

# **VOTE** *Research, Science and Technology*

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# *Research, Science and Technology*

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## Overview

### Departmental Appropriations

Departmental appropriations sought for Vote Research, Science and Technology in 2007/08 total \$13.946 million. This is intended to be spent as follows:

- \$13.946 million (2% of the Vote) to purchase advice on science and innovation that supports New Zealand's knowledge base and its capacity to innovate, and advise on managing Vote RS&T contracts.

### Non-Departmental Appropriations

Non-Departmental appropriations sought for Vote Research, Science and Technology in 2007/08 total \$644.190 million. These appropriations will be applied as follows:

- \$274.730 million (42% of the Vote) to purchase outputs that create value from science by increasing productivity in existing economic sectors and increasing commercialisation of public sector research.
- \$93.449 million (14% of the Vote) to purchase outputs to increase understanding of our environment and enhance linkages between environmental researchers and the end users of research.
- \$57.821 million (9% of the Vote) to purchase outputs to improve the capacity and capability of CRIs. This includes the CRI Capability Fund, Equity Investment Fund, REANNZ funding, and the establishment of the Advanced Network.
- \$69.682 million (11% of the Vote) to purchase outputs that increase knowledge about New Zealand society, including the health and well-being of New Zealanders.
- \$35.878 million (5% of the Vote) to purchase outputs that fund investigator-led research projects.
- \$18.658 million (3% of the Vote) to support the development and retention of scientists.
- \$48.387 million (7% of the Vote) to purchase outputs that support private sector innovation through investment in research, science and technology in firms and its commercialisation by them.
- \$13.436 million (2% of the Vote) to purchase outputs to fund the establishment, development and maintenance of international relationships including investment in the Australian Synchrotron.
- \$4.896 million (1% of the Vote) to increase the profile of research science and technology, and improve New Zealanders' understanding of the value of RS&T.
- \$21.114 million (3% of the Vote) to purchase advice on research and innovation policies and manage contracts with funding and investment agents and research providers.
- \$6.139 million (1% of the Vote) to purchase services from National Measurements Standards Limited, and the New Zealand government's subscription to the Convention du Metre.

Further information and explanations of the appropriations appear in Part C, D and E of this Vote.

## Terms and Definitions Used

APEC	Asia Pacific Economic Co-operation
CRI	Crown Research Institute
EI&RD	Economic, Industry and Regional Development
FRST	Foundation for Research, Science and Technology
GTP	Global Technology Partnerships
HRC	Health Research Council of New Zealand
IIOF	International Investment Opportunities Fund
IRL	Industrial Research Limited
MoRST	Ministry of Research, Science and Technology
NERF	New Economy Research Fund
NZAID	New Zealand International Aid and Development Agency
R&D	Research and Development
REANNZ	Research and Education Advanced Network of New Zealand
RS&T	Research, Science and Technology
RSNZ	The Royal Society of New Zealand
TechNZ	Technology New Zealand
TEI	Tertiary Education Institute
TIF	Technology for Industry Fellowships

## Minister Portfolio Table

56	Minister of Research, Science and Technology
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# Research, Science and Technology

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ADMINISTERING DEPARTMENT: The Ministry of Research, Science and Technology

The Minister of Research, Science and Technology is the Responsible Minister for the Ministry of Research, Science and Technology

## Part A - Statement of Objectives and Trends

### Part A1 - Objectives for Vote

#### *Government Goals*

Vote Research, Science and Technology contributes to each of the three themes shaping Government's current priorities - economic transformation, families - young and old, and national identity.

The focus of this Vote is to progress New Zealand's economic transformation goal and underpin government strategies that promote environmental sustainability, health and social well-being for New Zealanders.

#### *The Government's Role in Research, Science and Technology*

Research, science and technology (RS&T) is important to New Zealanders' quality of life and New Zealand's sustainable, prosperous future. RS&T is responsible for producing ideas and knowledge that drive innovation. Those ideas are taken up and applied, not just in commercial products that fuel economic transformation, but throughout society by enhancing New Zealanders' health and lifestyle, and in understanding our environment and how to manage it in a sustainable manner.

The government is a significant player investing in RS&T in New Zealand - it finances around half of New Zealand's investment in RS&T, and owns significant science infrastructure, notably the Crown Research Institutes (CRIs). In some cases, government departments also carry out science and research activity.

The government invests in RS&T to:

- *Transform New Zealand's economy to produce long-term economic value*
  - Generating new knowledge to improve our understanding of the world around us, in particular knowledge that is unique to New Zealand
  - Creating new products, processes and services to improve productivity in existing businesses and create new industries that lead to sustainable economic growth and a better standard of living.
- *Leverage private sector investment*
  - While private sector RS&T provides direct benefits to those undertaking it, there are often broader spillover benefits that occur in the wider community. These benefits allow other businesses to be more productive and can also lead to better services and products for New Zealanders. By supporting private sector R&D, the government can help ensure that these spillovers occur and the maximum benefit for New Zealand from RS&T is achieved.

- *Build capability in the science system*
  - The government's role in science and research extends beyond providing resources for science and research. The government is also involved in building capability in the science system so that it can produce and diffuse new knowledge and technology. It supports the development of links between the science system and with community, business and global partners. This includes developing robust policy advice, and supporting our science-related regulatory arrangements.
  - Preserve essential research capabilities and science infrastructure in publicly owned research organisations. This critical mass not only allows New Zealand to develop and diffuse technologies that are specific to our needs and comparative advantages, but also to absorb and adapt technologies developed offshore.
- *Capture international benefits of RS&T*
  - New Zealand's science system is connected to a vast global network of RS&T. While the global network cannot replace our own research activity, the larger science system is an important source of new knowledge and technologies that we draw on and adapt for our own needs and benefits. Our science system plays an important role in helping New Zealand to access this knowledge through international science linkages and collaborations at country, regional or research institute level.
- *Support the well-being of New Zealanders*
  - Maintain and improve services such as healthcare, environmental protection and management, education and social services. In these areas, government funds the science and research activity needed that is not met by private investment.

### *A More Stable Funding Environment*

The government is moving to a longer-term approach to research funding in New Zealand by creating a more stable funding environment. This approach seeks to enhance the balance between stability and flexibility of funding contracts in Vote RS&T.

Over the past year, the government has been implementing a range of initiatives to better tailor investment processes to the science they support. These have included:

- the roll-out of negotiated investments for science programmes with a proven track record to provide greater certainty for researchers and science organisations engaged in longer-term research
- improved contestable processes reducing costs and complexity
- progressively implementing technical review throughout the Vote to improve the quality assurance processes for the government's investments, and
- developing new funding mechanisms for 'backbone' research to create better accountability and clarity for users and providers of core databases, collections and other assets.

### *The RS&T Investment Strategy*

As part of its work on securing long term sustainable increases for Vote RS&T, MoRST has developed a medium-term investment strategy. This strategy aims to link new investment in Vote RS&T to government's current priorities (eg, economic transformation and environmental sustainability), influence prioritisation within the Vote, and maintain capability in the system as it transitions to a more stable funding environment.

The RS&T Investment Strategy is organised into the following areas:

### **Growing globally competitive firms**

Build locally based, globally competitive firms responsive to local and international markets. RS&T will generate new ideas that drive innovation. This is delivered through the following output expenses:

- New Economy Research Fund
- Research for Industry
- Technology New Zealand
- Pre-Seed Accelerator Fund
- Global Technology Partnership
- International Investment Opportunities Fund.

### **Supporting primary industries and environmental sustainability**

Dual economic and environmental outcomes are critical to the long term success and viability of New Zealand's resource-based industries of agriculture, forestry and seafood. This is delivered through the following output expenses:

- Research for Industry
- CRI Capability Fund
- Environmental Research
- New Economy Research Fund.

### **Enabling economic transformation**

Reliable infrastructure and quality urban environments underpin high-growth firms and help create internationally competitive cities. Reliable, resilient and affordable energy supplies are critical to economic transformation and the use of sustainable energy for the future. This is delivered through the following output expenses:

- Research for Industry
- CRI Capability Fund
- Environmental Research.

### **Building a healthy and inclusive society**

Government invests in health and social spending to seek social development that is inclusive, forward looking, and focused on lifting the aspirations and quality of life, improving health and developing the abilities of all New Zealanders. This is delivered through the following output expenses:

- Health Research
- Social Research.

### **Strengthening New Zealand's research culture**

Kick start the development of cutting-edge capabilities and skills to drive future advantage through RS&T.

To invest in targeted outcomes, the government will continue to use the existing RS&T Vote structures allowing it to invest in basic, applied, or partnership-funded research using the best mix of mechanisms to achieve a particular outcome. This is delivered through the following output expenses:

- Marsden Fund
- Engaging New Zealanders in Research, Science and Technology
- Advanced Network
- CRI Capability Fund
- International Science and Technology Linkages
- Māori Knowledge and Development Research
- National Measurement Standards
- Supporting Promising Individuals.

## Part A2 - Trends in Vote

### *The Direction for Vote Research, Science and Technology*

Total appropriations for Vote RS&T have increased from \$470.713 million in 2002/03 to \$658.136 million in 2007/08.

#### Output trends 2002/03 to 2007/08

##### Departmental output expenses

The table below illustrates the trends in Vote RS&T departmental output expenses from 2002/03 to 2007/08.

	2002/03 \$000	2003/04 \$000	2004/05 \$000	2005/06 \$000	2006/07 \$000	2007/08 \$000
Departmental Output Expense						
Policy Advice	6,470	8,215	11,373	12,275	-	-
Contract Management	509	481	529	1,089	-	-
Growth and Innovation Advisory Board	1,094	1,226	1,442	-	-	-
VIF - Governance	1,531	1,080	978	373		
APEC Science Ministers' Meeting	285	2,244	-	-	-	-
Advice on Shaping the Science System					13,987	13,946

Appropriations for departmental output expenses have risen from \$9.889 million in 2002/03 to \$13.946 million in 2007/08. Most of this increase occurred in the *Policy Advice* output expense which has been used by MoRST to support its leadership role in the science system, increase evaluation, and to support new strategies such as the New Zealand Biotechnology Strategy and the RS&T International Linkages Strategy.

In 2006/07 the *Policy Advice* and *Contract Management* output expenses were combined into a multi-class output appropriation *Advice on Shaping the Science System*. This change was made to enhance

the flexibility in managing the funding that sits within the *Policy Advice and Contract Management* outputs. The *Advice on Shaping the Science System* multi-class output appropriation is \$13.946 million in 2007/08.

Between 2002/03 and 2007/08, three departmental output expenses have been discontinued or transferred to other Votes:

The *NZVIF governance and operations* output expense was established in 2001/02 with an appropriation of \$1.899 million, decreasing to \$1.531 million in 2002/03, when it was transferred to a non-departmental output expense. This was transferred to Vote Economic, Industry & Regional Development in 2005.

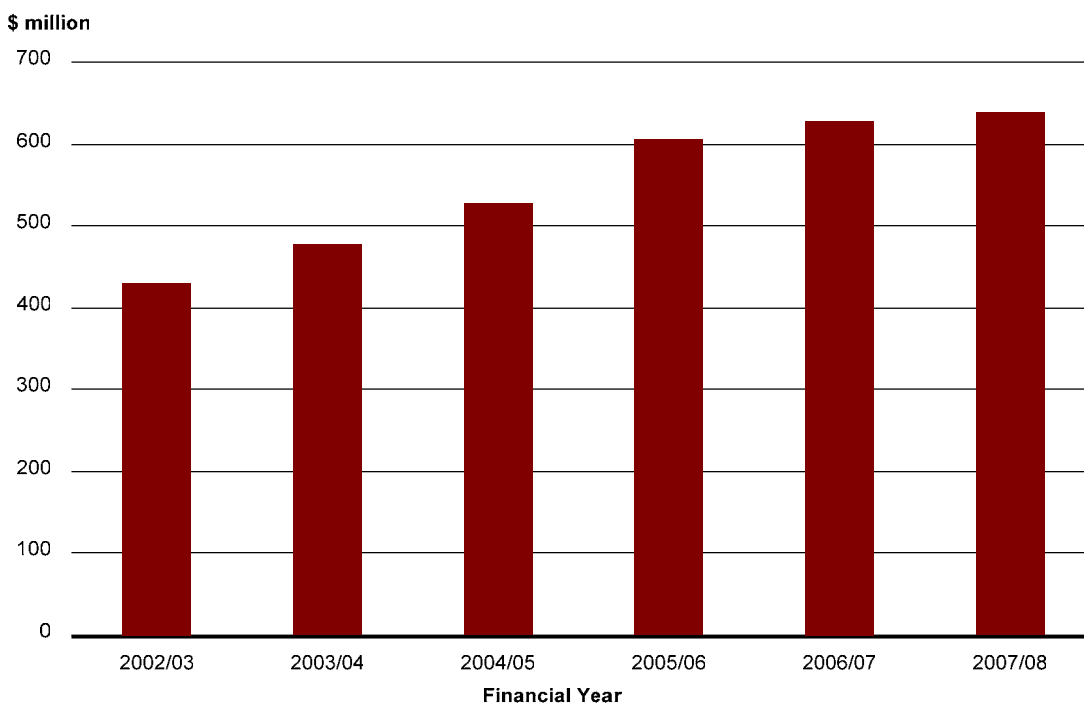
The *Growth and Innovation Advisory Board* output expense was established in 2001/02. In 2005/06 the *Growth and Innovation Advisory Board* departmental output expense was \$1.442 million. There is no appropriation for this in 2006/07 and onwards, as it was transferred from Vote RS&T to Vote Economic, Industry & Regional Development in 2005.

The output expense *APEC Science Ministers' Meeting* existed over the period 2002/03 and 2003/04 to provide for the meeting held in Christchurch in March 2004. The final year for this output expense was 2004/05.

**Non-departmental appropriations**

The chart below shows the trend in operational appropriations over time. These represent all appropriations within the Vote, excluding capital expenditure:

**Figure 1** - Trends in non-departmental appropriations



Source: Ministry of Research, Science and Technology

The 2007/08 operational appropriations amount to \$638.910 million compared with the 2006/07 appropriation of \$628.274 million.



The significant changes from 2006/07 to 2007/08 are:

- An increase in the New Economy Research Fund of \$4.217 million to maintain capability in emerging and high value technologies and services, and purchase research into new food and beverage ingredients and non-food biological technologies.
- An increase in Research for Industry output expense of \$11.553 million to increase the level of end-user involvement in RS&T through large-scale public-private partnerships, purchase research into new food and beverage ingredients and non-food biological technologies and maintaining research capabilities for sustainable primary production.
- An increase in the Environmental Research output expense of \$3.350 million to establish a contestable fund for International Polar Year research and research to manage climate change.
- An increase in the CRI Capability Fund of \$4.000 million to maintain, develop and enhance RS&T capabilities in CRIs, to assist them to fulfil their statutory roles and deliver public good science outcomes for New Zealand.
- An increase to the Techlink output in Technology New Zealand of \$3.000 million to support business R&D and improve linkages between businesses and public sector research organisations.
- An increase in the Marsden Fund of \$2.000 million to fund excellent basic research initiated by New Zealand's top researchers.
- A decrease in the Advanced Network output expense of \$10.113 million to match an agreed funding schedule for operational support by Government for the Research and Education Advanced Network Limited.

## New Policy Initiatives by Appropriation

Initiative	Appropriation as shown in Part B	\$000 increase/(decrease)				
		2006/07	2007/08	2008/09	2009/10	2010/11
Tax on Overseas Conditions of Service	Departmental Output Expense - Advice on Shaping the Science System	260	260	260	260	260
Research & Development Tax Credit - Evaluation and Assessment	Departmental Output Expense - Advice on Shaping the Science System		330	390	180	250
Enhancing Emerging and High Value Technologies and Services	Non-Departmental Output Expense - New Economy Research Fund		3,500	3,500	3,500	3,500
Focusing on Innovative Foods and Added Value Biological Products	Non-Departmental Output Expense - New Economy Research Fund		1,155	1,155	1,155	1,155
	Non-Departmental Output Expense - Research for Industry		2,345	2,345	2,345	2,345
Increasing Primary Productivity and Trade	Non-Departmental Output Expense - Research for Industry		2,000	2,000	2,000	2,000
Science Supporting International Polar Year: Contestable Research Fund	Non-Departmental Output Expense - Environmental Research		1,350	1,350	1,350	
	Non-Departmental Output Expense - Research Contract Management		150	150	150	
Managing for Climate Change	Non-Departmental Output Expense - Environmental Research		2,000	2,000	2,000	2,000
Connecting New Zealand Globally	Non-Departmental Output Expense - Development of International Linkages		700	700	700	700
Technical Review	Non-Departmental Output Expense - Research Contract Management		250	300	300	300
Humanities Research Scoping Study	Departmental Output Expense - Advice on Shaping the Science System		50			
Marsden Fund	Non-Departmental Output Expense - Marsden Fund		2,000	2,000	2,000	2,000
CRI Capability Fund	Non-Departmental Output Expense - CRI Capability Fund		4,000	4,000	4,000	4,000

Initiative	Appropriation as shown in Part B	\$'000 increase/(decrease)				
		2006/07	2007/08	2008/09	2009/10	2010/11
Enhancing Private-Sector R&D, Commercialisation and Innovation	Non-Departmental Output Expense - Technology New Zealand		3,000	3,000	3,000	3,000
	Non-Departmental Output Expense - Technology New Zealand		(600)	(2,000)	(2,000)	(2,000)
	Non-Departmental Output Expense - Research & Development Facilitation and Promotion Services		600	2,000	2,000	2,000
	Non-Departmental Output Expense - Technology New Zealand			(7,400)	(7,600)	(7,000)
Pastoral 21	Non-Departmental Output Expense - Research for Industry		3,000	3,000	3,000	3,000
	Non-Departmental Output Expense - Research for Industry			(3,000)	(3,000)	
Carter Observatory Grant	Non-Departmental Other Expense - Carter Observatory Grant	1,500	575			
Global Technology Partnerships	Non-Departmental Output Expense - Global Technology Partnerships	(620)	(891)	(1,002)	(1,361)	(1,361)
<b>Total Initiatives</b>		<b>1,140</b>	<b>25,774</b>	<b>14,748</b>	<b>13,979</b>	<b>16,149</b>

## Part B - Statement of Appropriations

### Summary of Financial Activity

	2002/03	2003/04	2004/05	2005/06	2006/07		2007/08 Appropriations to be Used				2008/09	2009/10	2010/11	
	Actual \$000	Actual \$000	Actual \$000	Actual \$000	Budget \$000	Estimated Actual \$000	By the Department Administering the Vote		For Non-Departmental Transactions		Total \$000	Estimated \$000	Estimated \$000	Estimated \$000
							Annual \$000	Other \$000	Annual \$000	Other \$000				
<b>Appropriations</b>														
Output Expenses	440,532	489,901	541,026	615,809	636,187	636,187	13,946	-	635,669	-	649,615	641,865	654,952	649,774
Benefits and Other Unrequited Expenses	-	-	-	-	-	-	N/A	N/A	-	-	-	-	-	-
Borrowing Expenses	-	-	-	-	-	-	N/A	N/A	-	-	-	-	-	-
Other Expenses	90	86	454	1,974	6,074	6,074	-	-	3,241	-	3,241	2,865	739	840
Capital Expenditure	4,737	7,920	15,029	6,931	2,311	2,311	N/A	N/A	5,280	-	5,280	530	-	-
Intelligence and Security Department Expenses and Capital Expenditure	-	-	-	-	-	-	-	-	N/A	N/A	-	-	-	-
<b>Total Appropriations</b>	<b>445,359</b>	<b>497,907</b>	<b>556,509</b>	<b>624,714</b>	<b>644,572</b>	<b>644,572</b>	<b>13,946</b>	<b>-</b>	<b>644,190</b>	<b>-</b>	<b>658,136</b>	<b>645,260</b>	<b>655,691</b>	<b>650,614</b>
<b>Crown Revenue and Receipts</b>														
Tax Revenue	-	-	-	-	-	-	N/A	N/A	N/A	N/A	-	-	-	-
Non-Tax Revenue	-	-	-	-	-	-	N/A	N/A	N/A	N/A	-	-	-	-
Capital Receipts	-	-	-	-	-	-	N/A	N/A	N/A	N/A	-	-	-	-
<b>Total Crown Revenue and Receipts</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

## Part B1 - Details of Appropriations

Appropriations	2006/07				2007/08		Scope of 2007/08 Appropriations
	Budget		Estimated Actual		Vote		
	Annual \$000	Other \$000	Annual \$000	Other \$000	Annual \$000	Other \$000	
Departmental Output Expenses (General)							
Advice on Shaping the Science System MCOA							Basis: Alignment of the output activity of two existing appropriations to outcomes within one appropriation
Contract Management	1,089	-	1,089	-	1,089	-	- Negotiating, managing and monitoring contracts with the Crown's funding and investment agents and with other specific science and technology service providers.
Policy Advice	12,898	-	12,898	-	12,857	-	- Policy advice on research, science and technology. This includes investment strategies, the performance and integration of the innovation system, scientific technical advice and ministerial services.
Advice on Shaping the Science System (M56)	13,987	-	13,987	-	13,946	-	
Total Departmental Output Expenses (General)	13,987	-	13,987	-	13,946	-	
Non-Departmental Output Expenses							
Advanced Network (M56)	10,360	-	10,360	-	247	-	- Operating a high-speed research and education data network connecting education and RS&T institutions throughout New Zealand in accordance with the objectives outlined in the relevant output agreement.  Reason for Change: Decrease due to the completion of the initial operating support by the Government.
CRI Capability Fund (M56)	46,612	-	46,612	-	50,612	-	- Maintaining and developing the capabilities of CRIs to fulfil their purpose.
Development of International Linkages (M56)	2,837	-	2,837	-	3,227	-	- Promoting and supporting New Zealand RS&T internationally, in accordance with the relevant terms of reference.
Engaging New Zealanders with Science and Technology (M56)	4,999	-	4,999	-	4,321	-	- Activities that engage with New Zealanders over the role of RS&T in supporting innovation.
Environmental Research (M56)	90,226	-	90,226	-	93,449	-	- Public good science and technology that enhances the understanding and management of our environment.
Global Technology Partnership Programme (M56)	1,320	-	1,320	-	564	-	- Providing New Zealand firms with access to information about international RS&T markets and expertise.
Health Research (M56)	58,955	-	58,955	-	58,955	-	- Public good science and technology that improves the health status of New Zealanders.

Appropriations	2006/07				2007/08		Scope of 2007/08 Appropriations
	Budget		Estimated Actual		Vote		
	Annual \$000	Other \$000	Annual \$000	Other \$000	Annual \$000	Other \$000	
<b>Non-Departmental Output Expenses - cont'd</b>							
International Investment Opportunities Fund (M56)	9,479	-	9,479	-	9,600	-	- Supporting the ability of research providers to participate in international research collaborations and to recruit highly experienced researchers from overseas.
Māori Knowledge and Development Research (M56)	4,867	-	4,867	-	4,867	-	- Public good science and technology that unlocks the innovation potential of Māori knowledge.
Marsden Fund (M56)	33,878	-	33,878	-	35,878	-	- Excellent basic research that broadens and deepens the research skill base in New Zealand, regardless of whether the research contributes to the Government's socio-economic priorities.
National Measurement Standards (M56)	5,504	-	5,504	-	5,764	-	- Provision of specified standards to satisfy the needs for traceable physical measurement in New Zealand.
New Economy Research Fund (M56)	61,586	-	61,586	-	65,803	-	- Investigator-initiated research that stimulates the emergence and growth of new knowledge-intensive enterprises.
Pre-Seed Accelerator Fund (M56)	6,711	-	6,711	-	8,267	-	- Accelerating the rate of commercialisation of research developed through publicly funded research.
Research and Development Facilitation and Promotion Service (M56)	-	-	-	-	600	-	- Accelerating commercialisation of research and development, and linkages between firms and research organisations.
Research Contract Management (M56)	20,588	-	20,588	-	21,114	-	- Selecting RS&T related providers, negotiating, managing and monitoring research contracts, and providing operational advice to the Minister.
Research for Industry (M56)	189,107	-	189,107	-	200,660	-	- Public good science and technology that improves the competitiveness of the industrial sector.
Social Research (M56)	5,860	-	5,860	-	5,860	-	- Public good science and technology that improves social well being.
Supporting Promising Individuals (M56)	18,291	-	18,291	-	18,658	-	- Development of human resources in RS&T through awards and fellowships. The recipients include post-doctoral researchers, teachers, and technologists.
Technology New Zealand (M56)	51,020	-	51,020	-	47,223	-	- Enhancing the technological capability of businesses to grow through the development and adoption of new technologies.
<b>Total Non-Departmental Output Expenses</b>	<b>622,200</b>	<b>-</b>	<b>622,200</b>	<b>-</b>	<b>635,669</b>	<b>-</b>	

Appropriations	2006/07				2007/08		Scope of 2007/08 Appropriations
	Budget		Estimated Actual		Vote		
	Annual \$000	Other \$000	Annual \$000	Other \$000	Annual \$000	Other \$000	
<b>Other Expenses to be Incurred by the Crown</b>							
Advanced Network Capability Building (M56)	2,342	-	2,342	-	1,221	-	- Development of capability within the Advanced Network user group (TEIs and CRIs) to make effective use of the Advanced Network. Reason for Change: Agreed scheduled decrease in funding.
Advanced Network CRI Tariffs (M56)	968	-	968	-	741	-	- Tariffs incurred by the usage of the advanced network (KAREN) by CRIs. These CRIs fund the Crown by way of special dividend.
Australian Synchrotron (M56)	1,166	-	1,166	-	609	-	- New Zealand Government's contribution to the establishment and operation of a synchrotron located in Victoria, Australia.
Carter Observatory Grant (M56)	1,500	-	1,500	-	575	-	- Grant to the Carter Observatory to allow for the redevelopment of the Carter Observatory.
Convention Du Metre (M56)	98	-	98	-	95	-	- Payment of New Zealand's annual subscription to the Convention du Metre.
<b>Total Other Expenses to be Incurred by the Crown</b>	<b>6,074</b>	<b>-</b>	<b>6,074</b>	<b>-</b>	<b>3,241</b>	<b>-</b>	
<b>Capital Expenditure</b>							
Equity Investment Fund (M56)	-	-	-	-	5,000	-	- Targeted equity investments into publicly funded research institutes to develop commercial prospects.
Foundation for Research Science and Technology (M56)	2,000	-	2,000	-	-	-	- Investment in information technology for FRST.
Industrial Research Limited (M56)	310	-	310	-	280	-	- Investment in the technological coverage of the Measurements Standards Laboratory at IRL.
Research and Education Advanced Network New Zealand (M56)	1	-	1	-	-	-	- Equity investment in Research and Education Advanced Network New Zealand Ltd, to support the company's operations in establishing and operating the Advanced Network.
<b>Total Capital Expenditure</b>	<b>2,311</b>	<b>-</b>	<b>2,311</b>	<b>-</b>	<b>5,280</b>	<b>-</b>	
<b>Total Appropriations</b>	<b>644,572</b>	<b>-</b>	<b>644,572</b>	<b>-</b>	<b>658,136</b>	<b>-</b>	

## Part C - Explanation of Appropriations for Output Expenses

### Part C1 - Departmental Output Expenses

#### *Advice on Shaping the Science System*

The *Advice on Shaping the Science System* multi class output appropriation comprises two separate outputs. *Policy Advice* which provides advice on science and innovation to support New Zealand's knowledge base and its capacity to innovate and *Contract Management* which administers Vote RS&T contracts.

Under the Policy Advice output MoRST will:

- provide advice that identifies policy needs and develops understanding of research, science and technology issues that affect New Zealand's social, environmental and economic wellbeing
- identify, evaluate and recommend solutions involving science and innovation, and
- implement policy and evaluate the impact on New Zealanders' lives, environment and enterprises, and enable and facilitate global, community and governmental partnerships.

The *Contract Management* output administers Vote RS&T contracts. It covers services provided on behalf of the Crown through the negotiation, management and monitoring of contracts.

Agreements are managed with the following agents and providers:

- Foundation for Research, Science and Technology
- Health Research Council of New Zealand
- Royal Society of New Zealand
- Crown Research Institutes
- REANNZ
- Fulbright New Zealand
- NZAID
- Other providers of research, science and technology services.

Delivery of this output expense is negotiated with each agent or providers through an Output Agreement and monitored through regular Progress Reports.

### Part C2 - Non-Departmental Output Expenses

These are listed in alphabetical order.

#### *Advanced Network*

The Advanced Network output expense funds the operation of a high-speed research and education data network connecting education and science institutions throughout New Zealand with each other and internationally.



This output consists of the governance and operation of REANNZ on behalf of the Minister, including payments to telecommunications network service providers contracted to provide the Advanced Network for REANNZ.

### Funding and investment agent

REANNZ.

### Providers

Crown Research Institutes, Tertiary Education Institutes and any other organisations as approved by the Minister.

### Quantity, quality and timeliness

Performance Measures	2007/08 Performance Standards
Governance	Good governance of REANNZ in accordance with its Constitution, Statement of Intent and the expectations of the shareholding Ministers.
Administration	Sound administration practices are maintained to support the core business and staff.
Supply contracts with key vendors	Administer contracts with vendors.
Membership Agreement	Administer membership agreements with 17 user institutions.

### Cost

	2006/07 \$000	2007/08 \$000
Total output class expenses	10,360	247

### *CRI Capability Fund*

A large proportion of New Zealand's RS&T capability resides in CRIs. The key to the actual and potential social, economic and environmental impact of CRIs is their ability to foster highly specialised teams of experienced and talented scientists.

The *CRI Capability Fund* reinforces and supports the distinctive role of CRIs to maintain the scientific capabilities required for the provision of public good science in New Zealand. It strengthens CRIs' ability to:

- retain and develop organisational RS&T capability for the benefit of New Zealand, and
- enhance the scientific capabilities required for the provision of public good RS&T for the Government.

The *CRI Capability Fund* is allocated to each CRI using a formula based on the value of RS&T contracts that it receives from central and local government sources, averaged over the last three years.

Investment decisions will be devolved to CRIs. The suitability of investments made using the fund will be assessed against both the government's expectations and the strategic goals of each CRI. CRIs will need to meet two requirements:

- to clearly state the key RS&T capabilities which their organisations are responsible for, and to report on progress within these areas in their strategic plans
- to produce a long-term plan for the maintenance of its key capabilities, including a plan for discovering and exploring promising new developments in those areas.

### Funding and investment agent

Ministry of Research, Science and Technology.

### Providers

Crown Research Institutes.

### Quantity, quality, timeliness and cost

#### Quantity

Crown Research Institute	2006/07 \$000	2007/08 \$000
Industrial Research Limited	4,895	5,346
Institute of Environmental Science and Research Limited	4,318	4,637
Institute of Geological and Nuclear Science Limited	3,687	4,084
Landcare Research New Zealand Limited	4,480	4,634
National Institute of Water and Atmospheric Research Limited	9,094	10,083
New Zealand Forest Research Institute Limited	3,398	3,740
New Zealand Institute for Crop and Food Research Limited	3,391	3,842
New Zealand Pastoral Agriculture Research Institute Limited	8,682	9,236
The Horticulture and Food Research Institute of New Zealand Limited	4,667	5,010
Total	46,612	50,612

The amounts for individual CRIs are indicative and are subject to change.

#### Quality and timeliness

Performance Measures	2007/08 Performance Standards
Contracts meet the criteria set out in the relevant agreement.	100%
Annual reports show extent of progress towards objectives and milestones, consistent with the plans stated by CRIs in their Statements of Corporate Intent.	100% of reports.

**Cost**

	2006/07 \$000	2007/08 \$000
Total output class expenses	46,612	50,612

*Development of International Linkages*

The *Development of International Linkages* output expense promotes and supports New Zealand RS&T internationally. Under this output expense, funding and investment agents will fund programmes that develop and enhance the New Zealand innovation sector's global connectivity by:

- supporting access to and utilising the best global ideas, and
- encouraging New Zealanders to use international research, science and technology linkages to enhance our knowledge base and innovative capacity.

Criteria for the purchase of outputs will be:

- contribution to the development of international opportunities and utilisation of overseas advances in science and technology
- dissemination of science and technology knowledge as a contribution to global knowledge, and
- contribution to New Zealand's research, science and technology strategic objectives.

**Funding and investment agents**

Ministry of Research, Science and Technology, Foundation for Research, Science and Technology, Health Research Council of New Zealand and the Royal Society of New Zealand.

**Providers**

Open to all research providers.

**Quality, quantity and timeliness**

Performance Measures	2007/08 Performance Standards
Number and total dollar value of new and active contracts.	Performance measure reported in all quarterly or six monthly reports for 2007/08.
Contracts are awarded according to the terms of the Ministerial Direction or Terms of Reference.	100%.
Provision of data for RS&T Scorecard supplied in accordance with timelines and content guidelines specified in the contract between the Minister of RS&T and the Funding and Investment Agents.	Annual data supplied by Funding and Investment Agencies to MoRST by 30 September

**Cost**

	2006/07 \$000	2007/08 \$000
Total output class expenses	2,837	3,227

*Engaging New Zealanders with Science and Technology*

The *Engaging New Zealanders with Science and Technology* output expense develops New Zealanders' awareness of the importance and value of science and technology to themselves and New Zealand, by:

- Delivering on the need to engage with New Zealanders on Biotechnology as identified in the "New Zealand Biotechnology Strategy".
- Supporting activities that promote the value of research, science and technology to New Zealanders.
- Linking school students and their families with the RS&T sector in New Zealand.
- Funding Smash Palace - a programme that supports artists and scientists to work on research projects together.
- Publishing the New Zealand Science and Technology Journals.

**Funding and investment agents**

Royal Society of New Zealand and Ministry of Research, Science and Technology.

**Providers**

Open to all providers of science and technology services.

Performance Measures	2007/08 Performance Standards
<b>New Zealand Science Journals</b>	
Eight journals will be published in electronic and/or paper forms	Four issues (maximum)
The average turnaround time from submission to publication	45 weeks (or less)
The publication of accepted papers	Within 24 weeks of acceptance subject to available journal space
<b>Alpha and Gamma Series</b>	
The Alpha and Gamma series will be published	Publish between four to six publications each year
<b>Promoting awareness of RS&amp;T</b>	As per contracts
Present the New Zealand Science & Technology Medals	
Manage a national promotional programme	
Support talented S&T school students	
Develop new promotional activities	
<b>Engaging New Zealanders on Biotechnology</b>	As per contracts
New Zealand schools are using Biotechnology information on the Biotechnology Learning Hub	
Develop a programme to give rural New Zealanders an awareness of the role of biotechnology research on food	

Performance Measures	2007/08 Performance Standards
Linking school students with RS&T research	As per contracts
Provision of data for performance measurement framework supplied in accordance with timelines and content guidelines specified in the relevant agreement	Annual data supplied by provider to MoRST by 30 September 2008
Support for Smash Palace	
Four projects to build links between scientists and artists are supported	As per contracts

## Cost

	2006/07 \$000	2007/08 \$000
Total output class expenses	4,999	4,321

## *Environmental Research*

The *Environmental Research* output expense supports public good research, science and technology that enhance the understanding and management of our environment.

Under this output expense, FRST will fund research, science and technology that contributes to the understanding of species, habitats and ecosystems, and the human, pest and other influences to which they are exposed.

Research outputs provide the knowledge that underpins the management, protection and enhancement of natural ecosystems. Research on sustainable use of ecosystems and the productive sector's environment is also included, as is attention to the social impacts of new technologies.

These outputs contribute to an understanding and management of the global biophysical environment and the impact of atmospheric, climatic and other changes to natural, agricultural and other human ecosystems.

This output expense has six outputs:

- Increasing knowledge and awareness of the state of New Zealand's ecosystems and improving their health, diversity and resilience.
- Increasing understanding of the global biophysical environment.
- Improving the quality of human environments and enhancing the capacity to use and manage ecosystems efficiently and sustainably.
- Sustainable management of the productive sector's environment.
- Increasing uptake of research by regional councils through the Envirolink scheme.
- International Polar Year Contestable Research Fund.

Criteria for the purchase of the first four outputs will be:

- benefit to New Zealand through contributions to the understanding and management of natural and human induced environmental systems
- scientific and technological quality

- develop the national RS&T capability to be able to anticipate the environmental issues of the future, and
- focus investment on New Zealand's key national environmental strategies and priorities, including innovative thinking on how to integrate the economic, social, and environmental components.

The objectives of Envirolink are to:

- improve science input to the environmental management activities of regional councils
- increase the engagement of regional councils with the environmental RS&T sector, and
- contribute to greater collective engagement between councils and the science system generally.

The International Polar Year Contestable Research Fund will allow New Zealand researchers to take advantage of this once in 50 year opportunity to participate in a concentrated focus of research on Antarctica and the surrounding oceans, as part of the International Polar Year from March 2007 to March 2009.

### Funding and investment agent

Foundation for Research, Science and Technology.

### Providers

Open to all science and technology providers or as specified in the relevant Ministerial Direction.

### Quantity, quality and timeliness

Performance Measures	2007/08 Performance Standards
Number and total dollar value of new and active contracts.	Performance measure reported in all quarterly reports for 2007/08.
Contracts meet the criteria set out in the Estimates of Appropriations or Ministerial Direction.	100% of contracts.
Provision of data for RS&T Scorecard supplied in accordance with timelines and content guidelines specified in the contract	Annual data supplied by Funding and Investment Agent to MoRST by 30 September 2008.
<b>Envirolink</b>	
Provision of data for the Envirolink Performance Measurement Framework in accordance with timelines and content guidelines specified in the contract between the Minister of RS&T and the Foundation.	Data supplied by Funding and Investment Agent to MoRST by 30 September 2008.

### Cost

	2006/07 \$000	2007/08 \$000
Total output class expenses	90,226	93,449
NZ Ecosystems	34,085	33,958
Global biophysical environment	22,813	24,813
Human environments	4,620	4,620
Sustainable production	27,108	27,108
Envirolink	1,600	1,600
International Polar Year Contestable Research Fund	-	1,350

## *Global Technology Partnerships*

The scheme provides a mechanism for New Zealand firms, and organisations with technical and research capability, to access information about international markets and expertise through the Danish Technology Institute's Technology Partnership Programme.

The intended outcome of the scheme is to improve the technological capability and international connectedness of firms by:

- facilitating domestic and international knowledge and technology transfer
- lifting the quality and quantity of private sector research and development, and
- increasing connections and collaborations between businesses and domestic and international knowledge institutions.

### **Funding and investment agent**

Foundation for Research, Science and Technology.

### **Providers**

Open to New Zealand firms.

### **Quantity, quality and timeliness**

Performance Measures	2007/08 Performance Standards
Contracts meet the criteria set out in the contract between the Minister of RS&T and the Foundation.	100% of contracts.
Provision of data for the Performance Measurement Framework of the Global Technology Partnerships scheme supplied in accordance with timelines and content guidelines specified in the Minister of RS&T and the Foundation.	Data supplied by Funding and Investment Agent to MoRST by 30 September 2008.

### **Cost**

	2006/07 \$000	2007/08 \$000
Total output class expenses	1,320	564

The amounts for these outputs are indicative and subject to change.

## *Health Research*

The *Health Research* output expense supports public good research, science and technology that contributes to improvement in the health status of New Zealanders.

Under this output expense, the HRC will fund research that has the greatest potential to improve the health and quality of life of New Zealanders.

This output expense will support research that provides:

- knowledge and understanding of the factors influencing health status, including health disparities between New Zealanders, and
- technology, products and services for improving health status and reducing health inequalities.

Criteria for the purchase of outputs will be:

- scientific and technological quality, and
- relevance to improving health and social wellbeing.

This output expense has three outputs:

- Contestable Funding Round: strategic, investigator-led research that contributes to the social, economic and knowledge goals for Vote RS&T
- Partnership Programme: research with a focus on building the evidence base for public sector policy and practice relevant to health outcomes, and
- Targeted Research for Health: targeted research addressing identified national health priorities.

### Funding and investment agent

Health Research Council of New Zealand.

### Providers

Open to all research providers.

### Quantity, quality and timeliness

Performance Measures	2007/08 Performance Standards
Number and total dollar value of new and active contracts.	Performance measure reported in six monthly reports for 2007/08
Contracts are awarded in line with the process and criteria set out for each output in the contract between the Minister of RS&T and the Health Research Council.	100% of contracts.
Provision of data for RS&T Scorecard supplied in accordance with timelines and content guidelines specified in the Output Agreement.	Annual data supplied by Funding and Investment Agent to MoRST by 30 September 2008.

### Cost

	2006/07 \$000	2007/08 \$000
Total output class expenses	58,955	58,955
Contestable Funding Round	52,291	52,291
Partnership Programme	1,778	1,778
Targeted Research for Health	4,886	4,886

The amounts for these outputs are indicative and subject to change.



## *International Investment Opportunities Fund*

The *International Investment Opportunities Fund* supports the ability of research providers to participate in research collaborations that attract international co-funding, to recruit highly experienced researchers from overseas and to support participation in international research programmes with a high relevance to New Zealand's economic, social and/or environmental development. The fund will be used to secure benefit for New Zealand in terms of bridging research funding, access to equipment or technologies not available in New Zealand, and building human capital.

The purpose of the fund is to expand New Zealand's knowledge base and capability through three objectives:

- providing funding to enable New Zealand researchers to respond to opportunities for international collaboration that arise out-of-cycle
- co-investing with international partners in research programmes of joint interest that will involve researchers based in New Zealand, and
- assisting world-leading researchers to establish research programmes in New Zealand in key areas of strategic interest to New Zealand.

All objectives are contingent on the demonstration of a clear potential benefit to New Zealand.

Criteria for the investment in research will be:

- scientific and technological quality, and
- potential benefit to New Zealand, including the ability to utilise overseas expertise and advances in science and technology, and the contribution to New Zealand's research, science and technology goals.

Criteria for the investment in assisting researchers to relocate to New Zealand will be:

- international leadership and strength of research group
- fit with New Zealand's strategic research interests
- potential contribution to building a critical mass of research expertise in New Zealand and complementarity with host institution
- host funding and support from a New Zealand research organisation, and
- contribution of incoming research groups.

### **Funding and investment agents**

Foundation for Research, Science and Technology, Health Research Council of New Zealand and Royal Society of New Zealand.

### **Providers**

Support for overseas research collaborations will be open to all science and technology providers based in New Zealand. Support to bring outstanding researchers to New Zealand will be open to eligible researchers from other countries, as specified in the relevant Ministerial Direction or Terms of Reference.

**Quantity, quality and timeliness**

Performance Measures	2007/08 Performance Standards
Number and total dollar value of new and active contracts.	Performance measure reported in all quarterly or six monthly reports for 2007/08.
Contracts are awarded according to the terms of the Ministerial Direction or Terms of Reference.	100%.
Provision of data for RS&T Scorecard supplied in accordance with timelines and content guidelines specified in the contract between the Minister of RS&T and the Funding and Investment Agents.	Annual data supplied by Funding and Investment Agencies to MoRST by 30 September 2008.

**Cost**

	2006/07 \$000	2007/08 \$000
Total output class expenses	9,479	9,600

*Māori Knowledge and Development Research*

The *Māori Knowledge and Development Research Output Expense* provides funding to develop research capacity and capability across the themes of the "Vision Mātauranga" framework:

- Indigenous Innovation: contributing to economic growth through distinctive research and development
- Taiao: achieving environmental sustainability through Iwi and Hapū relationships with land and sea
- Hauora/Oranga: improving Māori health and social wellbeing, and
- Mātauranga: exploring the interface between indigenous knowledge and RS&T, or
- any combination of these themes.

Criteria for the investment in research will be:

- scientific and technological quality
- potential benefit to New Zealand through unlocking the innovation potential of Māori knowledge, resources and people, and
- development of research capability relevant to one or more of the "Vision Mātauranga" themes.

In building research capacity and capability, funding and investment agents will seek to develop a distinct set of skills and body of knowledge. A range of people (Māori and non-Māori) and organisations will be involved in the creation of knowledge funded through this output expense.

**Funding and investment agents**

Foundation for Research, Science and Technology, Health Research Council of New Zealand.

**Providers**

Open to all research providers.

**Quantity, quality and timeliness**

Performance Measures	2007/08 Performance Standards
Number and total dollar value of existing contracts.	Performance measure reported in all quarterly or six monthly reports for 2007/08.
Contracts meet the criteria set out in the Estimates of Appropriations.	100% of contracts.
Provision of data for RS&T Scorecard supplied in accordance with timelines and content guidelines specified in the contract between the Minister of RS&T and the Funding and Investment Agents.	Annual data supplied by Funding and Investment Agencies to MoRST by 30 September 2008.

**Cost**

	2006/07 \$000	2007/08 \$000
Total output class expenses	4,867	4,867

***Marsden Fund***

The *Marsden Fund* output expense supports research that encourages excellence in the advancement of knowledge, expands the knowledge base and supports people with knowledge, skills and ideas.

Under this output expense, the RSNZ invests in investigator-initiated research aimed at exploring the frontiers of new knowledge. Marsden Fund research benefits society as a whole by contributing to the development of researchers with knowledge, skills and ideas. The research is not subject to government's socio-economic priorities. The Marsden Fund provides for long-term and sometimes serendipitous aspects of research, which may lead to profound or unexpected discoveries, or catalyse significant developments in previously unrelated and strategically-important fields of knowledge.

Criteria for the purchase of outputs will be:

- research excellence, and
- contribution to the development of new knowledge, human skills and expertise.

**Funding and investment agent**

Royal Society of New Zealand.

**Providers**

Open to all research providers.

**Quantity, quality and timeliness**

Performance Measures	2007/08 Performance Standards
Number and total dollar value of existing contracts.	Performance measure reported in all six monthly reports for 2007/08.
Contracts will be awarded on the basis of research excellence.	100% of contracts.
Provision of data for RS&T Scorecard supplied in accordance with timelines and content guidelines specified in the contract between the Minister of RS&T and the Royal Society of New Zealand.	Annual data supplied by Funding and Investment Agencies to MoRST by 30 September 2008.

**Cost**

	2006/07 \$000	2007/08 \$000
Total output class expenses	33,878	35,878

*National Measurement Standards*

The *National Measurement Standards* output expense provides specified national measurement standards and related services to satisfy the need for accurate measurement and the Minister's obligations under the Measurement Standards Act 1992.

**Provider**

The Measurement Standards Laboratory, a part of Industrial Research Ltd.

**Quantity, quality and timeliness**

Performance Measures	2007/08 Performance Standards
Provision of national measurement standards and related services.	In accordance with the requirements specified in the contract with the Minister.
The measurement standards will be maintained in accordance with the resolutions and recommendations of the Metric Treaty Organisation.	All technical procedures related to the measurement standards will be validated.
Delivery of outputs in accordance with time lines specified in the output agreement between the Minister and provider.	100% of activities.

**Cost**

	2006/07 \$000	2007/08 \$000
Total output class expenses	5,504	5,764

*New Economy Research Fund*

The *New Economy Research Fund* output expense supports researcher-led innovation that develops capability and knowledge in new areas, or applications where industries are emerging or yet to emerge.

The objective of the scheme is to underpin new or emerging knowledge-based enterprises in New Zealand through:

- Supporting investigator-initiated basic research that has the potential to create the advanced technological platforms that will underpin new and emerging industries.
- Building a critical mass of research capability and new knowledge in emerging science and technology areas.

- Developing advanced human capital and skills that draw from rapidly advancing international science and technology.
- Developing new areas of knowledge to a point where they may be further developed, sustained and/or exploited through other public or private investments.

The scheme will support research proposals that:

- meet international standards of excellence
- seek to build new areas of knowledge and research groupings in areas extending beyond existing industry boundaries
- build human capital in advanced areas of science and technology that may underpin the emergence of new industries
- are initiated as a basic research concept or idea, and develop towards a research-led commercial opportunity, and
- involve research based in New Zealand, but which may include appropriate international collaboration to maximise the benefit to New Zealand.

### Funding and investment agent

Foundation for Research, Science and Technology.

### Providers

Open to all research providers.

### Quantity, quality and timeliness

Performance Measures	2007/08 Performance Standards
Number and total dollar value of new and active contracts.	Performance measure reported in all quarterly reports for 2007/08.
Contracts meet the criteria set out in the Ministerial Direction.	100% of contracts.
Provision of data for RS&T Scorecard supplied in accordance with timelines and content guidelines specified in the contract between the Minister of RS&T and the Foundation.	Annual data supplied by Funding and Investment Agent to MoRST by 30 September 2008.

### Cost

	2006/07 \$000	2007/08 \$000
Total output class expenses	61,586	65,803

### *Pre-Seed Accelerator Fund*

The *Pre-Seed Accelerator Fund* output expense aims to increase the rate of commercialisation of innovations from publicly funded research by public sector research providers.

Under this output expense, the funding and investment agent will invest in entities governed by the Education Act 1989, the Crown Research Institutes Act 1992, Te Papa, Cawthron Institute and any New Zealand-based not-for-profit research associations, or subsidiaries owned more than 50% by such

an entity, to fund experimental development and other pre-seed activities that can be shown to fit the overall objective of the output expense.

Criteria for the purchase of outputs will be:

- an approved business case for the proposed funding, and
- potential to contribute strongly to New Zealand's growth and technological capability.

### Funding and investment agent

Foundation for Research, Science and Technology.

### Providers

Open to entities governed by the Education Act 1989, the Crown Research Institutes Act 1992, Te Papa, Cawthron Institute and any New Zealand-based not-for-profit research associations, or subsidiaries owned more than 50% by such an entity.

### Quantity, quality and timeliness

Performance Measures	2007/08 Performance Standards
Number and total dollar value of new and active contracts (including by type of provider).	Performance measure reported in all quarterly reports for 2007/08.
Contracts meet the criteria set out in the relevant Ministerial Direction.	100% of contracts.
Percentage of contracts that produce investor-ready milestones.	At least 75% of contracts.
Provision of data for RS&T Scorecard supplied in accordance with timelines and content guidelines specified in the contract between the Minister of RS&T and the Foundation.	Annual data supplied by Funding and Investment Agent to MoRST by 30 September 2008.

### Cost

	2006/07 \$000	2007/08 \$000
Total output class expenses	6,711	8,267

### *R&D Facilitation and Promotion Service*

This service provided by the Foundation for Research, Science and Technology supports accelerating commercialisation of R&D and promotes linkages between firms and research organisations.

This will occur through a number of ways including:

- seed funding to support the development of relationships
- develop more efficient ways to link firms with research organisations (eg, field days, commercialisation workshops etc)
- developing more efficient ways to bring current market knowledge into research planning, and
- work with New Zealand Trade and Enterprise on Sector Development.

Performance Measures	2007/08 Performance Standards
Number and total dollar value of new and active contracts	Performance measure reported in all quarterly reports for 2007/08
Provision of data for RS&T Scorecard supplied in accordance with timelines and content guidelines specified in the contract between the Minister of RS&T and the Foundation	Annual data supplied by Funding and Investment Agent to MoRST by 30 September 2008.

## Cost

	2006/07 \$000	2007/08 \$000
Total output class expenses	-	600

## Research Contract Management

The *Research Contract Management* output expense provides for funding and investment agents to manage contracts with a range of science, research and technology providers. Funding and investment agents monitor the delivery of these contracts to ensure the effective operation of the research, science and technology system. Funding and investment agents also evaluate the effectiveness of their purchase decisions through an annual report of progress and achievements.

Under this output expense the Minister has agreements with Funding and Investment Agents to fund research on behalf of the Crown.

### Funding and investment agents

Health Research Council of New Zealand, Foundation for Research, Science and Technology, Royal Society of New Zealand, Fulbright New Zealand.

### Quantity, quality, timeliness and cost

Performance Measures	2007/08 Performance Standards
Achievement reports from research providers are produced in accordance with timelines and content guidelines specified in contracts between the funding and investment agent and providers.	As specified in the contracts between the Minister of RS&T and Funding and Investment Agents.
Number of contracts monitored on the achievement of their performance objectives.	As specified in the contracts between the Minister of RS&T and Funding and Investment Agents.
Contracts are awarded in accordance with assessment processes outlined in annually updated documents.	100% of contracts awarded in accordance with processes set out in the documents identified in the relevant output agreement.
Research contract payments are made at the agreed sum to the correct providers and no payments are made in excess of the agreed sums.	100% of contracts.
Where appropriate, contracts require research providers to obtain ethical approvals, and satisfy government regulatory requirements before the research can be undertaken.	100% of contracts.
Funding and investment agents deliver key accountability reports in accordance with timelines specified in their contracts with the Minister.	100% of reports.
Provision of advice to the Minister as required, via the Ministry.	Any requested advice will be delivered within 15 working days of the formal request and will be of a standard acceptable to the Minister.

Performance Measures	2007/08 Performance Standards
Investment efficiency (\$ contract management budget / \$ investment funds disbursed).	Performance measure reported in the 4th quarter or 2nd six monthly reports for 2007/08.
Contracts (\$ contract management budget / no. of contracts let).	Performance measure reported in the 4th quarter or 2nd six monthly reports for 2007/08.
Processing time (Date of application / date of contracting) split by relevant output expenses (defined in the output agreement).	As specified in the contracts between the Minister of RS&T and Funding and Investment Agents.

## Cost

	2006/07 \$000	2007/08 \$000
Total output class expenses	20,588	21,114

## *Research for Industry*

The *Research for Industry* output expense aims to increase the competitiveness of New Zealand industries and sectors through strategic research.

Under this output expense, FRST will fund research that underpins development of new products, processes and services of use to New Zealand industries and sectors.

This output expense has four outputs:

- Research whose primary objective is to advance food and fibre-based industries and related sectors through innovation. Research portfolios will lead to new products, processes and services that enhance the competitiveness of these industries and sectors.
- Research whose primary objective is to advance manufacturing and services industries and sectors through innovation. Assists manufacturing and services industries and sectors to innovate, and includes research on the broad factors affecting business and economic life.
- Research for the development of infrastructure to underpin economic development. Assists infrastructure services, such as communications, energy, water and waste, to innovate cost-effectively. It also includes research on New Zealand's mineral wealth and understanding of, and responses to risks faced from New Zealand's physical hazards.
- Research consortia to facilitate public/private research partnerships that provide early user engagement and increase private investment in New Zealand. Research investment will be made through user-led research consortia in partnership with research providers.

Criteria for the purchase of outputs will be:

- potential benefit to New Zealand through innovation
- scientific and technological quality of the research
- potential to build RS&T capability and to increase the level of innovation within user groups
- clearly defined partnerships and pathways to the implementation of the research outcomes, and
- fit-for-purpose science track record.



## Funding and investment agent

Foundation for Research, Science and Technology.

## Providers

Open to all science and technology providers.

## Quantity, quality and timeliness

Performance Measures	2007/08 Performance Standards
Number and total dollar value of new and active contracts.	Performance measure reported in all quarterly reports for 2007/08.
Contracts meet the criteria set out in the Estimates of Appropriations.	100% of contracts.
Provision of data for RS&T Scorecard supplied in accordance with timelines and content guidelines specified in the contract between the Minister of RS&T and the Foundation.	Annual data supplied by Funding and Investment Agent to MoRST by 30 September 2008.
Percentage of contracts reporting co-funding greater than 5% of each contract's value.	At least 50% of contracts.
Research Consortia used to leverage private sector investment.	At least 50% planned cash co-funding contributed to consortia by the private sector. At least 50% reported co-funding accumulated over the life of the contract.

## Cost

	2006/07 \$000	2007/08 \$000
Total output class expenses	189,107	200,660
Food and Fibre	110,015	117,360
Manufacturing	27,184	27,184
Infrastructure	32,880	32,880
Research Consortia	19,028	23,236

The amounts for these outputs are indicative and subject to change.

## *Social Research*

The *Social Research* output expense supports public good research, science and technology that improves social wellbeing and cohesion and economic wealth.

Under this output expense, FRST will fund science and research programmes that have the greatest potential to improve New Zealanders' quality of life for individuals, families and communities, foster social cohesion, sustain culture and identity, and improve economic performance.

Research contracts should provide underpinning new knowledge, understanding and insights into longer term social issues and trends of importance to improving the well being of New Zealanders.

This output expense has three outputs:

- Children and young people participating and succeeding.

- Participation in employment.
- Positive ageing.

Criteria for the purchase of outputs will be:

- benefit to New Zealand through improved social well being
- science quality
- develop the RS&T to be able to anticipate the social issues of the future
- promoting new alliances and partnerships between researchers and the diverse users of social research, and
- developing new skills and techniques, in describing and collecting information and how this knowledge can contribute to enhancing the lives of New Zealanders.

**Funding and investment agent**

Foundation for Research, Science and Technology.

**Providers**

Open to all science and technology providers.

**Quantity, quality and timeliness**

Performance Measures	2007/08 Performance Standards
Number and total dollar value of new and active contracts.	Performance measure reported in all quarterly reports for 2007/08.
Contracts meet the criteria set out in the Estimates of Appropriations.	100% of contracts.
Provision of data for RS&T Scorecard supplied in accordance with timelines and content guidelines specified in the contract between the Minister of RS&T and the Foundation.	Annual data supplied by Funding and Investment Agent to MoRST by 30 September 2008.

**Cost**

	2006/07 \$000	2007/08 \$000
Total output class expenses	5,860	5,860

*Supporting Promising Individuals*

The *Supporting Promising Individuals* output expense supports human resources in research, science, and technology and contributes to the development of people with knowledge, skills and ideas.

Under this output expense, funding and investment agents will invest in awards and fellowships that support the development of human capital in research, science and technology, including:

- New Zealand Science and Technology Post-Doctoral Fellowships Scheme: fellowships to develop and enhance science and technology skills and knowledge in researchers who are of outstanding talent, and who apply the benefits to New Zealand.

- Health Research Council of New Zealand Career Development Awards: awards support the recruitment, education, training and retention of health researchers.
- Science, Mathematics and Technology Teacher Fellowships: fellowships provide excellent science and technology teachers with the opportunity to broaden their experience by placing them in organisations where research, science and technology are used and valued.
- Talented Secondary School Science Students Travel Award: provides funds to help cover the direct costs of attending science and technology based events and learning opportunities.
- James Cook Research Fellowships: fellowships are awarded to researchers who are recognised leaders in their respective fields.
- Te Tipu Putaiao Fellowships: fellowships that enhance the distinct innovation potential of Māori knowledge, resources and people to benefit New Zealand.
- Fulbright Scholarships: scholarships to increase the depth and quality of researchers working in New Zealand in areas that support growth and innovation.

### Funding and investment agents

Foundation for Research, Science and Technology, Health Research Council of New Zealand, Ministry of Research, Science and Technology, Royal Society of New Zealand, Fulbright New Zealand.

### Quantity, quality, timeliness and cost

Performance Measures	2007/08 Performance Standards
<b>All awards</b>	
Number and total dollar value of new and active contracts.	Performance measure reported in all quarterly or six monthly reports for 2007/08.
Contracts meet the criteria set out in the relevant Ministerial Direction.	100% of contracts.
Provision of data for RS&T Scorecard supplied in accordance with timelines and content guidelines specified in the contract between the Minister of RS&T and the Funding and Investment Agents.	Annual data supplied by Funding and Investment Agencies to MoRST by 30 September 2008.
<b>Science and Technology Post-Doctoral Fellowships</b>	
Number of active contracts	At least 80 active fellowships.
<b>Health Research Council awards</b>	
Number of active contracts	50-70 active fellowships and scholarships.
<b>Science, Mathematics and Technology Teacher Fellowships</b>	
Number of active contracts	Number of active fellowships defined in the relevant contract.
<b>Talented School Students Travel Award</b>	
Number of awards	Number of awards defined in the relevant contract.
<b>James Cook Research Fellowships</b>	
Number of active contracts	Five active fellowships.
<b>Te Tipu Putaiao Fellowships</b>	
Number of active contracts	At least 25 active fellowships.
<b>Fulbright Scholarships</b>	
Number of active contracts	At least ten scholarships awarded per annum subject to agreement with Minister.

**Cost**

	2006/07 \$000	2007/08 \$000
Total output class expenses	18,291	18,658
New Zealand Science and Technology Post-Doctoral Fellowships	6,535	6,235
Health Research Council of New Zealand Career Development Awards	4,720	5,720
Science, Mathematics and Technology Teacher Fellowships	4,472	4,472
Talented Secondary School Science Students Travel Awards	131	182
James Cook Research Fellowships	720	720
Te Tipu Putaiao Fellowships	1,180	796
Fulbright Scholarships	533	533

The amounts for these outputs are indicative and subject to change.

***Technology New Zealand***

The *Technology New Zealand* output expense aims to increase the ability of firms to adopt new technology and to apply technological learning and technological innovation for business growth.

The output expense comprises four schemes:

- **Technology for Business Growth:** fosters research and development, technological learning and technological innovation by part funding projects that enhance firms' technological capabilities and enable technologically capable firms to move towards high-value, technology-based products, processes or services.
- **Grants for Private Sector Research and Development:** increases the level of private sector investment in research and development in New Zealand by providing grant assistance to primarily small and medium-sized technologically aware firms to undertake R&D projects that have the potential to stretch a firm's technological capability, improve their ability to apply technological innovation for business growth and create an enduring increase in their R&D investment. This scheme will be phased out by the end of 2007/08.
- **Technology for Industry Fellowships:** supports the placement of researchers or technologists in firms or research providers to build linkages and enhance understanding of technological innovation in a commercial R&D environment.
- **TechLink:** stimulates awareness of, and facilitates access to, new technologies and technological capabilities in firms, by providing a range of promotion and technology guidance services.

**Funding and investment agent**

Foundation for Research, Science and Technology.

**Providers**

Open to New Zealand firms, business service organisations, and researchers and technologists.

**Quantity, quality, timeliness and cost**

Performance Measure	2007/08 Performance Standards
Contracts meet the criteria set out in the relevant Ministerial Direction.	The process and criteria used to select contracts are consistent with the relevant Ministerial Direction.
The funding and investment agent provides a quality service to participants in the Technology New Zealand Schemes.	At least 85% of biennially surveyed participants indicate satisfaction with the standard of delivery.
The funding and investment agent attracts new participants to the Technology New Zealand schemes.	At least 15% of participants have not previously had assistance from Technology New Zealand schemes.
Provision of data for RS&T Scorecard supplied in accordance with timelines and content guidelines specified in the contract between the Minister of RS&T and the Foundation.	Annual data supplied by Funding and Investment Agent to MoRST by 30 September 2008.
<b>Technology for Business Growth</b>	
Number of total dollar value of new and active contracts.	Performance measures reported in all quarterly reports for 2007/08.
<b>Grants for Private Sector Research and Development</b>	
Number and total dollar value of new and active contracts.	Performance measures reported in all quarterly reports for 2007/08.
<b>Technology for Industry Fellowships</b>	
Number and total dollar value of new and active contracts (split out by type of Fellowship).	Performance measures reported in all quarterly reports for 2007/08.
<b>TechLink</b>	
Number and total dollar value of new and active contracts, (split out by sub scheme).	Performance measures reported in all quarterly reports for 2007/08.

**Cost**

	2006/07 \$000	2007/08 \$000
Total output class expenses	51,020	47,223
Technology for Business Growth	33,287	30,305
Grants for Private Sector Research and Development	7,778	7,778
Technology for Industry Fellowships	7,938	4,723
Techlink	2,017	4,417

The amounts for these outputs are indicative and subject to change.

## Part D - Explanation of Appropriations for Other Operating Flows

### Part D3 - Other Expenses

#### *Convention du Metre*

New Zealand contributes annually to the Convention du Metre, an international convention that supports the national measurement standards applied in New Zealand.

The Convention du Metre is supported by 52 member states through the Bureau International Des Poids et Mesures (BIPM) based in France.

#### *Australian Synchrotron*

New Zealand is contributing to the operation of a synchrotron by the Victorian State Government in Australia.

The Australian facility provides security and convenience of access, furthering scientific discovery, educating and growing the user base, strengthening New Zealand's competitive position and influencing the direction of synchrotron science.

#### *Advanced Network Capability Building*

The Advanced Network will supply very high capacity, very high speed interconnections between TEIs and CRIs in New Zealand and with overseas counterparts, as well as providing connection to organisations engaged in research-based collaborations with these users and libraries, archives and museums.

The Network will enable scientific and tertiary educational institutions throughout New Zealand to participate in global advances and carry out leading-edge research that will enhance innovation in New Zealand.

This appropriation will provide for development of capability within the user group to make effective use of the Advanced Network.

#### *Advanced Network CRI Tariffs*

This appropriation will provide for CRI obligations to REANNZ Limited for their use of the Advanced Network. This appropriation will be covered by special dividends paid by CRIs.

#### *Carter Observatory Grant*

This appropriation will provide the Carter Observatory Board with funding for the re-development of the Carter Observatory.

## Part E - Explanation of Capital Flows

### Part E1 - Explanation of Movements in Departmental Net Asset Schedules

Details of Net Asset Schedule for Ministry of Research, Science and Technology	Estimated Actual 2006/07 \$000	Projected 2007/08 \$000	Explanation of Projected Movements in 2007/08
Opening Balance	2,411	2,411	
Capital Injections	-	-	
Capital Withdrawals	-	-	
Surplus to be Retained (Deficit Incurred)	-	-	
Other Movements	-	-	
Closing Balance	2,411	2,411	

### Part E2 - Statement of Estimated and Forecast Net Worth of Entities Owned

	Balance Date	Estimated Net Worth 2007 \$000	Forecast Net Worth 2008 \$000
<b>Crown Entities:</b>			
Foundation for Research, Science and Technology	30 June	3,200	3,200
Research and Education Advanced Network of New Zealand Ltd	30 June	1	1

### Part E3 - Explanation of Appropriations for Capital Expenditure

#### *Equity Investment Fund*

The Equity Investment Fund (formerly named the "Investment in Commercialisation of Publicly Funded Research and Development") was established in 2003/04 to provide for targeted equity investments into CRIs that have the capability to develop commercial prospects but are unable to find suitable commercial partners or to borrow the necessary funds. This will assist with the acceleration of activities that increase the rate of commercialisation of innovations from Crown-owned research providers.

#### *Industrial Research Limited*

This appropriation will provide for capital equipment to extend the services provided by the Measurement Standards Laboratory, a unit of Industrial Research Limited.

#### *Research and Education Advanced Network New Zealand*

Research and Education Advanced Network of New Zealand Limited (REANNZ) is the company formed to implement the Advanced Network.

This appropriation will provide for the establishment capital of the company.