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SUBMISSION FOR SCIENCE SYSTEM ADVISORY GROUP – PHASE 1

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The Science System Advisory Group (SSAG) can publish my name and contact information with this submission and can contact me in relation to this submission.

PREFACE

The Building Research Association of New Zealand (BRANZ) welcomes the opportunity to give feedback on the high level questions asked by the SSAG.

This opportunity will help shape the system to ensure it is optimally positioned to contribute to addressing the future challenges and opportunities for our country. We recognise that this is Phase 1 of the work, focusing on determining principles for the sector, and we look forward to Phase 2.

The following background on BRANZ is provided as context for our responses.

BRANZ[1] is an independent science-led organisation. We undertake and commission research, funded by the Building Research Levy[2], which helps improve industry practices around the performance of buildings and how we use them. Given our stewardship of the Building Research Levy and the alignment of our work with this mandate, BRANZ does not in general apply for funding directly through the investment processes of Vote Business, Science and Innovation.

Our core research programmes and research investment priorities are designed to meet long-term knowledge needs, gaps and desired outcomes. These are outlined in our Research Portfolio[3] and the annual Investment Priorities Statement[4].

Essential to achieving the outcomes we are striving to meet are our collaborative relationships with universities, Crown Research Institutes (CRIs) and other research providers. We also have extensive industry connections across the building and construction sector in Aotearoa New Zealand and internationally.

As an independent research organisation, we also collaborate with organisations that form the Independent Research Association of New Zealand (IRANZ)[5]. Independent research organisations provide important targeted research and expertise in specific economic, environmental and social areas not covered by CRIs and universities.

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[1] https://www.branz.co.nz/

[2] The Building Research Levy Act of 1969 established BRANZ as an incorporated society. Through this Act, authority is given to levy building contractors to provide money for research into improved techniques and materials for use in the building industry.

[3] https://www.branz.co.nz/investing-research/

[4] https://d39d3mj7qio96p.cloudfront.net/media/documents/Investment_Priorities_Statement_2024.pdf

[5] https://www.iranz.org.nz/

Since 2014, BRANZ has been the institutional host for the National Science Challenge Building Better Homes, Towns and Cities | *Ko ngā wā kāinga hei whakamāhorahora*.

BRANZ also provides independent commercial product testing and assurance services.

BRANZ has a team of over 120 scientists, engineers and professionals primarily residing at our campus in Judgeford, near Porirua in Wellington. Scientific staff are supported to develop their careers, science and leadership capabilities through our unique Scientific Growth Framework.

Our Campus and Asset Management Plan and Digital Futures Roadmap ensure that our facilities, equipment and technology meet the industry research and testing needs for the future. We are self-funding a redevelopment of the Judgeford campus and targeted investment in modern fit-for-purpose facilities to deliver world-class research and testing expertise.

This background on BRANZ is provided as context for our responses below. This submission does not answer all the questions posed. Rather we have addressed the theme of each set of questions and this response is structured accordingly.

QUESTION SET 1 - THE SCIENCE, INNOVATION AND TECHNOLOGY SYSTEM

Articulate a core purpose for the science, innovation and technology system
There is an absence from the system generally, of a clear overarching statement of purpose. Having a statement that signals what the science, innovation and technology system is there to do and achieve will provide greater clarity on the endpoint for the reforms. It will also support an analysis to determine what the desired shifts will be.

A key question to help shape the core purpose could be: To whom or what is the system in service?

Developing a core purpose and operating model will allow:

- a coherent and consistent view on what the system needs to do and how it should be structured.
- identification of priorities for the system at the macro scale.
- identification of the behaviours, attributes, incentives and capabilities needed to drive the system.
- clear understanding of the trade-offs across the system when allocating limited resources.
- the role of government to be identified in supporting this core purpose.

Our thoughts on the underlying principles by which the science, innovation and technology system should be designed include:

Principle 1 - Design the system with impacts in mind
System(s) transformation takes a long time and requires a range of new competencies which will need to be developed across the system. The positive and negative impacts of design choices need to be carefully considered and any resulting trade-offs will need to be carefully considered.

The potential shifts in the system will need to be guided and adapted as change is embedded and new behaviours or barriers emerge that work against the desired outcomes. Having good success measures to track the impact of the desired change will be important as well as those that signal any unintended consequences.

Principle 2 - Embed the Te Tiriti o Waitangi into system design
From a system perspective, embedding Te Tiriti o Waitangi at all levels across the science, innovation and technology system must be done as a priority. This must consider and resource the shifts required across the system to enable this to happen. We believe the nearly 20-year-old Vision Mātauranga Strategy is no longer fit for purpose and needs to be replaced. Embedding Te Tiriti is a significant process and consideration should be given to doing this via a partnership model.

Principle 3 - Design the system with users and outcomes for those users in mind
We recognise that different forms of research are needed across the system, from basic to applied. The system, though, must be designed with the user or those representing the user in mind. These users will be different depending on how the system is viewed and what part you are designing.

Stakeholders tend to have other responsibilities or roles and do not have a strong sense, nor should they have, of the inner workings of the RSI system. Their interaction with the RSI system needs to be made as simple, engaging and rewarding as possible. They need to understand the role of research and know what they can expect from the research they are involved with. Equally, they will need to be clear about what the research process can expect of them.

There also needs to be equitable access for all users to contribute to shaping the system and its developing priorities. Access to, and benefit from, science, innovation and technology should not correlate with stakeholders' ability to resource their influence. In addition, engagement with users by the system should be better recognised and fully resourced. Users need to be engaged at all stages – from policy design to priority identification, to funding decisions, through to research programmes.

In some instances, the user of the system will be the research community e.g., when researchers apply for funding. Designing the processes with the contribution and participation of the research community will make them as user friendly and aligned as possible.

Principle 4 - Design for greater stability and scale
The current system is fragmented and under resourced for the expectations that are placed upon it. There is a proliferation of strategies and priorities, both inside the system, and through other Votes and by industry sectors. This leads to inefficiencies, with piecemeal and competing approaches. There is a role for the science, innovation and technology system to align with other priorities across government and industry to ensure greater leverage and scale.

Having priorities that are focussed on long term goals, missions or 'moon shots' and having research institutions that are not driven by unnecessary competition will allow the system to settle into a more mature state. It will also allow better focus on delivery. Greater stability and scale in the science, innovation and technology system will lead to better outcomes and (perhaps counter-intuitively) enable more responsiveness to emerging opportunities and challenges.

Greater stability doesn't need to, and shouldn't, come at the expense of transparency and accountability. Integrity of decision-making is critical. Having independent, expert assurance for how research is responding to investment signals, complying with contracts and delivering impact are all important features of a system.

Principle 5 - Core capability needs to be well identified, well planned for, resourced and nurtured – and this is the key role of research organisations
Research organisations should be the capability 'powerhouses' of the system. Their primary role should be to nourish and enable the diverse workforce to be optimally positioned to deliver on current and future national research priorities. They should provide all the support required, including the 'tools of the trade', to do the best and most relevant research possible.

To do this well, research organisations need to:

- Think, plan and invest in the long-term.
- Have the best possible infrastructure and/or access to infrastructure.
- Have capability to scan developments and assess their impact on the direction of research and its impact on capability and disciplines.
- Be well aligned and connected to those who use their research outcomes.

QUESTION SET 2 - PUBLIC RESEARCH ORGANISATIONS

Our view is that government research institutes should be the 'power houses' of science, innovation and technology capability (workforce, infrastructure etc) in Aotearoa New Zealand to drive current, and help shape future, priorities. Research organisations need to be a 'step ahead of the curve', look over the horizon as to what capability is needed and plan for it. They should have a role in supporting development from within and recruit and work with the tertiary education institutions to train the future workforce.

The main economic drivers underpinning the current structures of the science, innovation and technology system, including the company structure of CRIs, has had a detrimental impact on workforce and capability from a system and country perspective. Having stable government research institutes, where research capability is clustered meaningfully, will improve collaboration across the system and reduce unnecessary competitive behaviours and duplication. Competition arises when organisations are 'doing the same thing' or have similar capabilities who are bidding for scarce resources.

We do not believe that larger and fewer organisations would lead to a more resilient system. Decisions on institutional structure should consider where capability best resides (and multiple capabilities can logically be coalesced). For example, if there is a niche research capability/workforce, it may not be better served sitting within a larger organisation where there are no links to the dominant capability of that organisation, nor connection to the industry or sector it serves.

We support consideration of colocation opportunities, as well as alignment of 'back office' support where appropriate. We believe there would be benefits in considering and funding science, innovation and technology infrastructure (including government research institutions) alongside Aotearoa New Zealand's other infrastructure plans in The New Zealand Infrastructure Commission Te Waihanga's pipeline. Planning and design, alongside other infrastructure plans of the government, has the potential to enable broader outcomes to be achieved.

When thinking about knowledge exchange, there is an important role for the science, innovation and technology system to support enhancing the absorptive capacity of sectors of our economy. Uptake of new knowledge and technology in complex systems does not, in general, happen easily when sectors are fragmented, have low productivity, low R&D investment and are highly regulated, such as the case in building and construction.

BRANZ supports the need to identify what constitutes core functions and for the system to resource those functions appropriately. We note that this cannot be done in advance of identifying the core purpose of the science, innovation and technology system and nor can it be done through the science, innovation and technology portfolio lens alone. There are functions that sit outside of those supported through this vote that are likely to be considered core functions for Aotearoa New Zealand's science, innovation and technology system. Core functions (and their funding) cannot be considered separately to institutions, workforce and infrastructure.

We consider that core functions, funded through a base grant, should be:

- aligned to capability and housed in institutions if the dominant use for that function is by the research institutions. Functions where the predominant use is through that of an operational government department should be considered outside of core science, innovation and technology system functions.
- made equitably accessible for all, regardless of where they reside.
- adequately supported to curate the data (or physical collections) associated with these core functions, and
- aligned, where relevant, with international core function research/research activity, particularly where they underpin standards and regulation.

We recommend the development of a core function 'stocktake' which includes those core functions that do not necessarily get support through the funding mechanisms of the science, innovation and technology portfolio.

QUESTION SET 3 – THE INNOVATION SYSTEM

There is value in New Zealand's innovation system being revised. The current approach focuses primarily on R&D activities that (hopefully) lead to innovation that can then attract global export companies. There would be value in the system supporting endogenous innovation and uptake. This in itself will serve as an attraction for international connections and support.

The New Zealand science, innovation and technology system cannot, and should not, be independent or isolated from the rest of the globe. The importance of international links and engagement echoes throughout the system: from career development to infrastructure, from funding to research priority setting. In order to get the best from our science, innovation and technology system, international connectedness is necessary. And in order to attract and maintain those connections, our system needs to be designed to the above principles, that is, it must consider, measure and adapt to impacts; embed Te Tiriti; be user-centric, stable, well planned out and nurtured.

QUESTION SET 4 – CONTESTABLE RESEARCH

BRANZ supports the science, innovation and technology system having respected, treasured, well-articulated, and enduring mission-led research priorities. Research priorities will need to be considered as taonga for our country and to drive better outcomes for our future generations.

Priorities should:

- Be aligned with Aotearoa New Zealand's, and where appropriate, our international aspirations which have a long-term knowledge needs component.

- Address research needs over the long term. Timeframes for delivery will depend on the priority and their strategy will need to be refreshed periodically to ensure relevance and achievement towards outcomes.
- Cover all of government science, innovation and technology resource and where possible incentivise the private sector to co-invest or align their R&D investment. This will avoid duplication and fragmentation and enhance leverage and scale.
- Be framed to address a mission and be 'SMART'. They should acknowledge the opportunities for outcomes to arise along the way and for those (unintended but valuable) outcomes to be supported.
- Have bespoke and measurable impacts, recognising that impact will be unique to each priority based on the goals and desired outcomes.
- Be managed as a portfolio to allow for cross priority synergies, opportunities and challenges to be managed across the portfolio.
- Be carefully designed to understand the impact on research institutions and capabilities and sequenced to allow for future planning of workforce and capability requirements.
- Be proportional to the size and scope of the problem if solved or opportunity if acted on.
- Strive for clarity between what a priority does and what the institutions do.

How research priorities are developed is important too. The process should consider:

- The regularity of process is well known, signalled, and embedded into the system to create certainty for all.
- Decisions around what will be a priority will be made in a way that is transparent, inclusive, and understandable to all.
- 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.
- There will be robust evidence and analysis to underpin decisions on priorities (which includes mātauranga Māori, systems and futures thinking) to input into this decision-making.
- The system and its users will be resourced to participate in any process to review and refresh the priorities. There shouldn't be an imbalance in what the priorities are, based on the ability of a sector to engage and influence the prioritisation process.
- Priorities will be well signalled and sequenced to ensure that capability to deliver on the priority is resourced and planned for.

In operationalising the research priorities there will be:

- Strong involvement of users in developing strategy for priorities.
- Strong assessment of the right team to deliver on the priority to ensure the research outcomes and impact are being met. Bespoke measures beyond traditional academic measures will need to be developed to both assess the delivery team and track progress.