MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

BRIEFING

Further decisions regarding R&D capabilities

Date:	12 December 2024	**Priority:**	High
Security classification:	Sensitive	**Tracking number:**	BRIEFING-REQ-0007162

Minister	Action sought	Deadline
Hon Judith Collins KC **Minister of Science, Innovation and Technology**	**Agree** to communicate to the Callaghan Innovation Board that the Government has not identified any sufficiently high value capabilities within RDS that they must be actively transferred to other entities in the SI&T system. **Agree** to reprioritise Crown funding currently allocated to RDS to other science system priorities [redacted] Confidential advice to Government	17 December 2024

Contact for telephone discussion (if required)				
Name	**Position**	**Telephone**		**1st contact**
Gina Williamson	Manager, Innovation Policy	04 901 8203	[redacted] Privacy of natural persons	ü
Dr Simon Wakeman	Principal Policy Advisor, Innovation Policy			

The following departments/agencies have been consulted
n/a

Minister's office to complete:

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- ☐ Withdrawn

Comments

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Date:	12 December 2024	**Priority:**	High
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Purpose

To seek further decisions following a high-level assessment of the science capabilities within Callaghan Innovation's Research and Development Solutions (RDS) division.

Recommended action

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

a **Agree** to communicate to the Callaghan Innovation Board that the Government has not identified any sufficiently high value capabilities within RDS that they must be actively transferred to other entities in the SI&T system.

Agree / Disagree

b **Agree** to reprioritise Crown funding currently allocated to RDS to other science system priorities Confidential advice to Government

Agree / Disagree

Gina Williamson
Manager, Innovation Policy
Labour Science and Enterprise, MBIE
12 / 12 / 2024

Hon Judith Collins KC
Minister of Science, Innovation and Technology
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Background

1. The Government has agreed to disestablish Callaghan Innovation, to redistribute its most important functions to other parts of the Science Innovation and Technology (SI&T) system, and to stop other functions [ECO-24-MIN-0242 refers]. You have indicated which functions you wish to retain and transfer, and which will not be funded in the future state [REQ-0004411 refers].
2. You indicated you do not wish to fund fee-for-service R&D for businesses in the future SI&T system. However, acknowledging the range of science capabilities within RDS that may be aligned with future science system needs, you directed us to test whether any capabilities within RDS should be transferred to another part of the SI&T system. The alternative being to allow market forces to reallocate scientists to new employment (including those funded by other parts of the science system).

Research and Development Solutions Group

3. Callaghan Innovation's RDS division fee-for-service R&D to commercial clients. It includes:
    a. the Biotechnologies Group
    b. the Applied Technologies Group

Commercial Information

4. A summary of the units within these Groups and their scientific capabilities and assets is provided at Annex One. Note that the Measurement Standards Laboratory (MSL), while part of RDS, is not included in this analysis. We have provided you separate advice regarding MSL [REQ-0007440].

Our assessment of RDS has not identified any specific high value capabilities that ought to be actively transferred to another part of the SI&T system

5. We have undertaken a high-level assessment of the capabilities within RDS with a view to future system needs – considering Crown funding for RDS, the science equipment within RDS, and the scientific expertise and its applications.
6. Retaining capability means actively facilitating the transfer of people and/or assets *with funding* attached to another entity in the SI&T system. Any capability that is retained, would reduce funding available to be reprioritised into other parts of the SI&T system. The threshold for active transfer of capability is therefore high.

RDS is commercially oriented and therefore does not produce public-good knowledge

7. RDS is commercially focused and generally does not produce new scientific knowledge in same way as Crown Research Institutes (or the future Public Research Organisations). It is also not a centre of expertise in advanced technologies or performer or funder of foundational scientific research, as you intend the Advanced Technologies Research Organisation (ATRO) to be. Rather, RDS is positioned at the applied end of the R&D continuum, providing services to businesses to support product development. As such there are not public-good arguments for continuing to fund RDS – by definition, its fee-for-service model assumes that the benefits of the research are able to be captured by its customers.

Uniqueness lies in its availability to business

8. There is valuable though not unique capability within RDS. What is unique is that RDS makes science capability available to business, particularly science equipment and the expertise to operate it. However, it is also clear from the financial performance of RDS that there is limited demand for RDS capability at commercial rates. In some areas (for instance, data science) RDS services may be crowding out private-sector provision or providing an effective subsidy to business (by providing capability at below cost).

9. Commercial Information

Most of RDS's physical assets are approaching end of life and require investment

10. RDS operates from Gracefield Innovation Quarter. Many of the buildings and much of the equipment RDS operates are at or approaching their end of life and require significant investment, either at GIQ or to rebuild facilities elsewhere. This notably includes the Biotech capabilities.

Confidential advice to Government

Undertaking a more detailed assessment carries costs

12. Instead of taking the decision to defund RDS now you could defer a decision in order to make a detailed assessment of the role of each RDS capability in the wider science and innovation system. We do not recommend this approach because:

Free and frank opinions

13. Our assessment is that there is not such unique capability within RDS that it necessitates active reallocation by and specific funding from government. With a view to creating an adaptive future SI&T system with a future focus, we consider that it would be of greater benefit to provide for the reallocation of RDS funding into the likes of the Advanced Technology Research Organisation and associated funding mechanisms.

Free and frank opinions

14. We recommend communicating an intention to defund RDS to the Callaghan Innovation Board and defer to them deciding the most appropriate way to resolve RDS ahead of the formal disestablishment of the entity. Free and frank opinions

Risks

15. There are currently around 80 scientists (in terms of Full-Time Equivalents) currently employed in RDS and around 30 in Glycosyn. Around 30 science-based roles were disestablished in mid-2024 as part of Callaghan Innovation's strategic reset.

16. We are assuming that the firms that use Callaghan's services and the wider SI&T system can adapt. Free and frank opinions

Next steps

17. Officials will be available to discuss this advice with you at the SI&T Officials meeting on 17 December.

18. We Confidential advice to Government will appropriately reflect this (along with other decisions related to the disestablishment of Callaghan Innovation) in a letter of expectation for you to communicate your intentions to Callaghan Innovation in due course.

Annexes

Annex One: Description of RDS capabilities

Annex One: Description of RDS capabilities

The RDS Biotechnologies and Applied Technologies groups provide scientific expertise to NZ companies on a fee-for-service basis. This includes:

- contract manufacture
- scale-up
- testing/validation
- proof-of-concept
- tech transfer
- compliance
- applied R&D.

The value comes from providing either:

- Expertise that is not otherwise available in New Zealand; or
- Capability that New Zealand companies would not otherwise be able to access due to cost, compliance, or lack of in-house technical expertise or infrastructure

In many instances the unique offering of RDS is not that the capability or scientific equipment is unique, in that it exists nowhere else in New Zealand, but that:

- The combination of different capabilities and equipment is only available at Callaghan Innovation as a 'one stop shop' offering.
- The capability or equipment is directly available for New Zealand business (i.e., other public research organisations or private companies may hold the same capability or equipment, but it is not available to NZ business)

Glycosyn develops and manufactures complex drug candidates for pre-clinical and clinical trials for New Zealand and overseas clients. The unique offering is the mix of contract research and manufacturing expertise in one enterprise, as well as the ability to manufacture using Good Manufacturing Practices (GMP).

The following table provides more detailed information (from Callaghan Innovation) on the various teams within RDS, their location, unique capabilities, and Full-Time Equivalent (FTE) employees:

Table 1: Information on RDS capabilities

Capability	Location	Equipment or capability unique to NZ	FTE
Biotechnology			**37.5**
Lipids and Natural Products Chemistry	• GIQ (Wellington)	• The Nuclear magnetic resonance (NMR) suite is only accredited lab for dairy phospholipid analysis • Only FoodScreener NMR in NZ, for food authenticity testing • Only GMPNMR capability	8.8
Process Engineering	• GIQ (Wellington)	• Only supercritical CO_2, dimethyl ether, and propane R&D extraction facility	10
Industrial Process Development	• GIQ (Wellington)	• Membrane separation contract R&D equipment portfolio • Large scale contract flammable solvent extraction	

Capability	Location	Equipment or capability unique to NZ	FTE
Fermentation and BioProcessing	• GIQ (Wellington)	• Only contract PC2 300 L and 1000 L fermentation facility • Only live culture (probiotic) fermentation contract R&D suite	5.9
Food & Beverage R&D	• Textile Centre (Auckland) • GIQ (Wellington) • FoodBowl (Auckland)	• Only Ultra high pressure (1300 bar) CO_2 extraction R&D plant	3
Food & Beverage Production	• Textile Centre (Auckland) • GIQ (Wellington) • FoodBowl (Auckland)	• Only food grade liquid propane and dimethyl ether manufacturing facility • Large scale contract food grade flammable solvent extraction	
Proteins and Enzymes and Bioactive Peptides	• University of Canterbury (BIC) • GIQ (Wellington)	• Suite of protein, peptide and enzyme bioactivity and quantification assays • Contract recombinant protein expression R&D capability	4.8
Enzyme Process Development			4
Applied Technologies (FTE)			**46.6**
Information	• GIQ (Wellington) • Textile Centre (Auckland)	• Only service/equipment directly available to Industry • Access to High Performance Computing • Data DIY services	12

Sensors & Sensing	• GIQ (Wellington)
	• Sheffield Crescent (Christchurch)
		• Laser direct writer
		• Femtosecond laser
		• Only service/equipment directly available to Industry
		  ○ Ultrasound equipment
		  ○ Cleanroom	

Materials	• GIQ (Wellington)
	• Robertson Building
		• Only service/equipment directly available to Industry
		  ○ X-ray diffractometer (XRD)
		  ○ Universal Testing Machine (UTM)
			11.8

Mechatronics	• GIQ (Wellington) • Textile Centre (Auckland) • Sheffield Crescent (Christchurch)	• Robotics labs • Borrowable mobile robots • Industry 4.0 Starter service • Surface Mount Technology (SMT) room	9.8
Engineering	• GIQ (Wellington) • Sheffield Crescent (Christchurch)	• Hydrodynamic test tunnel	11
Energy	• GIQ (Wellington) • Sheffield Crescent (Christchurch)	• HyLink installation	

Capability	Location	Equipment or capability unique to NZ	FTE
Telecommunications	• GIQ (Wellington)	• Only service/equipment directly available to Industry o Audio anechoic chamber	
Advanced Signal Processing	• GIQ (Wellington)	• Only service/equipment directly available to Industry o Radio frequency (RF) Anechoic chambers (no RF chambers at least in South Island, other anechoic chambers limited to universities) o Pick & Place machine (for printed circuit boards)	
Hardware	• GIQ (Wellington) • Sheffield Crescent (Christchurch)	• Only service/equipment directly available to Industry o Industry facing cleanroom & laser direct writer o Possibly chip dicer	
Glycosyn			**27.7**
Process Development	• GIQ (Wellington)	• The mixture of contract research and contract manufacturing expertise provided to clients (a mixed Contract Research Organization and Contract Manufacturing Organization model) in one enterprise. • The ability to manufacture complex drug substances for human use in clinical trials using GMP. These are Medsafe regulated international manufacturing guidelines to ensure safety, consistency, and efficacy of the drug product.	
Analytical Development	• GIQ (Wellington)		
cGMP* Manufacture	• GIQ (Wellington)	• cGMP compliant • 560 m^2 Processing Facility • Hazardous Area Location (Flameproof) • GMP NMR	