VOTE *Research, Science and Technology*

Research, Science and Technology

Overview

Appropriations sought for Vote Research, Science and Technology in 2004/05 total $621.098 million. These appropriations will be applied as follows:

- $165.962 million (27% of Vote) to purchase outputs that support innovative and entrepreneurial people with the ability to create new knowledge needed to respond to New Zealand's changing needs, and support our capacity to innovate.
- $255.938 million (41% of Vote) to research, science and technology outputs that contribute to increasing the competitiveness of New Zealand enterprises.
- $94.045 million (15% of Vote) to research, science and technology outputs that increase understanding of our environment.
- $54.326 million (9% of Vote) to research, science and technology outputs that increase knowledge of the social, biological, cultural, economic and physical factors that improve the social wellbeing of New Zealanders.
- $34.241 million (6% of Vote) to purchase advice on research and innovation policies and manage contracts with purchase agents and research providers.
- $13.200 million capital contribution carried over from 2002/03 for the New Zealand Venture Investment Fund to co-invest with the private sector to commercialise innovation.
- $1.800 million to improve the infrastructure for the Ministry of Research, Science and Technology.
- $1.500 million capital contribution to the Carter Observatory to relocate closer to similar educational attractions.
- $86,000 for the payment of the Crown's expenses for New Zealand's membership of the Convention du Metre.

Details of how the appropriations are to be applied appear in parts A, B and C of this Vote.

Terms and Definitions Used

APEC	Asia Pacific Economic Co-operation
CRI	Crown Research Institute
FRST	Foundation for Research, Science and Technology
GIF	Growth and Innovation Framework
GIAB	Growth and Innovation Advisory Board
HRC	Health Research Council of New Zealand
MoRST	Ministry of Research, Science and Technology
NERF	New Economy Research Fund
NZVIF	New Zealand Venture Investment Fund Limited
R&D	Research and Development
RSNZ	The Royal Society of New Zealand
RS&T	Research, Science and Technology
TIF	Technology for Industry Fellowships

Research, Science and Technology

VOTE MINISTER: Minister of Research, Science and Technology
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

A1 - Objectives for Vote Research, Science and Technology

The Government's Role in Research, Science and Technology

The Government views RS&T as a key driver for transforming New Zealand into a knowledge-based society, through contributing to knowledge, stimulating long-term economic growth, improving social well being, and ensuring the sustainable management of our environment.

The Government has agreed to a broad role for the Minister of RS&T that emphasises a view of RS&T activity and outcomes in the private and public sector, through, for example:

- A stronger stewardship role across the RS&T system, including public and private sector investment.
- Participation in whole of government processes, particularly the Growth and Innovation Framework and implementing the Biotechnology Strategy.
- Closer integration with purchase and ownership policy around CRIs.

The Government's investments in RS&T offer strong public good outcomes and high long run returns. Vote RS&T has a wide range of investments that build capacity and capability in the science system and contribute to its integrity and inter-connectedness. These initiatives build knowledge and encourage private sector R&D, as well as illustrating a wider long-term concern for the environmental and social wellbeing of New Zealanders.

The Government works as a leader, partner, facilitator, and broker across all sectors of the innovation system. Its investments in RS&T support innovation alongside its investments in education, industry and regional development, and its interventions that encourage technology uptake in business.

The GIF is the key framework within which the Government will deliver on its economic objective. It provides a basis on which to widen the investment focus for the Vote. The RS&T sector contributes to GIF in the following ways:

- **Enhancing the existing framework**. Vote RS&T supports a number of programmes to strengthen connections between the RS&T sector and the end users of research, such as businesses, government agencies and educators. This is critical to ensuring innovation can play a part in helping New Zealand to grow.

- **Developing, attracting and retaining people with exceptional skills and talents**. Vote RS&T has a number of output classes designed to develop, retain, repatriate and support top class individuals and their research teams.
- **Increasing global connectedness**. Vote RS&T actively establishes and maintains links with science institutions, government agencies and researchers overseas. It provides support for researchers in New Zealand to collaborate with overseas researchers and keep up to date with developments overseas.
- **Focusing government resources to maximise the impact of innovation across the whole economy**. In preparation of the 2004/05 Budget, MoRST has worked closely with the Ministry of Economic Development, New Zealand Trade and Enterprise, Ministry of Foreign Affairs and Trade, Ministry of Agriculture and Forestry, Ministry of Education, Tertiary Education Commission, Industry New Zealand, FRST, and the Treasury. These close working relationships ensure Vote RS&T links with cross-government initiatives.

Vote RS&T contributes to the Government's role in RS&T through ensuring that key capabilities are maintained in areas of importance to New Zealand. In 2004/05 there are two main themes under which new investment in RS&T fits. These are:

- Supporting core capabilities in the RS&T system - restoring and maintaining funding for capability is occurring through Research for Industry, Health Research and Environmental Research. New capabilities are being built through the New Economy Research Fund and Non-Specific Output Fund.
- Increasing global linkages - building on the international linkages developed through events like the 4th APEC Science Ministers Meeting in March 2004. New Zealand's involvement in international research collaborations will be strengthened by a new International Investment Opportunities Fund. Science counsellors in the European Union and United States of America will assist in expanding New Zealand's access to international ideas, technology and research infrastructure.

The Research, Science and Technology Investment Framework

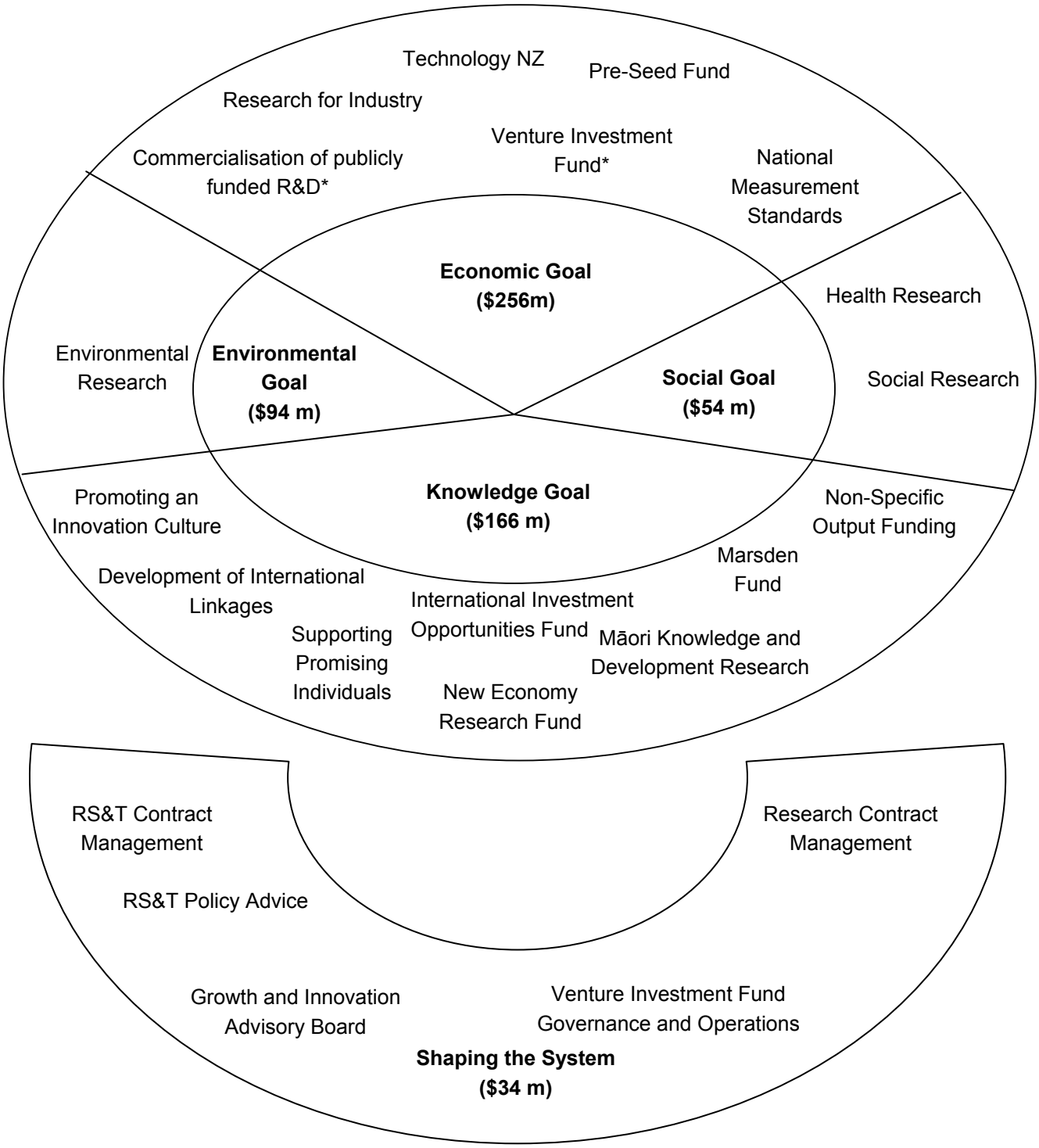
The Government wishes to ensure that its investment in Vote RS&T is appropriately targeted. It develops policy and allocates resources around four goals - Knowledge, Economic, Social and Environmental. There is also an allocation to ensure the development and running of the RS&T system.

Each goal comprises a group of output classes whose outputs make contributions to the achievement of the goal. The link between output classes and goals is described on the following pages.

Progress towards higher-level government goals and strategies is monitored through an evaluation programme looking at the short, medium and long-term outcomes of RS&T investments. Monitoring and evaluation identifies areas for reprioritisation and makes an important and increasing contribution to evidence-based policy development.

Output classes connected across government

The output class structure focuses Vote RS&T investments around the Government's knowledge, economic, environmental and social goals. The structure ensures government makes better investment decisions across all the outputs purchased through Vote RS&T. Output classes contribute most strongly to a specific goal, but there are secondary effects across other goals as well.



* The Venture Investment Fund and Commercialisation of Publicly Funded Research and Development are capital appropriations not included in the above figures.

Knowledge goal

The Knowledge Goal seeks to accelerate knowledge creation and develop people, learning systems and networks in order to enhance New Zealand's capacity to innovate. Inventive and entrepreneurial people with the ability to create new knowledge are needed to respond to New Zealand's changing needs, and support our capacity to innovate.

Desired outcomes under the Knowledge Goal:

- A knowledge base that reflects its specific national needs, its areas of comparative advantage and the risks it faces.
- Skilled people able to meet current and future research and innovation needs.
- A society and culture that values knowledge in its own right and has confidence in New Zealand's science institutions and scientists.
- Local and global networks and links that create, share and utilise new knowledge.

Output classes contributing to the Knowledge Goal are:

- *Marsden Fund* for excellent research exploring the frontiers of new knowledge.
- *New Economy Research Fund* for research capability and knowledge development in areas of science and technology where new industries and enterprises are emerging.
- *Non-Specific Output Funding* for exploratory research that underpins science capabilities in Crown Research Institutes.
- *Supporting Promising Individuals* for awards and fellowships to retain, repatriate and support people who sustain the innovation system.
- *Māori Knowledge and Development Research* for developing research capability and knowledge for Māori development, by encouraging excellence in the delivery of knowledge for Māori, building the Māori research skill base, and consolidating the Māori knowledge base.
- *Promoting an Innovation Culture* to develop relationships that strengthen and encourage a culture of innovation.
- *Development of International Linkages* to promote and support New Zealand RS&T internationally by accessing and utilising the best global ideas and encouraging New Zealanders to use international linkages to enhance our knowledge base and innovative capacity.
- *International Investment Opportunities Fund* - to support research providers and research funders to participate in international research collaborations and to recruit highly experienced researchers from overseas.

Significant knowledge goal initiatives for 2004/05

Supporting core capabilities in the RS&T system

Initiatives in 2004/05 that support the knowledge goal and support the capabilities of the RS&T system include increases in the *New Economy Research Fund* to encourage investigator-initiated research and new capability development aimed at exploring the new frontiers in emerging areas for New Zealand.

Increasing global linkages

Global connectedness will be strengthened through increased investments in *Development of International Linkages* that support an increased science presence in the European Union and the United States.

A new output class, the *International Investment Opportunities Fund* will encourage increased international co-funding of scientific research involving New Zealand.

Economic goal

The Economic Goal seeks to increase the contribution knowledge makes to the creation and value of new and improved products, processes, systems and services in order to enhance the competitiveness of New Zealand enterprises.

Desired outcomes under the Economic Goal:

- Public and private sector research investments complement each other in supporting growth and competitiveness across the economy.
- Increased levels of private sector R&D, research intensities and co-funding of research with the public sector.
- The Government's research investment emphasises development of skilled people and high-value technologies that will enhance the comparative advantage of New Zealand sectors and the competitiveness of New Zealand businesses in the global economy.
- The commercial value of publicly funded research is enhanced and there is rapid diffusion of new ideas and technologies from CRIs and tertiary education institutes into sectors of the economy.

Output classes contributing to the Economic Goal are:

- *Research for Industry* for increasing the global competitiveness of our food and fibre, manufacturing and service industries; and in national infrastructure such as energy and our built environment.
- *Pre-Seed Fund* to assist an innovative process or product from the conceptual stage to the point where there is a demonstrably marketable product or process.
- *Commercialisation of Publicly-Funded Research and Development* for targeted equity investments into Crown-owned research providers to increase the rate of commercialisation of research and development.
- *Technology New Zealand* for increasing both the flow of technology from researchers to firms, and the ability of firms to take up new technology.

- *New Zealand Venture Investment Fund* (NZVIF) for increasing seed and start-up investment funding capacity.
- National Measurement Standards for providing a set of internationally accepted standards for New Zealand products, processes and services.

Significant economic goal initiatives for 2004/05

Supporting core capabilities in the RS&T system

This year sees a significant increase in strategic research to maintain research capabilities and resources important to the New Zealand economy and its national infrastructure and increase the level of end-user involvement in RS&T through large-scale public-private partnerships. Specifically in 2004/05 this will both establish new research consortia and support the expansion of existing consortia.

Increased investment in *National Measurements Standards* will enable the establishment of a Virtual Institute of Metrology in Chemistry, to provide traceability in chemistry and biotechnology measurements, based on a national network of analytical laboratories and users.

The *Technology New Zealand* output class outputs have been reprioritised to provide additional funding to expand the Technology for Industry Fellowships (TIF) programme. This will enable a greater flow of knowledge between research institutes and business, as well as significantly developing the skills and experience of the participants.

Environmental goal

The Environmental Goal seeks to increase understanding of the environment, including the biological, physical, social, economic and cultural factors that affect it.

Desired outcomes under the Environmental Goal:

- The Government's investment in environmental research is aligned with important and recognised environmental needs and supports evidence based environmental polices.
- Highly integrated research programmes are promoted in order to develop innovative thinking on how to integrate the economic, social and environmental components.

The output class contributing to the Environmental Goal is:

- *Environmental Research* for increasing the knowledge of the environment and the factors that affect it, in order to establish and maintain a healthy environment.

Significant environmental goal initiatives for 2004/05

Supporting the capabilities in the RS&T system

An increase in *Environmental Research* will be invested in updating and maintaining nationally significant databases and collections. Additional funding will also support air quality and marine biosecurity research.

Social goal

The Social Goal seeks to increase understanding of the social, biological, environmental, cultural, economic and physical determinants of wellbeing in order to build a society in which all New Zealanders enjoy health and independence and have a sense of belonging, identity and partnership.

Desired outcomes under the Social Goal:

- The Government's social and health research investment aligns with important and recognised social and health needs and supports the development of evidence-based policy.
- Social innovation is encouraged by providing knowledge on the synergies between improvements in productive capacity, social well being, participation, connectedness and health.

Output classes contributing to the Social Goal are:

- *Health Research* for supporting public good research that has the greatest potential to improve the health status of New Zealanders.
- *Social Research* for supporting public good research that improves social wellbeing.

Significant social goal initiatives for 2004/05

An increase in *Health Research* funding will be invested in strategically relevant and high quality research to improve our knowledge of the factors influencing health status.

Shaping the system

In addition to the four science goals, the Government has the wider goal of influencing the overall shape of New Zealand's innovation system through RS&T. As government investment in RS&T totals about two thirds of New Zealand's reported R&D expenditure, its policies and actions set a strong direction for research and innovation activities.

MoRST's role is as the sector leader - initiating, sustaining, and evaluating changes to the way RS&T is undertaken to ensure that the RS&T sector is able to deliver on the goals of the Government. To do this, MoRST works in partnership with all those involved in the sector, including RS&T purchase agents, to bring about the changes that are required.

Activities aimed at delivering a high performing RS&T sector, and the output classes used to ensure direction and management for research and innovation in New Zealand are:

- Advice to the Government on RS&T:
  - *Research, Science and Technology Policy Advice* that funds MoRST to define, design and deliver policy advice to the Government on research and innovation. This includes a strategic oversight of the whole RS&T system and evaluating its effectiveness in achieving outcomes, as well as technical advice on science - related issues, co-ordinating the implementation of the Biotechnology Strategy, commercialisation of RS&T and international RS&T linkages.

- MoRST management of contracts that directly invest in research and innovation:
  - *Research, Science and Technology Contract Management* that funds MoRST to negotiate, manage and monitor contracts, and pay expenses on behalf of the Government.
- Purchase agent management of contracts that directly invest in research and innovation:
  - *Research Contract Management* that funds FRST, HRC and the RSNZ to invest in portfolios of research on behalf of the Government.
  - *Venture Investment Fund - Governance and Operation* for the management and governance of the NZVIF.
- Support for Growth and Innovation Advisory Board:
  - *Growth and Innovation Advisory* Board provides independent advice to the Prime Minister and senior economic ministers on how Government can strengthen its growth and innovation programme. GIAB identifies ways the framework can be evolved, as well as implementation improved and action prioritised.

Significant shaping the system initiatives for 2004/05

Increases have been made to the *Research Contract Management* output class to reflecting the cost of managing additional research funding. Additional funding has also been made available to recognise the expanding role of MoRST in the R&ST system.

A2 - Trends in Vote Research, Science and Technology

The Direction for Vote Research, Science and Technology

The total appropriation for Vote RS&T has increased from $430.282 million in 1999/2000 to $574.400 million in 2003/04. The 2003/04 appropriation includes $11.7 million of the capital contribution to the NZVIF.

Output trends 1999/2000 to 2003/04

Departmental output classes

The appropriation for departmental output classes has risen from $5.921 million in 1999/2000 to $13.687 million in 2003/04. Half of this increase has occurred in the Research Science and Technology Policy Advice output class which has increased from $5.348 million to $9.242 million. The Research, Science and Technology Contract Management output class has remained stable at $0.578 million.

During the period three new departmental output classes have been created:

- The Science and Innovation Advisory Council departmental output class was established in 2000/01 with an appropriation of $0.55 million. From 2001/02 the Science Innovation Advisory Council is known as the Growth and Innovation Board.
- The Growth and Innovation Board departmental output class was established in 2001/02 with an appropriation of $0.213 million, rising to $1.231 million in 2002/03 and $1.379 million in 2003/2004.

- The NZVIF governance and operations departmental output class was established in 2001/02 with an appropriation of $2.136 million, decreasing to $1.498 million in 2002/03 when it was transferred to a non-departmental output class.

Non-departmental output classes

The Vote RS&T non-departmental output classes were reorganised in 2000/01.

The Marsden Fund has increased by just under $10 million over the period - from $22.839 million in 1999/2000 to $32.789 million in 2003/04.

Research for Industry was established as a new non-departmental output class consolidating a number of smaller output classes in 2000/01 with an appropriation of $170.809 million, this has risen to $185.035 million in 2003/04 due mainly to the introduction of Research Consortia.

Three new non-departmental output classes were created in 2002/03 for:

- Pre-seed Fund ($4.800 million).
- Venture Investment Fund - Governance and Operation ($1.215 million).
- Development of International Linkages ($3.003 million).

Research contract management

Vote RS&T contains a non-departmental output class that funds the purchase of Research Contract Management from three purchase agents, FRST, HRC and RSNZ. The trends in the Research Contract Management non-departmental output class are outlined in the table below:

$000*	1999/2000	2000/01	2001/02	2002/03	2003/04
Non Departmental Output Class:					
Research Contract Management		11,111	12,456	15,127	17,377

Venture investment fund - distribution of capital

The NZVIF was established in 2001 with a capital appropriation of $100 million in Vote RS&T. This appropriation was subsequently transferred to the 2002/03 financial year, and by June 2003 $95.3 million of un-invested funds had been further transferred on to the 2003/04 year.

A further transfer of capital to out-years aligns capital drawdown projections made previously by NZVIF Limited. There will also be an automatic rolling over into the following year of any capital not invested at year-end. These changes are fiscally neutral.

The financial details of the changes are illustrated in the table below:

$000*	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Net capital impact	-83,600	13,200	17,200	18,800	14,000	20,400

Reconciliation of New Initiatives to Appropriations

		$000 increase/(decrease)				
Initiative	Appropriations as shown in Part B	2003/04	2004/05	2005/06	2006/07	2007/08
Development of New Zealand's Capability in Chemical Metrology	Non-Departmental Output Class - National Measurements Standards		440	440	440	440
Improve the infrastructure for MoRST	Departmental Output Class - Research, Science and Technology Policy Advice		684	588	588	588
Research Surveys and their Evaluation for MoRST	Departmental Output Class - Research, Science and Technology Policy Advice		1,734	959	959	959
Sustained Capability in MoRST	Departmental Output Class - Research, Science and Technology Policy Advice		1,726	2,322	2,572	2,572
Growth Culture Communications and Outreach	Departmental Output Class - Growth and Innovation Advisory Board		281			
Health Research	Non-Departmental Output Class - Health Research		5,500	5,500	5,500	5,500
	Non-Departmental Output Class - Research Contract Management		250	250	250	250
Environmental Research	Non-Departmental Output Class - Environmental Research		5,925	5,175	5,175	5,175
	Non-Departmental Output Class - Research Contract Management		200	200	200	200
International Investment Opportunities Fund	Non-Departmental Output Class - International Investment Opportunities Fund		2,880	3,840	4,800	4,800
	Non-Departmental Output Class - Research Contract Management		120	160	200	200

Reconciliation of New Initiatives to Appropriations (continued)

		$000 increase/(decrease)				
Initiative	Appropriations as shown in Part B	2003/04	2004/05	2005/06	2006/07	2007/08
Strategic Research for Economic Growth - Research for Industry	Non-Departmental Output Class - Research for Industry		17,300	19,150	19,150	19,150
	Non-Departmental Output Class - Technology New Zealand		(1,500)	(3,000)	(3,000)	(3,000)
	Non-Departmental Output Class - New Economic Research Fund		6,500	4,900	4,900	4,900
	Non-Departmental Output Class - Research Contract Management		1,000	750	750	750
Improving the Flow of Tacit Knowledge - Technology New Zealand	Non-Departmental Output Class - Technology New Zealand (Technology for Industry Fellowships)		1,500	3,000	3,000	3,000
Strategic Research for Economic Growth - Research Consortia	Non-Departmental Output Class - Research for Industry		2,380	3,810	3,810	6,650
	Non-Departmental Output Class - Research Contract Management		120	190	190	350
Organisational Capability in the RS&T sector	Non-Departmental Output Class - Non-Specific Output Fund		3,850	3,850	3,850	3,850
	Non-Departmental Output Class - Research and Contract Management		150	150	150	150
Science Counsellors	Non-Departmental Output Class - Development of International Linkages	(143)	(1,143)	(1,143)	(1,143)	(1,143)
	Departmental Output Class - Research, Science and Technology Policy Advice	161	1,286	1,286	1,286	1,286
Science Counsellors (additional funding)	Departmental Output Class - Research, Science and Technology Policy Advice		450	450	450	450

Smash Palace	Non-Departmental Output Class - Promoting an Innovation Culture		200	200	200	200
Science and Technology Publications	Non-Departmental Output Class - Promoting an Innovation Culture		150	150	150	150
Future Visionz	Non-Departmental Output Class - Promoting an Innovation Culture		250			
International Education	Non-Departmental Output Class - Supporting Promising Individuals		30	681	1,181	1,232
Venture Investment Fund - Capital Transfer	Capital Contributions to Other Persons or Organisations - New Zealand Venture Investment Fund	(83,600)	13,200	17,200	18,800	14,000
Carter Observatory - Capital Contribution	Capital Contributions to Other Persons or Organisations - Carter Observatory		1,500			
Increasing the capital investment in MoRST	Purchase or Development of Capital Assets by the Crown		1,800			
Total Initiatives		**(83,582)**	**68,763**	**71,058**	**74,408**	**72,659**

Trends in Vote Research, Science and Technology - Summary of Appropriations and Crown Revenue

	1999/2000	2000/01	2001/02	2002/03	2003/04		2004/05 Appropriations to be Used					2005/06	2006/07	2007/08
							By the Department Administering the Vote		For Non-Departmental Transactions					
Types of Appropriation	Actual $000	Actual $000	Actual $000	Actual $000	Budget $000	Estimated Actual $000	Annual $000	Other $000	Annual $000	Other $000	Total $000	Estimated $000	Estimated $000	Estimated $000
Operating Flows														
Classes of Outputs to be Supplied	430,196	473,958	473,103	494,458	550,651	550,151	13,904	-	590,608	-	604,512	624,849	630,752	628,801
Benefits and Other Unrequited Expenses	-	-	-	-	-	-	N/A	N/A	-	-	-	-	-	-
Borrowing Expenses	-	-	-	-	-	-	N/A	N/A	-	-	-	-	-	-
Other Expenses	86	90	93	90	86	86	-	-	86	-	86	86	86	86
Capital Flows														
Capital Contributions	-	-	-	4,737	23,663	10,000	1,800	-	14,700	-	16,500	17,200	18,800	34,400
Purchase or Development of Capital Assets	-	-	-	-	-	-	N/A	N/A	-	-	-	-	-	-
Repayment of Debt	-	-	-	-	-	-	N/A	N/A	-	-	-	-	-	-
Total Appropriations	430,282	474,048	473,196	499,285	574,400	560,237	15,704	-	605,394	-	621,098	642,135	649,638	663,287
Total Crown Revenue and Receipts	-	-	-	-	-	-	N/A	N/A	N/A	N/A	-	-	-	-

Part B1 - Details of Appropriations

	2003/04				2004/05		
	Vote		Estimated Actual		Vote		
Appropriations	Annual $000	Other $000	Annual $000	Other $000	Annual $000	Other $000	Description of 2004/05 Appropriations
Departmental Output Classes (Mode B Gross)							
Research, Science and Technology Policy Advice	9,242	-	9,242	-	**11,769**	-	Provides 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. Changes from 2003/04 to 2004/05 are due to an increased investment in the RS&T system.
Research, Science and Technology Contract Management	541	-	541	-	**573**	-	Negotiates, manages and monitors the Crown's funding of science and technology purchase agents and negotiates and monitors contracts with specific science and technology service providers. Changes from 2003/04 to 2004/05 are due to the flow on effects from increased funding in priority areas.
Growth and Innovation Advisory Board	1,379	-	1,379	-	**1,562**	-	Supports the Growth and Innovation Advisory Board which provides independent perspectives on how the Government can advance its growth and innovation framework. Changes from 2003/04 to 2004/05 will fund a communications and outreach package to engage with business and community partners on the growth culture message
4th APEC Science Ministers' Meeting	2,525	-	2,025	-	**-**	-	Supports NZ's hosting of the 4th APEC Ministers' Conference on regional Science & Technology Cooperation in Christchurch in March 2004. There is no appropriation for this output class in 2004/05.
Total Appropriations for Departmental Output Classes (Mode B Gross)	13,687	-	13,187	-	13,904	-	

Part B1 - Details of Appropriations (continued)

	2003/04				2004/05		
	Vote		Estimated Actual		Vote		
Appropriations	Annual $000	Other $000	Annual $000	Other $000	Annual $000	Other $000	Description of 2004/05 Appropriations
Non-Departmental Output Classes							
International Investment Opportunities Fund	-	-	-	-	**2,880**	-	Supports the ability of research providers to participate in international research collaborations and to recruit highly experienced researchers from overseas. This is a new appropriation for 2004/05.
Marsden Fund	32,789	-	32,789	-	**34,289**	-	Basic research outputs which broaden and deepen the research skill base and support excellent research in New Zealand, regardless of whether the research contributes to the Government's socio-economic priorities. Changes from 2003/04 to 2004/05 are due to increased investment in investigator-initiated research aimed at exploring the frontiers of new knowledge.
Non-Specific Output Funding	28,582	-	28,582	-	**32,376**	-	Funds the Crown Research Institutes as specified in the relevant Ministerial instruction. Changes from 2003/04 to 2004/05 are due to a transfer of funds from the Ministry of Agriculture and increased funding for CRI capability.
Supporting Promising Individuals	14,551	-	14,551	-	**14,031**	-	Supports the development of human resources in research, science and technology through awards and fellowships. The recipients include post-doctoral researchers, teachers, and Māori researchers and technologists.
Promoting an Innovation Culture	2,692	-	2,692	-	**4,192**	-	Supports the development of activities that engage with New Zealanders over the role of science and technology in supporting innovation. International links will be developed to access the best international research and researchers, and to promote New Zealand research overseas. Changes from 2003/04 to 2004/05 are due to increased funding for Smash Palace and science journals.
Research Contract Management	17,377	-	17,377	-	**19,237**	-	Supports the capability of the Crown's purchase agents to negotiate, manage and monitor research contracts, and provide advice to the Minister. Changes from 2003/04 to 2004/05 are due to the flow on effects from increased funding in priority areas.

New Economy Research Fund	63,884	-	63,884	-	**70,384**	-	Investigator-initiated research that stimulates the emergence and growth of new knowledge-intensive enterprises. Changes from 2003/04 to 2004/05 are due to increases in strategic research and capability funding.
Research for Industry	185,035	-	185,035	-	**205,215**	-	Public good science and technology that improves the competitiveness of the industrial sector. Changes from 2003/04 to 2004/05 will fund an increase the level of end-user involvement in RS&T through large-scale public-private partnerships, strategic research and capability funding.
Technology New Zealand	36,056	-	36,056	-	**40,406**	-	Enhances the technological capability of businesses to grow through the development and adoption of new technologies.
Pre-Seed Fund	4,800	-	4,800	-	**4,800**	-	Designed to accelerate the rate of commercialisation of research developed through publicly funded research.
National Measurement Standards	5,077	-	5,077	-	**5,517**	-	Provides specified standards to satisfy the needs for traceable physical measurement in New Zealand. Changes from 2003/04 to 2004/05 are due to the establishment of a Virtual Institute of Metrology in Chemistry.
Māori Knowledge and Development Research	5,475	-	5,475	-	**5,475**	-	Public good science and technology that enhances Māori knowledge and capability and contributes to the positive future development of Māori.
Health Research	42,234	-	42,234	-	**47,734**	-	Public good science and technology that improves the health status of New Zealanders. Changes from 2003/04 to 2004/05 are due to increased funding for strategically relevant research to improve knowledge of the factors influencing health status.
Social Research	6,592	-	6,592	-	**6,592**	-	Public good science and technology that improves societal well being.
Environmental Research	88,170	-	88,170	-	**94,045**	-	Public good science and technology that enhances the understanding and management of our environment. Changes from 2003/04 to 2004/05 are due to increased funding for sustainable development opportunities; updating databases and collections of national importance, environmental research transfer and uptake; and ecosystems research.

Part B1 - Details of Appropriations (continued)

	2003/04				2004/05		
	Vote		Estimated Actual		Vote		
Appropriations	Annual $000	Other $000	Annual $000	Other $000	Annual $000	Other $000	Description of 2004/05 Appropriations
Non-Departmental Output Classes - cont'd							
Venture Investment Fund - Governance and Operation	1,215	-	1,215	-	**1,100**	-	Supports the Venture Investment Fund which co-invests with the private sector to commercialise innovation in New Zealand.
Development of International Linkages	2,435	-	2,435	-	**2,335**	-	Supports the development of international links to access the best international research and researchers, and to promote New Zealand research overseas. Changes from 2003/04 to 2004/05 are due to the transfer of funding for science counsellors to the departmental output class Research, Science and Technology Policy Advice.
Total Appropriations for Non-Departmental Output Classes	536,964	-	536,964	-	590,608	-	
Other Expenses to be Incurred by the Crown							
Convention Du Metre	86	-	86	-	**86**	-	Payment of New Zealand's assessed subscription to the Convention du Metre in accordance with Cabinet directives.
Total Appropriations for Other Expenses to be Incurred by the Crown	86	-	86	-	86	-	
Capital Contributions to the Department							
Capital Investment	-	-	-	-	**1,800**	-	
Total Appropriations for Capital Contributions to the Department	-	-	-	-	1,800	-	

Capital Contributions to Other Persons or Organisations							
Carter Observatory	-	-	-	-	**1,500**	-	Capital investment to fund the government's contribution for the relocation of the Carter Observatory.
New Zealand Venture Investment Fund	11,663	-	2,000	-	**13,200**	-	Fund to accelerate the development of the New Zealand venture capital market. Public funds will be co-invested with the private sector to increase the rate of formation of new businesses based on high added value goods and services. Changes from 2003/04 to 2004/05 are due to the transfer of capital that was not spent in 2003/04 into the outyears.
Investment in Commercialisation of Publicly Funded Research and Development	12,000	-	8,000	-	**-**	-	Targeted equity investments into publicly funded research institutes to develop commercial prospects.
Total Appropriations for Capital Contributions to Other Persons or Organisations	23,663	-	10,000	-	14,700	-	
Total Appropriations	574,400	-	560,237	-	621,098	-	

Part C - Explanation of Appropriations for Output Classes

C1 - Departmental Output Classes

Output Class - Research, Science and Technology Policy Advice

The Research, Science and Technology Policy Advice output class provides policy advice on science and innovation to support New Zealand's knowledge base and its capacity to innovate.

Under this output class the Ministry of Research, Science and Technology will:

- Define policy. Advice that identifies policy needs and develops understanding of research, science and technology issues that affect New Zealand's social, environmental and economic wellbeing.
- Design policy. Identifying, evaluating and recommending solutions involving science and innovation.
- Deliver policy. Implementing policy and evaluating its impact on New Zealanders' lives, environment and enterprises, and enabling and facilitating global, community and governmental partnerships.

Delivery of this output class is negotiated through an Output Agreement and monitored through quarterly Progress Reports.

Output Class - Research, Science and Technology Contract Management

The Research, Science and Technology Contract Management output class administers research, science and technology contracts aimed at accelerating knowledge creation and the development of human capital and learning networks.

Under this output class, research, science and technology outputs in Vote Research, Science and Technology are 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
- Industrial Research Limited
- Carter Observatory Board
- New Zealand Venture Investment Fund Limited
- Other providers of research, science and technology services.

Delivery of this output class is negotiated through an Output Agreement and monitored through regular Progress Reports.

Output Class - Growth and Innovation Advisory Board

This output class supports the Growth and Innovation Advisory Board. The Advisory Board is made up of private sector representatives and has a strong future focus in respect of the Government's Growth and Innovation Framework. It provides independent advice to the Prime Minister and senior economic ministers on the framework's progress and evolution. The Board uses the experience, skills and networks of members to identify new opportunities and priorities for government and private sector action. It acts as a sounding board for groups charged with the implementation of the framework.

Under this output class the Ministry of Research, Science and Technology, which hosts the Secretariat, meets the fees of the members of the Growth and Innovation Advisory Board, and the costs of the Secretariat, including technical expertise, administrative services, and secondments. The Chair of the Growth and Innovation Advisory Board directs Secretariat staff.

Delivery of this output class is negotiated through an agreement between the Chair of the Growth and Innovation Advisory Board and the Chief Executive of the Ministry of Research, Science and Technology.

Part C2 - Non-Departmental Output Classes

Output Class - 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 research funding, access to equipment or technologies not available in New Zealand and building human capital.

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

- 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
- assisting world-leading researchers, working in key areas of strategic interest to New Zealand, to relocate to New Zealand and establish a research team.

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
- 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
- key strategic skills
- potential contribution to building a critical mass of research expertise in New Zealand
- partnership funding and support from a New Zealand research organisation.

Purchase agents

Foundation for Research, Science and Technology, Health Research Council 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 any country.

Quantity, quality, timeliness, and cost

Performance Measures	2004/05 Performance Standards
Contracts meet the criteria set out in the relevant Ministerial Terms of Reference and output agreement.	100% of contracts.
Contracts will be awarded according to the criteria outlined above.	100% of contracts.
Annual progress and achievements reports show extent of progress towards objectives, consistent with the relevant Ministerial Terms of Reference and output agreement.	Acceptance of Progress and Achievements Report confirms Minister's satisfaction.

Performance measures for the management of the International Investment Opportunities Fund Output Class are provided under Output Class - Research Contract Management.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	2,880
2003/04	Total output class to be provided within (GST inclusive)	Nil

Output Class - Marsden Fund

The Marsden Fund output class supports research that encourages excellence in the advancement of knowledge, expands the knowledge base and supports people with knowledge, skills and ideas. This output class contributes primarily to the Knowledge Goal.

Under this output class, the purchase agent invests in investigator-initiated research aimed at exploring the frontiers of new knowledge. The 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, and may lead to unexpected or unintended discoveries of international significance.

Criteria for the purchase of outputs will be:

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

Purchase agent

Royal Society of New Zealand.

Providers

Open to all research providers.

Quantity, quality, timeliness and cost

Performance Measures	2004/05 Performance Standards
Contracts meet the criteria set out in the relevant Ministerial Terms of Reference and output agreement.	The process and criteria used to select contracts are consistent with the relevant Ministerial Terms of Reference and output agreement.
Contracts will be awarded on the basis of research excellence and the likely contribution to the development of new knowledge, human skills and expertise.	100% of contracts.
Annual progress and achievements report demonstrates the extent to which the research has: • enhanced New Zealand's knowledge base, human capacity and capability • supported investigator-initiated research • fostered global linkages and contributed to the global advancement of knowledge • fostered cross-discipline approaches and co-operation.	Acceptance of annual progress and achievements report confirms Minister's satisfaction.

Performance Targets around the management of the Marsden Fund are provided under Output Class - Research Contract Management.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	34,289
2003/04	Total output class to be provided within (GST inclusive)	32,789

Output Class - Non-Specific Output Funding

The Non-Specific Output Funding output class funds Crown Research Institutes for public good research, science and technology that is independent of government priorities, in order to maintain their viability and capacity. This output class contributes primarily to the Knowledge Goal.

Under this output class the 2004/05 funding is based on the value of contracts awarded to Crown Research Institutes in 2002/03 from the following output classes:

- Environmental Research
- New Economy Research Fund (NERF)
- Research for Industry
- Health Research
- Social Research
- Māori Knowledge and Development Research
- Non-Specific Output Funding.

Outputs purchased will contribute to:

- increased knowledge or understanding of the physical, biological or social environment
- development or maintenance of scientific or technological expertise that is of particular importance to New Zealand
- research of benefit to New Zealand that is unlikely to be funded or adequately funded from non-government sources.

Purchase agent

Foundation for Research, Science and Technology.

Providers

Crown Research Institutes.

Quantity, quality, timeliness and cost

Quantity

Outputs will be provided by the nine Crown Research Institutes, at the following estimated cost per institute:

Crown Research Institute	2004/05 $000	2003/04 $000
Industrial Research Ltd	3,610	3,187
Institute of Environmental Science and Research Ltd	869	767
Institute of Geological and Nuclear Science Ltd	2,660	2,348
Landcare Research New Zealand Ltd	3,224	2,846
National Institute of Water and Atmospheric Research Ltd	4,762	4,204
New Zealand Forest Research Institute Ltd	3,002	2,650
New Zealand Institute for Crop and Food Research Ltd	2,652	2,341
New Zealand Pastoral Agriculture Research Institute Ltd	7,239	6,392
The Horticulture and Food Research Institute of New Zealand Ltd	4,358	3,847
Total	32,376	28,582

Quality and timeliness

Performance Measures	2004/05 Performance Standards
Contracts meet the criteria set out in the Ministerial Notice, including criteria for Public Good Science and Technology outputs, as defined in the Foundation for Research, Science and Technology Act, 1990.	100% of contracts.
Annual progress and achievements report shows extent of progress towards objectives and milestones, consistent with the objectives of the scheme as laid out in the Ministerial Notice.	Acceptance of annual progress and achievements report confirms Minister's satisfaction.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	32,376
2003/04	Total output class to be provided within (GST inclusive)	28,582

Output Class - Supporting Promising Individuals

The Supporting Promising Individuals output class supports human resources in research, science, and technology and contributes to the development of people with knowledge, skills and ideas. This output class contributes primarily to the Knowledge Goal.

Under this output class, purchase 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 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, of which one fellow shall be in social sciences.
- Tūāpapa Pūtaiao Māori Fellowships. Fellowships develop positive role models in order to promote the participation and achievement of Māori in science, technology and engineering.

Purchase agents

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

Quantity, quality, timeliness and cost

Performance Measures	2004/05 Performance Standards
All awards	
Annual progress and achievements report shows extent of progress towards objectives and milestones, consistent with the objectives of the scheme as laid out in the Ministerial Notices.	Acceptance of annual progress and achievements report confirms Minister's satisfaction.
Science and Technology Post-Doctoral Fellowships	95-110 active fellowships.
Contracts meet the criteria set out in the relevant Ministerial Notice.	The process and criteria used to select contracts are consistent with the relevant Ministerial Notice.
Health Research Council awards	50 -70 active fellowships and scholarships.
Contracts meet the criteria set out in the relevant output agreement.	The process and criteria used to select contracts are consistent with the relevant output agreement.
Awards are made on the basis of excellence and the potential to assist New Zealand health researchers to further develop their skills and knowledge.	100% of awards.

Performance Measures	2004/05 Performance Standards
Science, Mathematics and Technology Teacher Fellowships	45 - 55 active fellowships.
Contracts meet the criteria set out in the relevant Ministerial Terms of Reference and output agreement.	The process and criteria used to select contracts are consistent with the relevant Ministerial Terms of Reference and output agreement.
Fellowships are awarded on the basis of excellence of the proposed project and candidate.	100% of fellowships.
Final reports against completed fellowships demonstrate the extent to which: • Participating teachers' understanding of science, mathematics and technology and their applications is enhanced. • Teacher fellows share their enhanced knowledge of science, mathematics and technology with colleagues, students and others in the general community.	95% of fellowships.
Talented School Students Travel Award	15-20 awards.
Contracts meet the criteria set out in the relevant Ministerial Terms of Reference and output agreement.	The process and criteria used to select contracts are consistent with the relevant Ministerial Terms of Reference and output agreement.
James Cook Research Fellowships	At least 5 active fellowships.
Contracts meet the criteria set out in the relevant Ministerial Terms of Reference and output agreement.	The process and criteria used to select contracts are consistent with the relevant Ministerial Terms of Reference and output agreement.
Fellowships are awarded on the basis of sustained excellence.	100% of fellowships.
The scheme supports social science.	At least one fellowship in operation is exclusively in the social sciences.
Tūāpapa Pūtaiao Māori Fellowships	40-50 active fellowships.
Contracts meet the criteria set out in the relevant Ministerial Notice.	The process and criteria used to select contracts are consistent with the relevant Ministerial Notice.

Performance measures around the management of Supporting Promising Individuals are provided under Output Class - Research Contract Management.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	14,031
2003/04	Total output class to be provided within (GST inclusive)	14,551

Output Class - Promoting an Innovation Culture

The Promoting an Innovation Culture output class develops networks that strengthen and encourage a culture of innovation in New Zealand. This output class contributes primarily to the Knowledge Goal.

Under this output class, purchase agents will invest in programmes that engage with New Zealanders over the role of research, science and technology in supporting innovation, by:

- Promoting awareness of research, science and technology. Supports activities that promote the value of research, science and technology to New Zealanders.
- Engaging with New Zealanders over the issues associated with new and emerging scientific and technological developments.
- Publishing the best New Zealand science. Provides for the publication of New Zealand-based international science journals.

Criteria for the purchase of outputs will be:

- contribution to the promotion of the value of research, science and technology to target audiences
- contribution to an increasing level of comfort and trust in research, science and technology through dialogue.

Purchase agents

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

Providers

Open to all providers of science and technology services.

Quantity, quality, timeliness and cost

Performance Measures	2004/05 Performance Standards
Science Publications	
Publishing of at least six international science journals.	As specified in the output agreement.
Promotion of science and technology	
Contracts meet the criteria set out in the relevant Ministerial Terms of Reference and output agreement.	100% of contracts.
Preparation of distance learning programmes and public presentations about astronomical events.	As specified in the output agreement.
Increase awareness of science and technology.	As specified in the output agreement.
Administration and promotion of the New Zealand Science and Technology Medals.	The awards are well managed including provision to fund the future purchase of medals. Awards are covered in the media.
Dialogue Programme	
Preparation and delivery of a programme to increase levels of comfort and trust in science and technology.	As specified in the output agreement.

Performance Targets around the management of Promoting an Innovation Culture are provided under Output Class - Research Contract Management.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	4,192
2003/04	Total output class to be provided within (GST inclusive)	2,692

Output Class - Research Contract Management

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

Under this output class the Minister has agreements with purchase agents to invest in research on behalf of the Crown.

Providers

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

Quantity, quality, timeliness and cost

Performance Measures	2004/05 Performance Standards
Contracts are awarded through transparent, contestable selection processes and/or negotiations with research providers and users, consistent with relevant legislation, Ministerial Notices, Ministerial Terms of Reference and the government's Statement of Priorities.	All contracts. The process and criteria used to select contracts are widely available.
Research contract payments are made at the agreed sum to the correct providers and no payments are made in excess to the agreed sums.	All contracts.
Where appropriate, contracts require research providers to obtain ethical approvals, and satisfy government regulatory requirements before the research can be undertaken.	All applicable contracts.
Provision of financial progress and service delivery progress reports to the Minister summarising delivery against agreed specification, identifying any significant variations, any corrective actions required or taken, and any potential risks to delivery according to the agreed quantity and quality.	Acceptance of progress reports confirms Ministers satisfaction. Reports provided in accordance with the output agreement, within the specified timeline.
Publication of achievement reports from providers is in accordance with timelines specified in contracts between the purchase agent and providers.	95% of reports.

Performance Measures	2004/05 Performance Standards
Provision of an annual progress and achievements report that includes: • an evaluation of the achievement of a set of performance measures • effectiveness of purchase decisions • advice on future policy directions and initiatives.	Feedback from the Minister confirms satisfaction.
Provision of advice to the Minister as required.	The advice will be delivered within 15 working days of the formal request and will be of a standard acceptable to the Minister.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	19,237
2003/04	Total output class to be provided within (GST inclusive)	17,377

Output Class - New Economy Research Fund

The New Economy Research Fund output class will support researcher-led innovation aimed at developing capability and knowledge in new areas or applications where industries are emerging or yet to emerge, in order to underpin innovative new high-technology business opportunities. The focus of the research is on targeted basic research and human capital that will underpin new enterprises and new sectors. This output class contributes primarily to the Knowledge Goal.

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

- involve research based in New Zealand, but which may include appropriate international collaboration to maximise the benefit to New Zealand.

Purchase agent

Foundation for Research, Science and Technology.

Providers

Open to all science and technology providers.

Quantity, quality, timeliness and cost

Performance Measures	2004/05 Performance Standards
Contracts meet the criteria set out in the Ministerial Notice.	100% of contracts. The process and criteria used to select contracts are consistent with the Ministerial Notice.
Annual progress and achievements report demonstrates the extent to which the research has: • Supported investigator-initiated research. • Enhanced New Zealand's research capability in emerging science and technology areas. • Developed human capital and skills. • Developed new areas of knowledge to a point of readiness to be commercially exploited.	Acceptance of annual progress and achievements report confirms Minister's satisfaction.

Performance measures around the management of NERF are provided under Output Class - Research Contract Management.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	70,384
2003/04	Total output class to be provided within (GST inclusive)	63,884

Output Class - Research for Industry

The Research for Industry output class aims to increase the competitiveness of New Zealand industries and sectors through strategic research. This output class contributes primarily to the Economic Goal.

Under this output class, the purchase agent will invest in portfolios of research that underpin development of new products, processes and services of use to New Zealand industries and sectors.

This output class 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:

- scientific and technological quality
- potential benefit to New Zealand through innovation
- contribution to boosting competitiveness of New Zealand industries and sectors; or contribution to developing a robust infrastructure to underpin economic development
- clearly defined partnerships and pathways to implementation of the research outcomes
- potential to build scientific and technological capability and to increase the level of innovation within user groups.

Purchase agent

Foundation for Research, Science and Technology.

Providers

Open to all science and technology providers.

Quantity, quality, timeliness and cost

Performance Measures	2004/05 Performance Standards
Contracts meet the criteria set out above, in the output agreement and Government's Statement of Priorities.	The process and criteria used to select contracts are consistent with the relevant criteria, output agreement and Government's Statement of Priorities.
Contracts will be awarded on the basis of scientific and technological quality, contribution to boosting competitiveness of New Zealand industries and sectors, and contribution to developing a robust infrastructure to underpin economic development.	100% of contracts.
Research consortia used to leverage private sector investment.	At least 50% direct co-funding contributed to consortia by the private sector.
Annual progress and achievements report shows extent of progress towards objectives and milestones, consistent with the output class aims, in the: • food and fibre-based industries and related sectors • manufacturing and services industries and sectors • development of infrastructure to underpin economic development area • research consortia.	Acceptance of annual progress and achievements report confirms Minister's satisfaction.

Performance measures around the management of Research for Industry are provided under Output Class - Research Contract Management.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	205,215
2003/04	Total output class to be provided within (GST inclusive)	185,035

Output Class - Technology New Zealand

The Technology New Zealand output class aims to increase the ability of firms to adopt new technology and to apply technological learning and technological innovation for business growth. This output class contributes primarily to the Economic Goal.

The output class 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.
- 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.

Purchase 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 Measures	2004/05 Performance Standards
Contracts meet the criteria set out in the relevant Ministerial Notice.	The process and criteria used to select contracts are consistent with the relevant Ministerial Notices.
The purchase agent provides a quality service to participants in the Technology New Zealand Schemes.	85% of surveyed participants indicate satisfaction with the standard of delivery.
The purchase agent attracts new participants to the Technology New Zealand schemes.	At least 10% of participants have not previously had assistance from Technology New Zealand schemes.
Delivery of outputs that the purchase agent has direct control over in accordance with timelines specified in contracts entered into with providers.	95% of contracts.
Annual progress and achievements report demonstrates extent of progress towards objectives, consistent the relevant Ministerial Notice.	Acceptance of annual progress and achievements report confirms Minister's satisfaction.
Technology for Business Growth Contracts are awarded on their potential to: • Foster research and development, technological learning and technological innovation within firms. • Enhance technological capability enabling firms to move towards high-tech, high value markets.	100% of contracts.

Performance Measures	2004/05 Performance Standards
Grants for Private Sector Research and Development Contracts are awarded on their potential to: • increase levels of enduring R&D investment • stretch firms' technological capabilities beyond existing levels • increase the number of successfully commercialised products, processes and services.	100% of contracts.
Technology for Industry Fellowship Contracts are awarded on their potential to contribute to building an enhanced level of scientific and technology-based human capital in commercial R&D environments.	100% of contracts
TechLink Contracts are awarded on their potential to increase awareness of, and facilitate access to, technology or technological capabilities new to the firm.	100% of contracts.

Performance measures around the management of Technology New Zealand are also provided under Output Class - Research Contract Management.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	40,406
2003/04	Total output class to be provided within (GST inclusive)	36,056

Output Class - Pre-Seed Fund

The Pre-Seed Fund output class aims to increase the rate of commercialisation of innovations from publicly funded research by public sector research providers. This output class contributes primarily to the Economic Goal.

Under this output class, purchase agents 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 class.

Criteria for the purchase of outputs will be:

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

Purchase 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, timeliness and cost

Performance Measures	2004/05 Performance Standards
Contracts meet the criteria set out in the relevant Ministerial Terms of Reference and output agreement.	100% of contracts.
Contracts are awarded on the basis of the commercialisation potential of the proposal.	100% of contracts.
Annual progress and achievements report shows extent of progress towards objectives, consistent with the relevant Ministerial Terms of Reference and output agreement.	Acceptance of progress and achievements report confirms Minister's satisfaction.

Performance measures around the management of the Pre-Seed Fund are provided under Output Class - Research Contract Management.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	4,800
2003/04	Total output class to be provided within (GST inclusive)	4,800

Output Class - National Measurement Standards

The National Measurement Standards output class 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. This output class contributes primarily to the Economic Goal.

Provider

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

Quantity, quality, timeliness and cost

Performance Measures	2004/05 Performance Standards
Provision of national measurement standards and related services.	In accordance with the requirements specified in the output agreement with the Minister, or with agreed variations.
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 timelines specified in the output agreement between the Minister and provider.	97% of activities.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	5,517
2003/04	Total output class to be provided within (GST inclusive)	5,077

Output Class - Māori Knowledge and Development Research

The Māori Knowledge and Development Research output class provides funding to develop Māori research capability, evolve Māori knowledge and, hence, develop knowledge for the benefit of the nation. The output class aims to support research that is for Māori, by Māori and which may employ Māori methodologies. This output class primarily contributes to the Knowledge Goal.

Māori research may be conducted with support from throughout Vote RS&T. Under this output class purchase agents will invest in research, science and technology programmes that encourage excellence in the delivery of knowledge for the nation through research activities envisaged in paragraph one. Particularly, this means advances in Māori knowledge and knowledge that addresses specific issues and needs. This means consolidating the Māori knowledge base and broadening and deepening the Māori research skill base. By supporting the advancement of Māori knowledge and the development of Māori researchers, the Māori Knowledge and Development Research Output Class recognises the unique contribution that Māori can make to New Zealand's knowledge base.

Purchase agents

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

Providers

Open to all research providers.

Quantity, quality, timeliness and cost

Performance Measures	2004/05 Performance Standards
Contracts meet the criteria set out in the relevant output agreement and/or Government's Statement of Priorities.	The process and criteria used to select contracts are consistent with the relevant output agreement and/or Government's Statement of Priorities.
Contracts will be awarded on the basis of quality and merit, contribution to the development of Māori research capability, and advances in Māori knowledge.	100% of contracts.
Annual progress and achievements report demonstrates extent of progress towards objectives and milestones, consistent with the output class aims.	Acceptance of annual progress and achievements report confirms Minister's satisfaction.

Performance measures around the management of Māori Knowledge and Development Research are provided under Output Class - Research Contract Management.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	5,475
2003/04	Total output class to be provided within (GST inclusive)	5,475

Output Class - Health Research

The Health Research output class supports public good research, science and technology that contributes to improvement in the health status of New Zealanders. This output class contributes primarily to the Social Goal.

Under this output class the purchase agent will invest in research portfolios that have the greatest potential to improve the health and quality of life of New Zealanders.

This output class will support research that provides:

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

Criteria for the purchase of outputs will be:

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

Purchase agents

Health Research Council of New Zealand.

Providers

Open to all science and technology providers.

Quantity, quality, timeliness and cost

Performance Measures	2004/05 Performance Standards
Contracts meet the criteria set out in the relevant output agreement.	The process and criteria used to select contracts are consistent with the relevant output agreement.
Contracts will be awarded on the basis of scientific and technological quality, and improving health and social wellbeing.	100% of contracts.
Annual progress and achievements report demonstrates extent of progress towards objectives and milestones, consistent with the output class aims.	Acceptance of annual progress and achievements report confirms Minister's satisfaction.

Performance measures around the management of Health Research are provided under Output Class - Research Contract Management.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	47,734
2003/04	Total output class to be provided within (GST inclusive)	42,234

Output Class - Social Research

The Social Research output class supports public good research, science and technology that improve societal wellbeing. This output class contributes primarily to the Social Goal.

Under this output class the purchase agent will invest in science and research programmes that have the greatest potential to have a positive impact on families, communities, culture and identity.

Research contracts should, where possible, address the seven Key Knowledge Theme Areas developed by the Ministry of Social Development, in conjunction with the Minister of Research, Science and Technology:

- The changing nature of work.
- Developing human capabilities - knowledge and skills.
- Disparities between groups - how to change the picture.
- Enhancing positive social outcomes - developmental risk and protective factors.
- Measuring and understanding social wellbeing.
- Social connectedness.
- Social and cultural identities.

This output class has three outputs:

- Research on the structures, characteristics and dynamics of population change and identity.
- Research on families and households in New Zealand.
- Research focusing on public life.

Purchase agent

Foundation for Research, Science and Technology.

Providers

Open to all science and technology providers.

Quantity, quality, timeliness and cost

Performance Measures	2004/05 Performance Standards
Contracts meet the criteria set out in the relevant output agreement and Government's Statement of Priorities.	The process and criteria used to select contracts are consistent with the relevant output agreement and Government's Statement of Priorities.
Contracts will be awarded on the basis of scientific and technological quality, and contribution to improving social wellbeing.	100% of contracts.
Annual progress and achievements report demonstrates extent of progress towards objectives and milestones, consistent with the output class aims.	Acceptance of annual progress and achievements report confirms Minister's satisfaction.

Performance measures around the management of Social Research are provided under Output Class - Research Contract Management.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	6,592
2003/04	Total output class to be provided within (GST inclusive)	6,592

Output Class - Environmental Research

The Environmental Research output class supports public good research, science and technology that enhance the understanding and management of our environment. This output class contributes primarily to the Environment Goal.

Under this output class, the purchase agent will invest in portfolios of research, science and technology that contribute 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 the attention to the social impacts of new technologies.

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

This output class has four 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.

Purchase agent

Foundation for Research, Science and Technology.

Providers

Open to all science and technology providers.

Quantity, quality, timeliness and cost

Performance Measures	2004/05 Performance Standards
Contracts meet the criteria set out in the relevant output agreement and Government's Statement of Priorities.	The process and criteria used to select contracts are consistent with the relevant output agreement and Government's Statement of Priorities.
Contracts are awarded on the basis of scientific and technological quality, and the likely contributions made to the understanding and management of natural and human induced environmental systems.	100% of contracts.
Annual progress and achievements report demonstrates extent of progress towards objectives and milestones, consistent with the output class aims.	Acceptance of annual progress and achievements report confirms Minister's satisfaction.

Performance measures around the management of Environmental Research are provided under Output Class - Research Contract Management.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	94,045
2003/04	Total output class to be provided within (GST inclusive)	88,170

Output Class -Venture Investment Fund - Governance and Operation

This output class funds the management and governance of NZVIF. This includes administering the VIF programme and monitoring the performance of the fund. The output class contributes primarily to the Economic Goal.

NZVIF is wholly owned by the Crown and has been established for the purpose of accelerating the development of the venture capital market in New Zealand. NZVIF will achieve this purpose by co-investing with the private sector in venture capital funds managed by private sector fund managers. The Crown has appropriated $100 million of capital from Vote Research, Science and Technology that is administered through a separate funding agreement.

This investment has four goals:

- To accelerate development of the New Zealand venture-capital industry by increasing the level of seed, start-up and early expansion investment activity in the New Zealand market.
- To develop a larger pool of people in New Zealand's venture capital market with skills and expertise in seed and start-up investment.
- To facilitate the commercialisation of innovations from Crown Research Institutes, universities and the private sector.
- To get more New Zealand businesses on paths to global success by increasing their access to international experts, networks and market knowledge.

Provider

NZVIF Limited.

Quantity, quality, timeliness and cost

Performance Measures	2004/05 Performance Standards
Selection of seed fund managers.	Due diligence to select investment grade fund managers. Investment charters and legal documentation in line with international venture capital industry 'best practice'.
Manage the Venture Investment Fund.	Fund management conforms to industry 'best practice' for a venture capital "fund of funds".
Monitor the performance and results achieved by the seed fund managers.	Monitoring and governance processes that conform to industry 'best practice'.
Provision of an annual 'Progress and Achievement' report, which includes an assessment of the effectiveness of investment decisions and advice on future policy directions and initiatives.	Acceptance of the report confirms the Minister's satisfaction.
Provision of advice to the Minister as required.	The advice will be delivered within 15 working days of the formal request, unless otherwise agreed, and will be of a standard acceptable to the Minister.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	1,100
2003/04	Total output class to be provided within (GST inclusive)	1,215

Output Class - Development of International Linkages

The Development of International Linkages output class promotes and supports New Zealand RS&T internationally. This output class contributes primarily to the Knowledge Goal.

Under this output class, purchase agents will invest in programmes that support and enhance the New Zealand innovation sectors' global connectivity by:

- accessing and utilising the best global ideas
- 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
- contribution to New Zealand's Research, Science and Technology strategic objectives.

Purchase agent

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

Providers

Open to all research providers.

Quantity, quality, timeliness and cost

Performance Measures	2004/05 Performance Standards
Bilateral Cooperation Programme.	70 - 150 contracts.
International scientific academy organisations.	Active membership of at least 17 international science societies.
Strategic international activities.	50 - 80 contracts.
All applications analysed on the ISAT Linkages Database by country, science area and programme.	100% of applications.

Performance Targets around the management of Development of International Linkages are provided under Output Class - Research Contract Management.

Cost

	Output Class Cost	$000
2004/05	Total output class to be provided within (GST inclusive)	2,335
2003/04	Total output class to be provided within (GST inclusive)	2,435

Part E - Explanation of Appropriations for Capital Flows

Net Worth of Entities Owned

Statement of Estimated and Forecast Net Worth

	Balance Date	Estimated Net Worth 2004 $ million	Forecast Net Worth 2005 $ million
Crown Entities:			
Foundation for Research, Science and Technology	30 June	1.2	1.2
New Zealand Venture Investment Fund Limited	30 June	8.0	18.0
Investment in Commercialisation of Publicly Funded Research and Development	30 June	12.0	12.0

Part E2 - Capital Contributions to Other Persons or Organisations

Carter Observatory

This appropriation contributes to the capital cost of relocating the Carter Observatory closer to similar educational attractions.

Investment in Commercialisation of Publicly Funded Research and Development

This appropriation in 2003/04 provided 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. This was a single year appropriation.

New Zealand Venture Investment Fund

Cabinet agreed in 2000/01 to establish a Crown Seed Capital Fund. This has been renamed the New Zealand Venture Investment Fund (VIF). This fund has been designed so that the Crown and private sector investors co-invest in early stage ventures that show potential to create high value-added goods and services. The purpose of VIF is to:

- accelerate development of the New Zealand venture-capital industry by increasing the level of seed, start-up and early expansion investment activity in the New Zealand market

- develop a larger pool of people in New Zealand's venture capital market with skills and expertise in seed and start-up investment
- facilitate the commercialisation of innovations from Crown Research Institutes, universities and the private sector
- get more New Zealand businesses on paths to global success by increasing their access to international experts, networks and market knowledge.

The Crown's overall contribution to the Fund is $100 million. An equal or greater contribution will be made by private sector partners.

Summary information regarding these appropriations is provided in Part B1.