritual and ethical realms, in addition to practical and scientific knowledge, mātauranga Māori is 'more than' science. As described by several researchers who value mātauranga Māori, it carries the potential to inspire research from under-explored perspectives, to develop insights from traditional forms of knowledge, and to provide a source of meaning and direction. Sources of inspiration, insight and value that motivate or otherwise enhance research are many and varied across and within different cultural contexts. However, **proponents of enabling and protecting mātauranga Māori cited in the Green Paper make it clear that, as a system of knowledge, its processes and standards for generating and evaluating knowledge differ from those of science and the broader, universalist knowledge that underpins our current system.**

The differences between the two systems of knowledge create direct conflicts between them. **Secular, universalist knowledge has as its foundational norm the principle that all knowledge is contestable on the basis of reason and evidence.** This means that secular knowledge cannot have sacred status. Systems for advancing such knowledge cannot seek to protect particular knowledge or truth-claims from critical scrutiny.

Secular, scientific knowledge is universalist in the sense that it is open to all - regardless of ethnic or cultural background - to acquire the expertise necessary for engagement. Questions of moral value, including the moral character of the researcher, are separate from questions about the truth or probability attached to particular claims to knowledge.

These and other requisites of what has been called the ‘constitution of knowledge’ make up a culture of science: institutions, principles and commitments that allow for the pursuit of secular knowledge.¹ *Te Pūtahitanga: A Tiriti-led Science-Policy Approach for Aotearoa New Zealand*, cited in the Green Paper, notes that the universalist claims of scientific knowledge contain ‘cultural’ and normative content. This is true. To regard secular or scientific knowledge as valuable does reflect a value judgement about the advantages conferred by such knowledge. Even it may – like all tools – serve malign purposes, the normative judgement is that knowledge is preferable to ignorance. To prefer evidential tests over alternative methods of settling disputes over the validity of particular knowledge claims similarly reflects a value judgement.

Within this paradigm, plenty of criticisms can and have been made of our national system of research, science and innovation funding – and the practice of science in other contexts. That includes criticisms that the research system fails to meet objectives with regard to outcomes for Māori, as well as other demographic groups. The conflict between universalist, secular knowledge (and the systems that promote it) and mātauranga Māori is of a different order. **The principle that all knowledge is contestable, a commitment to evidential tests, and universalist standards of knowledge are not reconcilable with a commitment to honouring claims to knowledge on the basis of ascriptive status, faith or cultural tradition.**

Conflicts between Te Tiriti-led research and universalist knowledge systems

Embedding Te Tiriti across the research, science and innovation system is inconsistent with a research system that is oriented to the pursuit of scientific and universalist knowledge. Whatever it might mean in practice (and interpretations of Te Tiriti, its principles, and obligations arising from it remain in flux), a system that seeks to embed a commitment to Te Tiriti in its principles, priorities and mechanisms is one that **will place significant limitations on research. It will place some questions and hypotheses outside of the boundaries of acceptability, it will reject some research findings regardless of scientific merit, and it risks embedding significant conflicts of interest** that jeopardise the independence and integrity of scientific and other research. To elaborate briefly in each case:

- Embedding Te Tiriti across the research funding system is likely to impede research that investigates the effects of honouring obligations arising from Te Tiriti (however construed), whether in a particular policy area or as a general principle. How many aspiring researchers or

¹ Jonathan Rauch, [The Constitution of Knowledge: A Defense of Truth](#), Brookings Institution Press, 2021.

research leaders will find it in their interest to propose or undertake research that calls into question a fundamental commitment espoused by the funding system?

- A Te Tiriti-led research, science and innovation system is also likely to be hostile to findings that could be interpreted as unsupportive of any current interpretation of Te Tiriti or mātauranga Māori. Given the indeterminate and continually evolving nature of these interpretations – and the clear ascriptive basis as to who may legitimately offer an interpretation – the risks for individual researchers and their institutions are clear.
- A Te Tiriti-led research system risks exacerbating conflicts of interest and compromising research integrity. The risk that collaborators and stakeholders will influence the research process is never completely avoidable. In some cases it is a legitimate research requirement, for research that seeks to meet the needs of particular stakeholders. Such collaborations carry the risk that researchers may avoid legitimate questions, or suppress or distort findings, in order to ensure access to funding, research sites or other future opportunities. Because these risks are well-known, responsible research systems seek to guard against them, through mechanisms such as public funding and guarantees of academic freedom to protect the independence of research. The fact that these safeguards sometimes fail does not make them any less important. To design a system in which all research must be responsive to the concerns of a particular set of stakeholders is to create a system-wide vulnerability.

Public legitimacy and support for science

A resilient research funding system in a democratic polity is one that enjoys broad-based societal support. The pursuit of long-term objectives and access to stable sources of funding depend on the public legitimacy of the system for setting research priorities and managing funding.

The current Green Paper's commitment to a Te Tiriti-led research funding system seeks to introduce politically and ideologically-charged change of enormous magnitude without adequate democratic scrutiny or societal consent. Embedding Te Tiriti into the research funding system is not a matter of technical adjustment on the basis of specialist expertise in order to serve established social goals. As noted by one of the authors of *Te Pūtahitanga: A Tiriti-led Science-Policy Approach for Aotearoa New Zealand* (which the Green Paper draws heavily on), a Te Tiriti-led public sector implies fundamental change to our system of law and governance. Take, for example, the claim that: 'The Waitangi Tribunal has described much of New Zealand's law as still in breach of te Tiriti principles.'² If the aim is to close a gap between Treaty principles and our current body of law, the process must be subject to the normal democratic political process. The magnitude of change envisaged by those proposing a Te Tiriti-led science system goes beyond the revision of specific laws. It incorporates the clear aim of limiting our central constitutional principle: that parliament is sovereign. Transposed to the design of our research and science funding system, this goal would similarly tie the hands of those making decisions within it. Whether or not the Treaty (or its principles) should be given constitutional status is obviously a critical question, but one that lies far outside the remit of this consultation. For the time being, we are still subject to the norms and procedures of a democracy in which parliament is sovereign. Our systems for

² Jacinta Ruru and Jacobi Kohu-Morris, 'Why te Tiriti should place a limit on the supremacy of parliament.' 2 February 2021, <https://thespinoff.co.nz/atea-otago/02-02-2021/why-te-tiriti-should-place-a-limit-on-the-supremacy-of-parliament>

directing taxpayer resources to science and other research should not be based on an assumption that revolutionary change to our constitution will take place or has somehow already taken place.

Funding

Key Questions:

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

Core research functions should be established on the basis of national need as determined through a process that ensures all major political parties will support such functions. This is a pragmatic necessity to assure some continuity of funding across changes of government.

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?*

In principle, this is a sound idea, given the problems arising from a high degree of reliance on project funding and other features of the current system. Continuity of funding, however, will raise demands on systems for ensuring performance. Designing these in a way that avoids burdensome micro-monitoring but retains accountability will require a capacity for assessment that is structurally independent of the research funding system.

Institutions

Key Questions:

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, skills 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?*

These questions of institutional design and operation are subsidiary to those relating to the fundamental purpose and principles of the research funding system.

Although there is certainly scope to improve the current system, there are inherent costs and risks to wholesale system redesign. Given that not everything is broken, there is a strong case for incremental change.

It is also not necessary to reinvent the wheel – there are good models to adapt from high performance research, science and innovation systems elsewhere in the OECD as well as in other high-performing systems such as those of Taiwan and Singapore.

Some of the key institutional deficiencies identified in the Green Paper include:

- The governance structure for CRIs, which clearly creates unproductive competition and confusion of purpose.
- Excessive fragmentation and competition. There is scope for efficiencies from some rationalization.

Nonetheless, there is no inherent value to centralization. Restructuring functionally-separate units into a single institution is inefficient in cases where there are few or no gains from integration. The extent to which these gains potentially exist depends on the needs of specific research programmes: some will be able to share capital equipment, workforce capacity development or other resource; in other cases this potential does not exist.

It is unfortunate that no in-depth assessment of the performance of current RSI institutions appears to exist, either in the Green Paper or the MBIE website: the annual RSI report presents descriptive statistics and good-news case studies. The most recent evaluation of any part of the public RSI system on the MBIE document repository dates to 2015, and does not include any of the core components – neither the CRIs nor Callahan Innovation. There appears to be no publicly-available assessment of the RSI ecosystem from a policy or institutional design perspective. The White Paper to be developed by MBIE should present a systematic, comparative evaluation of the specific challenges, aims and resource needs of the RSI system. The broad generalizations and observations noted in the Green Paper capture some of the problems, but in very generic terms.

Research Workforce

Key Questions:

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?*

Workforce policy needs, as a starting point, systematic data on:

- Entry level profiles and cohort descriptions at the secondary and tertiary levels, including demographic breakdowns to identify where shortfalls in engagement of under-represented demographic groups occur.
- Retention patterns, benchmarked to high performing research systems.

Research Infrastructure

Key Questions:

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