MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

BRIEFING

Crown Research Institutes Refocus – possible options

Date:	21 March 2024	**Priority:**	Medium
Security classification:	In Confidence	**Tracking number:**	2324-2674

Action sought		
	Action sought	**Deadline**
Hon Judith Collins KC MP **Minister of Science, Innovation and Technology**	Agree to receive further advice on options to consolidate CRIs to support alignment, focus and effectiveness	27 March 2024

Contact for telephone discussion (if required)			
Name	**Position**	**Telephone**	**1st contact**
Landon McMillan	Manager, Science Policy	Privacy of natural persons	✓
Linda Moore	Principal Policy Advisor		

The following departments/agencies have been consulted

Minister's office to complete:

- ☐ Approved
- ☐ Noted
- ☐ Seen
- ☐ See Minister's Notes
- ☐ Declined
- ☐ Needs change
- ☐ Overtaken by Events
- ☐ Withdrawn

Comments

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Purpose

To seek your feedback on options to consolidate Crown Research Institutes.

Recommended action

The Ministry of Business, Innovation and Employment recommends that you:

Agree to receive further advice on options to consolidate CRIs to support alignment, focus and effectiveness, including:

a. Merging CRIs
b. Appointing common chairs
c. Possible legislative changes
d. Funding mechanisms
e. Stronger use of governance levers and greater involvement from departmental users who rely on this science
f. Policy settings that promote greater commercialisation, where agencies perform this function.

Agree / Disagree

Landon McMillan
Manager, Science Policy
Labour Science and Enterprise, MBIE

21 / 03 / 2024

Hon Judith Collins KC MP
Minister of Science Innovation and Technology

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Background

1. One of your priorities for the Science Innovation and Technology portfolio is to "scope and investigate potential refocus and removal of boundaries for Crown Research Institutes (CRIs)."

2. CRIs have provided significant value for New Zealand, but these organisations are facing several challenges. These include a mismatch between expectations and funding, an unclear set of priorities and inadequate mechanisms for steering and monitoring delivery. We see areas where there is wasteful competition, duplication, reduced connection with users of research, and a lack of transparency about investment. We are not confident that CRIs activities reflect the priorities of those areas of Government that they were intended to support. That said, CRIs are having to make impossible trade-offs given the array of expectations.

3. We advised you on the issues facing CRIs, and the potential to address these issues via institutional, funding and governance levers (Briefings *2324-1261, 2324-0902* and *2324-1394* refer). You agreed to receive further advice about how the levers can be used to improve the effectiveness of CRIs.

4. Immediate financial challenges are now forcing individual CRIs to reconsider their strategies and consider trade-offs, and this creates an opportunity to implement strategic changes to support their efficiency and effectiveness.

5. This briefing provides an outline of options to consolidate CRIs, using governance and institutional levers. We would like to test these options with you before developing more detailed advice. We anticipate discussing these issues with the SSAG.

6. This briefing should be read in conjunction with Briefing 2324-1860 which presents options for an Advanced Technology Organisation.

Options for consolidation

We think there is merit in consolidating and redesigning the CRIs to provide greater alignment.

7. Organisations are more successful when they have a coherent logic and clear mission, with sufficient resources to deliver on their strategy. Larger organisations have more ability to attract top talent, prioritise and secure key infrastructure, and the flexibility to make trade-offs and focus key resources on high-impact activities.

8. Current CRIs are connected and act collaboratively, but these connections serve individual institutional priorities, rather than being guided by overarching goals and strategies designed to deliver broader benefits to businesses, communities, and New Zealand as a whole.

9. Consolidating existing CRIs into a smaller number of institutions with a clearer mission is an important first step in addressing the issues faced by CRIs, as it would create greater critical mass, and move the system towards greater alignment and focus. However, it would need to be supported by other changes, such as changes to funding settings, organisational form, and other ownership/governance settings.

10. Consolidation can either be achieved by

a. a complete top-down **'full remix'** of the current suite of capabilities housed in CRIs, or

b. starting with **'merge similar'**: immediate mergers of aligned organisations, guided by a coherent strategy and then moving to greater alignment through empowering the boards to continue to adapt the organisations over time.

11. The slides in Annex 1 discuss:

- the case for public research organisations
- striking the balance between breadth and focus
- a new configuration of CRIs that separates **'sector facing**' science from science which is essential for New Zealand's social and economic resilience but is not provided by the market (often referred to as **'public good**' science**)**.[1]
- a high-level view of consolidation options, and
- a more detailed view of the potential 'full remix; and 'merge similar' options
- the process to implement changes.

Possible process to achieve consolidation

12. Our initial thinking is that any form of CRI amalgamation done at-pace would involve asking CRI boards to develop sensible proposals in close engagement with MBIE, in parallel with a legislative change process that could be managed over the medium term.

13. By contrast, a full remix has both high transaction costs and uncertainty for the system, and also requires legislative change.

14. We note that there is a high degree of asymmetric information, where information about what the most effective new configurations of science capability should be, at the highly detailed level, is held by the current CRIs, rather than by government; where the boards are often better placed to inform an approach to this kind of change.

15. The following steps could support consolidation:

a. Agree directional philosophy for CRIs.

b. Agree operational process to get there, which could include

i. appointing common Chairs across the CRIs with aligned capability.

ii. applying stronger shareholder guidance to encourage the CRI boards to consider mergers and reallocation of like functions to achieve the desired alignment and scale.

[1] Plant and Food's plant variety research is an example of 'sector facing' science, with positive spillovers for the economy. Research on increasing resilience to natural hazards is an example of 'public good' science, which has benefits for businesses who can use knowledge about hazard risk to inform investment and other decisions.

iii. introducing the legal changes required to give effect to the mergers and long-term direction, such as

- changes to the organisational form of CRIs (currently Crown Companies) or other organisational structures such as the MetService (which is a state-owned enterprise)
- changes to governance and ownership structure of new organisations
- changes to support boards to take key future decisions to implement the agreed direction.

c. Consider funding changes that best support the new organisations.

16. As part of these changes, we would also want to consider how we can support key government agencies to have a stronger ability to direct the new research organisations, and accept the trade-offs that are implicit within those choices and funding constraints, where that is appropriate.

Next steps

17. Subject to your feedback, we will shortly provide you with advice on

a. the current financial status of CRIs

b. the 'public good' work done by CRIs

c. the legal and procedural options available to bring about a 'desired' consolidation

d. the options for the Strategic Science Investment Fund which currently provides long-term funding for CRIs, noting the current Investment Plan is due to cease in 2024.

18. Following your feedback on the options in this paper, we will engage with the SSAG to develop more detailed advice on options and implementation to increase CRI effectiveness.

Annexes

Annex One: CRIs Refocus - Slide Deck

Annex One: CRIs Refocus - Slide Deck

CRI Refocus

Strategy discussion 27.03.2024

Why do we need public research organisations?

Public research is important because of positive externalities (for the economy, society, environment) and because the private sector is likely to under-provide science/research - but why do we need PROs? But why not something else? Eg universities, private providers?

The Rationale for an organisation :

Provider Market Failure

- **Thin or missing markets**, few alternate purchasers of science. Market only able to sustain a single provider efficiently.
- No markets = **lack of price discovery**, no price signals, no market discipline.
- Low fungibility across products makes **efficiency gains from competition unlikely**, and provides few incentives to attract new entrants.
- **High barriers to entry** – accumulated expertise, reputation & specialised capital stocks (eg labs, kit).
- **Benefits from scale** – means fragmented competition is undesirable.
- The market underinvests in future focussed stuff or is unaware of it. **Over-the-horizon research.**

Stewardship/Missions

- Firms often have a high discount rate, or narrow set of objectives = key reasons for **Government stewardship**.
- Building industries takes time, involves investing in **uncertain** things & specialised (expensive) infrastructure/kit.
- An **enduring organisation** can provide **more stability.**
- **Vertically integrated**: there is benefit in having long-term research linked with applied science.
- Unencumbered with teaching obligation.

Science Services

- Direct procurement from the private sector can be hard (transaction and coordination failures).
- Research (science services) is **an input into a public good**: central funding & contracting can result in efficiency, and consistent procurement principles.
- Single source of truth' is most appropriate for e.g. regulatory functions (eg Reference Laboratories).

Sovereign knowledge/capability

- **SIT from offshore providers**: we want to develop domestic solutions, domestic talent (spillovers), competitive advantage.
- Private research companies might come and go – or be sold off-shore?

Poor Reasons

- **Generating income** to cross-subsidise science (unless demonstrating feasibility, crowding in investment).
- **Legacy or Inertia:** we have this capability (for good or bad) through legacy and evolution – and trying to redesign is too hard/costly.
- **Regional development:** CRIs can be located in the under-developed regions.
- **Prestige or 'cool stuff'.**

Finding the right balance between focus and breadth

Collaboration is important

Solutions often require science from across disciplines.
Collaboration connects research to broader purpose/core.
Reduce some transaction/dissemination barriers.

V

Fragmentation is bad

Overlap in capability, not identical but related.
Sub-scale units, sub-scale funding, small projects, low impact.
No shared infrastructure, shared services.
Low attractiveness (for specialist capability and partnerships).

Current CRI coordination and collaboration happens in the context of, and when it suits, organisational priorities and choices (ie along the horizontal below), and is not guided by an overarching government strategy or priorities (the vertical).

A 2021 report from the CRIs shows how much they collaborate, and jointly offer a variety of solutions across key themes

	Emergency Response	Biosecurity and public health	Biodiversity	Water Resources	Climate Change	Energy	Food & Fibre Manufacturing	Land Use
Core Aspects	• Natural and environmental threats • Public health emergencies • Security and Justice sector	• Public health • Detection and identification • Response and eradication • Monitoring and control	• Identification and characterisation • Management and conservation	• Freshwater • Groundwater • Wastewater • Coast and oceans	• Understanding change • Assessing risk • Supporting adaptation • Reducing emissions • Clean Energy	• Energy storage • Energy resources and production • Energy utilisation	• Pastoral Horticulture • Seafood, fisheries, aquaculture • Food and beverage • Bio-based products • Forestry • Advanced manufacturing • Packaging	• Land health • Land management • Land use prioritisation
FTE	GNS 180 ESR 265 NIWA 50 Scion 12 **Total 327**	AgResearch 90 Scion 59 MWLC 68 PFR 40 ESR 11 NIWA 18 **Total 286**	MWLC 83 NIWA 30 **Total 113**	NIWA 120 ESR 33 GNS 40 **Total 153**	NIWA 172 AgResearch 52 Scion 75 MWLC 70 GNS 85 **Total 454**	GNS 60 Scion 12 NIWA 35 **Total 47**	AgResearch 190 Scion 83 PFR 575 NIWA 133 **Total 848**	MWLC 81 Scion 33 Agresearch 64 PFR 55 NIWA 32 **Total 265**

Focus is often critical to success. It enables organisations to direct their energy and activity, but can also create also path dependency, advocacy and fragility (to change). Breadth provides stability and adaptability, but we lose transparency and some ability to direct as organisations make trade-offs within their bounds.

Role: We probably need differentiated CRIs

Sector-facing science, innovation & tech

But we should ask if the sectors represented are still appropriate

The new economy

Advanced Technology – (maybe others?)

The old economy

H3 focussed – new things, adjacent sectors

Lifting productivity

"Normal public good" science

Most countries have: health, energy & environment, defence, meteorological, hazards, conservation

- Capability
- Databases & collections
- Labs
- Farms and orchards

These are increasingly organised as missions

Where science services relate to both protection of existing economy, regulation, public good

Key infrastructure: High performing computers, Research vessels, Quarantine facilities

Most appropriate PRO type

Research & Technology Organisations (eg ATO)

Mission: economic value (exp development), not for profit or private institution
eg Frauenhofer (Germany)

Public Research Centres and Councils (PRC):

Mission: develop knowledge (basic and applied), public institution
eg Max Planck (Germany)

Mission-oriented centres

Mission: solve problems (applied), public institution, eg INRAE (France), NASA (US)

There are broad options

Minor (as needed)

This is about merging only those that are in financial stress, with an organisation that can readily absorb them.

This is about as little disruption to the current system as possible.

An example might be:
- *Scion with Plant & Food (PFR).*
- *MetService with NIWA.*

Outside of CRIs there may be several needed mergers
- *NeSI with REANNZ.*

Or there may be parts of R&D or infrastructure that could be moved from one CRI to another – without a full merger.

Merge Similar

This is merging entire or near-entire CRIs entities in clusters or groups to create scale, share resources, buildings and infrastructure.

There are several models possible in this scenario.

One Option creates 4 CRIs:
- *Met Service/NIWA & GNS*
- *PFR & Scion*
- *AgResearch with Manaaki Whenua (MWLC)*
- *ESR on their own.*

Full Remix

*This option creates 3 or 4 CRIs based on their science **outcomes**, or **clients**, splitting parts of each CRI. Starts from the ground up, full redesign of the system.*

For example – outcomes-based might aim to have little or no mandate/science capacity overlap:
- *A Climate & Hazards CRI (MetService, parts of NIWA, and GNS).*
- *Land & environment-based CRI (parts of MW, AgR, Scion, PFR, NIWA).*
- *Food & Biological products-based CRI (parts of PFR, Scion, ESR).*
- *Public health (ESR, other).*
- *Advanced Tech/manufacturing CRI (parts of GNS, plus – maybe NeSI/REANNZ).*

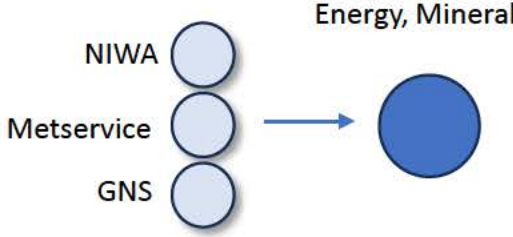
A client-based design lens – might consider the degree of overlap of clients (demand led).

One Ring

*This option creates one ring to bind them all. Like CSIRO. Or A*STAR. Or UKRI.*

Our preferred option is the **full remix** (based on mission/outcomes), with **merge similar** the first step to getting there.

Merge entire CRIs into clusters (Indicative)



Climate, Hazards & Energy, Minerals

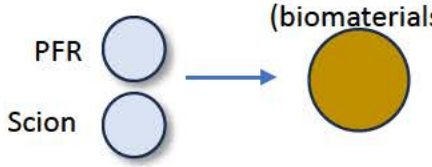
Description
- geologically-based energy & minerals
- nuclear science
- resilience to natural hazards
- geology and earth-systems
- climate and the atmosphere,
- aquatic resources
- oceans
- groundwater

Line Ministries
- MFE
- MBIE
- NEMA
- (MoT, DoC, others)

Ownership
- MBIE

Preferred Type
- "Public Good"
- Mission-oriented Centre
- Crown Entity
- Not for profit

	Starting FTE (estimate)	Revenue ($ millions)
GNS	484	120
NIWA	704	187
Combined	**1188**	**307**



Food & Fibre (biomaterials)

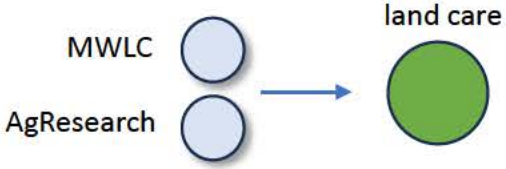
- horticulture
- arable sector
- seafood
- food and beverage industries
- forestry,
- biomaterial sectors

- MPI
- (MFE)

- MPI

- Industry facing
- (either RTO and/or Public research centre)
- Crown company?

	Starting FTE (estimate)	Revenue ($ millions)
Scion	329	64.321
Plant & Food	926	185.944
Combined	**1255**	**250.265**



Environment, land care

- pastoral
- agri-food
- agri-technology
- terrestrial biodiversity
- land use, including freshwater

- MPI
- MFE
- DoC

- ? (MBIE)

- "Public Good"
- Mission-oriented centre
- Crown Entity
- Not for Profit

	Starting FTE (estimate)	Revenue ($ millions)
Manaaki Whenua	372	115
AgResearch	666	178
Combined	**1038**	**273**

Health & Forensics

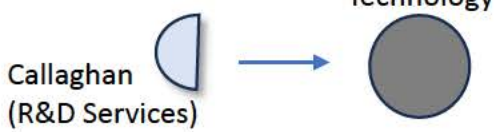
- public health,
- food safety
- water safety
- forensics
- genomics

- Health
- Police

- ? (MBIE or Health)

- "Public Good"
- Mission-oriented centre
- Crown Entity
- Not for Profit

	Starting FTE (estimate)	Revenue ($ millions)
ESR	562	123



Advanced Technology

- MBIE

- MBIE

- Industry facing
- RTO
- Crown Entity
- Not for Profit (for now!)

Full remix (Indicative)

		Description	Line Ministries	Ownership	Preferred Type	Starting FTE	Current Revenue
NIWA Metservice GNS	Climate & Hazards	• resilience to natural hazards • geology and earth-systems • climate and the atmosphere, • oceans • weather	• MFE • MBIE • NEMA • (MoT, DoC, others)	• MBIE	• "Public Good" • Mission-oriented Centre • Crown Entity • Not for profit		
PFR Scion AgR NiWA	Food & Fibre (incl aquaculture)	• horticulture • arable sector • agri-food • seafood • aquatic resources • food and beverage industries • biomaterial sectors	• MPI	• MPI	• Industry-facing • (either RTO and/or Public research centre) • Crown company?		
MWLC AgR Scion GNS NiWA	Environment, land care, **water**	• pastoral • terrestrial biodiversity • land use • freshwater • forestry • groundwater	• MFE • DoC • MPI	• ? (MBIE) • MFE?	• "Public Good" • Mission-oriented centre • Crown Entity • Not for Profit		
ESR	Health & Forensics	• public health • food safety • water safety • forensics • genomics	• Health • Police	• ? (MBIE or Health)	• "Public Good" • Mission-oriented centre • Crown Entity • Not for Profit		
Callaghan (R&D Services) GNS	Advanced Technology	• ... • geologically-based energy & minerals • nuclear science • agri-technology • ...	• MBIE	• MBIE	• Industry facing • RTO • Crown Entity • Not for Profit (for now!)		

Next Steps

We think consolidating CRIs will lead to more **scale and focus, alignment and concentration**. This should enable them the ability to attract top talent, prioritise & secure key infrastructure, and provide them sufficient focus & flexibility to manage resources to deliver quality science for NZ.

Steps

i. Agree direction philosophy for CRIs
ii. Appoint common chairs across the CRIs with aligned capability.
iii. Apply stronger shareholder guidance to encourage the CRI boards to consider mergers that achieve the desired alignment and scale.
iv. Introduce the legal changes required to give effect to the mergers and any other associated changes
v. Consider ownership changes
vi. Consider funding changes that best support the new organisations.