

***“Research for the Environment”***

**A Research, Science & Technology  
Strategy for Regional Councils**

**Final**

**March 2009**

## **Foreword**

Regional Councils throughout New Zealand are faced with increasingly complex and critical decision-making, often requiring a balance between sustainable development and resource conservation. Sage decision-making requires sound science, and experience has shown that scientific research must be anticipated and planned years if not decades in advance of key decisions being made.

The Regional Councils' CEO Forum and the Resource Managers Group endorsed the development of a Research, Science & Technology strategy in March 2007 with the objectives:

- To produce a Strategy that will provide a framework within which regional councils can pursue the further development of high quality, relevant research and timely and appropriate knowledge transfer mechanisms.
- To provide an overview as to what the Regional Councils require in research, science and technology, including a process to achieve goals and objectives contained within the Strategy or formulated from time to time through the pathways set out within the Strategy.

## **Focus**

The Strategy is for Regional Councils in the first instance. The Resource Managers Group, the Biosecurity Managers Group and the Special Interest Groups (SIGS) are key audiences and users, once Chief Executives have endorsed the Strategy.

The Strategy also provides a unified and influential voice for Regional Councils to communicate immediate and longer-term RS&T priorities to funding agencies and research providers in order to have greater influence on R, S & T investment and capability retention and development.

## **A Process – not just a document**

The Strategy provides mechanisms to (a) get input from all Regional Councils on R, S & T priorities, (b) promote greater collaboration, and (c) enhance communication within the Local Government framework to ensure that good science supports the roles and functions of Regional Councils. It outlines a three-year rolling planning cycle in line with the three-year cyclic review process for Long-term Community Consultative Plans, and also a process for developing an Annual Operating Plan, within the context of setting and continually reviewing strategic priorities.

Five key interventions provide the themes for the Strategy: (1) Leadership; (2) Action; (3) Targeted Research; (4) Partnership; and (5) Funding Profile.

## **Role of the Science Advisory Group**

The Science Advisory Group, established by and reporting to the CEO Forum, will keep the Strategy alive and ensure that the processes are followed to achieve the objectives of the Strategy and particularly to review the effectiveness of implementation.

Gary Bedford – Chairman for 2008-09 – Science Advisory Group

## ***Executive Summary***

The vision of the Strategy is that the profile of Regional Councils moves from being end users to being “partners” in research with key Government Departments and research providers. The RS&T Strategy provides a process for the combined councils to influence NZ’s environmental research direction. A key purpose is to ensure that the councils provide a united and influential front to funding agencies and research providers both for identifying research priorities and also capability requirements for the present and future.

The vision of the Regional Councils is for effective communication and collaboration between councils and with key government departments to ensure world leading environmental research in key areas of importance is identified and generated, now and in the future, and that the latest knowledge is implemented in a timely manner to facilitate and inform the functions of the Regional Councils for maximum benefit to NZ.

There is an excellent opportunity to improve coordination between councils in identifying longer-term research priorities and science capability needs, and to share resources between councils. The Special Interest Groups currently play a very useful role focusing on immediate priorities and shorter-term research requirements to assist councils in making science-based decisions. This Strategy proposes to extend this role to identifying longer-term research priorities and capability needs as well, and enhancing inter-council collaboration and support.

Regional Councils have very little formal input to high-level central government science strategy and agendas, although there are some exceptions to this where council input has made a significant impact on a number of strategic initiatives. The Envirolink scheme, which funds the implementation of environmental science, is an excellent example of strong collective involvement by Regional Councils with government science departments and key research providers. However, it currently influences a very tiny fraction of the annual environmental and science budget of New Zealand.

The Strategy provides a process to ensure greater formal involvement by councils in research prioritisation and implementation, and is especially focused on providing a unified voice in Wellington. The Strategy has four main Goals: (1) Providing timely, authoritative and respected direction to science research and funding; (2) Catalysing and enhancing science delivery – capability, capacity, and targeting; (3) Science uptake opportunity and facilitation; and (4) Receiving feedback and updating the Strategy.

It is envisaged that by committing to a process of keeping the Strategy current and specifically implementing key objectives by following an Annual Operating Plan, Regional Councils will begin to demonstrate greater leadership in providing research direction; key tasks will be completed within a relevant and acceptable time frame; research will become more targeted at key long-term as well as short-term priorities; key science capability will be developed and maintained; and stronger partnerships will develop with councils and other agencies. Implementation is key to the success of this Strategy and the Regional Councils will provide a dedicated resource to ensure the Strategy is kept alive and implemented in an appropriate and timely manner.

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## **Introduction**

Regional Councils are charged with ensuring the sustainable management of New Zealand's resources. According to the Resource Management Act, this means managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economical and cultural wellbeing and for their health and safety while sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations, safeguarding the life-supporting capacity of air, water, soil and ecosystems, and avoiding, remedying or mitigating any adverse effects of activities on the environment.

Regional Councils also function under the Local Government Act, which amongst other things requires local authorities to play a broad role in promoting the social, economic, environmental, and cultural wellbeing of their communities taking a sustainable development approach - the so-called four well-beings. The Act also requires local authorities to enable democratic local decision-making and action by and on behalf of communities and to promote the social, economic environmental and cultural wellbeing of communities; for the present and future.

Faced with the challenges posed under New Zealand legislation, councils are more than ever being required to make major decisions that will affect the long-term sustainability of their regions. Science-based decision making is an important component of Regional Council functions, therefore it is critical that New Zealand science and research efforts are targeted at areas that are priorities for councils, and that research results are not only highly credible but that they are also accessible and implemented in a timely manner. This Research, Science & Technology (RS&T) Strategy is part of the process to ensure this happens.

## **Purpose of the Strategy**

This Strategy is not so much a document but a process that will assist in the further development of high quality relevant research and timely and appropriate knowledge transfer mechanisms for the benefit of Regional Councils.

The Strategy is owned by the Regional Councils and in the first instance has an internal focus. It provides a mechanism, or a Strategy Process, to get input from all Regional Councils on R, S & T priorities, promote greater collaboration, and enhance communication within the Local Government framework to ensure that good science supports the roles and functions of Regional Councils. The Strategy Process also provides a unified and influential voice for Regional Councils to communicate immediate and longer-term RS&T priorities to funding agencies and research providers in order to be acknowledged as a partner in setting research agendas and to have greater influence on R, S & T investment and capability retention and development.

## **Scope of the Strategy**

The Scope of the RS&T Strategy includes:

- (a) Research, science and technology that is necessary to support and inform environmental and sustainable management
- (b) Environmental research and relevant hazard research, and also social, cultural, and economic aspects where they relate to the roles and functions of Regional Councils
- (c) The recognition and promotion of sciences that go beyond just the physical to incorporate values and societal effects and values and perspectives
- (d) Science to enable policy issues to be addressed.

For the purpose of this strategy, environment includes:

- Ecosystems and their constituent parts, including people and communities
- Natural and physical resources
- Amenity values
- Social, economic, aesthetic, and cultural conditions relevant to the above points.

## ***Vision for Regional Council RS&T***

*The Regional Council vision for RS&T is to be effectively involved in the identification, development, and implementation of research, science and technology to facilitate the functions of Regional Councils for the benefit of New Zealanders. We want to see effective communication and collaboration between Councils to avoid unnecessary duplication and to continually improve the management of the environment based on sound science. Additionally we want to ensure that together we provide a united and influential front to funding agencies and research providers both for identifying research priorities and also capability requirements for the present and future.*

*The Regional Councils also want to see that New Zealand is a world leader in environmental RS&T and that there is a process in place to ensure that science evolves and deals with issues before they become major problems. We also want to ensure that the latest knowledge and technology is appropriately implemented in a timely manner and that decisions are based on readily available sound science.*

*A component of our vision is to ensure that scientists are adequately rewarded for their efforts in science and that a future in environmental and related sciences is considered an attractive career path for young New Zealanders.*

*Finally, our vision is to provide a process that will continue to direct RS&T for the benefit of Regional Councils well into the future.*

## **Current State**

New Zealand has 16 Regional Councils. The country also has nine Crown Research Institutes (CRIs), eight Universities and additional quasi-private research providers such as Cawthron and Lincoln Ventures Limited that conduct Government-funded research relevant to Regional Councils. In addition there are a number of private environmental consulting companies that are also involved research and provide a contract service to Regional Councils.

## **Science capability and planning within Regional Councils**

Regional Councils vary in science capability and capacity as a function both of need and resources. While many environmental issues are national in scope others are often specific to a relatively small number of regions. Larger councils tend to employ scientific expertise to deal with specific ongoing technical issues such as water and soil quality. The smaller councils generally contract scientific expertise as required and as budgets permit.

A semi-formal system of sharing knowledge and experiences has been established through Special Interest Groups (SIGs) that are loosely coordinated primarily, but not exclusively, through the Resource Managers Group (RMG), while the Biosecurity Managers Group (BMG) covers biosecurity and terrestrial biodiversity interests. The current structure of the SIGs is shown in Appendix 1. The SIGs have official mandates from the CEO Forum and in most cases their Terms of Reference include an objective to identify research priorities and possible collaborative research projects. These priorities and projects are generally actioned on an informal or ad hoc basis only.

Each of the Regional Councils and Unitary Authorities tends to operate independently in determining research priorities and needs, and there has been relatively little sharing of scientific expertise between councils; other than knowledge sharing through the SIGs. There is certainly little systematic or intentional collaboration. A priority for the RS&T strategy is to develop mechanisms that will ensure greater transfer of knowledge between councils, as well as to councils from external science providers.

## **RS&T Providers**

The Crown Research Institute structure is well suited to provide relevant research to Regional Councils as much of the focus is on research that can be applied. The National Institute of Water and Atmospheric Research (NIWA) and Landcare Research in particular are very focused on key areas of research relevant to Regional Council needs. The other CRI's, the universities, and also research organizations such as Cawthron, provide additional expertise and science programmes, often in very specialised areas beyond the science capability of most councils. This RS&T Strategy seeks to strengthen linkages with the country's research providers and ensure that the current and future needs of the Regional Councils are communicated and acknowledged.

## **Research Funding and Prioritisation Mechanisms**

The Foundation for Research, Science & Technology is the primary funder of environmental research in New Zealand investing in the order of \$93 million annually, mainly to the CRIs and to a lesser extent universities. Central Government funds account for approximately 85% of environmental research investment in New Zealand, primarily through Vote RS&T but also through Govt department budgets outside Vote RS&T (9%), Local Govt (4%), and business and others (3%) (Source: MRST Environment Research Roadmap – May 2007).

The scope of science that Regional Councils can directly purchase is much smaller than the above. Councils will therefore influence the research agenda of New Zealand, not by economic force but by appreciation of their collective insight arising from their unique role as resource managers and policy makers shaping New Zealand's environment, and their understanding of state of and pressures coming to bear on that environment.

Regional Councils are not formally involved as a unified voice in influencing Government funding allocations to environmental research or capability development. However, key senior Regional Council staff are consulted by the Ministry of Research, Science & Technology (MRST) and also the Foundation for Research, Science & Technology (FRST) on an ad hoc basis when Local Government input is sought for decision making purposes.

MRST has a mandate to develop research priorities for Government science funding and does this in consultation with a wide range of stakeholders, including Central and Local Government, industry and others. MRST has encouraged Regional Councils to develop and maintain an RS&T Strategy to provide a mechanism for more formal interaction with them, and particularly to provide a process to identify current as well as future research needs.

FRST has two main processes to call for research proposals and to decide on research investment: (1) Contestable – in which research providers submit proposals through a one-stage or two-stage process. In the two-stage process, Advisory Groups screen the Stage 1 proposals to determine which research providers need to submit full proposals in Stage 2. And (2) Negotiated – in which the Foundation negotiates directly with the research provider that has an established track record with FRST to determine the scope of a new research contract that builds on an existing one. An agreed panel conducts the necessary quality assurance checks.

The new FRST “negotiation” process and the introduction of “Research Platforms” offer excellent opportunities for greater and more formal involvement of Regional Councils in directing long-term research programmes. There is also a good opportunity for Regional Council staff to become more involved in technical reviews of long-term research programmes to ensure the relevance of science and especially effective implementation pathways. It is realised that to be most effective in these areas requires the councils to develop considered and collective views across several research areas. The RS&T Strategy provides a mechanism to facilitate this process and work closely with FRST.

## **Current Focus of Government-Funded Environmental Science**

The current focus of Government-funded environmental science is shown in Figure 1 (MRST Environment Research Roadmap 2007). Land, Water and Coasts research receives the largest proportion of funding at about 35%. Across all environmental categories

approximately 40% of funding goes to fundamental research of natural systems with the remainder going to human-environment interactions and impacts.

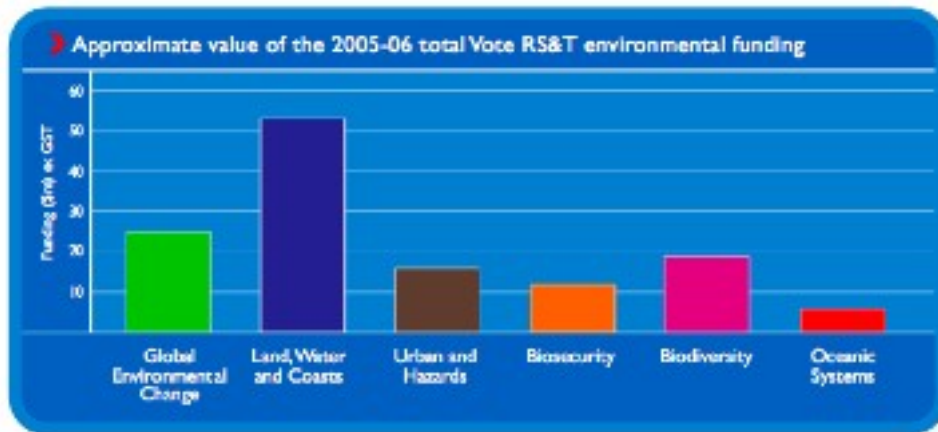


Figure 1. Approximate value of the 2005-06 Vote RS&T environmental funding by the six environmental research areas (MRST Environment Research Roadmap 2007)

The level of funding to Ecosystems has increased over the last few years, primarily to databases, collections and large-scale pest control. There was also new funding in 2003/04 to Sustainable Resource Use targeted at possum control. While the amount of FRST funding to environmental research has increased by 22% in the last five years it has failed to keep pace with the increased budget in other areas. Also, since 1999, Environmental Research Output Expense funding by Government has effectively declined by 8% (Figure 2. Source: MRST Environment Research Roadmap – May 2007).

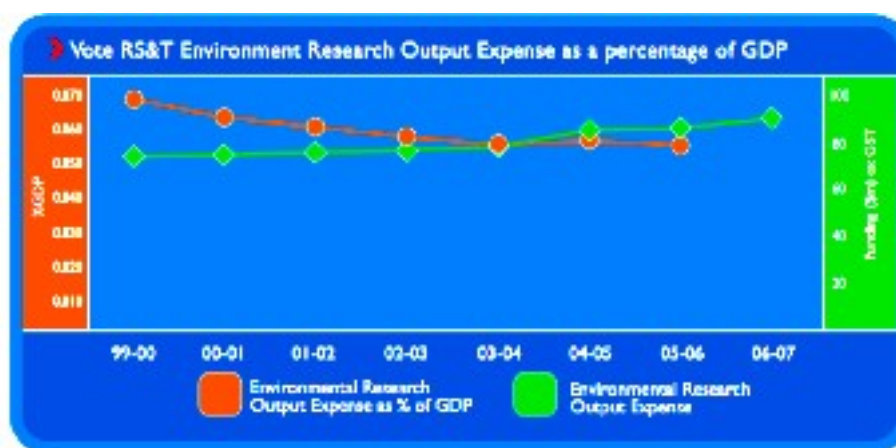


Figure 2. Environmental Research Output Expense as a percentage of GDP (MRST Environment Research Roadmap 2007)

## MRST's Proposed Future Focus for Government-Funded Environmental Research

MRST, in collaboration with stakeholders, has identified three overarching environmental research themes that require additional focus (MRST Environment Research Roadmap 2007):

- (1) **Systems understanding and integration.** Understanding of environmental systems requires more effective integration across multiple disciplines. E.g., interaction of land use, soil characteristics, and groundwater and surface waters; impacts of freshwater on coastal environments; understanding ecosystem aspects of fisheries management; and understanding the biophysical, socio-economic and health dimensions of urban design.
- (2) **Transfer and uptake.** Addressing this need requires greater focus on predictive science and solutions-oriented research, improved use of management initiatives to help advance scientific understanding, and improved communication technologies such as visualisation.
- (3) **Information systems.** This includes databases, collections, data management accessibility to data and using new data collection technologies. Improved integration across disciplines and improved transfer and uptake of research cannot occur unless data management is improved.

The Roadmap also identifies six broad environmental research areas: (1) Global environmental change, (2) Land, water and coasts, (3) Urban design and hazards, (4) Biosecurity, (5) Biodiversity, (6) Oceanic systems. MRST has further identified a number of Actions to address their priorities (see MRST Environment Research Roadmap for details). The Regional Councils' RS&T Strategy will enable greater involvement in the identification, refinement, and pursuit of priority research areas.

## Current Regional Council Role in Environmental Research

Regional Councils are the key end-users of a large proportion of environmental research being conducted in New Zealand; their position in the research environment is shown in Appendix 2. However, despite the Regional Council's role as a key end-user of a great deal of environmental research, there is currently no process to debate and identify longer-term research priorities or to provide a unified voice to key government departments. There is also no process between Regional Councils to ensure that councils have the capability and capacity to deliver good science, or that councils have a process to influence universities in future skill development requirements.

Envirolink ([www.envirolink.govt.nz](http://www.envirolink.govt.nz)) is a good example of a scheme, which has come into operation in recent years, that enables research results to be effectively implemented by the smaller Regional Councils that have struggled in the past to make this connection. It also has provided a mechanism for all councils to come together to identify priorities for environmental tool prioritisation.

The combined Regional Councils have recognised that, especially given the emphasis on end-user partnerships being promoted by MRST and FRST, there is an excellent opportunity

to take a more strategic approach to influence the country's environmental science direction and delivery.

## ***Strategic Goals for Regional Council RS&T***

Regional Council staff, working with the Science Advisory Group, identified four key goals for the RS&T Strategy:

- 1. To provide timely, authoritative and respected direction to science research and funding**
- 2. To catalyse and enhance science delivery**
- 3. To facilitate science uptake**
- 4. To ensure an ongoing RS&T strategy process**

**Goal 1** - To provide timely, authoritative and respected direction to science research and funding. This is mainly about having input to Government science direction, strategic priorities, and funding allocation. It is also about partnering with research providers in RS&T. This Goal recognises the key role that Regional Councils play in delivering environmental outcomes.

**Goal 2** - To catalyse and enhance science delivery. This Goal focuses on ensuring that Regional Councils have the capability and capacity to deliver good science, and also that there is communication with research providers and especially universities as to future skill requirements and with Government on maintaining and enhancing key capability within the science sector generally.

**Goal 3** – To facilitate science uptake. This Goal focuses on ensuring that science outputs are useful to Regional Councils and that research results are applied in a timely manner.

**Goal 4** - To ensure an ongoing RS&T strategy process. This Goal is about providing processes for governance and keeping the strategy alive and regularly updated.

Objectives under each Goal follow:

## ***Strategic Objectives***

**Goal 1. To provide timely, authoritative and respected direction to science research and funding**

### **Objectives for Goal 1:**

1. To be recognised as a single, representative voice with a long-term focus, that produces robust scientific knowledge and actively drives policy development and implementation

2. To be recognised as a trusted partner, not just an end user, and a unified voice as to how research funding should be allocated
3. To be viewed as real partners by research providers and funders
4. To be integrally involved in FRST negotiated investments
5. To be recognised as an integral component of the science planning and implementation system
6. To secure and direct appropriate funding towards science goals to:
  - i. Understand current issues and cultural values (socio-economic) of the resources and implications to the future
  - ii. Develop tools to manage the environment and broader roles and responsibilities of RC's
  - iii. Develop new monitoring technologies
  - iv. Develop pragmatic solutions for problems
  - v. Provide for more effective delivery of science
  - vi. Provide more certainty with uncertain information
  - vii. Provide for scenario testing
7. To maximise leverage on existing and new RC research funding to provide greater science direction
8. To influence research providers and funding agencies on the culture required to meet RC's needs
9. To advocate for multiple-provider team approach for effective use of science capability
10. To meet tomorrow's problems as well as today's
11. To foster the optimal use of science between councils
12. To develop a system for ongoing prioritisation of research for RC's needs
13. To be a voice to deal with outside agencies - such as MfE, DOC, MAF
14. To establish clear intellectual property guidelines
15. In a collegial manner, to systematically and regularly identify knowledge gaps in:
  - i. Characterising NZ's natural resources;
  - ii. Identifying inventories and trends;
  - iii. Improving knowledge of processes and systems that shape the resources;
  - iv. Continually evaluating and updating that knowledge;
  - v. Achieving and sharing consensus on practices that lead to sustainable resource management (while identifying and incorporating regional differences and distinctiveness).

## **Goal 2. To catalyse and enhance science delivery**

### **Objectives for Goal 2:**

1. To maintain and build capability and ensure resources are targeted to most effectively deliver environmental outcomes
2. To identify a process of identifying key regional councils that are doing things well in some areas and use these councils as a conduit
3. To encourage partnerships and collaborative research effort
4. To empower SIGs to develop and implement research priorities
5. To assess and manage risk associated with the provision of science
6. To set up a system of advocating over public good science for maintaining capability

7. To collectively advocate to FRST, relevant ministries, and Chief Executive Environmental Forum (action - to identify the vehicle to advocate)
8. To establish mechanisms for greater council interaction
9. To establish processes for validation of research results (e.g., peer review vs. contract report)
10. To prioritise and target science that reflects and has regard to:
  - Strategic importance for all RC's collectively but also for specific problems of wide significance
  - Existing research capacity
  - The likely benefits
  - The ability of users to capture the benefits.

### **Goal 3. To facilitate science uptake**

#### **Goal 3 Objectives:**

1. To encourage the implementation of schemes such as Envirolink
2. To promote the development of knowledge management systems
3. To promote effective two-way communication including between science and policy within RC's
4. To use the Strategy to advise regional councils to think about end use before defining product in the contract. Need to consider what the research really means
5. To influence central govt funding on appropriate output
6. To ensure effective RS&T output
7. To consider a continuum model to work with scientists
8. To advocate to councils that science knowledge is valuable
9. To develop new mechanisms to attract central govt funding for knowledge transfer and implementation
10. To ensure greater transparency as to who is doing what - research providers and councils etc

### **Goal 4. To ensure an ongoing RS&T strategy process**

#### **Goal 4 Objectives:**

1. To develop a process to review, refine, and update the strategy
2. To provide the necessary resource to ensure the strategy process if successful
3. To provide a governance mechanism to oversee the strategy process

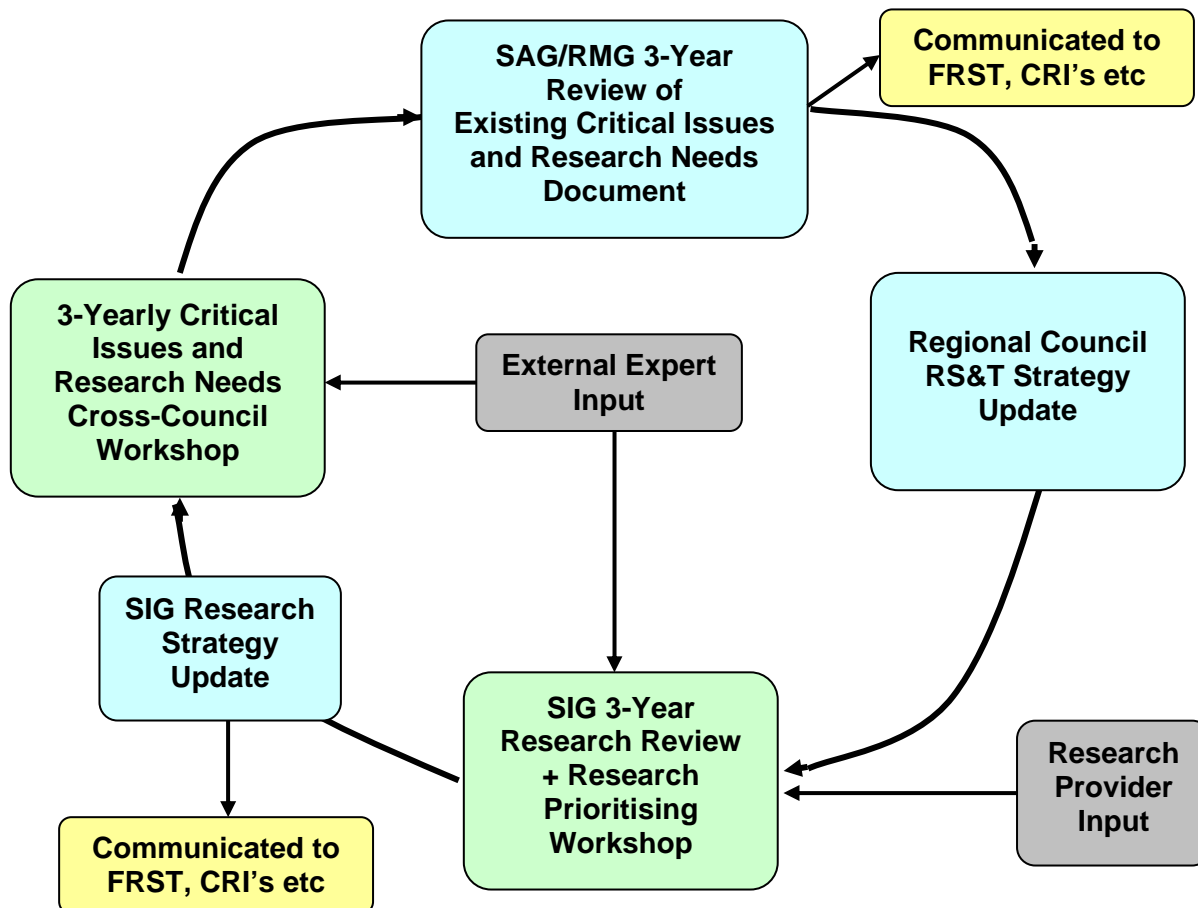
## ***Roles and Responsibilities***

The Science Advisory Group (SAG) has been established and endorsed by the CEO Forum to provide a governance function to the development and ongoing implementation of the Research Strategy. A Strategy Coordinator is to be contracted on a part-time basis to coordinate the implementation of the Research Strategy and will report to the Science Advisory Group.

The Resource Managers Group (RMG) has the responsibility to ensure the necessary Special Interest Groups (SIGs) are in place with appropriate Terms of Reference. SIGs are responsible for developing research strategies, and especially research priorities, for their areas of interest.

## Research Prioritisation

Goal 1 of the RS&T Strategy is to “provide timely, authoritative and respected direction to science research funding”. To meet this goal requires Regional Councils to have a good understanding of research requirements, both short and long-term. A priority setting process follows (Figure 3).



**Figure 3. Research Prioritisation Process – 3-Year Cycle**

The Regional Council SIGs will play a major role in priority setting as they are exposed to the latest research in their areas of expertise and understand what is required, especially in the shorter-term. At the “SIG meeting to review research and identify priorities” it will be necessary for the SIGs to think longer-term, in order to identify those areas of the environment that will need greater understanding 10, 20 and even 30 years in advance. It is anticipated that research providers will have significant input at these review meetings, but it will be Regional Council staff that best understand future council requirements.

SIG research priorities need to be communicated both to internal and external audiences: particularly FRST and its Advisory Panels, but also key research providers to assist them with their strategic planning process. SIG research priorities need to be documented and fed in to the “Critical Issues and Research Needs” workshop. This provides an opportunity for

SAG and RMG to develop an overview of all research priorities and to prepare a high level message to present to key government departments, particularly MRST, FRST, MfE and MAF. This exercise was conducted for the first time in June/July 2008 and the results are summarised in Appendix 3. A full report is included on the Envirolink website ([www.Envirolink.govt.nz](http://www.Envirolink.govt.nz)).

## ***Implementation***

Key to the success of the Research Strategy is ensuring that the strategic planning process is maintained. The intention is to follow a three-year rolling planning cycle in line with the three-year cyclic review process for Long-term Community Consultative Plans, including a process for developing an Annual Operating Plan (AOP). This is shown in Figure 4.

The AOP will be followed to drive the implementation of the Strategy. The Strategy Coordinator (SC), under the direction of the SAG, will be responsible for the development of the AOP and its implementation. The SC will report to the SAG (and RMG and BMG) on a regular basis. The AOP will include milestones (updated annually), which will be monitored as a measure of implementation success. The first year's AOP is included in Appendix 4.

As part of a three-year cycle, each SIG will review current knowledge, identify gaps, and hold a workshop to identify future research needs for their area of interest. This information will be communicated to both external parties, including FRST, CRI's and universities, and appropriate Government departments, and will also be fed into the SAG/RMG/BMG process for determining higher-level strategic research needs.

As shown in the planning cycle (Figure 4) a "Critical Issues and Research Needs" workshop will be held every three years to review the current situation and look ahead to future needs. In addition, and in different year, it is intended to hold a "Futures Workshop", which will take an even longer view of issues that will likely be facing Regional Councils and for which research as well as capability planning will be required.

It is also intended to work closely with key research providers to hold topical workshops or conferences on a three-year rolling cycle. What this means is that NIWA, for example, will partner with the Regional Councils once every three years to hold a workshop or conference on a particularly relevant topic.

## Ensuring an Ongoing RS&T Strategy Process

The proposed planning cycle is shown in Figure 4 below:

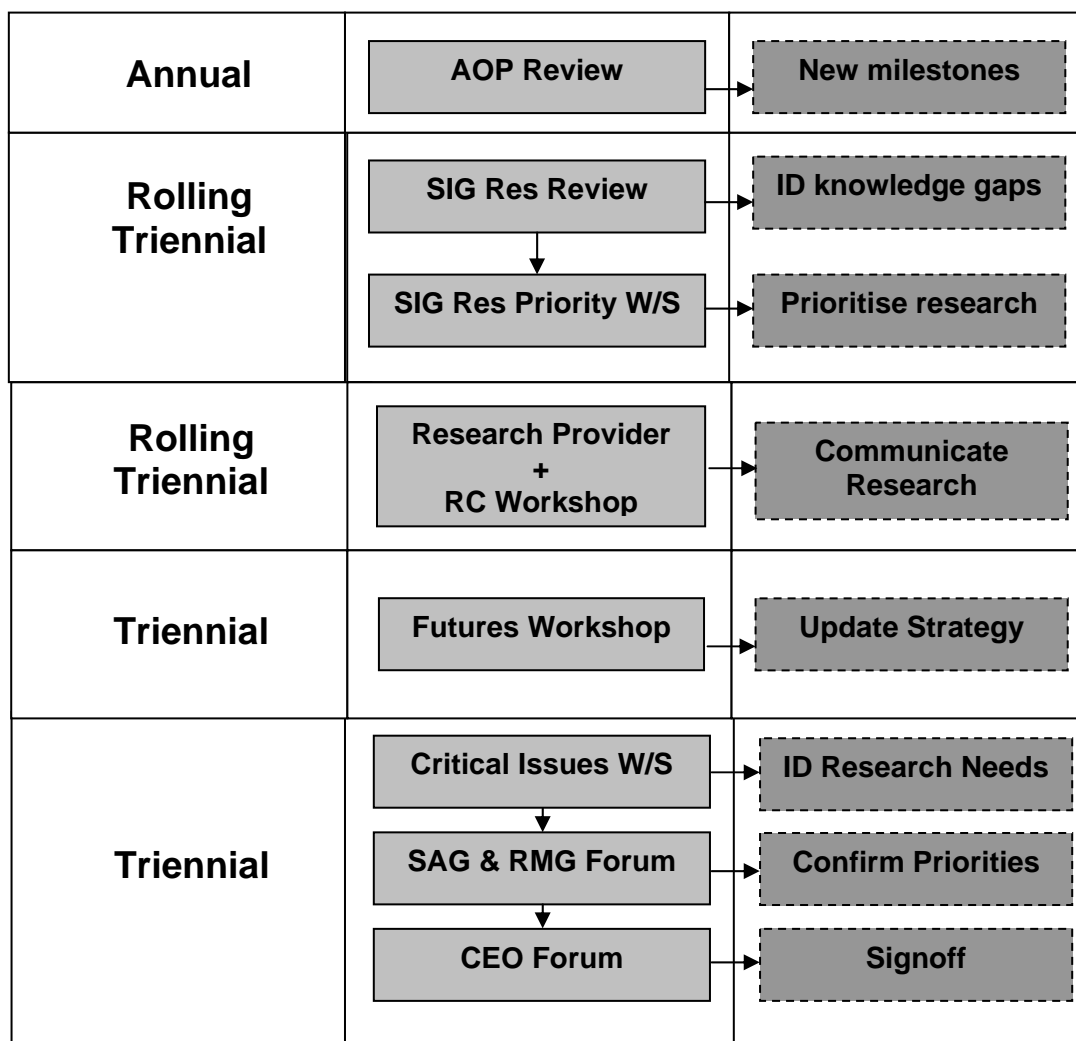


Figure 4. Regional Council RS&T Strategy Planning Cycle

## ***Strategic Priorities***

Regional Council staff, particularly through the SIGs, have identified a number of key priorities that need to be achieved by the Research Strategy process. These are:

### **(1) Provide Research Leadership**

Develop key messages and present these to MRST and FRST CEO's in Wellington. This is specifically to ensure that key government departments recognise that Regional Councils are serious about taking a much greater role in directing environmental research and in ensuring that the results are implemented for the benefit of New Zealand.

It is also important that a similar message is delivered to key environmental research providers and that they realise that Regional Councils want to have a closer partnership with them to developing research priorities, programmes of work, and implementation pathways.

### **(2) Take Action**

Finalise the Annual Operating Plan each year and deliver on milestones. Delivering the milestones in the AOP is seen as key to implementing the RS&T Strategy. Annual milestones have to be relevant and realistic and require commitment at all levels within Regional Councils. It is also intended to work closely with MRST and FRST to ensure that Regional Councils are specifically referred to in strategic documents as being key "partners" in environmental research planning and implementation.

### **(3) Prioritise Research Needs**

Develop and implement a research prioritisation process with the SIGs. The SIGs are key to the development of research area specific priorities. These need to be collated and prioritised and communicated to key government departments. Critical issues and future research needs are listed in Appendix 3.

### **(4) Develop Partnerships**

Identify important RS&T partners and work with them to help develop research priorities and to identify capability needs. There are a number of key research providers that are most relevant to providing research for Regional Councils to assist with science-based decision making and deliver environmental benefit.

### **(5) Improve the Funding Profile**

Determine how Government and Regional Council funds are currently allocated and how this might be improved to deliver greater benefit to New Zealand. In particular, understanding how environmental research funding is prioritised at the highest level and ensuring that the Regional Council R,S&T Strategy can influence this decision making.

## ***Current High Level Research Priorities***

For this initial Research Strategy the following current high level research strategies have been identified and will be communicated to MRST and FRST and other external parties. In addition, Appendix 3 highlights those critical issues facing councils and future research required to address those issues. Appendix 3 should be referred to for greater detail on specific priority research needs and readers are also advised to refer to the Envirolink website ([www.Envirolink.govt.nz](http://www.Envirolink.govt.nz)) for up to date information on research priorities.

MRST's Environment Research Roadmap (2007) presents six broad environmental research areas: (1) Global environmental change, (2) Land, water and coasts, (3) Urban design and hazards, (4) Biosecurity, (5) Biodiversity, (6) Oceanic systems. MRST has further identified a number of Actions to address their priorities. Councils' current high-level priorities in each of these areas follows:

### **1. Global environmental change.**

The research scope covers four main topics: Atmosphere and climate processes; Terrestrial systems and atmosphere exchange; Ocean processes; and Plate tectonic processes. Regional Councils draw on this science mainly for predicting the consequences of climate change and understanding natural hazards. **Current priority areas for Regional Councils are primarily for tools to make research results readily available and useable when needed.**

### **2. Land, water and coasts.**

The research scope covers: Freshwater science; Land science; Estuarine and coastal marine science; and Connections between land, water, and estuarine/marine science. These are very important research topics for Regional Councils and it is critical that Councils have involvement in priority decision-making. Research is reasonably well coordinated in this research area and there is considerable effort underway to develop management tools that can integrate knowledge from land to freshwater to marine environments. **There are two key priorities: (1) to ensure continued integration of research effort and research to fill knowledge gaps, and (2) greater capability development in estuarine and marine environments.**

### **3. Urban design and hazards**

The research scope covers: Air quality; Water quality in urban areas; and Transport and urban design. Hazards research is also included in this area. Urban research is not well developed in New Zealand and the **Regional Councils see a particular need for greater capability in sustainable urban design and in developing an urban research strategy.**

### **4. Biosecurity**

"Biosecurity is the exclusion, eradication, or effective management of risks posed by pests and diseases to the economy, environment, and human health." Biosecurity is a key issue in the protection of the country's social, cultural, economic and environmental values and is therefore very important to Regional Councils. Of particular relevance to Regional Councils is the effective management of pests once they have become established in New Zealand. Therefore, Councils have a role to ensure that research is targeted at issues of both

immediate and more strategic relevance to limit the impact of established pests. The Biosecurity Managers Group has been active in providing input to research priorities at a national level and has **highlighted greater research effort needs in the development of control tools for established pests.**

## **5. Biodiversity**

Biodiversity research covers terrestrial, freshwater, estuarine, and coastal marine. It includes identification, understanding and research into managing threats to biodiversity. Under the Resource Management Act (1991), Regional Councils have major responsibilities for maintaining native biodiversity, therefore **research into the development of tools to assist Councils in protecting biodiversity is a high priority. Biosecurity Managers Group has convened a forum to progress the identification of specific biodiversity research priorities.**

## **6. Oceanic systems**

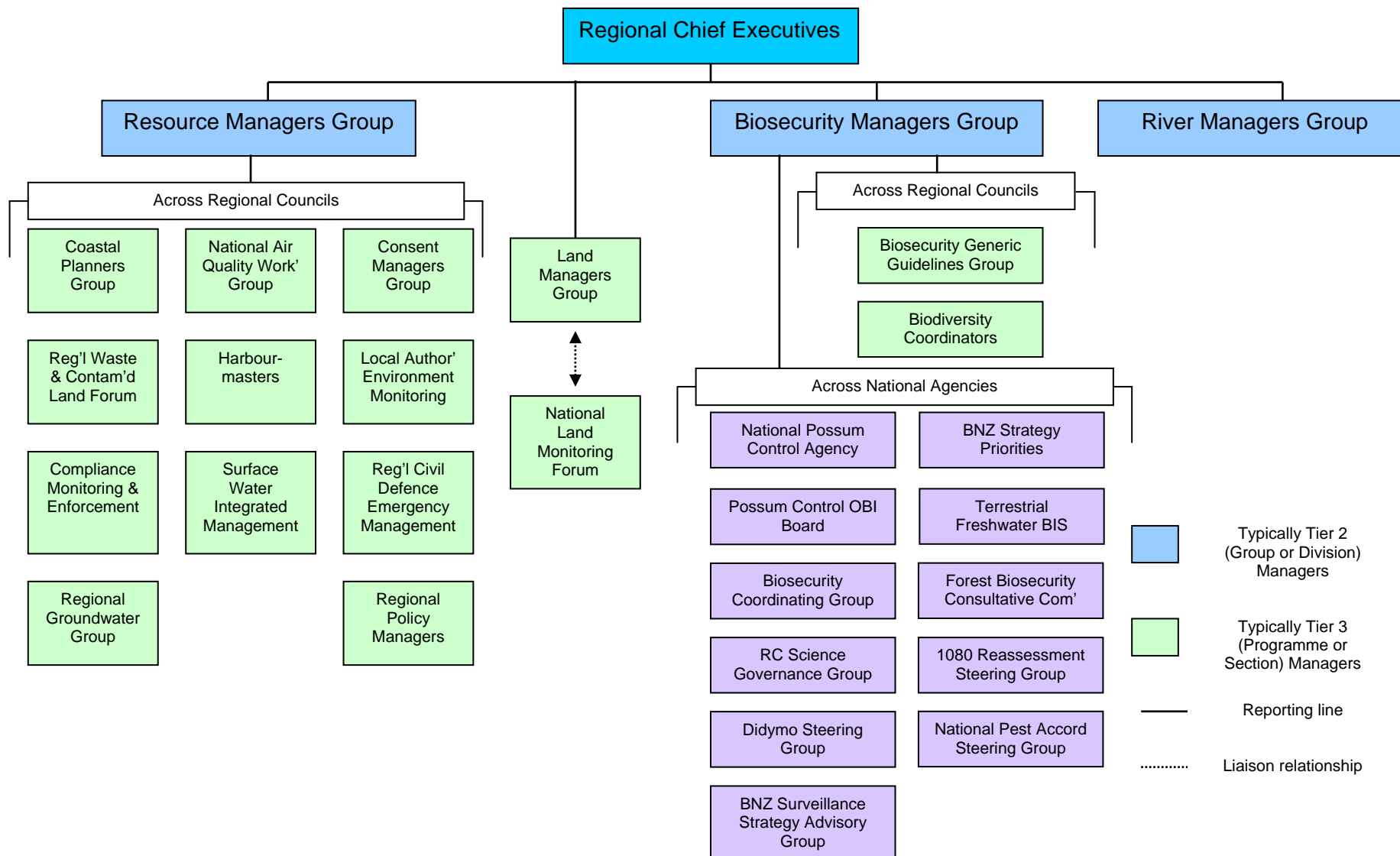
The research scope covers: Biological and chemical oceanography; Physical oceanography; Geology; Mineralogy; and Extractive resource uses. Most of the research conducted in this area has a national and to some extent, international focus, and Regional Councils would not normally be involved in setting research priorities.

The priorities mentioned above will be reviewed as part of the planning process outlined in section "Research Prioritisation Process".

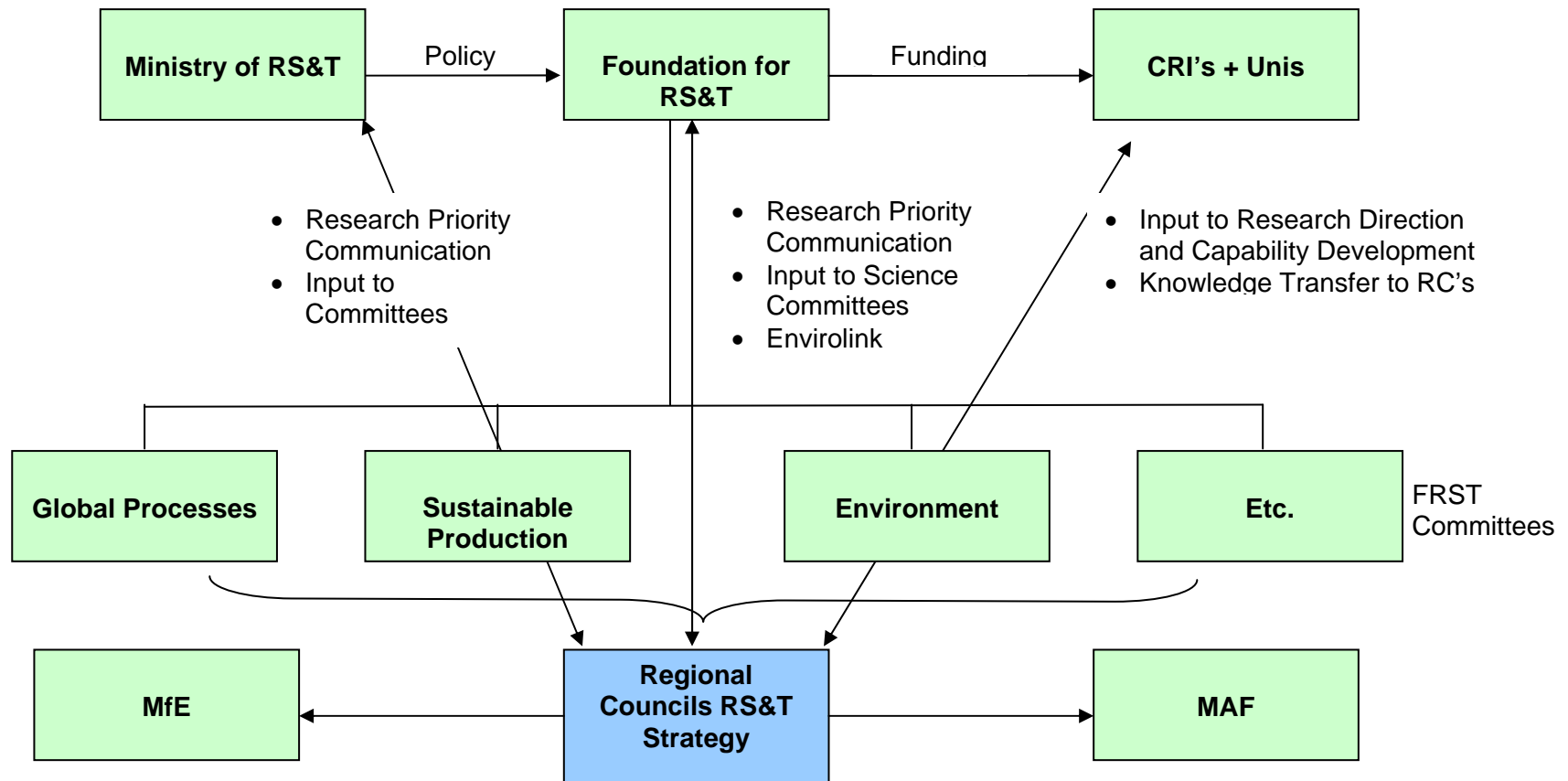
## ***Appendices***

1. Regional Council Special Interest Groups – July 2008
2. Regional Councils in the Bigger Environmental Science Picture
3. Regional Council Critical Issues and Research Needs
4. Draft 2008/2009 – Research Strategy - Annual Operating Plan

### Appendix 1 – Regional Council Special Interest Groups – July 2008



## Appendix 2 – Regional Councils in the Bigger Environmental Science Picture



## Appendix 3 - Regional Council Critical Issues and Research Needs

**Introduction** This document presents the critical issues and research needs considered to be of very high strategic importance by New Zealand's Regional Councils over the next 20 years. In developing the document the priority was to look beyond a pre-occupation with immediate needs, to anticipate what councils might have to deal with in the future and so bring timely research to bear; but this principle was not followed exclusively in developing the agreed list of critical issues. The document also indicates "Themes" or "cross-FRST portfolio" topics that the Regional Councils consider need to be addressed by FRST and other government departments.

Additional important critical issues and research needs are included on the Envirolink Website ([www.Envirolink.govt.nz](http://www.Envirolink.govt.nz)).

<b>Critical Issue</b>	<b>Research Needs</b>
<b>Valuing environmental services</b>	<ul style="list-style-type: none"> <li>• Research to develop and trial new methodologies and tools to enable RC's to place financial and non-financial values on environmental resource services. Valuing 'natural capital' in a robust, defensible and transparent way that is capable of wide application across all natural resources.</li> </ul>
<b>Accumulation of contaminants in soils – resulting from the application of fertilisers and other chemicals etc. - the side effects of productivity-modifying actions</b>	<ul style="list-style-type: none"> <li>• In a future world of alternative fertilisers (e.g., slags, biochar, effluent, chicken litter) and pesticides, what will be the consequences of use on the soil-water system (e.g. potential effects upon soil structure and quality, groundwater and surface water receiving environments, carbon sequestration) and the risks for productive and consumptive uses of the system (including plant and animal production and human occupation of sites).</li> </ul>
<b>Application of planning mechanisms and social and economic research for land use changes</b>	<ul style="list-style-type: none"> <li>• Development of planning tools, including social and economic research, for investigating the implications and consequences of future land use changes. Tools may include models.</li> </ul>
<b>Understanding the impacts of nutrients and sediments on estuaries and coastal environments – both urban and rural context</b>	<ul style="list-style-type: none"> <li>• Land use effects on nutrient and sediment generation and transport and effects on estuaries and coastal environments, including sublethal, synergistic (or antagonistic) effects of multiple stressors and interactions</li> </ul>
<b>Determine the assimilative capacity of estuarine/coastal receiving environments and ascribe land-based contaminant management standards and targets</b>	<ul style="list-style-type: none"> <li>• Need an empirical, evidenced-based approach to policy development that integrates management of contaminants at source (land-based) aligned to contaminant fate (transport mechanisms) and environmental consequence (ecological impact).</li> </ul>

Critical Issue	Research Needs
<b>Control tools for biosecurity pest management</b>	<ul style="list-style-type: none"> <li>• Development of new control tools for pest management – such as a replacement for 1080 and brodifacoum should their use be curtailed in the future (need for greater central Govt effort)</li> <li>• Characterisation and control methods for aquatic pests – both freshwater and marine</li> </ul>
<b>Cumulative effects of activities on ecosystem structure, function and resilience</b>	<ul style="list-style-type: none"> <li>• Improved understanding of natural ecosystem complexity, diversity and resilience, and the cumulative effects of on-site and off-site activities on NZ natural ecosystems (i.e. how to avoid ‘death by a thousand cuts’ in our ecosystems; are there ‘tipping’ points and if so, when do they occur?)</li> </ul>
<b>Urban stormwater management</b>	<ul style="list-style-type: none"> <li>• Address barriers to science and technology transfer on what is known about stormwater diversion, retention, treatment, and utilisation in urban areas; both greenfield and brownfield. Development of robust indicators identifying contamination issues and ecosystem changes (by stormwater) in natural systems.</li> </ul>
<b>Sustainability frameworks to evaluate community wellbeing and quality of life</b>	<ul style="list-style-type: none"> <li>• Development of innovative methods to evaluate community wellbeing and quality of life – for example, genuine progress indicators; and advice on how to achieve effective application of such methods in strategic community decision-making cycles.</li> </ul>
<b>Technologies to improve air quality</b>	<ul style="list-style-type: none"> <li>• Development, and/or technology transfer, to improve options to abate air quality emissions from existing home and industry sources in energy efficient ways (Note: the National Environmental Standard focuses on new sources, not existing ones)</li> </ul>
<b>Managing primary production systems under increasingly constrained inputs (water, soil, land)</b>	<ul style="list-style-type: none"> <li>• Techniques and tools for managing primary production systems under constrained inputs; what might ‘constrained input’ agriculture look like; what new environmental pressures might it bring, or existing pressures might it ease?</li> <li>• Optimising and integrating existing nutrient management tools. E.g., SPASMO etc. Improved agricultural nutrient models e.g., OVERSEER, to manage non-point source discharges and consequent effects, not just on-site nutrient balancing; need for greater reliability under a range of specific conditions.</li> <li>• Mechanisms for sustainable water management and allocation efficiency and equity; including valuing of water and understanding of social distributive issues etc</li> </ul>

<b>Critical Issue</b>	<b>Research Needs</b>
<b>Aquaculture impact on benthic systems</b>	<ul style="list-style-type: none"> <li>• Understanding the positive and negative impacts of aquaculture on benthic systems (both freshwater and marine) including the associated benthic invertebrate and fish communities.</li> </ul>
<b>Environmental performance evaluation including auditing and certification</b>	<ul style="list-style-type: none"> <li>• Robust defensible protocols for identifying, measuring and evaluating environmental performance, for the benefit of producers (accountability to consumers), their market/consumers (choice); and for environmental regulators (full environmental impact assessment).</li> </ul>
<b>High class soil management</b>	<ul style="list-style-type: none"> <li>• How can we value high quality lands (i.e., soil-climate systems) that are under pressure from non-productive land use development (e.g., urban sprawl onto highly productive lands)</li> </ul>
<b>Waste management</b>	<ul style="list-style-type: none"> <li>• Reuse or recycling of solid waste and wastewater. All waste types. Productive reuse, and integration with other values e.g. wastewater for carbon sequestration irrigation</li> </ul>
<b>Technological hazards</b>	<ul style="list-style-type: none"> <li>• Technological hazard and risk analysis – e.g., power outages- likelihood, vulnerability analysis</li> </ul>
<b>Climate change</b>	<ul style="list-style-type: none"> <li>• Planning for impacts of climate change – adaptation to risks including opportunities presented by climate change.</li> <li>• Impacts of climate change on indigenous biodiversity values and change including what are the biodiversity values and resources most at risk?</li> </ul>
<b>Community change</b>	<ul style="list-style-type: none"> <li>• Social science research - how to effectively promote highly targeted behaviour changes towards desired ends amongst particular populations, for particular issues. Including a mix of policy options.</li> <li>• Investigate impacts on, and ability for communities to adapt /respond to changes in their environment and the distribution of impacts including identification of equity issues and mechanisms to minimise negative consequences on well-beings.</li> <li>• Identify examples co-management models between Maori and Council and evaluate their effectiveness.</li> <li>• Identify links between social, economic, cultural and environmental well-beings and evaluate the effectiveness of their inclusion in council and other agencies decision making.</li> </ul>

## Themes or Cross-Portfolio Topics that Need to be Addressed

**Introduction** The Regional Councils have also identified a number of themes that cut across research areas and portfolios that need to be addressed primarily by Central Government. A “Comment” column is included that indicates the main audience for communication.

Theme or Cross-Portfolio Topic	Comment
Mechanisms to identify, access and harness economic drivers that lead (knowingly or unknowingly) to desirable environmental change. Need to be able to counter short-run pricing positions by government or resource user sectors with sound science-based environmental policy; i.e. how to make environmental science more effective in policy formulation as a driver of societal change. Institutional ways of operating. How do you slow down what's going on – with science? Influence. Developing own economic drivers.	Links in with more than just FRST – should also be communicated to MED, MAF, and MfE.
Social science research - how to effectively promote highly targeted behaviour change towards desired ends amongst particular populations, for particular issues. Including a mix of policy options.	To be communicated to FRST and others.
Future proofing of science capability in NZ.	Communicate to FRST and MRST.
Integrating water quality and land-use research – but also in relation to community change.	Communicate to FRST and MRST.
Maintaining environmental (green image) integrity; proof of environmental 'acceptability'- robust, comprehensive, and practical certification of environmental quality of production, for consumer approval (e.g. an answer to the debate over 'food miles'), and as a regulatory tool describing environmental performance.	Broad policy issue to be communicated to MfE, MAF, MED, MRST, FRST
Better methodologies for balancing economic and societal/cultural values e.g. <i>balancing economic pressures from aquaculture, tourism and forestry industries, while taking regard of community aspirations to maintain tranquillity, attractive landscapes, clean air and water, heritage features and terrestrial marine flora and fauna.</i>	Discuss with MfE, MED, MAF etc.
Need to incorporate system complexity in the identification and understanding of links between land-use activities and receiving environments.	Mainly a FRST issue.
Biodiversity and pest management prioritisation setting technologies need to be developed to assist RC's, includes tools to assist RC's to make a stock take of biodiversity values and pests. Tools that could provide an inventory of values at sites with an overlay of pest impact, including the relationship between pests. A National biodiversity inventory, information and management system (including a database) is required; (LENZ would be a subset of this); lends itself to a Platform approach; Framework for thinking: what	This primarily concerns integrated tool development – and part of a theme that RC's need to communicate to FRST. It is of high importance for RC's but it's something RC's need to do with research provider assistance. Possibly recommend this as a

have we got, how does it work, how do we keep it?	Platform to FRST.
<b>Theme or Cross-Portfolio Topic</b>	<b>Comment</b>
National water monitoring methodologies.	Discuss with MfE.
A water platform might be from surface to estuary. Integration key. Something to discuss. SWIM.	Philosophical point to discuss with FRST.
Databases of national significance (water, climate etc) need to be connected – also National Hydrometric Network. Also consider national databases for pests and risk modelling tools.	Encourage FRST; another philosophical point to make
Biodiversity - how can we better measure what difference we are making?	Discuss with DOC, MfE and FRST/MRST.
The generic challenge is integrated assessment & dynamic modelling of systems (resource and ecosystems) for running and evaluating scenarios including the analysis of risk and uncertainty with each scenario	A complex topic to discuss with MfE, MRST and FRST.
Appropriate standards for contaminated land –e.g., for residential use in the context of high rises and apartments, instead of in context of ‘1/4 acres section’ growing vegetables etc. Also, for ecologically-based environmental acceptance criteria for contaminated sites – as opposed to merely human health issues Bioaccumulation risk profiling and comparative risk assessment from older agricultural and horticultural sites still in production or under residential development scenarios: this work to underpin or support NES for contaminated sites.	To discuss with MfE.
Robust methods for improving our ability to predict consequences of different policy options and evaluate the effectiveness of management actions on the environment.	To discuss with MfE
Impacts of intensive agricultural practices on soil quality and water systems (surface and groundwater)	To discuss with FRST as part of the “platform” discussion
Options for enhancing soil quality/integration with other co-benefits such as carbon sequestration	Discuss with MfE, MAF.
Biosecurity - how can we better measure what difference we are making at reducing risk and managing pests? How can we best target limited resources?	Discuss with MAF and DOC.
Continued investigation of hazards and risks to the NZ community including work on NZ standard for Flood Risk Management.	Discuss with FRST.
The role of science to stimulate discussion on sustainable development. How can science play this role?	Discuss with MRST and FRST.



### Appendix 4 – Draft 2008/09 Research Strategy - Annual Operating Plan

Objectives	Action	When?
<p><b>Goal 1. To provide timely, authoritative and respected direction to science research and funding</b></p> <ol style="list-style-type: none"> <li>1. To be recognised as a single, representative voice with a long-term focus. That produces robust scientific knowledge that actively drives policy development and implementation.</li> <li>2. To be recognised as a trusted partner, not just an end user, and a unified voice as to how research funding should be allocated.</li> <li>3. To be viewed as real partners by research providers and funders.</li> <li>4. To be integrally involved in FRST negotiated investments</li> <li>5. To be recognised as an integral component of the science planning and implementation system.</li> <li>6. To secure and direct appropriate funding towards science goals to:               <ol style="list-style-type: none"> <li>i. Understand current issues and cultural values (socio-economic) of the resources and implications to the future</li> <li>ii. Develop tools to manage the environment and broader roles and responsibilities of RC's</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>1. Visit key Govt CEO's – MRST, FRST, MfE, MED and deliver a clear message on priorities and capability needs..</li> <li>2. Visit key RP CEOs. Ensure RC participation in key FRST committees.</li> <li>3. Ensure RC participation on key RP advisory committees</li> <li>4. Ensure RC involvement in FRST negotiated investments</li> <li>5. Plan meetings with MRST and FRST at key budget round times.</li> <li>6. As part of the message to take to Wellington, develop a process and document that identifies science and capability gaps needed to: (i) understand current issues and implications to future (ii) understand tools needed to help manage the environment</li> </ol>	<p><b>Initially before 30 Sept 08</b></p> <p><b>Initially before 30 Sept 08</b></p> <p><b>Key message with (1)</b></p> <p><b>Key message with (1)</b></p> <p><b>For October 08</b></p> <p><b>Before October 08</b></p>

<ul style="list-style-type: none"> <li>iii. Develop new monitoring technologies</li> <li>iv. Develop pragmatic solutions for problems</li> <li>v. Provide for more effective delivery of science</li> <li>vi. Provide more certainty with uncertain information</li> <li>vii. Provide for scenario testing</li> <li>7. To maximise leverage on existing and new RC research funding to provide greater science direction.</li> <li>8. To influence research providers and funding agencies on the culture required to meet RC's needs.</li> <li>9. To advocate for multiple-provider team approach for effective use of science capability</li> <li>10. To meet tomorrow's problems as well as today's</li> <li>11. To foster the optimal use of science between councils</li>   <li>12. To develop a system for ongoing prioritisation of research for RC's needs</li>   <li>13. To be a voice to deal with outside agencies - such as MfE, DOC, MAF,</li> <li>14. To establish clear IP guidelines (or under Goal 3) = see MRST guidelines.</li> </ul>	<ul style="list-style-type: none"> <li>(iii) understand needs for new monitoring technology and (v) the need for pragmatic solutions to problems. Also a process/ document that addresses the other points in Objective 6.</li>   <li>7. Stock-take existing funding and determine how this might be leveraged.</li> <li>8. Develop a concise message to RP's on what's needed to meet RC needs.</li> <li>9. Identify key areas where multiple-providers should be used.</li> <li>10. Develop a process/ document of future priorities.</li> <li>11. Establish a mechanism to ensure optimal use of science between councils. Review SIGS as required.</li> <li>12. Work with RMG and SIGS to develop a research priority setting process and implement this in Year 1.</li> <li>13. See (1.).Visit MfE, DOC, MAF.</li> <li>14. Document standard IP guidelines and share between</li> </ul>	<ul style="list-style-type: none"> <li><b>Before 30 Sept 08</b></li>   <li><b>Before 30 Sept 08</b></li>   <li><b>Before 30 Sept 08</b></li>   <li><b>Before 30 Sept 08</b></li>   <li><b>Before 30 Dec 08</b></li>   <li><b>Before 30 Sept 08</b></li>   <li><b>Before 30 Sept 08</b></li>   <li><b>Before 31 Oct 08</b></li> </ul>
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<p>15. In a collegial manner, to systematically and regularly identify knowledge gaps in:</p> <ul style="list-style-type: none"> <li>i. Characterising NZ's natural resources;</li> <li>ii. identifying inventories and trends;</li> <li>iii. Improving knowledge of processes and systems that shape the resources;</li> <li>iv. Continually evaluating and updating that knowledge</li> <li>v. Achieving and sharing consensus on practices that lead to sustainable resource management (while identifying and incorporating regional differences and distinctiveness)</li> </ul>	<p>Councils.</p> <p>15. Ask SIGS to identify knowledge gaps in (i) characterizing NZ's natural resources, (ii) identifying inventories and trends, (iii) improving knowledge of processes and systems that shape the resources. Put in place systems to (iv) continually evaluate and update knowledge and (v) share consensus on practices that lead to sustainable resource management – while recognising regional differences.</p>	<p><b>Before 31 March 09</b></p>
<p><b>Objectives</b></p>	<p><b>Action</b></p>	<p><b>When?</b></p>
<p><b>Goal 2. To catalyse and enhance science delivery</b></p> <ul style="list-style-type: none"> <li>1. To maintain and build capability and ensure resources are targeted to most effectively deliver environmental outcomes</li> <li>2. To identify a process of identifying key regional councils that are doing things well in some areas and use these councils as a conduit</li> <li>3. To encourage partnerships and collaborative research effort</li> </ul>	<ul style="list-style-type: none"> <li>1. Identify and communicate needs in research capability to Central Govt and universities etc</li> <li>2. Stock take areas of expertise in RC's and communicate to all RC's</li> <li>3. Work through SIGS to encourage collaborative</li> </ul>	<p><b>Initially before 30 Sept 08 Detail - November 08</b></p> <p><b>Before 30 November 08</b></p> <p><b>Before 30 November 08</b></p>

<p>4. To assess and manage risk associated with the provision of science</p> <p>5. To set up a system of advocating over public good science for maintaining capability</p> <p>6. To collectively advocate to FRST, relevant ministries, and Chief Executive Environmental Forum</p> <p>7. To establish mechanisms for greater council interaction</p> <p>8. To establish processes for validation of research results (e.g., peer review vs. contract report)</p> <p>9. To prioritise and target science that reflects and has regard to:</p> <ul style="list-style-type: none"> <li>• Strategic importance for all RC's collectively but also for specific problems of wide significance</li> <li>• Existing research capacity</li> <li>• The likely benefits</li> <li>• User ability to capture benefits.</li> </ul>	<p>research effort.</p> <p>4. Consider Envirolink Tool Project</p> <p>5. Develop a concise document with a rationale for maintaining capability and communicate to central Govt.</p> <p>6. Maintain regular and meaningful communication with key ministries and CEEF</p> <p>7. Identify priorities for greater council interaction and develop a mechanism to implement.</p> <p>8. Work with research providers to develop and implement a system for validating research results. This may be through SIGS.</p> <p>9. Develop a list of research priorities that provides the biggest bang for the buck.</p>	<p><b>Before November 08</b></p> <p><b>Before October 08</b></p> <p><b>Before 30 Sept 08 and again before 31 March 09</b></p> <p><b>Before 31 December 08</b></p> <p><b>Before 28 February 09</b></p> <p><b>Before October 08</b></p>
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Objectives	Action	When?
<p><b>Goal 3. To facilitate science uptake</b></p> <ol style="list-style-type: none"> <li>1. To encourage the implementation of schemes such as Envirolink</li> <li>2. To promote the development of knowledge management systems</li> <li>3. To promote effective two-way communication</li> <li>4. To use the Strategy to advise regional councils to think about end use before defining product in the contract. Need to consider what the research really means.</li> <li>5. To influence central govt funding on appropriate output.</li> <li>6. To ensure effective RS&amp;T output</li> <li>7. To consider a continuum model to work with scientists.</li> <li>8. To advocate to councils that science knowledge is valuable</li> <li>9. To develop new mechanisms to attract central govt funding for knowledge transfer and implementation</li> <li>10. To ensure greater transparency as to who is doing what - research providers and councils etc</li> </ol>	<p>Work with MRST and others to</p> <ol style="list-style-type: none"> <li>1. Provide relevant research uptake mechanisms,</li> <li>2. Develop plan for knowledge management systems,</li> <li>3. Promote effective 2-way communication between RC's as well as RP's.</li> <li>4. Develop a plan to "educate" RC staff on clearly defining the product in any research contract through training.</li> <li>5. Discuss with MRST/FRST and RP's what is appropriate research output.</li> <li>6. Communicate to RP's what output is expected.</li> <li>7. Develop a draft continuum model</li> <li>8. Develop a communication plan to advocate to councils that science knowledge is valuable.</li> <li>9. Brainstorm the opportunity with SAG and others</li> <li>10. Develop a website page that begins to better explain linkages</li> </ol>	<p><b>Discuss before 30 Nov 08</b>  <b>Review Dec 08</b>  <b>Before 31 March 09</b></p> <p><b>Before 30 Sept 08 and again before 31 March 09</b>  <b>Before 31 March 09</b></p> <p><b>October 08</b></p> <p><b>Before 31 Dec 08</b></p> <p><b>Before 31 Mar 09</b></p> <p><b>Before 30 Nov 08</b></p> <p><b>Before 31 Dec 08</b></p> <p><b>Before 31 Dec 08</b></p>

Objectives	Action	When?
<p><b>Goal 4. To ensure an ongoing RS&amp;T strategy process</b></p> <ul style="list-style-type: none"> <li>1. To develop a process to review, refine, and update the strategy</li> <li>2. To provide the necessary resource to ensure the strategy process is successful</li> <li>3. To provide a governance mechanism to oversee the strategy process</li> </ul>	<ul style="list-style-type: none"> <li>1. Develop a draft process to discuss with SAG</li> <li>2. SAG and RMG to recommend resource to CEO Forum</li> <li>3. SAG to recommend mechanism to CEO Forum</li> </ul>	<p><b>Before 30 June 08 - done</b></p> <p><b>Before Aug 08</b></p> <p><b>Before Aug 08</b></p>