Working together in Thames-Coromandel

Guidelines for community planning

Parliamentary Commissioner for the Environment
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Aotearoa New Zealand
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This report and other publications by the Parliamentary Commissioner for the Environment (PCE) are available on the PCE's website: www.pce.govt.nz.

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Acknowledgements
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Appendix A: Summary of the Whangamata Community Plan investigation findings and recommendations

Introduction

This executive summary summarises the Parliamentary Commissioner for the Environment's (the Commissioner's) findings and recommendations from an investigation into the process used in the Whangamata area to create the Whangamata Community Plan.

Background

The investigation was instigated by two concerns raised with the Commissioner: the encroachment of mangroves into the harbour and the performance of the town's wastewater treatment plant.

The investigation's terms of reference were to:

- investigate and assess the community planning process used in the Whangamata catchment and coastal area to address the adverse effects from development
- produce a report based on the investigation and make it available to the various stakeholder groups in Whangamata and other communities with similar issues.

Conclusions

The investigation has shown the potential for local authorities to work *with*, rather than *for*, communities to develop ways to address the many social, economic, and environmental factors of concern to all developing communities. Local authorities must consider such factors when making decisions and setting goals within the sustainable development approach required by the Local Government Act 2002 and with a view to sustainable management as required by the Resource Management Act 1991.

The investigation's recommendations must be read in the context of the terms of reference's focus on the role of community planning. This focus was chosen because of community planning's potential to address and resolve divergent community perspectives on issues relating to the environment.

The findings and recommendations relate to three areas:

- community plan development
- community plan implementation and maintenance
- environmental outcomes and futures.

The findings within each topic are summarised below, with recommendations and explanatory notes where appropriate.

Community plan development

Finding

The process used to develop the Whangamata Community Plan was successful, with the consultation process generally supported, despite strongly held feelings in some parts of the community. However, some parts of the community held unrealistic expectations about the process's ability to achieve their desired outcomes and did not consider the limitations imposed by other statutory and planning frameworks. Participants in the process may also have lacked sufficient information.

Recommendation 1

To all councils and their constituent communities: When a council and community engage in a community planning process, the council makes it clear early in the process:

- the purpose of the process
- how decisions or recommendations as a result of the process might be put into effect
- how those decisions or recommendations might fit within the council's ongoing planning and policy development and implementation.

Recommendation 2

To all councils and their constituent communities: When a council or community are about to engage in a community planning process, the council, early in the process, reviews and summarises all relevant initiatives and strategies, so stakeholders can ensure that they consider the potential effect of these initiatives and strategies on the future community plan during the consultation process.

Finding

The community planning process helped to get disparate groups into a constructive dialogue, but the plan's development was limited by the:

- implementing agencies' apparent lack of capacity or commitment to implement the plan
- community's uncertainty over the plan's status with respect to statutory planning documents
- plan's recommendations being beyond the ability of the councils and community to implement without support from other agencies.

Finding

The community planning process could be improved by:

- ensuring key stakeholders' early commitment to the process
- setting realistic expectations early in the process
- prioritising outcomes
- developing mechanisms to implement the plan whenever possible, but taking into account the legal context and its limitations on the plan's implementation.

Community plan implementation and maintenance

Finding

Despite implementation problems, the community planning process successfully set agreed actions to address many of the community's environmental and community concerns.

It is encouraging that Thames-Coromandel District Council (TCDC) reports that many of these actions have been completed or at least initiated. However, many of the more challenging actions have not been implemented.

Recommendation 3

To Thames-Coromandel District Council (TCDC) and Environment Waikato (EW): TCDC and EW work together to develop strategies, policies, and processes to progressively implement the aspects of the community plan that are within their jurisdiction and that have not been implemented.

Finding

The Long-Term Council Community Plan (LTCCP) is a planning tool well suited to addressing the issues identified in the community planning process.

Recommendation 4

To TCDC: TCDC clearly identifies how it has used the various community plans in its district (including Whangamata's plan) to develop its LTCCP.

Finding

Information gaps were identified during the community planning process.

Recommendation 5

To TCDC and the Whangamata Community Board: TCDC and the Whangamata Community Board, as part of the community plan's ongoing development, develop a programme for addressing critical information needs. This information is collected to inform discussions about future versions of the community plan.

Finding

The community plan's implementation can be improved.

Recommendation 6

To all participants in the community planning process: Participants in the community planning process enable the community plan's more effective implementation by:

- ensuring ongoing political and community commitment to the plan
- defining the plan's relationship to the council's day-to-day operations
- appointing an effective champion (a group or an individual) of the plan
- monitoring progress, reporting, and reviewing the plan.

Finding

The community plan's effectiveness and implementation are affected by the extent of delegated power provided to the Whangamata Community Board.

Recommendation 7

To TCDC: TCDC, as part of any future review of the implementation of the community plan, assesses the effectiveness of the Whangamata Community Board's delegations.

Finding

Appropriate resources need to be dedicated to facilitating the plan's development, keeping the plan alive and working, and keeping the community engaged in the ongoing process.

Recommendation 8

To TCDC: TCDC allocates sufficient resources to ensure ongoing community participation in the community plan's implementation and review, including regularly using forums and information bulletins. These resources should:

- build TCDC's capacity to support facilitation and participatory processes and the community plan's implementation (for example, by appointing a full-time staff member dedicated to community plan support activities)
- address the community's distrust of the council by appointing suitably skilled neutral facilitators.

Finding

Participatory community planning processes provide more effective outcomes when they involve an ongoing participatory dialogue between the community and decision makers.

Recommendation 9

To TCDC, the Whangamata Community Board, and EW: TCDC, the Whangamata Community Board, and EW reinvigorate the community plan with a new round of consultation that updates progress, raises new issues, and encourages ongoing constructive dialogue among all parties.

Environmental outcomes and futures

Finding

The water quality of the Whangamata Harbour has degraded. Some areas are probably unsafe for swimming and shellfish gathering at most times and it is probably unsafe to swim in the harbour immediately after heavy rain.

Recommendation 10

To EW: EW undertakes further rounds of water quality testing in the harbour to determine what effect, if any, the recent improvements undertaken by TCDC to the wastewater treatment plant may have had.

Recommendation 11

To EW and TCDC: EW and TCDC work together and with the community to develop an ongoing water quality monitoring programme so empirical data are available about changes and trends in the harbour's water quality.

Explanatory note
The Commissioner considers a sustained improvement in water quality needs an integrated whole-catchment-based response to water quality problems. The community plan provides the vehicle by which the community can be involved in such an initiative.

Empirical data on changes and trends in water quality are also needed.

Finding

Parties disagreed about the appropriate method to assess water quality in the harbour.

Recommendation 12

To EW and TCDC: EW and TCDC meet with Clean Water Whangamata and the Public Health Unit of Health Waikato to discuss concerns about water quality testing. The conclusions from such a meeting would then be fed back into the community planning process and used to implement water quality testing and monitoring programmes.

Finding

Past and proposed physical changes to the harbour's structure will have long-term, adverse environmental effects on the harbour and the coastal processes that shape it.

Recommendation 13

To TCDC: TCDC continues to work with EW and the University of Waikato to ensure sufficient baseline research is done to enable an effective assessment of the effects of past and proposed changes to the harbour's structure.

Finding

In Whangamata, as in other similar resort areas, local authorities face the difficulty of providing the infrastructure to adequately meet the needs of a seasonally fluctuating population. In Whangamata, the water supply and wastewater treatment systems are under particular pressure.

Recommendation 14

To TCDC: TCDC, when making infrastructure decisions considers:

- involving the community in all phases of a system's design, build, and operation
- designing the system for the long term not just to cover immediate problems
- designing the system for local conditions
- ensuring that the community has a comprehensive understanding of the impact of local environmental and social conditions on the options being considered
- giving additional weight to managing the demand on systems (especially peak demand) using educative, regulatory, and economic measures; not just by increasing system capacity
- ensuring robust performance standards and appropriate financial incentives or penalties are built into performance contracts with infrastructural developers and operators if these functions are contracted out.

Recommendation 15

To EW: EW works openly with TCDC, the Whangamata Community Board, and the community, to the extent possible without compromising its position as a consent authority, to ensure the upgraded wastewater treatment plant is designed, built, and operated to meet resource consent conditions for the consent's duration and beyond.

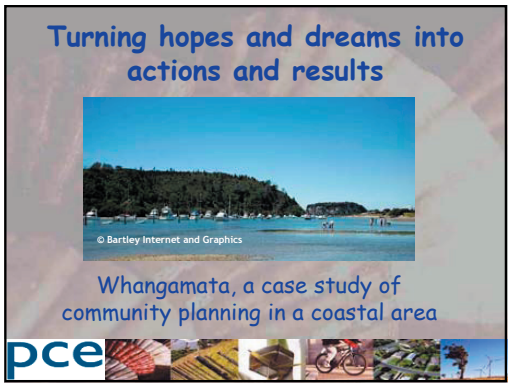
Explanatory note

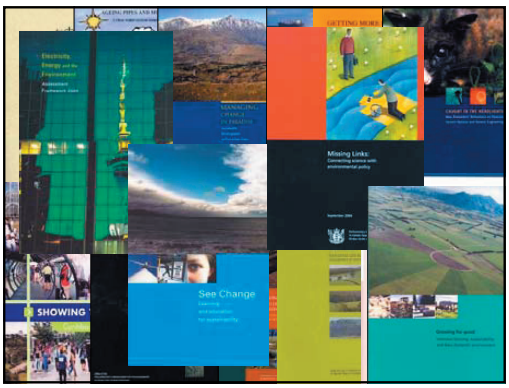
The Commissioner endorses TCDC's actions to progress the upgrade of Whangamata's wastewater treatment plant.

The Commissioner advocates using the community consultation process, as used in the community plan's development (that is, a process of participatory appraisal), as a constructive way to engage the community on this matter.

Appendix B: Turning hopes and dreams into actions and results

Notes of the presentation given by Dr J Morgan Williams, Parliamentary Commissioner for the Environment, on the investigation carried out under the Environment Act 1986 into the process used for preparing the Whangamata Community Plan.





A very special place!

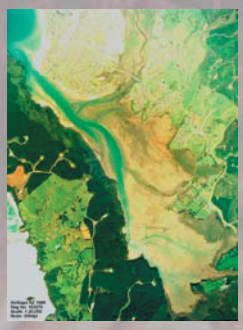
Courtesy of Environment Waikato

Whangamata Estuary

Our approach; **how** the PCE assesses environmental concerns

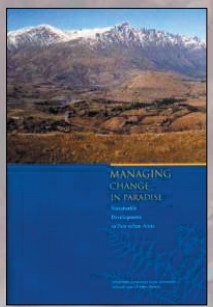
- Consider the **importance** of a concern (in this case harbour water quality and performance of waste water systems)
- Look at it in a **wider context** (impacts on the coastal environment that arises from ongoing development)
- Develop an investigation approach that help **address wider system issues**

The needs….



- Complex environmental problems require
  - sustained and integrated programmes (that address all the needs & pressures)
  - the involvement and support of all parts of the community – thru robust participation & planning processes

Role of Community Participation…



- In Managing Change in Paradise: Sustainable Development in Peri-urban Areas (PCE, 2001) advocated the development, by communities, of strategic plans
- Whangamata's community plan represents an opportunity for the PCE to assess the effectiveness of such a process

What the PCE did…

Interviewed a range of organisations, groups and individuals involved in the plan process and discussed the:

- Issues that instigated the development of the Plan – mangroves, sewerage systems, water qualities, etc (the specific concerns)
- The process used to develop the Plan
- The progress in its implementation (as of August 2004)

The Plan: what the PCE found…

- It was generally successful in involving the community and promoting dialogue, despite strong feelings
- There were unrealistic expectations about what the Plan could achieve and by when; capacity & commitment issues.

The plan……

Development; key recommendations

- Early in the process there should be clarification of:
  - the purpose
  - potential constraints (capacity, legal, financial, lack of trust between parties, input from other agencies etc.)
  - available mechanisms for implementation
- Provide information on other related environmental programmes, which may impact on the Plan – e.g. LG initiatives - RMA Plans, LTCCPs, Iwi Plans, DoC strategies

The plan….

Implementation and maintenance; as of August 2004

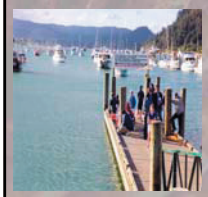
- Many actions are reported as having been initiated or completed
- However, many of the more challenging actions have not yet been implemented – esp. those that relate to water quality
- Information gaps need addressing

The plan…..

Implementation and maintenance; key recommendations

- The relationship between the LTCCP and Community Plans needs to be clarified
- All the participants need to maintain commitment to the implementation of the Plan
- The Plan needs an effective champion, a 'keeper of the long view'
- Adequate resources are required for the Plan's implementation and ongoing development

Environment & infrastructure: what the PCE found….

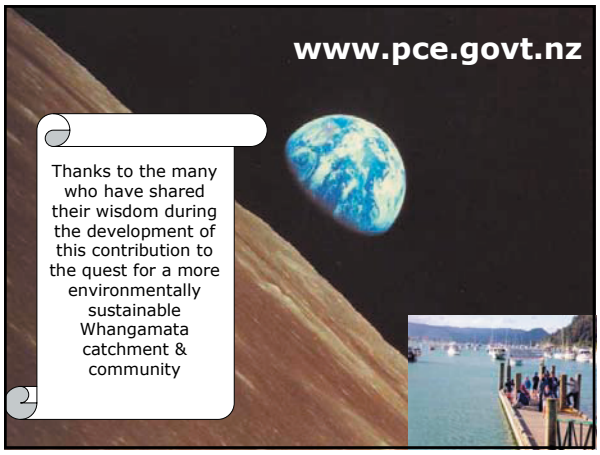


- Water quality in the harbour is degraded
- Further water quality testing is recommended with the involvement of the community
- Sustained water quality improvement requires an integrated whole of catchment response addressing all contaminate sources
- The Plan provides a vehicle by which the community can be involved in this process.

Environment & infrastructure…

- Whangamata and other resort areas must provide infrastructure for a seasonally fluctuating population
- Need to:
  - Design for the long term
  - Design for local conditions
  - Involve the community at all stages of design
  - Incorporate demand management into the design of systems
  - Ensure performance through standards and incentives


Beyond the words….
1. Support this workshop to discuss
• further implementation and development of Whangamata's Community Plan
• The usefulness to communities with similar concerns of:
✓ Community participation
✓ Development of strategic plans
✓ Whole of catchment integrated management
2. PCE focused follow-up review of the Plan's implementation (how successful in improving environmental outcomes?)
pce


www.pce.govt.nz
Thanks to the many who have shared their wisdom during the development of this contribution to the quest for a more environmentally sustainable Whangamata catchment & community

Appendix C: Integrated catchment management

Notes of the presentation given by Marjorie van Roon, Centre for Urban Ecosystem Sustainability, Department of Planning, The University of Auckland, outlining a framework for coastal management on the Coromandel Peninsula.

Integrated Catchment Management: a framework for Coastal Management on Coromandel Peninsula

Marjorie van Roon
Centre for Urban Ecosystem Sustainability
Planning Department, University of Auckland

In April 2004 TCDC ran a TOUR AND RETREAT on Mercury Bay

Peninsula-wide Environmental Issues discussed at the Mercury Bay workshop were:

- Maintaining and enhancing the Peninsula's natural environment
- Managing the impact of natural hazards on the district and its communities
- District's biodiversity is going backwards?
- Moving to "Loving the Coromandel" - environmental action plans?
- What is appropriate development?
- What form of 'urban' development do we want?
  - Ambience within our 'urban' environments

We might address some of these Peninsula-wide issues by looking in particular at :

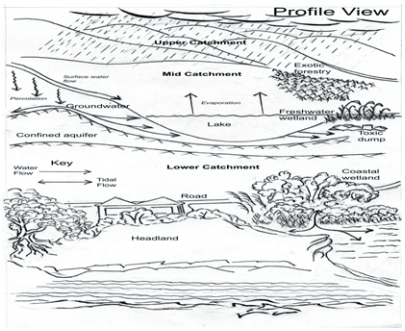
Integrated Catchment Management (ICM)

Using catchment boundaries for both human and ecological management purposes provides for integration and reduces complexity. Many of the problems facing Coromandel Peninsula residents are the result of water cycle processes in catchments e.g. flooding, sewage or sediment runoff to harbours, mangrove proliferation.

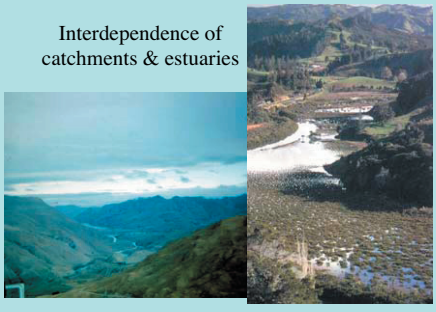
Secondarily look at adoption of:

'Low Impact Design and Development' in both urban (LIUDD) and rural-residential (LIRRDD) settings - using a catchment framework.

WATER CYCLE



Interdependence of catchments & estuaries



Coromandel township catchment


In the old parts of Coromandel streets are narrower and more natural
There are no curbs and verges naturally absorb stormwater


New parts of Coromandel have curbs, stormwater pipes and sometimes - wet carpets on the drive


The retirement village is built on the floodplain


The site of the sewage treatment plant gets flooded

Development of Catchment Management Plans
Phase one: identifying the issues

Catchment management plans may be presented as regional plans or structure plans under the RMA or alternatively held & used informally by the community. The following process could be carried out either by or with the resident community of the catchment.

- Define your catchment boundary.
- Describe the natural characteristics & human modifications of your catchment e.g. hydrology, soils, biology, habitats, water quality, areas of cultural or spiritual value, land uses, water uses, resource consents, reserves, bush covenants, water supply & sewage systems.
- Identify the conflicts and impairments, which limit both human uses and ecosystem function within your catchment e.g. conflicts between activities that compete for a single resource like stream water. There are also likely to be impairments (e.g. stream pollution by cattle) which prevent a desired level of use of a resource (e.g. high cattle stocking rate on land) or attainment of a healthy ecosystem condition or recreational quality.
- Identify the causes of these conflicts and impairments. This enables you to:
- Describe the problems/ issues that you wish to address in your Catchment Management Plan and what you are trying to achieve by solving these problems

Development of Catchment Management Plans
Phase two: getting action

- Describe possible solutions to the problems/issues.
- Identify what constraints limit actions to resolve problems/issues eg. cost, time, difficulty, lack of community support etc.
- Create a list of actions, which you recommend be carried out within your catchment.
- Prioritise the recommended actions – which actions are most practical and productive, and can be initiated immediately? Which give the best returns for their cost and effort?
- Recommend suitable indicators to monitor to demonstrate whether your actions produced the results you are seeking to achieve for the resource.
- Monitoring results feed back into future updates of your Catchment Management Plan.

Whangamata's catchment management planning

- Whangamata Community Plan identified issues
- Primary issues that are all driven by catchment water cycle processes: harbour modification, harbour sedimentation & mangrove proliferation, farm runoff, sewage effluent runoff, potential for forest felling effects.
- All of these issues need to be addressed at source using a catchment management model.

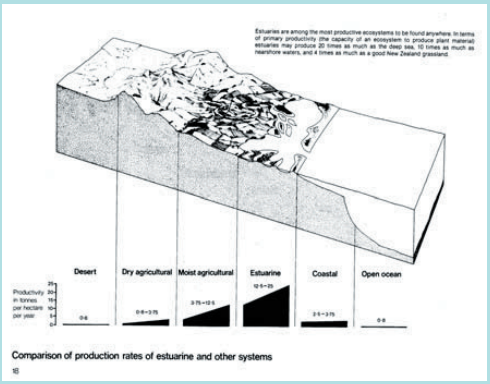
Some other achievements & anticipated actions by Whangamata community

- Water quality tested & reported - primary sources of contaminants creating problems in harbour known by subcatchments.
- Action on these issues already targeted.
- Sewage treatment upgrade - resource consent 2006
- Riparian planting in pastoral Wentworth catchment.
- Recognition that in long-term mangrove spread needs to be controlled through catchment & harbour management not removal.

Mangroves

- Keystone native species of productive estuarine ecosystem: provide nutrients & habitat for fish & food of fish.
- Mangroves produce 6 - 8 tonnes/ha/year organic matter*
- Trap sediments from the land that otherwise deposit in channels
- Community 'tug of war' between mangrove protection (for productivity) & destruction (for beaches)
- Perceived problem not solved by treating the symptoms in harbours rather than catchment causes -erosion & loss of fresh water wetlands in lower catchment areas.
- Sedimentation key driver of mangrove spread by raising seabed & changing harbour sands to muds.

*Saenger & Snedaker, 1993; Park. S., 2004 -Aspects of mangrove distribution & abundance in Tauranga Harbour. Env.BoP publication. P11.



Comparison of production rates of estuarine and other systems

Ecosystem products/services valued

- Estuaries @ NZ$40,026/ha/year
- Open Marine @NZ$423/ha/year
- Agricultural @ NZ$1029/ha/year

- Values from Patterson & Cole (1997) "Valuation of N.Z. Biodiversity" Massey University

Possible support for good work to date in Whangamata through:

- Preventing (or reversing) changes to the harbour that reduce tidal exchange volume
- Preventing loss of forest in the catchment at the end of forest rotation, and investigating the feasibility of harvesting techniques that minimise clear felling.
- Learning from other locations with similar problems
  **changes to pastoral practices in Raglan/Whaingaroa*
  **sustainable forestry practices - Tane's Tree Trust*
  **marinas built in locations where little reclamation or dredging is necessary - Bayswater Marina*
- Peak holiday population to pay part-cost of sewage treatment & water supply - through water charges?
- Low Impact Design and Development uptake.

User pays for holiday makers

- Sewage treatment, water supply & road costs greatly increased by 10X increase in holiday population.
- User pays necessary; need to capture increase in population in private houses, motels & campgrounds.
- Consider collection through metered water supply. Flat charge for water use 46 weeks of year, ??X water charge for holiday period - use $s for water, sewage and road upgrades.

Low Impact Design and Development: why do we need it for our coastal catchments?

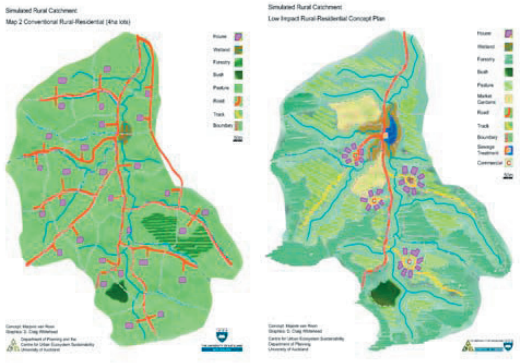
- Disruption of the water cycle
- Damage to soils
- Flooding and pollution of waterways by stormwater contaminants
- Water shortages and/or high costs of delivering reticulated water supply
- Pollution from sewage effluents & costs of sewage servicing
- Loss of biodiversity and landscape quality
- High levels of consumption of water, energy & materials
- Need for sustainability of our cities, towns & periurban areas.

What is LIUDD and how can it help Coromandel Peninsula settlements?

- An integrated urban design & development process at neighbourhood-to-catchment scales
- focused primarily on integrated land & water use
- aims to avoid adverse effects of conventional urban & rural-residential development
- protects aquatic & terrestrial ecological integrity while allowing urbanisation at all densities
- May incorporate water recycling facilitated by the efficient interfacing of urban water supply, wastewater treatment and stormwater drainage systems

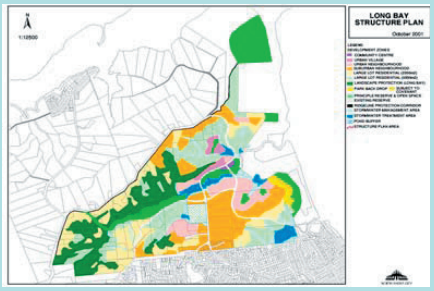
LIDD should begin at rural -residential stage of subdivision using the catchment as a design & management unit

- Landscape often degraded by pastoral use.
- In the past there has been no improvement in ecosystems & landscapes from rural to rural-residential
- Don't lose the opportunity to protect ecosystems typically further damaged by geometric 4ha carve-up
- Good design at RR stage reduces likelihood of landscape & ecological destruction at transition to urban
- This is an opportunity to improve the quality of rural-residential lifestyle & environment



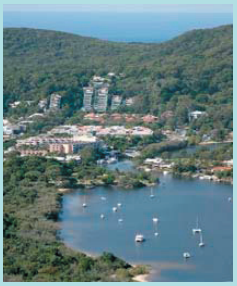
Map 1 shows a traditional or conventional way of rural-residential subdivision into 4 ha blocks. This subdivision shows little consideration for the topography, streams, wetlands & bush remnants. The number of roads is greatly increased to service the many houses. The construction of roads and houses involves earthworks sometimes in unsuitable steep or streamside locations with soil washing off into streams, lakes or harbours. Steep hillsides, highly visible ridgelines, wetlands, streams & bush receive little protection.
Map 2 shows the catchment as it could be subdivided - shaped to fit the topography. The stream corridor is protected & replanted to filter out sediment & contaminants that would otherwise flow into the stream during rainfall periods. The stream corridor might be made wide enough to accommodate paths for bicycles, horses and pedestrians. Wetlands & existing areas of bush would be protected & possibly extended & restored. Ideally steep land, headlands and ridgelines would be used for sustainable forms of forestry rather than for pasture, cropping or housing thereby protecting them from erosion & preserving rural views. Rural blocks for horticulture, pasture or additional forestry could occupy the less-steep land between the steep forestry blocks & stream corridors. Provided they are not part of the flood plain, these might be the least-impact areas for later urban intensification if deemed desirable. If houses are clustered fewer access roads are needed, sewage & water servicing is easier. Stormwater would be treated in rain gardens or swales instead of being piped to waterways. Residents might own single or multiple lots in the catchment. House clusters located at the intersection of several converging agricultural blocks would provide direct access for residents to adjacent blocks.

LIUDD example of good practice: Long Bay, North Shore City



Noosa 2003

(Source: Thames Coromandel District Council 2004)

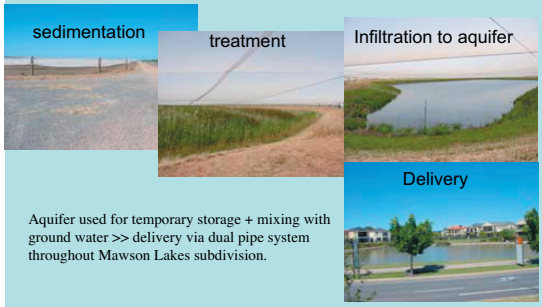


Example of good design: 3 waters management - Aurora, Melbourne

- Expected population 25,000
- Stormwater >>biofiltration strips
- Sewage >>onsite plant with effluent recycled for secondary dual water supply -Class A water. No effluent contribution to Port Phillip Bay
- Rainwater from roofs to hot water systems
- 70% reduction in potable water demand
- Other features include energy efficient construction, public transport, cycleways, habitat protection & repair

Techniques to reduce stormwater or sewage contaminants in waterways & reduce demand for potable water Parafields and Mawson Lakes, Adelaide

Stormwater collected from large residential catchment is treated in 3 ponds



Aquifer used for temporary storage + mixing with ground water >> delivery via dual pipe system throughout Mawson Lakes subdivision.

LIUDD Challenge

- New Developments: To ensure, that when a catchment is developed, aquatic & terrestrial ecosystem health improves regardless of population density
- Old Urban Areas: To refurbish existing urban areas over a long time period during redevelopment of individual lots & infrastructure replacement or upgrading, to ensure a gradual transition towards ecological functionality and sustainability

What can LIUDD & LIRRDD do for the Peninsula

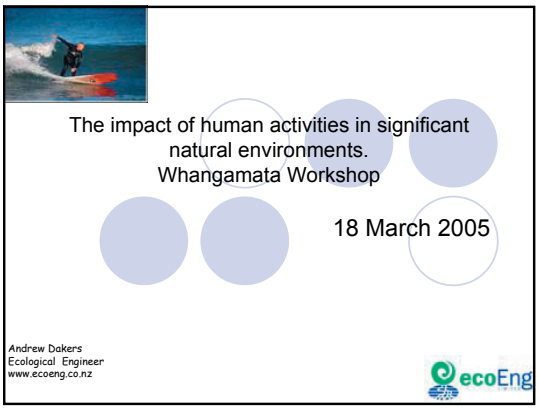
- Provide an alternative approach to coastal development
- Reduce sewage & stormwater contaminants in streams, groundwater and harbours
- Make efficient use of available water supply resources
- Improve amenity, biodiversity and natural character of the coastline
- Restore degraded pastoral landscapes during rural-residential development

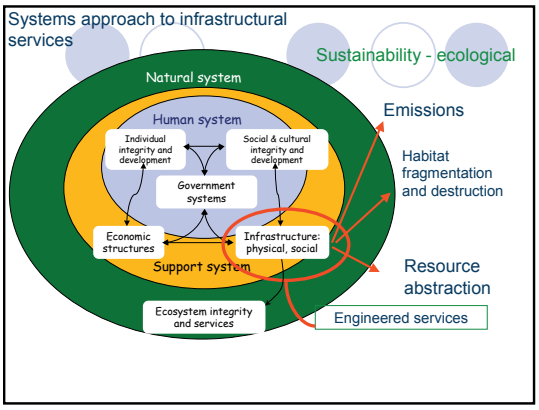
For the long-term on the Peninsula

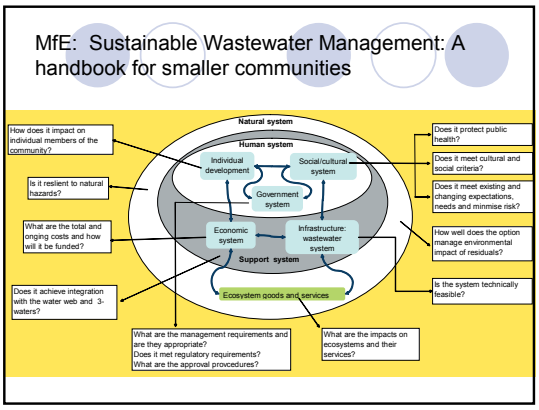
- Ensure that decisions on the location of all new uses consider catchment dynamics
- Use opportunities provided by infrastructure upgrading or neighbourhood revitalisation to optimise catchment processes (relocate or redesign)
- Ensure forest continues to dominate catchment land use.
- Take advantage of Low Impact Design and Development lessons from elsewhere

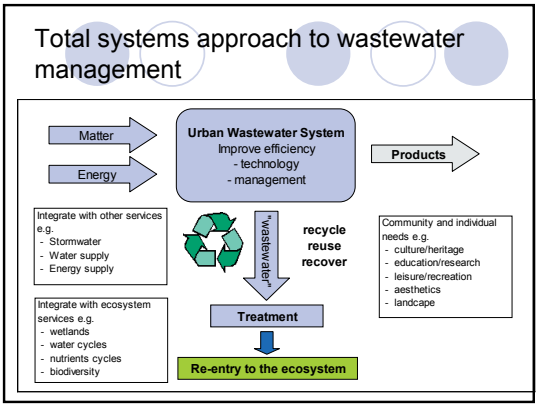
Appendix D: The impact of human activities in significant natural environments

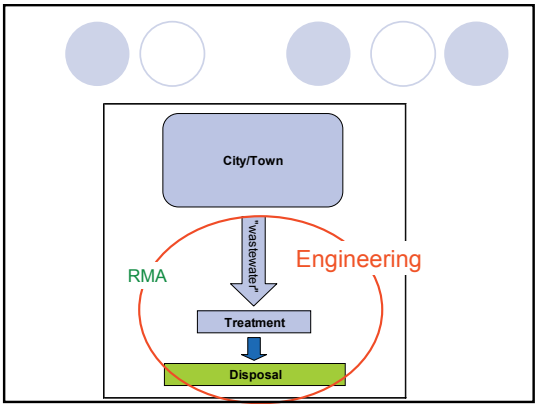
Notes of the presentation given by Andrew Dakers, Ecological and Agricultural Engineering Consultant.











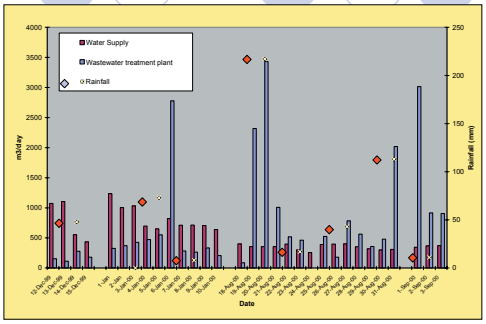
Recent research - Sustainability in tourism infrastructural issues

- Efficient use of resources e.g. water, nutrients, energy, mineral and biological resources
- Respect for local ecosystem – care with emissions and habitat fragmentation.
- Levels of implementation – infrastructure design planning, design and management
- User - demand management:
  - Providing the incentives
  - Sending the appropriate signals

3 small towns: snapshot studies

- Akaroa, Hanmer and Kaikoura…..

Akaroa – effect of rainfall in causing stormwater infiltration

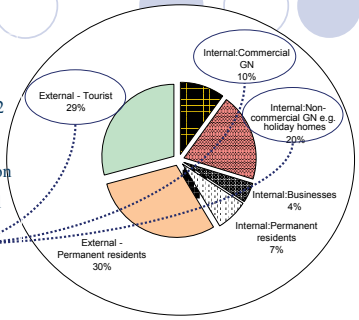


Akaroa: Peak sector water demand

Averaged monthly water demand

Aug 99 to Aug 02 mean monthly guest nights water consumption

- average annual tourist demand is 8.6%



Heavy water users and wastewater producers

Public toilets

	Kaikoura m3/day	Hanmer m3/day
Mean	16.31	15.40
SD	2.06	8.76

Café

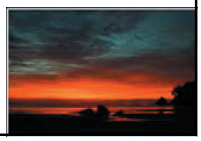
	Kaikoura m3/day	Hanmer m3/day
Mean	1.13	0.81
SD	0.19	0.22

Café with public urinal attached

	m3/day
Mean	12.20
SD	1.98

Risk assessment – systematic approach involving the community

Likelihood	Consequences				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	Medium	Medium	Undesirable	Unacceptable	Unacceptable
Likely	Low	Medium	Undesirable	Undesirable	Unacceptable
Possible	Low	Low	Medium	Undesirable	Undesirable
Unlikely	Very low	Low	Low	Medium	Undesirable
Rare	Very low	Very low	Low	Medium	Medium



Risk assessment – systematic approach involving the community

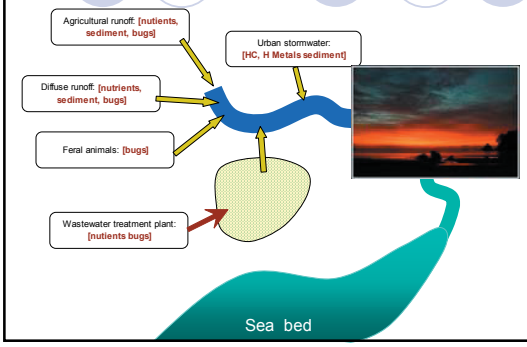
Description of the risks	Assessment of the risks	Risk grade
Contamination of ground water used as drinking water	• Likelihood is almost certain. • Consequence is major.	Unacceptable
Contamination of rainwater used as drinking water	• Likelihood is almost certain. • Consequence is major.	Unacceptable
Contamination of water delivered to the community and used for drinking water	• Likelihood is possible. • Consequence is major.	Undesirable
Not enough water available	• Likelihood is unlikely. • Consequence is major.	Medium
Inadequate water available for fire fighting	• Likelihood is unlikely. • Consequence is major.	Medium
On-site wastewater system: public health risk (excluding risks to bore water supplies)	• Likelihood is possible. • Consequence is moderate.	Medium
On-site wastewater system detrimental impact on local ecosystem.	• Likelihood is unlikely. • Consequence is moderate.	Low

How are human activities impacting on the Whangamata ecosystem?

The hydrological catchment for the Whanhgamata Harbour
- Natural features
- "Engineered" features

- Emissions
- Habitat fragmentation/destruction
- Resource abstraction

A complex interconnected system



Vant (2001)

Table 1: Land-cover in the catchment of Whangamata Harbour in 1996. Areas in km^2. Source: Terralink (1996).

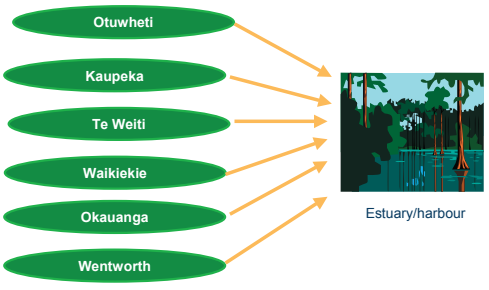
Sub-catchment	Indigenous forest and shrubland	Planted forest	Pasture	Other*	Total
Wentworth	16.37	1.84	4.90	0.67	23.8
Otuwheti	0.81	7.18	0.80	–	8.8
Waikiekie	1.77	3.49	0.60	0.09	5.9
Te Weiti	0.26	1.31	0.33	<0.01	1.9
Okauanga	0.25	0.14	0.49	–	0.9
Kaupeka	–	0.78	<0.01	–	0.8
Un-monitored	0.68	4.42	1.56	0.52	7.2
Total	**20.1**	**19.2**	**8.7**	**1.3**	**49.3**

*urban areas and inland water

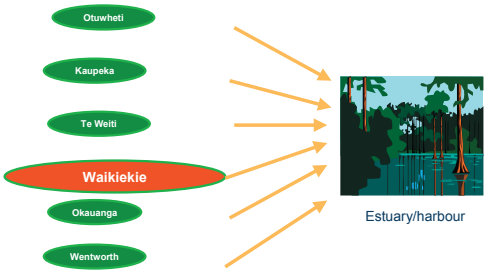
Key issues

- Whangamata – catchment draining to a ecological and culturally sensitive marine ecosystem.
- Seasonal peak – 4500 people increasing to 50,000 in the summer.
- Recognition of the interests of tangata whenua
- Wastewater treatment plant and irrigation – capacity and performance.
- Stormwater management – quantity and quality.
- Diffuse run-off: agriculture, forestry, urban stormwater.
- Local Government capacity.
- Method of monitoring.
- Appropriate community process in decision making.
- Changing town character – retirees and absentee ratepayers.
- Ensuring continuing effectiveness of the community plan.

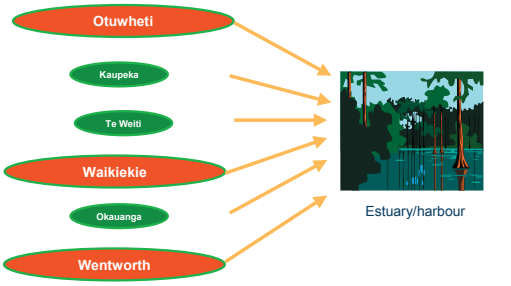
Catchments



Nitrates



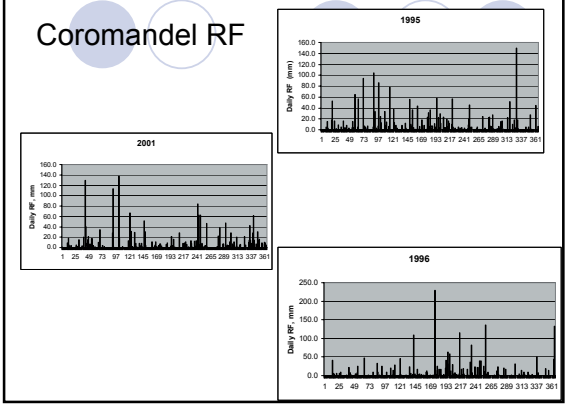
Bacteria



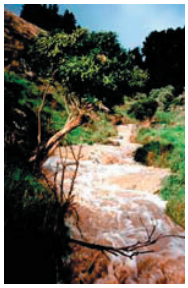
Key findings (EW, Vant 2000 and 2001 reports

- Wentworth sub-catchment main source of contaminants to the harbour.
- Waikiekie sub-catchment disproportionately high contributor of bugs and nitrates.
- Significant first-flush contaminant loads
- Unexplained peaks from smaller catchments – feral animals?
- Stormwater?
- Report suggests that the largely pastoral area downstream in the Wentworth sub-catchment contributed most of the turbidity observed at the lower end of the river, and at times contributed much of the loads of the other contaminants.

Coromandel RF



Highflow stormwater events carry debris and sediment

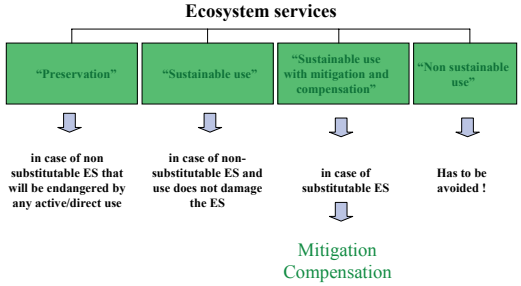


Various control techniques, urban and rural:

- Sedimentation basins, traps and filters – large ponds, wetlands.
- Permeable swales
- Debris traps
- Riparian management

Ecosystem services management

- **How do we choose the right approach ?**



Ecosystem services management

- Procedure for "Sustainability Use and "Sustainable use with mitigation and compensation"
  - Identify ecosystem services
  - Identify impact of use (link to integrated assessment)
  - Identify possible mitigation or compensation strategies
  - Build model to assess strategies (link to integrated modeling)
  - Implementation
  - Identify indicators for impact and success - monitoring plan (Integrated assessment)
  - Adaptive management
- Mitigation means: Impact on ES should be minimized
- Compensation means: Substitution of ES that are lost (and cannot be compensated)

Asking the key questions

How to ensure effective communication and understanding between technical people and local people – marry local knowledge with technical thinkers and innovation
What are the current risks? What are the future risks? Assess likelihood and consequences.
What are the mitigation options – engineering and management?
What are some useful tools – ICM, stakeholder platforms, tourism toolkit…….
Can the **problem** be turned in a resource and/or opportunity.

Asking the key questions

Has a there been a systematic assessment of the benefits of demand management options?
Are funding and charging structures appropriate? Are their better options?