



MINISTRY OF
RESEARCH, SCIENCE
& TECHNOLOGY

TE MANATŪ PŪTAIAO

**A 'Snapshot' of
Vote Research, Science & Technology
Investment in 'Māori Research'
in the period July 2002 to June 2003**

Ministry of Research, Science and Technology 2004

The views expressed in this publication are those of the author and are not necessarily supported by the Ministry of Research, Science and Technology.

Published by the
Ministry of Research, Science and Technology
PO Box 5336, Wellington, New Zealand
Telephone: +64 4 917 2900
Facsimile: +64 4 471 1284
Internet: <http://www.morst.govt.nz>

May 2004

Approved for general release

Dr Helen Anderson
Chief Executive

A 'Snapshot' of Vote Research, Science & Technology Investment in 'Māori Research' in the period July 2002 to June 2003
--

Contents

1.0 Introduction	4
1.1 Purpose	4
1.2 Preparation of the Report	5
1.3 Acknowledgements	5
1.4 A 'Snapshot' of Vote RS&T Initiatives of Relevance to Māori	5
2.0 An Introduction to 'Māori Research' and Vote RS&T	7
2.1 What is Māori Research?	7
2.2 Māori Development and Māori Advancement	7
2.3 Māori Responsiveness	8
2.4 The Treaty of Waitangi	9
2.5 Māori Specific Provisions in Legislation	9
2.6 Relevant Statements in Vote Estimates	11
3.0 Purchase Agent Approaches to 'Māori Research'	12
3.1 Health Research Council	12
3.1.1 Guidelines for Researchers on Health Research Involving Māori	12
3.1.2 Rangahau Hauora Māori Portfolio Strategy	13
3.1.3 Strategic Plan for Māori Health Research 2004-2008	13
3.1.4 Māori Development and Māori Advancement	14
3.1.5 Kaupapa Māori Research and Kikorangi (Blue Sky) Research	15
3.2 Foundation for Research, Science and Technology	15
3.2.1 Māori Development and Māori Advancement	15
3.2.2 Research Descriptors	17
3.2.3 Advancing Outcomes for Māori Across Portfolios	18
3.2.4 Māori Cross Portfolio Themes — Economic, Social and Resource Management	18
3.2.5 Māori Research and Innovation Strategy	19
3.3 Royal Society of New Zealand	20
4.0 'Māori Research' investments by Purchase Agents	22
4.1 'Māori Development' Research Investment	22
4.2 'Māori Advancement' Research Investment	23
4.3 The Royal Society and Māori Development and Advancement Combined	23
4.4 The HRC and Māori Development and Advancement Combined	24
4.5 FRST and Māori Development and Advancement Combined	24
4.6 Total Current Investment in Māori Development and Māori Advancement Research across VoteRS&T	26
4.7 Where is Māori Research Funding Invested?	27
4.8 Māori Research Objectives and Example Projects/Programmes	28
4.9 Human Capital Development	32
4.9.1 Supporting Promising Individuals Output Class	32

4.9.2 FRST Scheme: Tūāpapa Pūtaiao Māori Fellowships (TPMF)	32
4.9.3 HRC Scheme: Māori Career Development Awards	33
4.9.4 MoRST Scheme: Mauriora-ki-te-Ao	35
4.10.0 Adoption of new technology and application of technological learning and innovation for business growth	36
4.10.1 Technology NZ Output Class	36
4.10.2 Māori Collectives Scheme	36
5.0 Crown Research Institute Approaches to 'Māori Research'	38
5.1 Environmental and Scientific Research (ESR) Ltd	39
5.2 National Institute of Water and Atmospheric Research (NIWA) Ltd	40
5.3 Institute of Geological and Nuclear Science (IGNS) Ltd	40
5.4 New Zealand Forest Research Institute Ltd	41
5.5 Crop and Food Research Ltd	43
5.6 Manaaki Whenua Landcare Research Ltd	43
5.7 HortResearch Ltd	44
5.8 Industrial Research Ltd	45
5.9 Agresearch Ltd	47
6.0 Other Agencies supported through Vote RS&T	48
6.1 Venture Investment Fund	48
6.2 Carter Observatory	49
Appendices	
Appendix One: A Sample of Research Currently Supported by Vote RS&T	51
Appendix Two: Précis of TechNZ Māori Collectives Scheme projects funded to date	58
List of Tables	
Table One: <i>MKDOC Māori Development Research Expenditure</i>	23
Table Two: <i>FRST 'Māori Advancement' Research Investment</i>	23
Table Three: <i>Royal Society Māori Development and Māori Advancement Research Investment Combined</i>	24
Table Four: <i>The HRC and Māori Development and Advancement Research Investment Combined</i>	24
Table Five: <i>FRST and Māori Development and Advancement Research Investments Combined</i>	25
Table Six: <i>FRST Research Investment Across Output Classes</i>	25
Table Seven: <i>Māori Human Capital Development Awards</i>	34
Table Eight: <i>Technology New Zealand Schemes</i>	37

1.0 Introduction

With the growth in Māori owned assets, the development of major Māori organisations and the emergence of Māori research providers, the shape and form of the 'Māori Research scene' is now experiencing a period of growth and change.

New directions are emerging with respect to who conducts research, the circumstances in which research is being conducted and the questions and issues that are proposed as the topics of research.

MoRST wishes to remain informed of these developments and is particularly interested in understanding the creative and innovation opportunities that are emerging in this growing dimension of New Zealand's research.

To this end, MoRST is conducting an ongoing overview of the Māori research scene in order to remain informed of these developments and to support those developments in an appropriate way. This report concerns how Vote RS&T supports Māori research activities.

1.1. Purpose

This report contains a 'snapshot' of Vote RS&T initiatives in relation to 'Māori research'. As such, *the report describes the system* and does not include evaluative or descriptive information pertaining to research activity. The purpose of the report is:

- To understand the nature and character of Vote RS&T investment in 'Māori research'
- To quantify, where possible, this investment

The report is not intended for a public audience although information arising from this report may be made public at an appropriate time. The report will be used to initiate an ongoing overview and monitoring of the 'Māori research scene' and to assist in the evolution of Vote RS&T policies pertaining to 'Māori research'.

In reading this report, the following matters should be understood:

- All figures are GST inclusive
- All figures were supplied by Purchase Agents
- All figures and information relate to the 2002/2003 financial year

The report contains information about the way the Vote RS&T system behaves in relation to 'Māori research'. The report is not designed to evaluate the performance of Purchase Agents and their investments against stated investment goals. The report does not contain any analyses or judgements of Purchase Agent activities. Rather, its purpose is to provide information about the general shape and character of initiatives within the Vote which are designed to support Māori research activities. The concluding section of the report is not a statement of findings but is rather a discussion of themes and issues that arise from gathering this information together.

1.2 Preparation of the Report

The report was commissioned internally by MoRST for the purposes of assisting the Ministry's programme entitled 'Supporting Māori Innovation and Research'.

The preparation of the report has relied upon information and assistance provided by the three Purchase Agents. It has been our intention to construct this 'snapshot' of activities based upon information supplied by the Purchase Agents on the basis that they possess a greater understanding of Vote RS&T research investments than MoRST. The authors of the report have been particular to indicate information sourced from within the Ministry should that information appear in this report. Information was also provided by members of the various Crown Research Institutes.

Further, the preparation of the report has been assisted by staff of the nine Crown Research Institutes.

1.3 Acknowledgements

We would like to thank Louisa Wall and Bruce Scoggins of the Health Research Council, John Kape, Jessica Hutchings and Alan Groves of the Foundation for Research, Science and Technology and Peter Gilbert of the Royal Society of New Zealand. We would also like to thank Irene Kereama-Royal and Teresa Tepania-Ashton (HortResearch), Tupara Morrison (Forest Research), Tom Rogers (IRL), Murray Hemi (IGNS), Ōrewa Barrett-Ohia (AgResearch), Dr Charlotte Severne (NIWA), Keriatu Stuart (ESR), Dr Meto Leach (Crop and Food Research), Rauru Kirikiri (Landcare Manaaki Whenua).

1.4 A 'Snapshot' of Vote RS&T Initiatives of Relevance to Māori

System Initiatives

- The Māori Collectives Scheme within TechNZ
- The Appointment of a General Manager, Māori Development at NIWA, Dr. Charlotte Severne and her group at NIWA
- The recent appointment of a number of Māori research/strategy managers within CRIs
- The Māori Innovation Strategy within FRST
- 'Supporting Māori Innovation and Research' within MoRST
- The Māori Knowledge and Development Output Class
- The 'Māori Responsiveness' initiative within applications to the James Cook Research Fellowship and the Marsden Fund, Royal Society of New Zealand
- The formation of Māori Across Crown Research Institutes (MACRI)
- Significant initiatives developed by Louisa Wall and Moe Milne within the Health Research Council
- Variety of scholarship and fellowships including the *Mauriora-ki-te-Ao* Scholarship scheme supported by MoRST, the *Tūāpapa Pūtaiao* Fellowships administered by FRST and the various career development awards of the HRC.
- The FRST initiated inaugural Māori students science and research *wānanga* to be held in May 2004

Research Highlights

- The Māori Health Research Centres
- Harakeke fabric research – Rangi Te Kanawa and IRL
- The first Iwi-based research project funded through the Marsden focusing on Landscape transformations in the Bay of Islands pre-1840.
- Te Pumanawa Hauora Research Programme – Massey University based Maori research programme with outcomes linked to measurable gains in social, cultural and economic development. The programme is funded through the HRC.
- Titi Harvests Research Project – The Rakiura Titi Islands Administering Committee have been contracted to carry out research that will help ensure the sustainability of a traditional wildlife harvest (of titi or muttonbird) which is a defining cultural activity that generates social cohesion and group identity amongst Rakiura Maori. The project is funded through FRST.
- Revitalisation and Enhancement of Aquatic Environments through mātauranga Māori - Dr Sean Ogilvie of NIWA will be leading a new research project investigating the Revitalisation and Enhancement of Aquatic Environments through matauranga Māori. The project is co-administered by the HRC and FRST.
- Commercial rearing system for indigenous Greenshell mussels echnology – Wakatu Incorporation. Technology New Zealand's biggest ever grant to a Māori research and development project. It is hoped the project will help establish a commercial rearing system for indigenous Greenshell™ mussels.

2.0 An Introduction to ‘Māori Research’ and Vote Research, Science and Technology

This section explores how ‘Māori research’ is considered within Vote RS&T policies. Specifically this section considers:

- The understandings held throughout the Vote and by each Purchase Agent concerning the terms ‘Māori research’
- The meanings of the terms Māori Development, Māori Advancement and Māori Responsiveness

In approaching the notion of ‘Māori research’ and Māori involvement in research activities in which they invest, Purchase Agents, together with MoRST use concepts such as Māori Development, Māori Advancement and Māori Responsiveness. Further phrases such as ‘Māori specific investment’ can also be found.

2.1 What is Māori research?

Currently there is no single definition of ‘Māori research’ which is applied uniformly throughout the Vote. Rather, each Purchase Agent has developed their distinct approaches to the notion of ‘Māori Research’. For example, the Health Research Council uses the term ‘Kaupapa Māori Research’. Purchase Agent approaches to the concept of ‘Māori Research’ are discussed in Section 3.0 below.

2.2 Māori Development and Māori Advancement

The framework which employs the terms ‘Māori Development and Māori Advancement’ was developed by Professors Mason Durie and Chris Cunningham and was introduced into the Vote in 2000. It is a framework that looks to involvement of Māori across the activities of the Vote and employs the Treaty of Waitangi as a basis for this involvement. The definitions of these terms are as follows:

Māori Development

Māori Development relates to research concerning Māori as tangata whenua and considers, particularly, research by Māori, for Māori and possibly employing Māori methodologies.

The goal of Māori Development responds to Article II of the Treaty, which relates to rangatiratanga - Māori control of things Māori. It is also a partnership between tangata whenua and the Crown involving respect and support for Māori approaches, philosophies and methods in research, and the use of the Māori language, culture and experiences. This goal encourages greater Māori control and participation in research agendas.¹

The definition of ‘Māori Advancement’ is as follows:

Māori Advancement

Māori Advancement relates to research concerning Māori as New Zealand citizens. It is focused upon addressing specific issues and needs identified by Māori. This theme focuses upon achieving equity and reducing disparities for Māori.

¹ MoRST Website as at January 2004.

The goal of Māori Advancement corresponds to Article III of the Treaty relating to the rights of all citizens to equitable results from government policy. The Article III relationship provides for Māori to be treated equally with other citizens. For example, disparities between Māori health statistics and those for all New Zealanders indicate the need for research investigating ways to improve Māori health.²

Versions of these two statements appear in the following documents:

- 'Igniting the Future', MoRST Statement of Intent 2003-2006, p.14
- HRC: Rangahau Hauora Māori Portfolio Strategy
- FRST Māori Development and Advancement Strategic Portfolio Outline

Additionally, in the Ministry's document entitled 'Blueprint for Change', published in 1999, a Target Outcome statement is provided which reads as follows:

Maori development. Maori achieve well-being, self sufficiency, prosperity, equity, justice and political effectiveness.³

The document also provides the following 'examples of the contributions RS&T could make towards this target outcome':

- Developing Maori intellectual capital and capacity through participation in the RS&T system
- Enhancing the ability of Maori to develop and manage their resources by developing science and technology skills and networks to enable economic self-sufficiency
- Developing an understanding of Mātauranga Maori and Tikanga Maori
- Building an infrastructure relevant to robust Maori development. For example, understanding governance structures.
- Understanding the social, cultural and economic determinants of well-being.⁴

2.3 Māori Responsiveness

'Māori responsiveness' is another term that is used throughout the Vote. It first appeared in the MoRST document entitled 'Blueprint for Change' published in May 1999 which reads as follows:

Purchase agents are expected to design research portfolios that are responsive to the needs and diversity of Maori. FRST has a legal obligation to consult with Maori (see below) in their policy development process. The HRC has addressed Maori health research issues through its statutory Maori health committee. All the target outcome areas should contribute knowledge that will assist in the advancement of Maori. In designing portfolios beneath each target outcome area, purchase agents need to consider research that addresses disparities between Maori and non-Maori in New Zealand, and

² MoRST Website as at January 2004.

³ *Blueprint for Change*, Minister of Research, Science and Technology, May 1999, p.24.

⁴ *Blueprint for Change*, Minister of Research, Science and Technology, May 1999, p.24.

recognises Maori knowledge requirements. An outcome specifically related to Maori development has also been included in the target outcome set. In this target outcome a focus upon Maori people is fundamental, in recognition of the Treaty partnership. Any research that contributes to this outcome will need to develop appropriate methods to assess Maori specific methodologies and approaches to research.⁵

The Royal Society of New Zealand provides some information on their website regarding their contribution to Māori responsiveness. Pages 80 and 81 of their Progress and Achievements Report for 2003 also include paragraphs related to 'Māori Responsiveness'. Here Māori responsiveness is linked to the Treaty of Waitangi.

It appears that 'Māori responsiveness':

- arose in response to the historically low involvement of Māori individuals and communities in the work of Vote RS&T, its Purchase Agents and in research generally
- is designed to catalyse action on the part of Purchase Agents to ensure that where barriers exist to inhibit Māori access to resources, relationships and the benefits of research, these barriers should be overcome
- is designed to make Purchase Agents more 'user friendly'

2.4 The Treaty of Waitangi

The Treaty of Waitangi appears in discussions relating to 'Māori Advancement' and 'Māori Development'. In these provisions, 'Māori Development' is linked to Article Two of the Treaty and 'Māori Advancement' to Article Three. Hence, Māori Development is connected with the Article Two concept entitled 'tino rangatiratanga', popularly interpreted to mean 'Māori control of things Māori'. As Article Three concerns Māori as citizens of the nation, Māori Advancement pertains to the place of Māori in wider society. Purchase Agent approaches to these matters are presented in the next chapter.

Additionally, the Crown Research Institutes Act of 1992 includes the following provision:

In relation to the transfer, pursuant to this Act, of any land, or any interest in any land, to a Crown Research Institute or a subsidiary of a Crown Research Institute, the shareholding Ministers shall have regard to the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).⁶

2.5 Māori Specific Provisions in Legislation

Legislation relevant to the operations of the Vote include:

- Health Research Council Act 1990
- Foundation for Research, Science and Technology Amendment Act 1993
- Crown Research Institutes Act 1992

⁵ *Blueprint for Change*, Minister of Research, Science and Technology, May 1999, p. 18.

⁶ Crown Research Institutes Act of 1992, Section 10

- Royal Society of New Zealand Act 1997

Māori relevant or specific provisions in these Acts of Parliament are set out below.

Health Research Council Act 1990

Section 21 makes provision for the establishment of a Māori Health Committee:

...to advise the Council on health research into issues that affect Maori people, with particular reference to research impinging on cultural factors affecting Maori people, including those that affect the gathering of information, and the verification and validation of information.⁷

Section 23 discusses membership.

Foundation for Research, Science and Technology Amendment Act 1993

The FRST Act of 1990 was amended in 1993. One of the amendments introduced the word 'Māori' in Section 3 pertaining to Functions:

(2) The Foundation's advice on matters relating to national priorities for research, science and technology shall be formulated after consultation between the Foundation and representatives of industry, researchers, Maori, and the community.

(3) In order to ensure that the views of industry, researchers, Maori, and the community are able to be considered in the formulation of the Foundation's advice on other matters, the Foundation shall institute a programme of regular consultation, with representatives of industry, researchers, Maori, and the community but nothing in this subsection shall be taken to require consultation before each and every occasion on which such advice is formulated.⁸

Crown Research Institutes Act 1992

This Act includes a provision pertaining to the Treaty of Waitangi (see above). Additionally, 'good employer' provisions include the following statements:

(4) For the purposes of this section, a "good employer" is an employer who operates a personnel policy containing provisions generally accepted as necessary for the fair and proper treatment of employees in all aspects of their employment, including provisions requiring—

- (i) The aims and aspirations of Maori; and
- (ii) The employment requirements of Maori; and
- (iii) The need for greater involvement of Maori as employees of the company

There are no provisions of this kind in the Royal Society of New Zealand Act 1997.

⁷ Section 22, HRC Act 1990

⁸ Foundation for Research, Science and Technology Amendment Act 1993

2.6 Relevant Statements in Vote Estimates

The following statements are contained within Estimates for Vote RS&T 2003-2004. The first statement is a description of the output class in the context of the Knowledge Goal of the Vote.

Knowledge Goal

Maori Knowledge and Development Research for developing research capability and knowledge for Maori development, by encouraging excellence in the delivery of knowledge for Maori, building the Maori research skill base, and consolidating the Maori knowledge base.⁹

This second statement provides more detail about the Māori Knowledge and Development Output Class:

The Maori Knowledge and Development Research output class provides funding to develop Maori research capability, evolve Maori knowledge and develop knowledge for the benefit of Maori. The output class aims to support research that is for Maori, by Maori and which may employ Maori methodologies. This output class primarily contributes to the Knowledge Goal. Maori research may be conducted with support from throughout Vote RS&T (in recognition of Maori Advancement). However, research supported by this output class takes place in recognition of the aim of Maori Development. Maori Development aligns with the status of Maori as tangata whenua and focuses on research carried out by Maori with relevance to Maori and which uses Maori methodologies. Maori Advancement concerns Maori as citizens of New Zealand and focuses upon achieving equity and reducing disparities for Maori. Under this output class purchase agents will invest in research, science and technology programmes that encourage excellence in the delivery of knowledge for Maori. Particularly, this means advances in Maori knowledge and knowledge that addresses specific issues and needs. This means consolidating the Maori knowledge base and broadening and deepening the Maori research skill base. By supporting the advancement of Maori knowledge and the development of Maori researchers, the Maori Knowledge and Development Research Output Class recognises the unique contribution that Maori can make to New Zealand's knowledge base.¹⁰

⁹ Estimates for Vote Research, Science and Technology 2003-2004, p.7

¹⁰ Ibid, p.36

3.0 Purchase Agent Approaches to 'Māori Research'

This section considers the approaches of the individual Purchase Agents to the notion of 'Māori research' and its related concepts Māori Advancement, Māori Development and Māori Responsiveness. It will show the diversity of approach across the three Purchase Agents.

3.1 Health Research Council

The general context in which the Health Research Council conducts its activities of relevance to Māori is set forth in legislation (quoted in Section 2.5) and in the Output Agreement between the Minister of Research, Science and Technology and the Health Research Council. The following statement appears in the Output Agreement:

Contributing to Maori advancement and development

Separate but complementary goals are used in Vote RS&T to align research activities to the aspirations and needs of Maori. Maori development research is research carried out to consolidate and develop Maori knowledge and to deepen the Maori research skill base. This relates in particular to Article II of the Treaty of Waitangi. Maori advancement research is research that addresses the significant disadvantage of Maori relative to non-Maori in many areas and relates to Article III of the Treaty of Waitangi. The Council will invest in research projects that contribute to Maori development under the Maori Knowledge and Development output class. The Council will also ensure that investments it makes contribute to Maori advancement under all other relevant output classes.¹¹

In response to this, there are three significant activity areas within the HRC which are of relevance to Māori. Firstly, there are 'Guidelines for Researchers on Health Research Involving Māori'; secondly the Research Portfolio strategy entitled 'Rangahau Hauora Māori Portfolio Strategy' and finally the 'Strategic Plan for Maori Health Research 2004-08'.

3.1.1 Guidelines for Researchers on Health Research Involving Māori

As noted above, the HRC maintains a Māori Health Committee which is provided for in the Health Research Council Act of 1990. This Committee has developed a set of 'guidelines to assist researchers who intend undertaking biomedical, public health or clinical research involving Maori participants or on issues relevant to Maori health.'¹² The documentation continues:

These guidelines are intended to inform researchers about when consultation is necessary and the processes involved in initiating consultation with Maori. The purpose of any consultation is to ensure that research practices and outcomes contribute to Maori health development whenever possible. This consultation is also the foundation for co-operative and collaborative working relationships between researchers and Maori organisations and groups.

The guidelines themselves contain a policy framework within which research of relevance to Māori is conducted. This framework utilises legislative provisions, the Treaty of Waitangi and various policy initiatives such as *Policy Guidelines for the*

¹¹ Health Research Council Output Agreement, 2003/2004, Operating Principles.

¹² Health Research Council Website, <http://www.hrc.govt.nz/Maoguide.htm>

Health Research Council (Shiple 1996). The guidelines then go on to discuss matters such as consultation, research partnerships, ethics and more.

3.1.2 Rangahau Hauora Māori Portfolio Strategy

A second significant initiative within the Health Research Council, and of relevance to Māori, is the Research Portfolio Strategy entitled 'Rangahau Hauora Māori Portfolio Strategy'. The purpose of this Portfolio Strategy is to guide the Council in its research funding decisions for Māori research. Specifically:

The Rangahau Hauora Maori portfolio supports a “by Māori for Māori” Kaupapa and aims to build Maori capacity and capability to undertake health research, to prioritise the development of Maori science, paradigms and methodologies and to ensure Kaupapa Maori focussed research is supported.¹³

The strategy description then goes on to discuss the association of the capacity building function with 'Supporting Promising Individuals'. The HRC places an emphasis upon fostering Māori research capability and capacity and is encouraging toward the retention of Māori research talent. The strategy also includes a note pertaining to the ability of whānau, hapū, iwi and Māori organisations 'to identify priority research areas and to undertake such research if they have the capacity and capability to do so...'

The Strategy continues by discussing the mandate within which the Strategy operates national issues and research priorities. With respect to national issues, the HRC places an emphasis upon disparities that appear in certain aspects of Māori health. These include such things as life expectancy, sudden death infant syndrome, cardiovascular diseases, diabetes and more. With respect to research priorities, the strategy states:

The specific role of the Rangahau Hauora Maori portfolio is to fund research into problems identified by Maori, for Maori (specific needs based research) to develop Maori research paradigms, (Kaupapa Maori research) and to enhance the ability of whanau, hapu, iwi and Maori organisations to develop and lead research.¹⁴

3.1.3 Strategic Plan for Māori Health Research 2004-2008

The Health Research Council has also developed a document entitled 'Ngā Pou Rangahau Hauora Kia Whakapiki Ake Te Hauora Māori 2004-2008, The Health Research Strategy to Improve Māori Health and Well-being 2004-2008'. The Vision articulated in the plan reads as follows:

Mā te rangahau hauora e tautoko te whakapiki ake te hauora Māori
All health research in Aotearoa New Zealand benefits the hauora (health and well-being) of tangata whenua.¹⁵

¹³ Rangahau Hauora Māori Portfolio Strategy, Health Research Council.

¹⁴ Ibid.

¹⁵ Ngā Pou Rangahau Hauora Kia Whakapiki Ake Te Hauora Māori 2004-2008, The Health Research Strategy to Improve Māori Health and Well-being 2004-2008, p.9

The 'HRC's goal for Māori health research over the next five years is':

To improve Māori health through funding and supporting high quality health research which is driven by Māori health priorities and needs, consistent with tikanga Māori and generates mātauranga that is highly valued and used by tangata whenua and government agencies.¹⁶

The Strategy notes six goals taken from a previous strategy entitled 'Te Pukapuka Tauira Whakamutunga 1998-2002'. These are as follows:

- Research responsive to Māori health needs
- Conduct of quality Māori health research
- Nature of Māori health research practices
- Māori health research workforce development
- Dissemination of research findings to promote Māori health development
- Co-ordination of health research

The new Strategy then builds on these goals by adding the following:

- Rangatiratanga – Partnerships with tangata whenua
- Māori health research and innovation
- Māori and new health research technologies
- Collaborations with other indigenous peoples
- Inclusion of Māori ethical issues

The rest of the document discusses each goal by providing information concerning gains made previously, strategies and performance measures.

3.1.4 Māori Development and Māori Advancement

The Rangahau Hauora Māori Portfolio Strategy includes statements regarding Māori development and Māori advancement:

Maori development research is research that is carried out to consolidate and develop Maori knowledge and to deepen the Maori research skill base. There is an expectation that it will address issues of concern to Maori communities.¹⁷

With respect to Māori development, the Strategy makes the following statement:

Maori advancement research is research that addresses the significant disadvantage of Maori relative to non-Maori. This will include specific Maori health conditions such as causes of postnatal mortality, Diabetes mellitus, dental health, communicable diseases, cancer, cardiovascular diseases, smoking related illness and cessation programmes, and mental health. There is also a desire to see a shift to research proposals focusing on interventional studies to address disparities in Maori health rather than purely observational studies of Maori deprivation. It is an expectation that many Maori development proposals may be funded in conjunction with other relevant HRC portfolios if

¹⁶ Ibid, p.9

¹⁷ Ibid

they also contribute to Maori advancement objectives. In addition research into the provision of Maori specific health services and their utilisation by Maori will also fall into this category. Again, there is an expectation that this research address issues of concern to Maori communities.¹⁸

3.1.5 Kaupapa Māori Research and Kikorangi (Blue Sky) Research

The HRC Rangahau Hauora Māori Portfolio Strategy contains the following description of Kaupapa Māori research:

Kaupapa Maori research uses tools based on Maori paradigms and methodologies and represent an important part of the development of Maori thought, culture and world view. The Rangahau Hauora Maori portfolio will encourage Kaupapa Maori research that contributes to the knowledge base of Maori and also research that assesses and validates Maori paradigms and methodologies.¹⁹

Kikorangi (Blue Sky) Research concerns ‘research proposals that are specific to Maori but are by their nature unusual or novel.’ This provision encourages research proposals ‘from individuals or community groups not formally affiliated to the universities or government agencies.’ The description continues:

Proposals that have been formulated by or in association with whanau, hapu and iwi will be given priority particularly when they address questions that are of relevance to the community. This category will include research that is led by Maori for the benefit of Maori and also proposals that are led by Maori but that seek to benefit the wider community.²⁰

3.2 Foundation for Research, Science and Technology

The Foundation for Research, Science and Technology describes itself as ‘a major investor in Māori Development and Advancement research’.²¹ Relevant statements appear in their Output Agreement with the Minister and elsewhere.

3.2.1 Māori Development and Māori Advancement

The 2003/04 Output Agreement between the Minister and the Foundation for Research, Science and Technology includes the following statement:

Contributing to Maori advancement and development

Separate but complementary goals are used in Vote RS&T to align research activities to the aspirations and needs of Maori. Maori development research is research carried out to consolidate and develop Maori knowledge and to deepen the Maori research skill base. Maori advancement research is research that addresses the significant disadvantage of Maori relative to non-Maori in many areas.

The Foundation will invest in research projects that contribute to Maori development under the Maori Knowledge and Development output class. The

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Ibid.

²¹ Foundation for Research, Science and Technology website. <http://www.frst.govt.nz/maori/index.cfm>

Foundation will also ensure that investments it makes contribute to Maori advancement under all other relevant output classes.²²

Furthermore, the following is a statement about the Foundation's commitment to supporting Māori Development research:

As a Government agency the Foundation is committed to supporting Māori Development research in keeping with the principle of partnership embodied in the Treaty of Waitangi. This is a commitment that recognises that Māori have a rich heritage of innovation, one driven by cultural necessity and based in Aotearoa's unique natural environment, a heritage based on centuries of observation, information collection and exploration, and a heritage rich in examples of entrepreneurial spirit. The Foundation is also committed to developing Māori RS&T capability including RS&T skills that will enable Māori to participate in advanced technology and future premium-earning sectors of the economy.²³

In response to this, the Foundation has developed a 'Māori Development and Advancement Strategic Portfolio Outline'. The material that follows is drawn from this Outline. The Foundation has also published the following 'Change Message':

The Foundation will seek to invest in RS&T that:

- Enables Māori to participate fully in advanced technology and other high-value and rapidly growing areas of the economy;
- Enables Māori involvement at all stages of research, science and technology from inception to the delivery of benefits (including mechanisms for the protection of cultural property and management of intellectual property);
- Supports the achievement of better outcomes for Māori where there are disparities in economic, social, justice, and educational achievement;
- Supports enhanced Māori management of natural, cultural and historical resources and maintains matauranga Māori (Māori knowledge);
- Develops Māori RS&T capability aligned to these directions - including means of enabling Māori to take leadership of research programmes.²⁴

With respect to the concepts of Māori Development and Māori Advancement, the following statements can be found on the Foundation's website.

The Foundation promotes the twin goals of Māori Development and Māori Advancement. These goals correspond to the two relationships that Māori have with the Crown under Article II and Article III of the Treaty of Waitangi.

Māori Development Goal

Māori Development is about the positive development of Māori lives, resources and knowledge. It is based on the distinct identity of Māori as tangata whenua who have a unique heritage and culture. The goal of Māori

²² FRST Output Agreement 03/04 – Operating Principles

²³ Foundation for Research, Science and Technology website. <http://www.frst.govt.nz/maori/index.cfm>

²⁴ Foundation for Research, Science and Technology website, <http://www.frst.govt.nz/maori/ResStrat.cfm>

Development responds to Article II of the Treaty of Waitangi, encouraging greater Māori control and participation in research agendas. It is also a goal that involves support for Māori knowledge, approaches, philosophies and methods in research, and the use of the Māori language, culture and experiences.

Māori Advancement Goal

The goal of Māori Advancement responds to Article III of the Treaty relating to the rights of all citizens to equitable access to the wider society and economy of Aotearoa/ New Zealand and to addressing Māori/non-Māori disparities. The Foundation is seeking to advance outcomes for Māori across other portfolios as a portfolio balance factor aligned to the strategic direction of those portfolios.²⁵

3.2.2 Research Descriptors

The Foundation also employs the following descriptors of research. In doing so, it requests that applications for Māori research funding ‘convincingly demonstrate a substantive level of Māori involvement and be clearly designed to benefit Māori to be classified as Māori research.’ Public good science and technology (PGS&T) research providers are asked to estimate the nature and extent of Māori research on the basis of the following descriptors:

Research specifically relevant to Māori:

Research where the results are specifically relevant to Māori but it has a low level of Māori involvement. Targeted technology transfer may provide an opportunity for improved outcomes for Māori.

Research involving Māori:

Research where Māori are involved as participants and possibly as members of the research team. The research responds to an issue of importance for Māori and Māori have been involved in the development of the proposal. The research specifically contributes to improvements in outcomes for Māori.

Māori-centred research:

Māori are significant participants and typically are senior members of the research team. The research addresses a distinct issue of importance and specifically contributes to improvements in outcomes for Māori, e.g., a longitudinal social science study of Māori households.

Kaupapa Māori research:

Research that responds to a culturally distinct issue of importance; Māori are significant participants and primary researchers; Māori knowledge is used and produced. Research, which primarily meets expectations and quality standards, set by Māori, e.g., a study that contributes to revitalisation of Te Reo Māori.²⁶

²⁵ Foundation for Research, Science and Technology website, <http://www.frst.govt.nz/maori/ResStrat.cfm>

²⁶ Application Guidelines for PGS&T Research Funding 2003/04 Investment Round, p.63

These descriptors can be found on page 63 of the 'Application Guidelines for PGS&T Research Funding 2003/04 Investment Round.'

3.2.3 Advancing Outcomes for Māori Across Portfolios

The Foundation has also introduced policies designed to encourage and allow Māori participation across its Portfolios. The Foundation invests in Māori Development research in the Māori Development portfolio and considers Māori responsiveness as a 'portfolio balance factor' across other portfolios with specific Māori responsiveness targets tailored to portfolios.

The Māori portfolio balance factor components within proposals are assessed according to the following criteria:

- Outcomes for Māori
- Connections and Partnerships with Māori end user groups
- Māori Human Capital Development²⁷

The statement continues:

The Foundation is not seeking evidence of responsiveness to Māori in all research proposals. It is seeking to invest in the best quality research proposals that contribute beneficial outcomes for Māori. The Foundation is seeking to invest in RS&T projects that demonstrate meaningful collaboration with Māori from idea inception through to delivery of the outcomes. It is encouraging research providers to engage Māori organisations, to identify issues and opportunities specific to those groups, and to develop research programmes that respond to these issues and are aligned to the Foundation's strategic directions.

3.2.4 Māori Cross Portfolio Themes — Economic, Social and Resource Management

Additionally, the Foundation maintains three 'Māori Cross Portfolio Themes' that 'track the Foundation's RS&T contracts that contribute beneficial outcomes for Māori. These are Māori Economic Development, Māori Social Well-being and Māori Resource Management.' The statements below are extracts. The full texts can be read at <http://www.frst.govt.nz/maori/ResStrat.cfm>.

Māori Economic Development

The Māori Economic Development theme tracks Foundation research contracts funded by the Research for Industry and New Economy Research Fund that contribute improved outcomes for Māori. The Māori balance factor will receive particular emphasis in the following portfolio areas to enable Māori participation in advanced technology, value added and premium earning sectors of the economy:

- Wood Fibre based Industries
- Seafood and Aquatic Environment Based Industries
- High value horticultural products

²⁷ Foundation for Research, Science and Technology website, <http://www.frst.govt.nz/maori/ResStrat.cfm>

- NERF related portfolios

Māori Social Well-being

The Māori Social Well-being theme tracks Foundation research contracts funded by the Social Research Output Class that contribute to improved outcomes for Māori. Investments aligned to this theme generate knowledge that contributes to the improved social and cultural well-being of Māori.

Māori Resource Management

The Māori Resource Management theme tracks Foundation research contracts funded by the Environmental Research Output Class that contribute to improved outcomes for Māori. Investments aligned to this theme support enhanced Māori management of natural, cultural and historical resources and facilitate Māori involvement in environmental management.

Māori Human Capital Development

Māori human capital development is a part of the overarching strategic direction of the Māori Development and Advancement SPO. The Foundation is seeking to develop Māori research, science and technology capability across social, economic and environmental goals. It is doing this by encouraging the development of Māori research capability in research contracts and in scholarship schemes including the Tūāpapa Pūtaiao Māori Fellowship Scheme. The Foundation is seeking to:

- align the Māori Fellowships with research contracts
- link Māori research capability development up with the best research teams in the country
- target Māori research capability development in advanced technology and premium earning sectors of the economy

The Foundation is encouraging research providers to collaborate with the University sector and Māori organisations to identify and mentor budding Māori researchers from an early stage

Collaborative Research Models for Working with Māori Enduser Groups

The Foundation is seeking to invest in RS&T projects that demonstrate meaningful collaboration with Māori from idea inception through to the delivery of outcomes. It is encouraging research providers to engage Māori organisations to identify issues and opportunities specific to those groups and to develop research programmes that respond to these.²⁸

3.2.5 Māori Research and Innovation Strategy

In 2003, the Foundation initiated the development of a 'Māori Research and Innovation Strategy'. Its purpose is described as follows:

The overall purpose of the Maori Research and Innovation Strategy is to maximise the effectiveness of the Foundation's investments that contributing positive outcomes for Maori by:

²⁸ Foundation for Research, Science and Technology website, <http://www.frst.govt.nz/maori/ResStrat.cfm>

- Developing a vision for Maori Innovation
- Identify distinct barriers to Maori Innovation and key mechanisms and behaviours to enable effective Maori involvement in science and innovation
- Identifying target outcomes for Maori to be embedded across Foundation portfolios and the best investment process to achieve each target
- Development of a strategic plan to focus the development of Maori science and innovation skills including identification of the levels of investment and the role of different output classes and organisations in delivering outcomes for Maori.

The development of the strategy will take place over 2004 with a draft strategy available for input in August 2004.

3.3 Royal Society of New Zealand

The 2003/2004 Output Agreement between the Minister of Research Science and Technology and the Royal Society of New Zealand includes the following Operating Principle:

Responsiveness to Maori

Within the limits of this Agreement, the Society will design research portfolios that are responsive to the needs and diversity of Maori.

In September 2003, the Royal Society prepared a list of current activities and initiatives illustrating how it is responsive to Māori. These initiatives are grouped by the following activities:

- The Marsden Fund
- Centres of Research Excellence
- James Cook Research Fellowships
- Science Promotion Fund
- General Royal Society activities including Hui, Science Meets Parliament and Education

Here the Royal Society discusses initiatives such as the introduction of Māori responsiveness sections into proposal forms for the Marsden Fund and the James Cook Research Fellowships. The Royal Society also includes a table pertaining to the monitoring of participation of Māori researchers and topics of specific interest to Māori supported by the Marsden Fund. With respect to 'Māori responsiveness', the Royal Society includes the following note in its documentation, again in relation to the Marsden Fund:

This year, the Marsden Fund has introduced a Māori responsiveness section into its proposal forms. This has a number of purposes. It indicates that engagement with Māori is an objective for the Marsden Fund. It indicates to research organisations that they should be setting up consultative mechanisms, if these do not exist already. It highlights the need to develop

Māori research capacity. And it ensures that the researchers take steps to ensure that there are no barriers to their research.²⁹

Mention is also made of the Centres of Research Excellence and the following criteria statement applied to the selection of the Centres of Research Excellence Fund Committee:

Demonstrated experience and reputation in assessing excellence in Māori research³⁰

With respect to the Science Promotion fund, 'For the 2001/02 round of the Promotion Fund, applications specific relevance to Māori were actively encouraged, resulting in 3 such projects being supported (and being allocated 21% of the funds).³¹ The Royal Society also attended four MoRST hui entitled 'Supporting Maturanga Māori and Innovation through Research, Science and Technology', two of the 'Science meets Parliament' evening talks for parliamentarians were of relevance to Māori and the Royal Society also describes an array of activities designed to target Māori within its Education function. A description of these activities can be found at <http://www.rsnz.org/news/maori/>

²⁹ Royal Society of New Zealand website, <http://www.rsnz.org/news/maori/>

³⁰ Ibid.

³¹ Ibid.

4.0 ‘Māori Research’ Investments by Purchase Agents

This section is an attempt to quantify investments by Purchase Agents in ‘Māori Research’ in the period July 2002 to June 2003. The figures that appear in this section are estimates provided by Purchase Agents. In reading this material, it is important to note that the Purchase Agents have developed their own approaches to ‘Māori Research’ investment. Hence, in the absence of a uniform and a consistently applied meaning to the concept of ‘Māori research’, it is difficult therefore to provide a clear statement about the level of investment in ‘Māori research’. In response, this section is arranged according to the policy frameworks and meanings employed by the Purchase Agents themselves.

As previously mentioned, Māori Research funded through Vote RS&T promotes the twin goals of Māori development and Māori advancement. Overall, this is the policy framework applied within the Vote and which superseded the earlier policy entitled ‘Māori Responsiveness.’³² However, this is not entirely the case as, for example, the Royal Society of New Zealand still employs the term ‘Māori Responsiveness’.³³ In discussion with the Royal Society, they are aware of the Māori Development and Māori Advancement framework and they have provided information in relation to this framework (see Section 4.3 below), however, it should be noted that their Output Agreement 2003/2004 asks them to give expression to ‘Māori Responsiveness’.

The figures supplied by the Foundation are research provider estimates which are in turn audited by the Foundation. This takes place on the basis of assessments from the Māori reference group and the level of relative benefit likely to accrue to Māori from the successful completion of the research. FRST uses the following three descriptors (see Section 3.2.2):

- Research Involving Māori
- Māori Centred Research
- Kaupapa Māori Research

The fourth descriptor entitled ‘research specifically relevant to Māori’ is not applicable here when calculating investment figures due to the low level of Māori involvement in these projects.

4.1 ‘Māori Development’ Research Investment

The primary vehicle for ‘Māori Development Research’ is the Māori Knowledge and Development Research Output Class (MKDOC). Accordingly, this provides funding to support research undertaken for and by Māori. It aims to develop Māori research capability, evolve Māori knowledge and develop knowledge for the benefit of Māori.

The MKDOC supports Māori development research and is co-administered by the Foundation for Research Science and Technology and the Health Research Council.

³² This is noted, for example, in the Letter of Expectations between the Minister of Research, Science and Technology and the Foundation for Research, Science and Technology, dated 4 March 2002. See Annex Two.

³³ The Royal Society is requested to act upon ‘Māori responsiveness’ in the 2003/2004 Output Agreement. See Section 3.3 of this report. See also RSNZ website, <http://www.rsnz.org/news/maori/>

Table One: MKDOC Māori Development Research Expenditure

	<u>02/03</u>
FRST	\$2.7m
HRC	\$2.3m
Total	\$5.0m

Additionally, a proportion of the Marsden fund is also invested in Māori development research, however, this is difficult to quantify. Please see Section 4.3 below.

4.2 ‘Māori Advancement’ Research Investment

Māori Advancement research is supported through a number of other output classes. It is designed to enable Māori to gain support from throughout the activities of the Vote. Additionally, it is also designed to give expression to Article Three of the Treaty of Waitangi and relates to Māori in wider New Zealand society. Investment figures for each purchase agent are listed below, along with an explanation of the source of these totals.

Table Two: FRST ‘Māori Advancement’ Research Investment

Output Class	Māori Research Goal	Expenditure during 02/03 financial year	Total Value of the Output Class for the 02/03 financial year	Māori research as % of Total Output Class	RS&T Goal
RFI	Advancement	\$10m	\$185m	5.4%	Economic
NERF	Advancement	\$840k	\$64m	1.3%	Knowledge
Social	Advancement	\$1.4m	\$6.6m	21%	Social
Environment	Advancement	\$4.6m	\$88.6m	5%	Environmental
TOTAL		\$16.94m	\$344.3m		

4.3 The Royal Society and Māori Development and Advancement Combined

The Royal Society of New Zealand, which administers the Marsden Fund, classifies as Māori research that which is of ‘*specific interest and relevance to Māori, or kaupapa Māori based.*’ This includes, for example, research on the history, language, and culture of Māori, their interactions with wider New Zealand society and institutions, and international indigenous and global issues concerning Māori. The Royal Society and the Marsden Fund Council have a clear expectation that such research will be developed either by, or in consultation with, Māori. Research by researchers who are Māori is not classified as Māori research unless the research topic itself meets the criteria stated above.

The Royal Society does not draw a distinction between Māori development and Māori advancement research. The following figures have been provided:

Table Three: Royal Society Māori Development and Māori Advancement Research Investment Combined

Output Class	Māori Research Goal	Expenditure during 02/03 financial year	Total Value of the Output Class for the 02/03 financial year	Māori research as % of Total Output Class	RS&T Goal
Marsden	Development and Advancement	\$697k	\$30.84m	2.3%	Knowledge
TOTAL		\$697k	\$30.84m		

4.4 The HRC and Māori Development and Advancement Combined

The Health Research Council's (HRC) investment in Māori health research is the sum of its investments in Māori development and Māori advancement health research.

The HRC define Māori development research as research carried out to consolidate and develop Māori knowledge and to deepen the Māori research skill base.

Māori advancement research is defined as research that addresses the significant disadvantage of Māori relative to non-Māori in many areas and relates to Article III of the Treaty of Waitangi.

Māori development research is supported with funding from the Māori Knowledge and Development Output Class (MKDOC) and is allocated by the HRC through the Rangahau Hauora Māori Research Portfolio.

Māori advancement research is supported with funding from the Health Research Output Class and is allocated by the HRC through all HRC Research Portfolios.

Table Four: The HRC and Māori Development and Advancement Research Investment Combined

Output Class	Māori Research Goal	Expenditure during 02/03 financial year	Total Value of the Output Class for the 02/03 financial year	Māori research as % of Total Output Class	RS&T Goal
MKDOC	Development	\$2.3m	\$2.3m *	40%	Knowledge
Health	Advancement	\$6m	\$42m	6%	Social
TOTAL		\$8.3m	\$44.2m		

* The MKDOC is co-invested by the FRST and the HRC. The total value of the output class for the 02/03 year was \$5m. The total value of the output class for the 03/04 year is \$5.5m.

4.5 FRST and Māori Development and Advancement Combined

The Foundation has provided the following figures as an overview of their investments for Māori Development and Māori Advancement research combined.

Table Five: FRST and Māori Development and Advancement Research Investments Combined

Output Class	Māori Research Goal	Expenditure between July 02 and October 03	Total Value of the Output Class for the 02/03 financial year	Māori research as % of Total Output Class	RS&T Goal
MKDOC	Development	\$2.7m	\$2.7m *	60%	Knowledge
RFI	Advancement	\$10m	\$185m	5.4%	Economic
NERF	Advancement	\$840k	\$64m	1.3%	Knowledge
Social	Advancement	\$1.4m	\$6.6m	21%	Social
Environment	Advancement	\$4.6m	\$88.6m	5%	Environmental
TOTAL		\$20.14m	\$347.5m		

However, it should be noted that some investments in Output Classes outside of the MKDOC can also be classed under the 'Māori development' descriptor. For example there is 'kaupapa Māori research' supported in the environmental and social output classes albeit the investment is relatively small (Please see table below). In most parts of the Vote, the MKDOC is seen as the primary vehicle for 'Māori development' and 'Māori advancement' is facilitated through research supported by other Output Classes. In the case of the FRST, however, their research descriptors allow for 'Māori centred' and 'kaupapa Māori' research application across a number of portfolios and output classes.

Table Six: FRST Research Investment Across Output Classes

Output Class	Research Involving Māori	Māori Centred Research	Kaupapa Māori Research
OC6 NERF	\$838,480	\$0	\$0
OC7 RFI	\$6,907,637	\$2,807,755	\$238,550
OC11 MKDOC	\$5,000	\$1,329,469	\$1,182,488
OC13 Social	\$938,036	\$381,550	\$33,750
OC14 Environmental	\$3,508,726	\$791,514	\$263,316

4.6 Total Current Investment in Māori Development and Māori Advancement Research across Vote RS&T

To summarise, these tables and their figures can be arranged in the following manner:

Total Investment = Approx. \$29.13m (of a possible \$458m) = 6.3%

Of the \$29.13 million...

\$5.5m is invested in Māori development research (19%)

\$23.63m is invested in Māori advancement research (81%)

4.7 Where is Māori research funding invested?

Set out below is a summary of where Māori research funds are invested by type of research provider (2002/2003 financial year):

Foundation for Research Science and Technology:

Output class: MKDOC

Universities	46%
CRIs	27%
Other	27%

Output class: Social

Universities	80%
Other	20%

Output class: RFI

CRIs	70%
Other	20%
Universities	10%

Output class: Environment

CRIs	80%
Universities	20%

Output class: NERF

CRIs	20%
Universities	60%
Other	20%

Health Research Council

Output classes: MKDOC and Health Research

Universities	84%
CRIs	0
Other	16%

The Royal Society of New Zealand:

Output class: Marsden

Universities	75%
CRIs	0
Other	25%

Approximately 50% of Māori research is conducted within Universities. 25% is conducted within private/independent organisations, and 25% is carried out in CRIs.

4.8 Māori Research Objectives and Example Projects/Programmes

Objective	Theme	Output Class	Goal	Example project
FRST				
Māori Development	Māori Development	MKDOC	Social/Knowledge	<p>Best outcomes for Māori – <i>Te Hoe Nuku Roa</i>. Longitudinal study of Māori households providing information on the current status and aspirations of Māori individuals and families to Government agencies, territorial local authorities, iwi runanga, Māori authorities and relevant community groups.</p> <p>Key researchers: Prof. Mason Durie, Assoc. Prof Chris Cunningham</p> <p>Research provider: Massey University</p>
Māori Advancement	Māori Economic Development	RFI, NERF	Economic	<p>Rapid commercialisation of new aquaculture species. Goal of the research is to generate new wealth within the seafood sector through diversification of the aquaculture industry into high-value export products. The research aims to achieve this by working with Māori and the seafood industry to rapidly advance five new aquaculture species into commercial production.</p> <p>Key researchers: Dr Carolyn Poortenaar, Dr Andrew Jeffs, Dr</p>

				Michael Bruce, Dr Erina Watene Research provider: NIWA
Māori Advancement	Māori Social Well-being	Social	Social	<i>Te Mātāhauariki</i> – Laws and Institutions for Aotearoa New Zealand. The overall aim of this research is to explore ways in which the legal system of Aotearoa/New Zealand can evolve so as to accommodate the best of the values and concepts of both major components of its society and to generate a discourse which proposes a cohesive jurisprudence and offers models for its practical application to selected areas of our legal system. Key Researchers: Adjunct Prof. Mike Brown, Dr Tui Adams, Assoc. Prof. Richard Benton Research Provider: Waikato University
Māori Advancement	Māori Resource Management	Environment	Environment	Indigenous Forestry. This research will assist in meeting societal expectations for environmentally sustainable management through demonstrating how a significant portion of New Zealand's privately owned indigenous forests could be sustainably managed for timber production. The research includes a partnership, and case study, with Tūhoe Tuawhenua Trust. Knowledge will be disseminated

				through the support of Māori students, presentations at tribal hui, and assisting the development of management plans for Māori-owned forests. Research Provider: Landcare Research
HRC				
Māori Development	Māori Development Health Research	Health	Social	Oranga Niho: A kaupapa Māori review of Māori dental health service provision Researcher: Assoc. Professor John Broughton Research Provider: Otago University
Māori Advancement	Māori Advancement Health Research	Health	Social/Knowledge	Diabetes Research. This programme aims to generate new approaches to monitoring and therapy of Type-2-Diabetes (T2DM) and insulin resistance, based in four project-areas. Key Researcher: Professor Garth Cooper Research Provider: University of Auckland

RSNZ				
Māori Development and Advancement	Sociology, Ecology	Marsden Fund	Knowledge	Landscape transformation and human interaction in pre-1840 Bay of Islands, New Zealand. Ngāti Hine, the tangata whenua of the Bay of Islands, will co-ordinate research, in partnership with a multi-disciplinary team from the Treaty of Waitangi Research Unit of Victoria University and the James Henare Māori Research Centre of the University of Auckland, on the ecological impact and human interaction that occurred in their area pre-1840.

4.9 Human Capital Development

Human capital development is another area of significant investment in Vote RS&T. This activity is supported through the Supporting Promising Individuals Output Class.

4.9.1 Supporting Promising Individuals Output Class

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.'³⁴ This output class supports a range of programmes such as the James Cook Research Fellowships (administered by the Royal Society). Māori specific programmes supported through this output class are described below.

4.9.2 FRST Scheme: Tūāpapa Pūtaiao Māori Fellowships (TPMF)

The following information is found on the FRST website at <http://www.frst.govt.nz/students/TuapapaPutaiiaoMaori.cfm>

These Fellowships are aimed at developing positive role models in order to promote the participation and achievement of Māori in science, technology and engineering. The Tūāpapa Pūtaiao Māori Fellowships (TPMF) scheme began in 1996 and plays an important role in developing pathways for Māori to participate in RS&T. Since the beginning of the scheme in 1996 the Foundation has funded 31 PhDs and 52 Masters.

The TPMF scheme underwent review in late 2003. As a result the study areas have been broadened to include the following:

- Mātauranga Māori (Māori knowledge)
- Pūtaiao Māori (Māori science)
- Māori Resource Management
- Environmental Studies
- Architecture and Design

FRST aims to fund 30% of fellows in these new discipline areas.

The Tūāpapa Pūtaiao Māori Fellowships aim to:

- Assist Māori to gain scientific qualifications in order to pursue a research career in science, technology, or engineering
- Develop or assist in the development of skills relating to research, science and technology among Māori, especially young Māori, by providing opportunities for talented graduates to study for higher degrees
- Develop positive role models in order to promote the participation and achievement of Māori in New Zealand science, technology and engineering, at school and under-graduate level

³⁴ Vote Research Science and Technology, Budget Estimates 2003-2004, p.24

Emphasis is placed on areas of science, engineering or technology where participation by Māori, as evidenced by numbers of Māori graduates, is particularly low. Fellowships are offered for post-graduate degrees in science, engineering and technology disciplines, but exclude Social Sciences, Humanities, and Medical and Health Sciences.

PhD fellowships are valued at \$25000 per year for up to 3 years and Masters fellowships are \$20000 per year for up to 2 years.³⁵

4.9.3 HRC Scheme: Māori Career Development Awards

These awards support the recruitment, education, training and retention of Māori health researchers.

Summer Studentships: Summer Studentships are offered to introduce research to those students who have the potential to develop careers involving Māori health research. The studentships include vacation work and a stipend of \$4000 per annum.

Rangahau Hauora Award: Rangahau Hauora Awards are intended to provide personal support to individuals seeking to undertake a period of research training relevant to Māori health. This award is particularly suited to individuals who do not have an academic background but who wish to learn a limited set of research skills relevant to a particular research project. This set of skills would enable them to be involved in an intended piece of research in their own area. The awards are particularly suited to Māori already working in the health field, who have an interest in an area of health research and who wish to obtain some practical research skills relevant to their work. Rangahau Hauora Awards are not intended to be the start of a full-time research career. The value of the stipend is based on the recipient's qualifications and research experience and is determined by the Council according to each individual's circumstances and the duration of training to be undertaken, to a maximum value of \$12,000 over the period of the award.

Masters and PhD Scholarships:

Masters: Masters scholarships are intended to provide one year of personal support for students completing the research component of a masters degree. The current value of the Masters scholarship is \$10,000 per year.

PhD: Māori Health PhD scholarships are intended to provide three years of personal support for students undertaking a PhD. Applicants eligible to apply may come from any discipline, but must be enrolled for a PhD in a research field related to improving human health. The current value of the Doctorate scholarship is approximately \$25000 per year. The HRC Masters and PhD scholarships also pay fees and a tikanga allowance. PhD scholars are also paid a \$10k research allowance.

Post Doctoral Fellowships: Postdoctoral Fellowships are intended for the support of outstanding graduates who have recently completed a degree at

³⁵Foundation for Research Science and Technology website
<http://www.frst.govt.nz/students/tuapapaPutaiiaoMaori.cfm>

doctoral level related to improving human health. Their purpose is to provide support for up to four years for researchers to gain further experience in their chosen fields and for them to become established as an independent researcher. Where appropriate, the fellowship can include a period of up to two years of training that is undertaken overseas. Postdoctoral fellowships are available to applicants from all disciplines.

There are three fellowships specifically available in Māori health research. Each focuses on different areas of Māori health research.

Erihapeti Rehu-Murchie Research Fellowship in Māori Health

Postdoctoral fellowship honours the work of kaumātua Dr Erihapeti Rehu-Murchie. It provides a salary for an emerging leader in Māori health with a PhD or equivalent to undertake research in one of the following areas - hauora wahine and hauora tamariki; health promotion; holistic health (whare tapa whā); indigenous health policy involving international comparison.

Hōhua Tūtengaehe Research Fellowship in Māori Health

Postdoctoral fellowship honouring the legacy of kaumātua Hōhua Tūtengaehe. It provides a salary for an emerging leader in Māori health research with a PhD or equivalent to undertake research in one of the following areas - Māori community health development; mātauranga Māori; te reo me ona tikanga; te ao wairua; urban Māori; justice; or rangatahi.

Eru Pomare Research Fellowship in Māori Health

This postdoctoral fellowship honours the legacy of Professor Eru Pomare and his contributions to the field of gastroenterology. It provides a salary for an emerging leader in Māori health research with a PhD or equivalent to undertake clinical or medical research. Applications from medically qualified individuals are especially welcome.³⁶

Table Seven: Māori Human Capital Development Awards

Purchase Agent	Scheme	PhDs funded to date	Masters funded to date	02/03 Expenditure	03/04 Income
HRC	Māori Career Development Awards	45	31	\$850k	\$1m
FRST	Tūāpapa Pūtaiao Māori Fellowships	31	52	\$240k	\$765k

³⁶ Health Research Council website
<http://www.hrc.govt.nz/Awards1.htm>

4.9.4 Mauriora-ki-te-Ao Scholarships

The *Mauriora-ki-te-Ao* scholarship is open to Māori students undertaking a science / Mātauranga Māori related course at a tertiary education institute. Students with an interest in learning more about how the RS&T system works or government policy for RS&T are particularly encouraged to apply, but this is not a requirement of the scholarship.

The Mauriora-ki-te-Ao scholarship is offered by several government agencies, including MoRST, to encourage Māori to pursue a career in government policy. To streamline the application process Land Information New Zealand administers the scholarship (i.e. distributing, receiving and compiling the applications) but each separate agency selects their own scholarship winner/s.

The value of the MoRST scholarship is \$3,000 for one year, and is targeted at undergraduate students only. MoRST has awarded 9 scholarships since becoming involved in the scheme in 1999.

4.10 Adoption of new technology and application of technological learning and innovation for business growth

Another significant research investment initiative of relevance to Māori falls under the category of 'adoption of new technology and application of technological learning and innovation for business growth.' Specifically this relates to the Technology New Zealand Output Class, an activity that takes place under the aegis of Technology NZ (a part of FRST).

4.10.1 Technology NZ Output Class

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. The output class is administered by the Foundation for Research, Science and Technology.

The output class comprises four schemes:

- Technology for Business Growth
- Grants for Private Sector Research and Development
- Technology for Industry Fellowships
- Techlink

4.10.2 Māori Collectives Scheme

The Māori Collectives scheme is a sub-scheme of TechLink which has been devised to assist Māori groups evaluate the commercial potential of the resources, assets and other unique opportunities at their disposal through the funding of base-level, analytical programmes of R&D provided in most instances by the Crown Research Institutes (CRIs). The scheme has been operating since 2002.

The primary objectives of the scheme are to:

1. Assist the entities in identifying and evaluating, through technical means, the commercial opportunities presented by their access or rights to unique or scarce resources, cultural assets and/or other unique propositions;
2. Employ scientific evidence to assist the entity in determining which opportunity to pursue;
3. Provide a R&D pathway forward for the project, utilising the expertise and skills available within the innovation system;
4. Provide opportunities for fostering R&D capability in, and knowledge/skill transfer into the entity;
5. Assist the entity in establishing strategic RS&T relationships.

There are two key criteria applying to Māori Collectives funding:

Type of collective

Māori collectives are, for the purposes of this scheme, defined as legally established iwi (tribal) or pan-iwi authorities, councils or trust boards; rūnanga, marae, whenua or whakapapa-based (i.e.: ahūwhenua or whānau) trusts, incorporations or societies. This covers groups with common interests, based

on whenua and/or whakapapa, or shared commercial interests (i.e.: sector or regional groupings).

Such collectives must have clear mandates and objectives, be well governed and managed. They will have established commercial or legal entities able to embark upon research and development programmes and engage in commercial activity. Whānau-based collectives must have established either a company, charitable trust or both.

All collectives must demonstrate how the outcomes of any R&D programme and associated commercial development will be of benefit all members of the collective.

Uniqueness of the R&D opportunity

The collective must have the potential to develop a relatively unique research and development proposition based on its ownership control of, or access to scarce or unique resources or other opportunities of significant commercial potential.

Such opportunities will be provided by the collectives' access or rights to one or a number of the following:

- Indigenous resources such as mineral deposits, natural gas, geothermal fields, etc;
- Unique land features or qualities (i.e.: micro-climate, soil types);
- Lakes, rivers, coastlines and seabed;
- Native flora & fauna;
- Traditional knowledge, Intellectual or Cultural Property (i.e.: mātauranga, rongoā);
- Customary rights (i.e.: seasonal access to muttonbird or other mahinga kai);
- Other unique, commercially and technically feasible propositions.

The proposed research & development programme must have the potential to result in a business that is sustainable over time, and in a significant degree of upskilling and learning within the collective.³⁷

Table Eight: Technology New Zealand Schemes

Technology NZ Schemes	02/03 grants to Māori organisations
Technology for Business Growth (TBG)	\$1.2m
Technology for Industry Fellowships (TIF)	\$155k
Techlink	\$25k
Māori Collectives Scheme	\$875k
TOTAL	\$2.25m

³⁷ Foundation for Research Science and Technology website
<http://www.frst.govt.nz/business/MaoriCollectives.cfm>

5.0 Crown Research Institutes

The nine Crown Research Institutes are research providers supported through Vote RS&T and are critical to the achievement of the goals of this Vote. They operate according to the Crown Research Institutes Act of 1992 which contains the following Māori relevant provisions:

Section 5: Principles of Operation

For the purposes of this section, a “good employer” is an employer who operates a personnel policy containing provisions generally accepted as necessary for the fair and proper treatment of employees in all aspects of their employment, including provisions requiring –

- (a) Good and safe working conditions; and
- (b) An equal employment opportunities programme; and
- (c) The impartial selection of suitably qualified persons for appointment; and
- (d) Recognition of –
 - (i) The aims and aspirations of Maori; and
 - (ii) The employment requirements of Maori; and
 - (iii) The need for greater involvement of Maori as employees of the company

Section 10: Treaty of Waitangi

In relation to the transfer, pursuant to this Act, of any land, or any interest in any land, to a Crown Research Institute or a subsidiary of a Crown Research Institute, the shareholding Ministers shall have regard to the principles of the Treaty of Waitangi.

The nine Crown Research institutes, and brief descriptions, are as follows:

- **Environmental and Scientific Research (ESR) Ltd**
Provides specialist science solutions related to public health, environmental health and forensic science. Its particular capabilities are in chemical and microbiological contaminants, and surveillance of diseases and hazards
- **National Institute of Water and Atmospheric Research (NIWA)** -
Provides a scientific basis for the sustainable management and development of New Zealand’s atmospheric, marine and freshwater systems and associated resources.
- **Institute of Geological and Nuclear Sciences (GNS)** - An earth systems science enterprise whose focus includes geological hazards and tectonics, environment and land use, and earth and ocean resources for economic growth.
- **New Zealand Forest Research Institute Ltd Forest Research** -
Provides research and technology solutions to all levels of forest and wood products industries, including biomaterials science, alternative species, and plantation resources. Forest Research has recently extended its focus beyond wood to meet the growing consumer demand for renewable materials and products from plants.

- **Crop and Food Research** - Provides scientific research to support the sustainable production of food and new biomaterials. Its areas of expertise include biotechnology; sustainable environmental management and food production; nutrition and health; the production of innovative biomaterials; and advanced postharvest technology.
- **Manaaki Whenua Landcare Research Ltd** - Research focuses on six areas: biodiversity and ecosystem processes; greenhouse gases and carbon storage; sustainable business and government; biosecurity and pest management; rural land use; and urban environmental management.
- **HortResearch Ltd** - Creates new fruit varieties, technologies and products that add value. Its research expertise includes developments at a molecular level making it a world-class centre for plant-based biotechnology.
- **AgResearch**: A life sciences research organisation with an increasing emphasis on product development and commercialisation. Its expertise in modern biotechnologies is founded on a legacy in the biological sciences of agriculture.
- **Industrial Research Ltd (IRL)** – Undertakes world-class science, development and technology commercialisation in areas of communication, information and electronic technologies, advanced materials and performance, intelligent devices and systems, biochemical technologies, energy technologies, complex measurement and analysis.

5.1 Environmental and Scientific Research (ESR) Ltd

ESR places an emphasis on fostering relationships with Māori communities. The following statements are taken from their 2003 Annual Report:

ESR continues to support Maori development and advancement through fostering our relationships with the three local iwi at each site (Ngati Toa, Ngati Whatua and Ngai Tahu). In partnership with local iwi, ESR is providing Maori Development funding for education, including secondary and tertiary scholarships, and support for iwi initiatives such as marae-based homework centres.³⁸

ESR has established meaningful relationships with the three iwi associated with each of its sites, Ngati Whatua, Ngati Toa and Ngai Tahu, and now has in place Maori development scholarships with each iwi. ESR was host to the inaugural meeting of the Maori Crown Research Institute (CRI) network. The group of representatives from the CRIs was welcomed onto the Kenepuru site by Gary Dyall and the Kenepuru Waiata Group. ESR supports the establishment of this new collaborative peer group within the CRI network and is active in their discussions.³⁹

³⁸ ESR 2003 Annual Report, Chairman's Review, Pg2

³⁹ ESR 2003 Annual Report, Chief Executives Review, Pg5

ESR has a number of collaborative projects with marae committees, iwi, hapū and other Māori organisations under way or in development. These include the recently completed Whirinaki (Hokianga) community water supply research project, and research on viruses in kaimoana (shellfish) at Waitangi.

ESR also has a Māori Development Strategy which is currently under further development. The document is used internally and contains guiding principles based on directions from FRST and the HRC. ESR expects that research with Māori will develop, as its research on areas such as communicable and non-communicable diseases, food safety, water quality and waste disposal is of particular interest to Māori communities. ESR is also aware of Māori-specific issues in the provision of its forensic science services, and has started initiatives to address these.

5.2 National Institute of Water and Atmospheric Research (NIWA) Ltd
Te Kūwaha o Taihoro Nukurangi is the Māori Development Unit of NIWA. The unit plays an important role in liaising with Māori groups and providing a Māori perspective for NIWA staff.

We have much to learn from Māori about their philosophies regarding sustainable management, such as the effectiveness of rotational marine harvesting, the spiritual significance of "clean" water and good food, and marine husbandry and enhancement. Te Kūwaha maintains and establishes links with iwi groups wishing to enhance marine and freshwater resources and offers assistance of NIWA fisheries and ecological expertise where appropriate.⁴⁰

As an organisation, NIWA is committed to building effective partnerships and conducting relevant research with Māori. NIWA are also cognisant of the special relationship between Māori and the natural environment.

NIWA is committed to collaboration with iwi and with Māori commercial ventures. We have signed memoranda of understanding with various groups and recognise the iwi role in manawhenua, manamoana and kaitiakitanga. We try to pay careful attention to Māori aspirations and needs in relation to science and its impact on the environment.³⁰

5.3 Institute of Geological and Nuclear Science (IGNS) Ltd

In October 2002, IGNS appointed a Māori Strategy Manager whose key responsibilities include establishing connections between the science of IGNS and the Māori community as well as creating relationships between IGNS and iwi. The following statement is taken from the IGNS values (Included in standard IGNS job descriptions) in relation to Māori relationships:

GNS are committed to achieving mutual success through collaboration with Maori. The focus of GNS on creating new growth opportunities in earth and isotope science aligns very closely with Maori interests in the

⁴⁰ NIWA website January 2004 <http://www.niwa.cri.nz/rc/maori/>

natural world and their relationship with the land. Significant benefits can accrue from effective relationships between GNS and Maori. The creation of seamless relationships with Maori is a crucial element in the organisational growth of GNS. GNS aims to include relationships with Maori as a natural part of GNS business.⁴¹

In relation to working with Māori, the following information can be found in the 2003 Annual Report:

WORKING WITH MAORI

GNS works hard at building long-term and mutually beneficial relationships with Maori. A growing proportion of our research projects include components designed to deliver science outputs relevant and beneficial to Maori. In addition, we are increasingly joining with Maori partners in commercial and research initiatives. Many of these activities are led by senior science staff assisted by Murray Hemi, Manager, Maori Strategy. We expect our interactions with Maori to become more frequent and more diverse.⁴²

5.4 Forest Research Institute Ltd

Forest Research is focused on creating an environment that is responsive to Māori in recognition of Treaty obligations. Forest Research also sees the increase of connectivity and participation by Māori in their work as a key priority for the future. The following is taken from their 2003 Annual Report.

In the past year, Forest Research made significant progress in the development of a Maori strategy for the organisation. Critical to the success of such a strategy is the recognition of the Treaty of Waitangi obligations of partnership, participation, and protection, and within this framework the recognition of Tangata Whenua status in relation to the lands on which Forest Research is based.

The key drivers to achieve organisational recognition are Board commitment and Chief Executive leadership. This allows strategic frameworks and structures to be put in place to raise staff awareness and create an environment that is responsive to Maori

Forest Research's progress needs to be seen as the beginning of a journey towards recognition. Increasing awareness across the organisation can assist with forging new partnerships with Maori. Increasing connectivity and participation by Maori in the work that Forest Research undertakes is a key priority for the future.⁴³

The following statements were presented to the Minister of Research, Science and Technology by the Forest Research Māori Development Manager, during his 2004 site visits to the CRIs:

⁴¹ <http://www.gns.cri.nz/news/vacancies/index.html>

⁴² IGNS Annual Report 2003, Pg 12

⁴³ Forest Research Annual Report 2003, Strengthening ties with Tangata Whenua, p. 24

In June 2003, Forest Research appointed a Maori Business Development Manager to manage its investment in Maori relationships. Maori relationships are of particular importance to Forest Research for two reasons.

Firstly, at a local level, Ngati Taeotu, Ngati Hurungaterangi and Ngati Te Kahu are Tangata Whenua of the very ground on which the organisation is sited – the original owners. A partnership with the hapu is essential to the ongoing operation of the organisation and Forest Research is endeavouring to build an enduring relationship with Tangata Whenua.

Secondly, Maori involvement in the innovation system is increasing, ranging from Maori researchers funded by Vote R,S & T, to consultation with Maori by research providers (such as Forest Research) in order that we take account of the principles of the Treaty of Waitangi – Partnership, Protection and Participation.

Forest Research has commenced on its journey to understand the relationship of Maori and their culture and traditions with their ancestral lands, water sites, waahi tapu, valued flora and fauna and other taonga.

Forest Research encourages the Ministry to support and significantly advance its Maori programmes, particularly Maori Knowledge and Development Research and the Maori Collectives Scheme. Forest Research also encourages the Ministry to advance its Maori Responsiveness targets in other science funding portfolios that are funded.

The Ministry has indicated that the New Zealand innovation system is starting to “thicken up”. Maori and Maori organisations are part of this increasing involvement in the R, S & T sector. Forest Research has extended its collaboration efforts by informing Maori-led business of our Bio-materials strategy - Ngati Porou Whanui Forests Limited, Matatua Economic Development Group and Te Arawa Federation of Maori Authorities are three such groups. More engagement is needed and Forest Research is focused on doing so.

Forest Research is also supporting initiatives that assist the organisation in better understanding issues concerning Maori.

Internally, the Cellwall Biotechnology Centre has established a Maori Advisory and Monitoring group, Te Aroturuki to facilitate meaningful relationships between Maori and Forest Research scientists in the science of plant gene technologies. This will result in improving outcomes for Maori from current and future forest biotechnology's including commercial and educational opportunities, environmental enhancement and protection, and cultural integration.

Externally, Forest Research is represented on a newly formed group called MACRI – Maori across CRI – comprising Senior Maori Managers from all 9 CRI's. The kaupapa for this group is “Ka tu Maori ai i roto i te kaupapa putaiao whanui – Let us stand tall as Maori in the world of science. MACRI has a contribution to make to both Maori and Government R S & T sectors in assisting parties to define, develop and deliver on the Treaty relationship. It is a new and exciting CRI collaboration and is full of capable and energetic “change agents” who are very focused on improving outcomes for Maori in the sector.⁴⁴

5.5 Crop and Food Research Ltd

Crop and Food Research Ltd also places an emphasis on the development of partnerships with Māori. The following is taken from the 2003 Annual Report:

INNOVATION THROUGH PARTNERSHIPS... THE WAY OF THE FUTURE

Generating knowledge through scientific discovery and applying it to improve the sustainable development of the arable, vegetable, dairy, floriculture, seafood, processed foods and nutrition sectors in New Zealand and other countries is one of our primary goals. Our approach is to develop innovative solutions by working with scientific colleagues, industry, user groups, the community and Maori in genuine partnerships.⁴⁵

Crop and Food Research hope to achieve the aforementioned goals through the implementation of the Crop and Food Research Māori strategy Te Pūtahi; a relationship with Māori which joins the strengths and values of both partners. The strategy aims to engage iwi at a meaningful level by

- being proactive in science/dialogue areas attractive to Maori
- a willingness to address the underlying issues
- working in partnership to develop opportunities

Crop and Food Research also see the recent appointment of a Māori research leader to their ranks as an opportunity to develop research programmes that will meet the expectations of a range of Māori groups.

5.6 Manaaki Whenua Landcare Research Ltd

The guiding philosophy of Manaaki Whenua Landcare Research includes the following statements:

- honouring the principles and spirit of the Treaty of Waitangi (believing) that the spirit of the Treaty provides a model for our dealings with people from all cultures and societies.
- Having due regard to Claim WAI262 in relation to the ownership of indigenous flora and fauna, including living and dead collections.⁴⁶

⁴⁴ Tupara Morrison, Māori Business Development Manager, HortResearch, 11 February 2004

⁴⁵ Crop and Food Research Annual Report 2003, Pg 3

⁴⁶ Manaaki Whenua Landcare Research Statement of Corporate Intent 2003-2004, Pg12

The research direction of the Company – whilst largely influenced by funding providers – aims to maximise the engagement of Maori in the design, implementation and assessment of all of its Maori-related research (and non Maori-related research where necessary and appropriate). Responsiveness to the needs and aspirations of Maori is the essential catchcry for all staff of Manaaki Whenua.

The following statement from the Manaaki Whenua website endorses this:

Maori Perspectives and Treaty Responsibilities

Historically, physical survival and spiritual well-being for Māori depended on the land. Traditional protocols developed and practised over the centuries were a form of resource management. Contemporary scientific process has largely ignored Māori cultural values and the rationale from which these developed. We have a responsibility to set this right and accept the validity of traditional perspectives and approaches. Among Māori, there is a desire for increased involvement in science and resource management. The Treaty claims process also makes collaboration a priority between Māori, local authorities, conservationists and researchers.⁴⁷

5.7 HortResearch Ltd

HortResearch Limited also places an emphasis on developing partnerships with Māori. The following is taken from their 2003 Annual Report:

Maori Partnership – Advancing Knowledge and Economic Development

During the last year significant steps have been taken to ensure that HortResearch is strategically moving forward in respect of the Treaty and Maori engagement.

A Strong Infrastructure

The Maori business development team appointed in December 2002 leads the development of research and business partnerships with Maori, proposes guidance for staff on cultural protocols and contemporary Treaty awareness, encourages Maori aspirations in research and further develops Treaty policy.

Business Development

A primary goal of the Maori business development team is to raise the profile of HortResearch to become a preferred research provider and thereby increase business via long term relationships with local, national and community based Maori. Targeted funding proposals are developed and new research partnerships are driven by an alignment with central government policy signals and HortResearch's overall strategic direction.

⁴⁷ Manaaki Whenua Landcare Research website January 2004

Alignment of HortResearch science with hapu, iwi and commercial entities provides opportunity to improve outcomes for Maori. A positive example is our relationship with Wakatu Incorporated who are developing a new horticultural brand, with other joint projects under discussion. Our environmentally sustainable land use management capability also offers significant value to Maori.⁴⁸

HortResearch also have staff and advisers who concentrate on supporting Māori business development and cultural integrity:

HortResearch has support from Whakaruruhau (advisory) Kaumatua who advises on the cultural integrity of HortResearch's activities at a corporate level.

The Maori Business Development Unit is a first point of contact for staff advice on matters relating to this policy.

Members of the network of Maori staff –Nga Toa Ngaki Kai, may be consulted with respect to local issues.

A dedicated science advisor who acts as a guide and mentor for Maori Business Development Leaders on the use of HortResearch science, skills and capability for the benefit of both Maori and HortResearch.⁴⁹

5.8 Industrial Research Ltd

The following statement is taken from the Chairman's Report of the 2003 Industrial Research Limited Annual Report:

We also take considerable pride in our social contribution to New Zealand society. We initiated a project that should utilise the skills and expertise resident in our polytechnics to offer, in partnership with Industrial Research, an accessible R&D resource for small and medium sized businesses. We contributed to the development of improved hazardous substance legislation and successfully met and exceeded the Government's call to conserve energy. Our technologies and the skills of our scientists are actively supporting Maori economic development in a range of projects.⁵⁰

Provided below, again taken from the 2003 Annual Report, are descriptions of some of the research activity carried out by Industrial Research Limited related to Māori:

⁴⁸ HortResearch 2003 Annual Report, Pg 27

⁴⁹ Maori Engagement Policy for HortResearch 2004

⁵⁰ Industrial Research Limited 2003 Annual Report, Chairmans Report, Pg 3

Social Contributions to New Zealand

POWER TO THE COAST

A 'Power to the Coast' project is underway to alleviate serious energy infrastructure problems facing the east coast north of Gisborne. Insufficient distribution networks are stymieing new development for local communities and negatively impacting community health. Industrial Research and research partner Ngati Porou Hauroa (a local health services provider) will receive \$250,000 from the Foundation for Research Science and Technology for up to four years to undertake the project. Its focus is developing innovative alternatives to traditional network electricity supply using demand side management and distributed generation of power from local renewable energy sources. Key issues are to reduce the present costs of supply and relieve stress on the existing infrastructure. Collaboration is a key note of the project with Eastland Networks (the local electricity distributor) and several Ngati Porou iwi organisations all being closely involved.

HARAKEKE FABRIC

Under a project funded by the Foundation for Research, Science and Technology's Maori Collectives Scheme, Industrial Research is investigating developing a spinnable fibre from the harakeke plant (New Zealand flax), in conjunction with Rangi Te Kanawa of Te Kuiti-based Muka Limited. The project involves tearing the flax fibre apart and reconstituting it into a spinnable fibre that can be commercially woven. It is hoped that such a fibre could be used to make high value fabric suitable for clothing and create a niche market for the product. The lower quality fibre will be investigated for possible industrial applications. Some harakeke fibres are almost as fine as linen and have a gloss that cotton doesn't possess. As oil supplies become more limited and the cost of synthetic fibres rises, it is likely that natural fibres will become more desirable and harakeke could be part of that natural fibre spectrum.

TIKITERE GEOTHERMAL FIELD

The potential of the Tikitere geothermal field near Rotorua for producing electricity is being investigated on behalf of the Tikitere Trust in a project led by Industrial Research. Using information and data provided by Geological and Nuclear Sciences, Industrial Research mathematicians are modelling the field to determine its scale and the impact that different sized geothermal power developments would have on both the area, which has deep cultural significance for local Maori, and on an established tourism operation. The project also involves Auckland University mapping Tikitere's thermal features and studying the area's thermophillic

bacteria. It is being funded by the Foundation for Research, Science and Technology's Maori Collectives Scheme.⁵¹

5.8 AgResearch Ltd

The strategic values of AgResearch are captured in the following strategic intent:

Conduct responsible and in touch research:

Responsible research begins with alignment to Government wishes to accelerate Māori economic development and fulfil Treaty of Waitangi obligations and partnering in FORST programmes.

Ag Research has scientific and technological expertise to assist Māori to develop their land assets so that they become a strong and continuing economic driver. The company has recognised a capability gap with regard to Māori science and business and has sought to address this. A significant step forward has been the recent appointments of Māori staff in the areas of social science research and business development. This clearly demonstrates the commitment of AgResearch to Māori. The thrust of these appointments are to significantly improve science related dialogue with Māori, to increase the number of collaborative research and development projects and increase understanding of the challenges that new technologies bring to Māori. In these ways, AgResearch is committed to demonstrating their commitment to Māori economic wealth and social wellbeing.⁵²

⁵¹ Industrial Research Limited 2003 Annual Report, Pg 18

⁵² Orewa Barrett Ohia, Researcher, Human Behaviour, Social Systems Research, AgResearch Ltd, 20 February 2004

6.0 Other Agencies supported through Vote RS&T

Vote Research, Science and Technology also supports two other organisations including The New Zealand Venture Investment Fund and the Carter Observatory in Wellington.

6.1 The New Zealand Venture Investment Fund

The New Zealand Venture Investment Fund Limited (VIF) is a Crown Owned Company established under the Companies Act 1993 and incorporated on 1 July 2002. VIF is responsible for implementing the New Zealand Government venture capital programme.

VIF is a venture capital "Fund of Funds" which is investing NZ \$100million alongside private sector co-investors, in a series of privately managed venture capital investment funds (VIF Seed Funds).

The Goals of the VIF Programme are:

- to accelerate development of the New Zealand venture-capital industry by increasing the level of early stage (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 early stage investment
- to facilitate the commercialisation of innovation 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

The following statements are contained within Estimates for Vote RS&T 2003-2004. The first statement is a description of the Venture Investment Fund output class in the context of the Economic Goal of the Vote:

Venture Investment Fund – Governance and Operation

This output class funds the management and governance of New Zealand Venture Investment Fund Limited (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.

The Venture Investment Fund 2003/2004 Statement of Intent includes the following Operating Principles in the Business Policies and Statutory Requirements section. Mention is made of the Treaty of Waitangi:

Operating Principles:

- To operate with integrity and professionalism, in all undertakings.
- To protect the capital invested by managing all assets and liabilities on a prudent basis.
- To be a fair, equitable and effective employer.
- To meet all our statutory obligations under the Public Finance Act and Companies Act.
- To observe the Crown's Treaty of Waitangi obligations
- To maintain full and accurate financial and accounting records.

6.2 Carter Observatory

The Carter Observatory is the national astronomical observatory of New Zealand. Established through the Carter Observatory Act 1938, the organisation receives funding through Vote RS&T; specifically through the Promoting an Innovation Culture output class. Sections from the Carter Observatory Act 1938 reads as follows:

Carter Observatory Act 1938:

3A. Functions of Carter Observatory-The Carter Observatory shall be the national astronomical observatory of New Zealand, and may promote or carry out such research or activity related to astronomy as the Board may see fit.

(1) The functions of the Observatory may be carried out in collaboration with any other body or person.]

The following statements are contained within Estimates for Vote RS&T 2003-2004. The first statement is a description of the Promoting an Innovation Culture output class in the context of the Knowledge Goal of the Vote.

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.

The Carter Observatory runs a series of courses which provide a comprehensive overview of astronomy. The following is a description of a Māori Astronomy Course offered by the observatory:

Maori Astronomy Course:

As cultivators of the land the Polynesians had an intimate association with the seasons, the soil and plants. As hunter-gathers of the sea, they could read the land and sea signs. From origins in South-East Asia, they used the stars to traverse the great ocean and settle the far-flung islands of the Polynesian triangle. We reconstruct their astronomy from the clues that remain, and practice it under the starry planetarium dome.⁵³

⁵³ Carter Observatory Website February 2004,
<http://www.carterobs.ac.nz/public/booksession.asp?es=29579&et=4>

Appendix One: A Sample of Research Currently Supported through VoteRS&T

Wakatū Incorporation – Commercial rearing system for indigenous Greenshell mussels (TechNZ)

Technology New Zealand's biggest ever grant to a Māori research and development project has gone to Wakatū Incorporation to help establish a commercial rearing system for indigenous Greenshell™ mussels.

Technology New Zealand is investing \$800,000 in a 3-year project through its Technology for Business Growth scheme (TBG) to develop a unique land-based system for the controlled rearing of juvenile mussels. New Zealand's multi-million dollar Greenshell™ mussel industry currently relies on wild-harvested mussel spat gathered from sites at Golden Bay and the Marlborough Sounds in the South Island and Kaitaia in the North Island.

Wakatū Incorporation is a Nelson-based Māori-owned commercial enterprise with assets of more than \$150 million. Wakatū businesses are based around land and sea, with \$45 million having been invested in the mussel industry in the last five years. Wakatū is working with researchers at the Cawthron Institute on the project, which aims to establish a continuous supply of high quality mussels. Ultimately Wakatū intends to use the intellectual property gained during the project to establish pond-based spat production.

Wakatū Chief Executive Keith Palmer says a commercial scale hatchery utilising selectively bred stock has the potential to increase returns from exports of Greenshell™ mussels by 50 percent. "The current system of gathering spat from the wild is both inefficient and unreliable and offers absolutely no control over the quality of the mussels grown. You actually lose around 98 percent of the original spat collected in the wild which is incredibly wasteful," he said. "This project aims to eliminate the early mortality stages, thereby developing technology which is unique to both the sector and the species."

The project will allow Wakatū to be among the first mussel companies to benefit from the Cawthron Institute's mussel selective breeding programme. It will develop the technology to grow superior mussels purchased from Cawthron as larvae. "The selective breeding approach is about arranged marriages" Keith Palmer said. "Our project will give us the ability to develop the best possible mussels for our needs from selected parent mussels."

Wakatū's ponds will be developed directly alongside Cawthron's existing hatchery. Wakatū will need to invest \$1.5 million in buildings, equipments and ponds for the project, and will also be matching the investment from Technology New Zealand dollar for dollar.

Wakatū Incorporation was formed in 1977 by descendants of 254 Māori owners who sold land to the New Zealand Company in 1841. The purchase agreement provided for 10 percent of the land to be held in trust for the benefit of the Māori vendors. Today there are nearly 3000 shareholders, all

descendants of the original owners. Wakatū's assets include a 105-hectare marine resource in the Marlborough Sounds, where Greenshell mussels are grown, and a processing factory in Blenheim.

Keith Palmer says the intellectual property resulting from the project will allow Wakatū to lift the quality and quantity of its mussel exports, most of which go to the United States, giving the business a significant commercial advantage. "It will also directly benefit our shareholders, many of whom have their own mussel businesses, and will want to take advantage of the knowledge we gain."

Te Hoe Nuku Roa, Professor Mason Durie, Massey University (MKDOC)

Te Hoe Nuku Roa - Māori Profiles project is a longitudinal study of Māori households. The overall aim is to produce a sound empirical base that will provide information for Māori and other planners, and facilitate the development of policies and programmes appropriate to Māori in cultural, social and economic terms.

A stratified random sampling method - Whaihua Tatau , developed in collaboration with Statistics New Zealand, was used to compile a sample of households that are representative of a range of Māori geographic, economic, cultural and social circumstances. The total sample comprises 665 Māori households, and more than 1600 individuals.

In 1992 staff of the Department of Māori Studies, Massey University, in response to pressure from tribes and other Māori groups, recognised the need for a longitudinal study of Māori households which would enable cultural, economic and personal factors to be correlated. Three years funding from the Public Good Science Fund enabled the study, known as Te Hoe Nuku Roa - Māori Profiles, to begin in July 1993.

The study incorporates four specific aims. First, it uses a Māori relevant framework to gauge personal and family development. Second, it attempts to objectify the context in which Māori families and individuals exist by examining their relationships with societal structures at local, regional and national levels, as well as their relationship with Māori structures. Third, it proposes an integrated and holistic approach to personal and family development with a simultaneous focus on cultural, social and economic dimensions. Fourth, it includes a longitudinal component that offers an opportunity to chart the natural history of Māori individuals and families and to assess the impact of policies and programmes designed to address their specific and general needs.

Harakeke: Traditional Knowledge and New Uses - Dr Roger Newman, IRL and Rangī Te Kanawa (MKDOC)

A vision of reviving the once all-important New Zealand flax or harakeke industry is driving a joint project between Industrial Research and textile conservator Rangī Te Kanawa. Rangī Te Kanawa, grand-daughter and daughter respectively of famed weavers the late Dame Rangimārie Hetet and

Diggeress Te Kanawa, has joined with Industrial Research to develop the suitability of harakeke fibre for modern fashion clothing.

In the early part of the 20th century harakeke fibre production and export made up nearly a third of New Zealand's economic activity. The processed fibre was used mainly for sail cloth, rope and sacking. But with the advent of synthetic fibres the industry went into decline.

While traditional Māori usage of the harakeke fibre or "muka" included cordage for thatching and weaponry, it was also used for weaving into cloaks, but these were not of the fineness demanded for modern clothing.

Until now, the very qualities of harakeke that suited it so well to robust industrial uses – its strength and stiffness – made it less suitable than other natural fibres such as linen, cotton or hemp for fashion fabric.

But with a new patented softening process developed by Industrial Research scientists Roger Newman and Marcus King, the natural qualities of this indigenous New Zealand resource may one day shine through on the international fashion catwalks. The softening process splits the raw fibres lengthwise, reducing their diameter, making them more pliable and producing a much finer spun yarn.

The process used is also environmentally friendly, unlike the processes conventionally used in cotton or linen yarn production. Although the scientists have not yet achieved the desired fineness of linen or cotton fibre, they are confident it is achievable.

Targeting the high end of the fashion market on the strength of the cultural and environmental attributes of harakeke would fit in well with Rangi Te Kanawa's vision of preserving a hand-crafted, marae-based level of production. She still swears by the traditional "haro" method of hand-stripping the fibre from the leaves using a mussel shell. The shell separates out the fibre, the waxy matter (or "para") and the green leaf matter, and extracts the finer fibres – certainly better than the early stripping machines employed at the height of the commercial industry, she says. "I believe that is the trick."

Current research also involves identifying the variety of harakeke most suitable for producing fabric-grade fibre from the 63 known types. There are big differences in fibre coarseness between varieties, she says.

Rangi Te Kanawa is passionate about the wide range of benefits a revival of the harakeke industry would offer. The gel extracted from the butt of the leaf is a valuable component in natural wound healing and cosmetic products, and there's even a use for the waste product after the muka has been stripped from the leaves. Another bonus is that cattle love to eat the leftovers, she says.

Landscape transformation and human interaction in pre-1840 Bay of Islands – Ngāti Hine (Marsden Fund)

An exciting new model of iwi-based research has been announced in 03/04 year of Marsden Fund grants. Ngati Hine, the tangata whenua of the Bay of Islands, has successfully created the first iwi-based project to win money from the Fund. They will co-ordinate research, in partnership with a multi-disciplinary team from the Treaty of Waitangi Research Unit of Victoria University and the James Henare Maori Research Centre of the University of Auckland, on the ecological impact and human interaction that occurred in their area pre-1840.

The collective research seeks to background both Maori and Pakeha historic perspectives leading up to when the Treaty of Waitangi was signed.

The Bay of Islands was landfall for many settlers, but little is recorded about the history from the arrival of Captain James Cook, in 1769, up to 1840. The research will collate the evidence of this interaction, including maps, charts, sketches, paintings and European texts, journals and papers and Ngati Hine/Ngapuhi information systems that convey knowledge through place names, in song, chant, dance, poetry, proverbs, oratory and whakapapa.

This pioneer project could provide a successful model for other iwi-based collaborative research in the future.

Tā Moko: culture, body modifications and the psychology of identity

Principal Investigators: Linda Waimarie Nikora and Professor Ngahuia Te Awekotuku.

This project, based at the University of Waikato, is focused on Tā Moko, the form of body adornment unique to Māori. Historically, Tā Moko involved a deep scarring of the skin and the insertion of colour. The uhi (chisel) that was traditionally used has been replaced by the western needle cluster and electric gun, although use of the uhi is currently being revived. Unlike tattooing in other cultures, Tā Moko involves carving the skin rather than puncturing it. Māori use of Tā Moko declined following European colonisation. Now, with the revival of Māori commitment to cultural self-determination, interest in this form of taonga is reviving. This research explores the social and political issues for the increasing numbers of Māori wearing forms of Tā Moko, as well as the technology and practice of Tā Moko, its relationship to traditional whakairo (carving) and its history (as recorded orally and in archaeological and archival materials). The social aspects of Tā Moko (for example, reasons for wearing moko, the feelings of the wearer, and reactions to wearers) are proving fascinating. Information on this is being gathered through a network of community based researchers who are working with special interest groups (e.g. kapa haka groups, gangs, practitioners, and wearers), and by extensive contact of the researchers themselves with wearers and artists. For example, it has been found that wearers of moko have high expectations placed on them by the Māori community. The project, which commenced in late 2001, is due to be completed at the end of 2004. The findings will be published in two books – one tailored for the general community and the other for scholars. In

the meantime, the researchers have set a high priority on attending community meetings, wananga, academic conferences and workshops, as a way of ensuring that information is fed back to the community as quickly as possible.

Revitalisation and Enhancement of Aquatic Environments through mātauranga Māori (MKDOC)

Dr Sean Ogilvie will be leading a new research project investigating the Revitalisation and Enhancement of Aquatic Environments through mātauranga Māori. Dr Ogilvie is based at the National Institute of Water & Atmospheric Research in Christchurch. This project has been funded through the Joint Research Portfolio (HRC & FRST) part of Māori Knowledge and Development output class.

Te Kete a Tini Rauhanga / Māori Plant Medicines (MKDOC)

FRST will administer Te Kete a Tini Rauhanga, an investigation of the native medicinal flora (rongoa Māori) used by Tuhoe, led by Dr Meto Leach through the University of Waikato. This programme will see Dr Meto Leach and his research team work with respected Tohunga Rongoa or Māori medicine expert, Hohepa Kereopa, to investigate the traditional use of native flora.

The aim of the research is to document the selection, preparation and medicinal uses of rongoa by Tuhoe and identify the bioactive compounds responsible for the medicinal properties observed.

The project integrates mainstream science and traditional Māori knowledge with the objective of improving socio-economic and health outcomes for Māori.

The programme, estimated to cost \$320,000 pa, started in July 2001. The University of Waikato programme is a good example of collaboration between a research provider and Māori. It also makes a significant contribution to developing Māori research capability by supporting two PhD scholarships in the area of natural product chemistry.

This project has been funded through the Joint Research Portfolio (HRC & FRST) part of Māori Knowledge and Development output class.

Orally active molecules that reverse the cardiovascular complications of diabetes – Professor Garth Cooper, Protomix (NERF)

T2DM is a common metabolic disease that affects hundreds of millions of people world wide, including about 200,000 in New Zealand. In addition, this form of diabetes is of major concern to Maori, who have a high prevalence of severe diabetes. There is general agreement that established T2DM results from three processes: insulin resistance; islet B-cell failure; and glucose-driven vascular complication.

Existing therapies do not halt disease progression, so creating a large unmet need. Protelix has developed systems to detect molecules that can improve each of the disease processes. This programme aims to characterise the mode of action of these molecules in suitable preclinical systems, and to progress at least two of them into human clinical trials, where their safety and efficacy will be determined.

The main Target Outcome to which this programme will contribute is Wealth from new knowledge-based enterprises, through the development of novel therapies for Type 2 diabetes and growth of Protelix Inc., a start-up Biotechnology corporation, founded to develop and market globally the products from this programme.

Other Target Outcomes to which contribution will be made are Health for all through the development of new therapies for human metabolic diseases; People with knowledge, skills and ideas by providing opportunities for the growing numbers of graduate students in NZ; and Maori development since the programme involves several Maori members in the research team, including the Lead Researcher, and the research contributes to significant outcomes of importance to Maori health and well-being.

The cultural significance of wetlands in Taranaki

Principal Investigators: Associate Professor Harry Allen, Dilys Johns, Dr Caroline Phillips.

This project involved researchers from the University of Auckland, Landcare Research, Puke Ariki (Taranaki Museum), Auckland War Memorial Museum, and Massey University, as well as research contractors, working in partnership with Ngāti Mutunga. It has provided new information on the scope, nature and timing of landscape changes in North Taranaki, particularly in relation to lowland wetlands. The project, which started in 2000, had been prompted by the uncovering of a considerable number of wooden artefacts during drainage operations and the desire to understand this in terms of environmental history, land use, and Māori use of wetlands. The research has found that the arrival of Māori had little impact on Taranaki until the late 17th century, at which time forest clearance started to occur, some 400-500 years after the drier, eastern areas of New Zealand had been cleared. The researchers also mapped the wetlands of 100 years ago, determined how they had formed, established the location and nature of nearby archaeological sites, and delved into traditional Māori knowledge on wetlands. A key outcome from the project has been to obtain information on the surviving wetland environments, particularly oxygen levels and water table heights. This will allow conservation guidelines to be produced, and thus assist in the survival of wetlands and the store of information they hold. A feature of the project has been the good relationships that have developed between all parties - Ngāti Mutunga, farmers, Councils, and researchers. The project was completed in December 2003 and the findings have been published in international research journals, at conferences and at hui. A spin-off from the project is a new Marsden Fast-Start grant for associate investigator, Janet Wilmshurst. Janet discovered that very old seeds, preserved in the wetland, carried signs

of gnawing by rats. She is now dating these seeds to see what they tell us about the time of major human settlement in New Zealand (since it is likely that humans were responsible for the transportation of the Polynesian rat to New Zealand).

Appendix Two: Précis of TechNZ Māori Collectives Scheme projects funded to date

Précis of projects funded to date under the Technology NZ Maori Collectives' Sub-Scheme (July 2002-June 2003):

- Muka Ltd (Rangi Te Kanawa): an investigation into modern, high-value uses for sustainably-harvested harakeke, including natural fabrics, synthetic substitute products and skin treatments. Research Partner: Industrial Research Ltd.
- Tītī Oil (Ōraka-Aparima Rūnaka): an investigation into the unique qualities of the wax esters collected annually from the Sooty Shearwater (Titi), the project will result in the development of a new cosmeceutical. Research partner: IRL.
- Maorifood.com & Kinaki Wild Herbs (Charles Royal): this project involves the protected cultivation of a rare 'essential oil' flavoured edible fern variety with outstanding culinary potential. Research partner: Crop & Food Research.
- Eel aquaculture (Ngāti Kahungunu, Ngāti Raukawa, Muaupoko); this project aims to develop low cost, ecologically-sound and sustainable eel agistment and fattening techniques to provide consistent supply to commercial outlets. Research partner: NIWA.
- Whāngāpē Mussel Spat Catchers (Muriwhenua): this project aims to prove that the spat flow in Northland's Whāngāpē Harbour, and the novel techniques WMSC use to harvest them, can sustain a commercial operation. Research Partner: NIWA.
- Wairarapa Moana Farms (Pouakani Trust): this project involves the development of innovative, technology-driven water management and irrigation systems to allow for optimum production on the WM farms in the central North Island. Research partners: AgResearch and HortResearch.
- Hell's Gate Geothermal Field (Tikitere Trust): this project will investigate the energy production capability of the field, as well as the unique mineral and microbial makeup of its geothermal outflows. Research partners: Industrial Research Ltd, Geological and Nuclear Sciences and Auckland University.
- Te Rūnanga o Te Whānau a Apanui: this project involves the development of a GIS/database system that will allow the Eastern BoP iwi to optimise the use of its land, taking into account cultural, environmental and infrastructural considerations. Research partner: KamTech (Rawinia Kamau).
- Taewa (Nick Roskrige): this project involves the development of a virus-free, commercial scale seed bank of the main varieties of Maori potatoes, and tradition-conscious protocols for their production and storage. Research partners: C&F and Massey University.
- Tokaanu Hot Pools (Ngāti Kurauia): this project will establish processes for the production of balneotherapy salts from the pools' runoff, and investigate the pharmaceutical potential of the extremophilic microbes in the pools. Research partner: NIWA.

- Tairāwhiti Pharmaceuticals: this project will establish new value-added options for the elevated anti-microbial oil extracted from the elite, naturally selected mānuka strains of the Eastern Cape area. Research partner: C&F.
- Tairāwhiti Organics: this project will establish protocols for the commercial scale organic production of niche, high-value crops suited to the under-developed land resources of the Tairāwhiti district. Research partner: C&F.