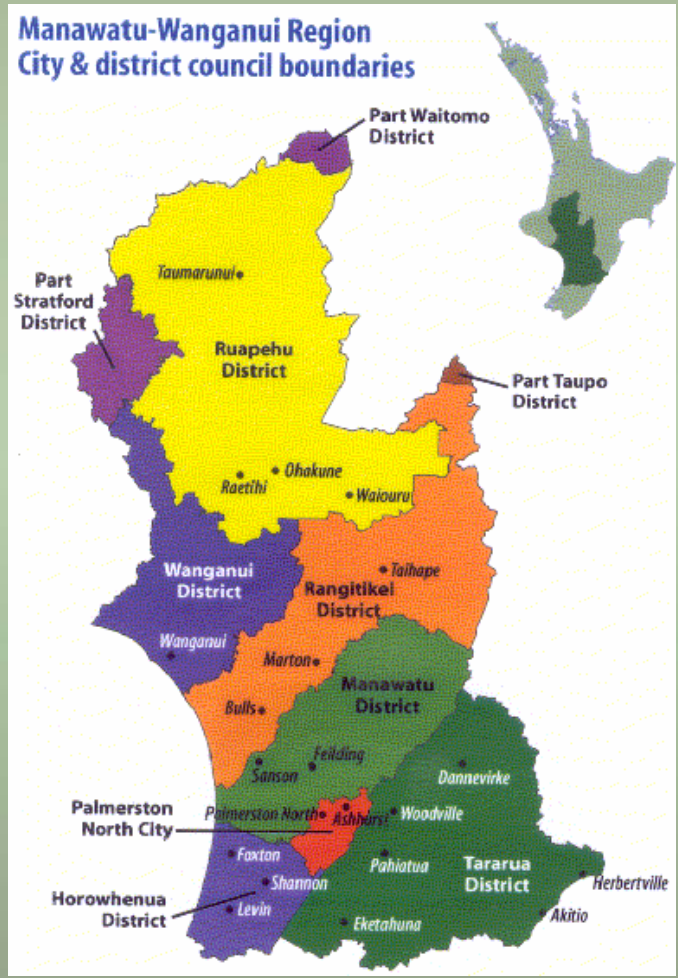
Integrated Catchment Management (ICM) Workshop - Tools



Tools & Approaches for ICM 1

Process Tools

- ICM process – linked with council & communities
- ICM plans – linked with RMA processes
- Influence Matrix for whole system planning
- Questionnaires & surveys

Tools & Approaches for ICM 2

Information Tools

- Define a minimum dataset for ICM
- Metadata: what do we know already?
- Website, eg. http://icm.landcareresearch.co.nz/
- Monitoring & indicators
- Knowledge management tools: databases, GIS
- Integrated Systems for Knowledge Management (ISKM)
- ICM Toolbook

Tools & Approaches for ICM 3

Collaboration Tools

- Collaborative learning groups
- ICM committees/ Landcare groups
- Human Technology for Integration
- Community Reference Group
- Sector Reference Group
- Iwi relationship building and involvement
- Annual ICM Meeting

Tools & Approaches for ICM 4

Biophysical Tools

- Riparian management
- Environmental Management Systems
- Resource allocation limits – water, gravel, coastal space
- River & land management actions
- System dynamic modelling (IDEAS)
- Mechanistic biophysical models – hydrology, sediment flux, coastal circulation, hydraulics

Whole-system modelling for sustainability assessment

- A rapid assessment Ecosystem Services methodology can identify priorities for action
- It can predict what will happen if we intervene

Community Reference Group's Goal Statement:

The residents of the Motueka Catchment want to manage their Catchment so as to ensure they continue to enjoy … *a safe place to play and live, its pristine character and beauty, its identity, economic and ecological balance, its economic viability for business development, its exceptional climate, biological, community and landscape diversity & coastal integrity.*

Influence Matrix

The effect of these factors on…			… on these factors.								
	Groups	Factors	Forestry	Farming	Sediment	Nitrate	Profit	Cashflow	Qual of life	Com health	Col sums
	Ecological	Forestry	--	0							
		Farming	2	--	4	5	6	5	3	3	**28**
		Sediment		4	--						
		Nitrate		2		--					
	Economic	Profit		6			--				
		Cashflow		5				--			
	Social	Qual of life		4					--		
		Com health		0						--	
		Row sums		**21**							
			How these factors are *affected by* other factors.								

How these factors *affect* other factors.

Scoring: 0 = none 1 = trace 2 = w eak 3 = modest 4 = strong 5 = substantial 6 = dominant

iMatrix Results for the Motueka Catchment

Critical Factors for Sustainability

- primary industries,
- water quality and supply
- policy-plans-rules-legislation

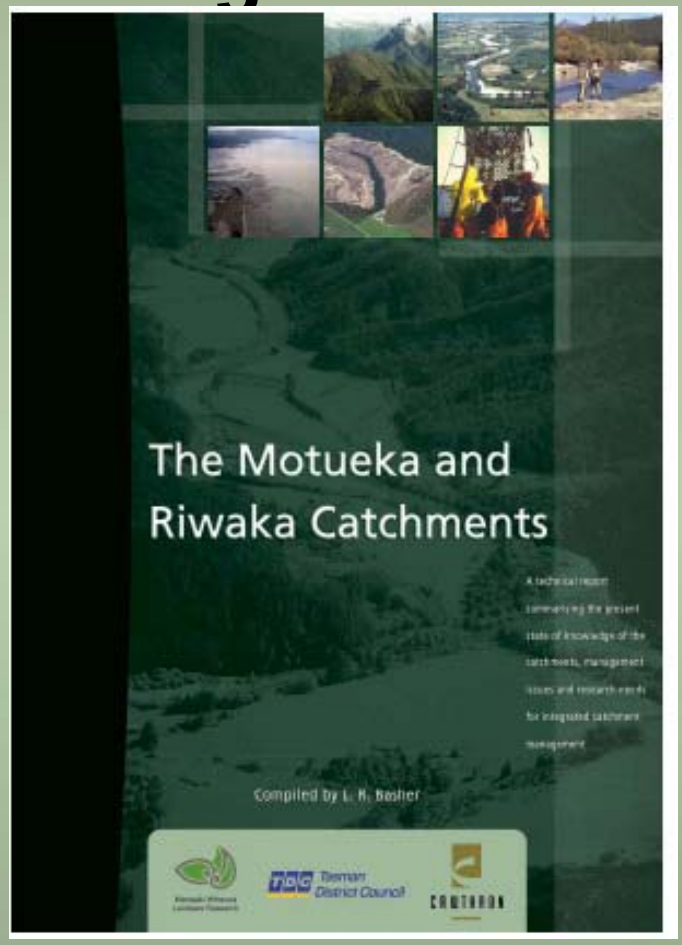
Factors changing the catchment:

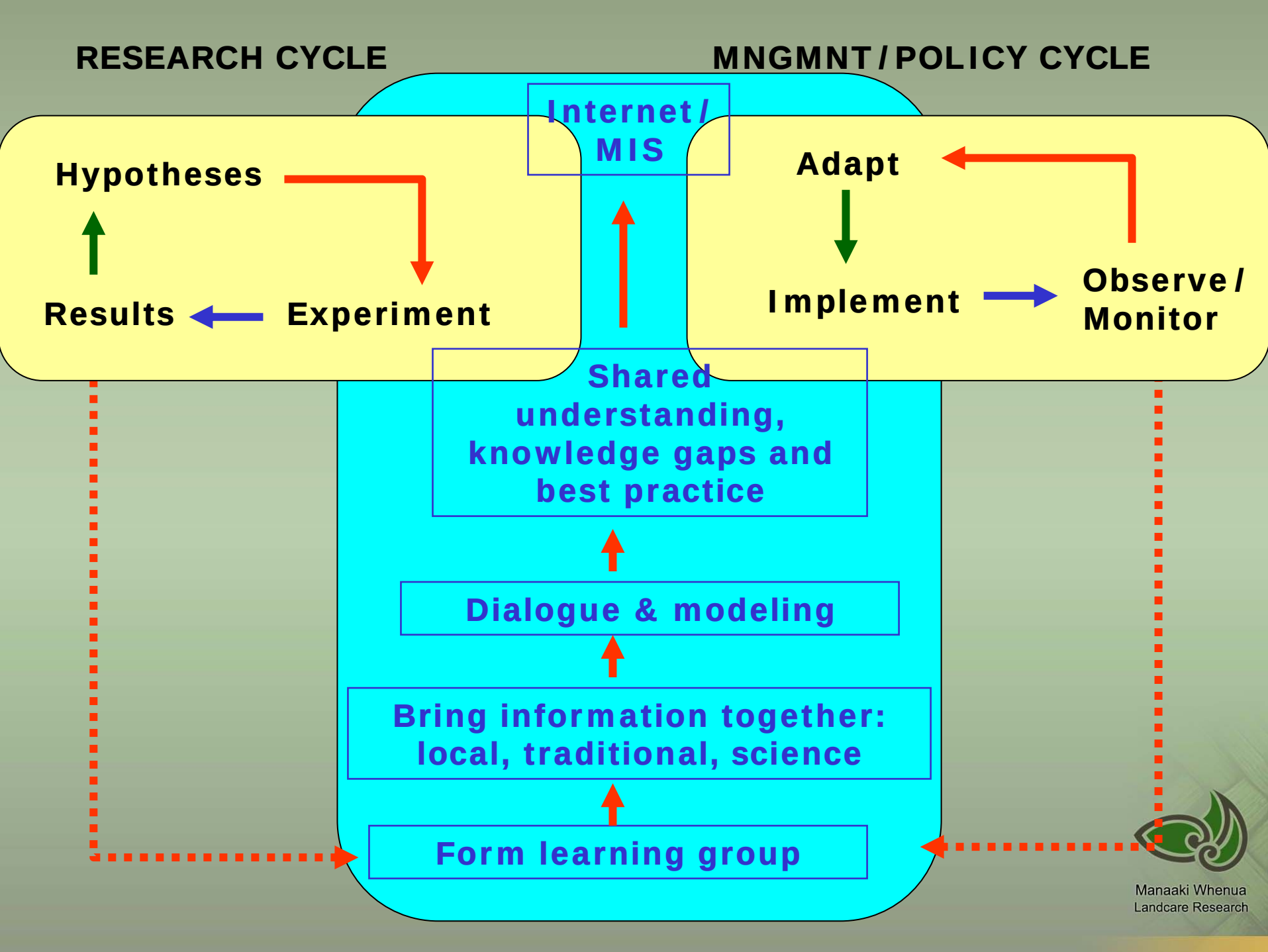
- climate variability,
- non-local influences, e.g. exchange and interest rates
- social institutions

Influences on Wellbeing in the Catchment:

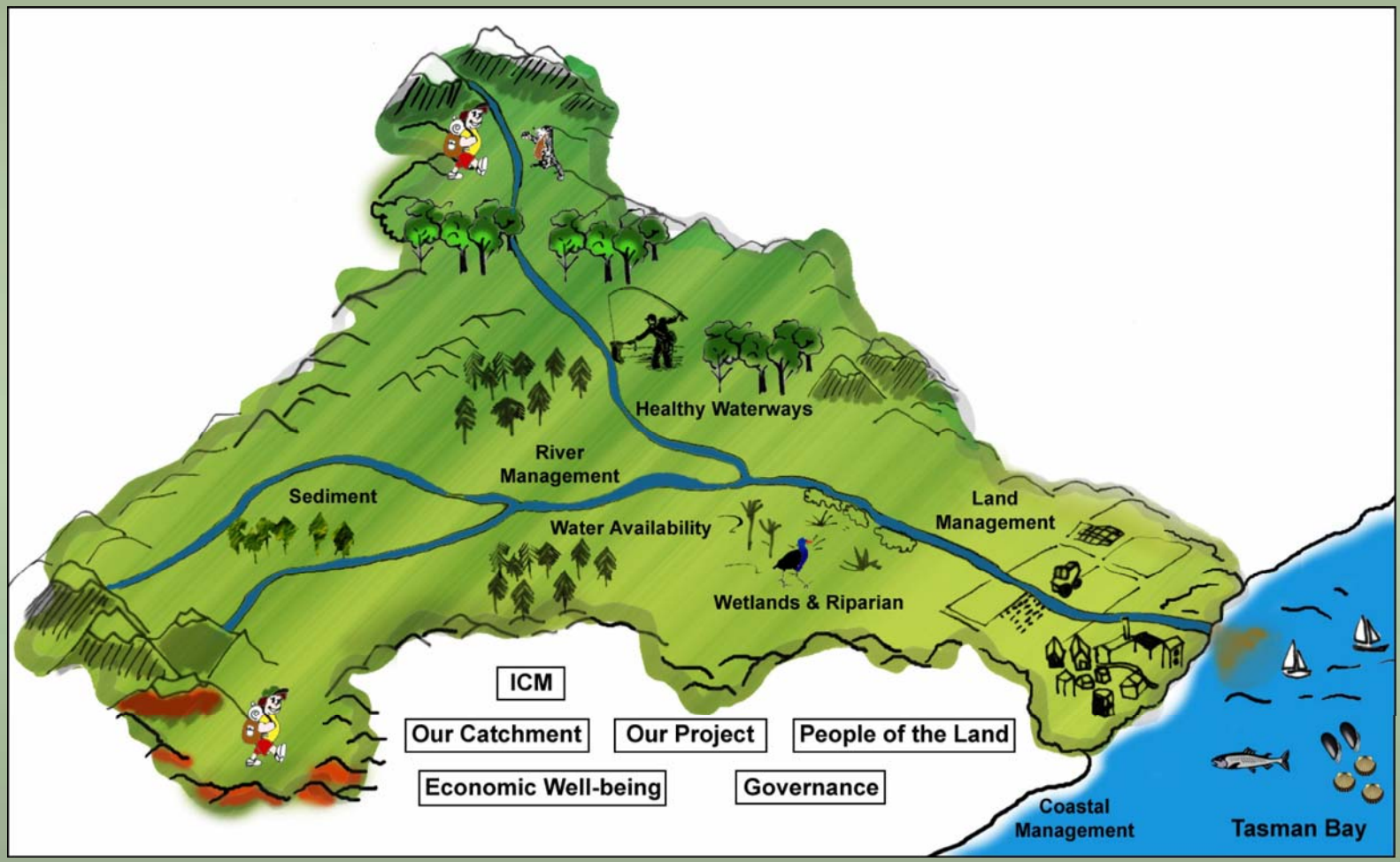
- human health, property values, service industries, families, community services, and tourism

Examples of Successes – Information exchange




RESEARCH CYCLE
MNGMNT / POLICY CYCLE
Internet / MIS
Hypotheses
Results
Experiment
Adapt
Implement
Observe / Monitor
Shared understanding, knowledge gaps and best practice
Dialogue & modeling
Bring information together: local, traditional, science
Form learning group
Manaaki Whenua
Landcare Research

Motueka catchment CD-ROM



Iwi Role in ICM

Examples

- Assessment of iwi environmental monitoring approaches:
  - Cultural site evaluation
  - Contaminated site monitoring protocols
  - MfE Maori indicators
  - ICM monitoring techniques for iwi
- Collaborative learning guidelines for communities including iwi groups
- Develop Iwi Information Systems for environmental management

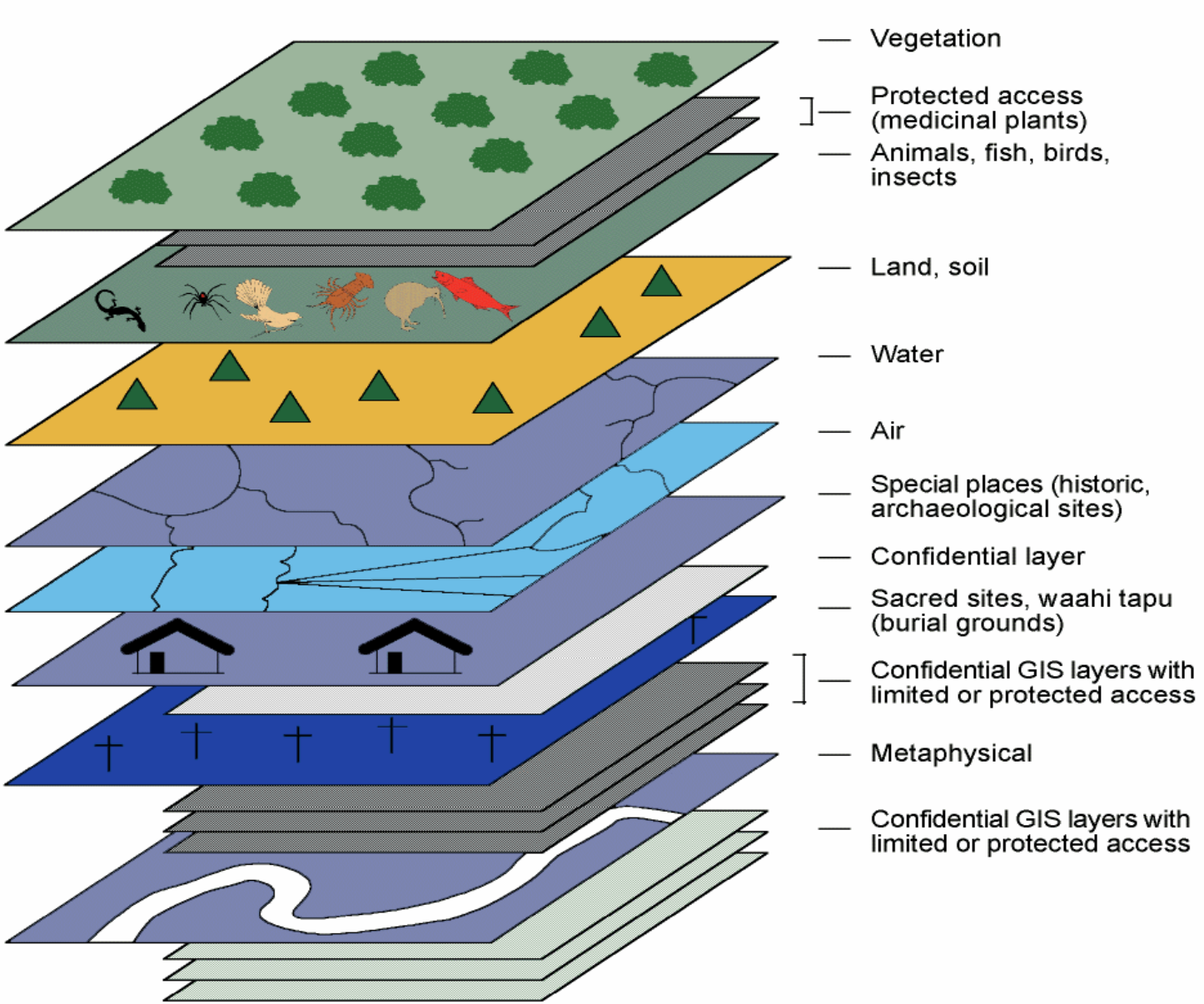


Figure 1: GIS layers and confidential sub-layers

icm.landcareresearch.co.nz

INTEGRATED CATCHMENT MANAGEMENT for the Motueka River

•ridge tops to the sea•

Home Page

HOME ABOUT WHAT'S NEW WHAT'S ON SEARCH CONTACT US PROJECT STAFFROOM

This web site is about the ICM Motueka Programme. Its purpose is to provide information resources relevant to project participants and to the stakeholders of the Motueka River catchment. The site is a collaborative venture between a number of organisations. Please read about our site.

The Motueka River catchment is a Global HELP Catchment.

Our Site

General information about the site, the ICM Motueka project, and its purpose - includes site map.

Our Catchment

Overview of the Motueka River catchment - includes virtual field trips.

Our Science

Outlines the research being conducted in the catchment.

Science Quick Links

Site kindly hosted by Landcare Research

Announcements

NEW 10/12/02 Recent conference abstracts added

NEW 10/12/02 HELP conference in Kalmar Sweden 2002

06/11/02 2002-03 overview & progress

Hot Topics

Current events and notable happenings from the Programme Leader.

Project Staff Room

(Available only for programme participants).

Library of Resources

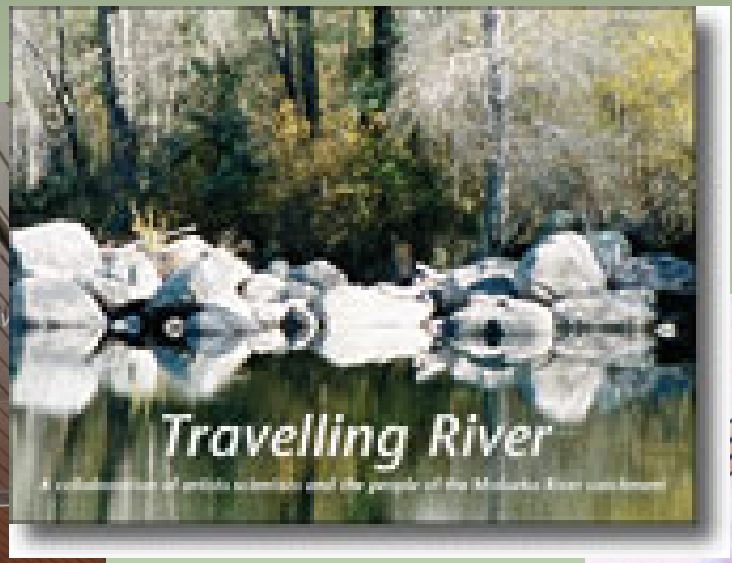
Includes reports, fact sheets, images, maps, and other resources.

Library Quick Links

To receive email notice of events and research findings please join our ICM Motueka discussion group

Whenua Research

Travelling River Art-Science Collaboration



TDC Tasman District Council

Environmental AWARDS 2004

Cultural Heritage Award

Winner

Travelling River Exhibition

The Travelling River Exhibition has been named the winner of the Tasman District Council's Cultural Heritage Environmental Award, in recognition of the enormous contribution the exhibition has made to promote the cultural heritage and environmental significance of the Motueka River Catchment.

The collection incorporated the work, vision and stories of artists, scientists and the people of the Motueka River Catchment in an innovative and accessible way. Bringing the exhibition together drew all areas of the community into a discussion of what the river meant to them.

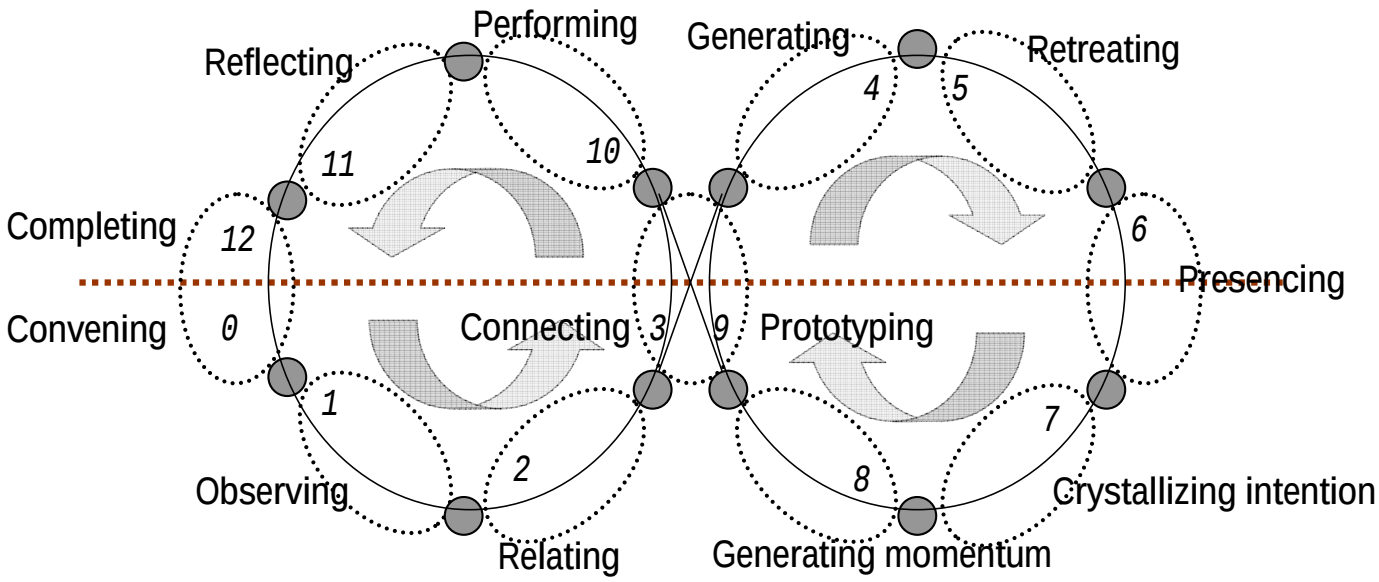
The beauty of the Travelling River art-science exhibition is that it crosses cultural and social boundaries; giving equal consideration to the thoughts and views of the many sectors of the Motueka community.

We applaud the vision of Landcare Research and the exhibition curators Andrew Fenemor, Maggie Atkinson and Suzie Peacock in bringing alive life and science in the Motueka River catchment.

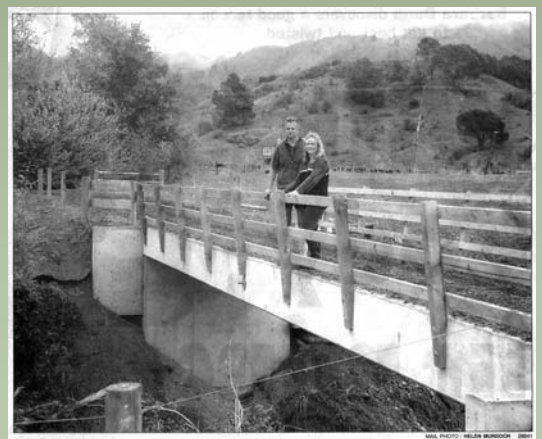
Therefore the Tasman District Council and judges of this category would like to congratulate all of the exhibition coordinators, the many contributors to the project, including artists, scientists, iwi and the greater community for sharing what the Motueka River Catchment has meant to them and how this compares with modern use and management.

Human Technology of Integration

Twelve stage cycle



Examples of Successes – Water



SPANNED: Frank and Lisa White on their new $50,000 stock bridge across the Sherry River.

Bridge over troubled waters

By Helen Murdoch

Tomorrow's opening of a $50,000 stock bridge across the Sherry River marks the start of a combined project between farmers and the Tasman District Council to improve the river's health.

Dairy farmers Frank and Lisa White commissioned the concrete span bridge from Thelin Construction to provide permanent access to 30ha of their 271ha farm.

Mr White said their 280-cow herd would no longer have to tackle the slippery steep-banked ford twice a day and the river would not cut off access to valuable grazing when it was in flood.

"Building the bridge has always been part of the farm plan," Mr White said.

The couple have owned the farm for about a year.

Mr White said the cows used to slip, fall and bump each other when they went across the ford.

Rising river levels had also led to stock being marooned in the paddocks away from the milking shed.

Mrs White said the Tasman District Council had helped with the project and waived resource consent and building consent fees.

The river was the subject of the first known national scientific study on the effect of cows crossing a waterway to and from milking.

The study, which included the use of video cameras, graphically illustrated the natural tendency of stock to defecate in water (3 times more likely than elsewhere), and the r suiting high bacteria levels.

Council policy planner Martin Worker said the Whites' bridge was an example farmers taking positive action to protect environment.

Water quality monitoring of the river 2000 had identified high bacterial cour certain times.

Fish and Game had previously raised cerns about the health of the river before the monitoring, which was part of the Motueka integrated catchment project.

This involved the ... Landcare Research and other ... the impact of ... coastal mar...

news extra

NEWS

Water order praised

Fourteen years of negotiation over

by Bernadette Cooney

A decision to place a water conservation order on parts of the Motueka River has been applauded by Nelson Marlborough Fish and Game.

... Environment Min-

Ward, said from Auckland today he was pleased to hear the order had finally been gazetted after 14 years of negotiation.

"There's quite a level of personal satisfaction in seeing this come to pass," he said.

"I congratulate Fish and Game and Nelson anglers for their dedication and ability to work through the issues, which certainly created a lot of misunderstanding early on. People thought we wanted to lock the river up and throw away the key."

... Marlborough Fish and ... welcomed ... sus-

er Lewis Metcalfe said primary producers now had some assurance over access to a reasonable level of water flow for irrigation.

"Water is vital for the primary sector and the socio-economic well-being of the community. However, a balance had to be found between primary sector demands and the environment, and this is what has occurred," Mr Metcalfe said.

Ms Hobbs said the order would allow parts of the river to be kept in its natural state.

"The Motueka River has many outstanding characteristics, including the scientifically important karst geological formations, blue duck habitats and brown trout fisheries," she said.

"It is important that these characteristics and the river's other natural features are protected by the conservation order."

Farmers and scientists join up to sweeten the Sherry River

While farmers are frequently criticised for the effects of dairying on the environment, positive developments are often ignored. **Simon Towle** reports on work along the Sherry River in Tasman District, where farmers have joined forces with scientists and the district council.

Dairy farmers have traditionally locked horns both with local councils and Fish and Game New Zealand for contaminating the country's natural waterways. However, compelling science has now persuaded farmers in Tasman District to invest considerable effort and money to clean up the Sherry River in a case that could prove a model example for the rest of the country.

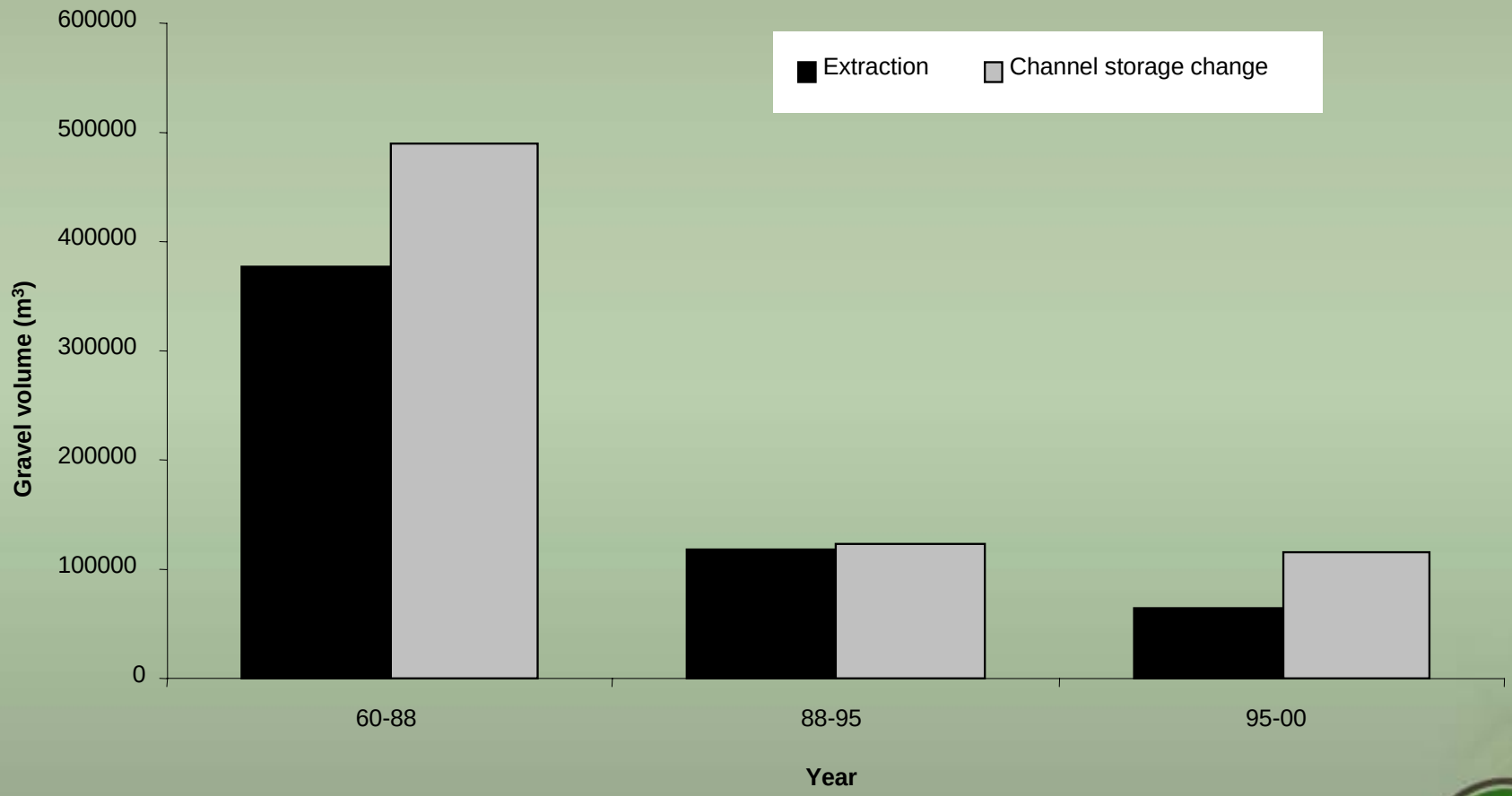
Even long-time dirty-dairying campaigner Bryce Johnson, director of Fish and Game, enthusiastically describes the project as "a ... the envi-

... new information in December 2001, "the Sherry farmers undertook to take action. In a short period of time, the crossing on Frank and Lisa White's property where the exper... iment was carried out has now been brid... In addition, another farmer, Rod O'... is using a bridge instead of taking ... through the river."

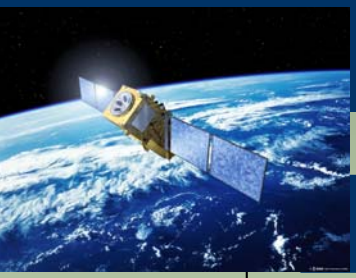
He says two other bridges a... ning stages and substantial f... ing to keep stock ou...

Tasman Distric... cial assistance ...

Comparison of gravel storage changes and gravel extraction



Dynamic assessment of catchment scenarios



Satellite imaging

G.I.S

Present land and ocean use

Future land and ocean use

Physical models

Mass/energy flows

Economic activity

Generate future scenarios

Social demography

Land ownership

3D visualisation

Economic Environmental input/output models

Tabular summary

ICM as a process