BANKS PENINSULA WORKSHOP REPORT
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ACKNOWLEDGEMENTS

This report is the product of both pre-conference and in-conference processes. This has involved input from the following people.

Pre-conference discussions with:
Banks Peninsula residents – Stewart Miller (also Counsellor), Paul Pritchard, Pam Richardson, Stuart Wright-Stow, Hugh Wilson.
Banks Peninsula District Council Staff – Chris Hopman and John Porter

The following people were involved in the Conference workshop.

Facilitator: Johannes Heeb (from Switzerland)
Rapporteur: Ali Arshad (Pakistan)
Workshop Chair: Andrew Dakers (NZ)

Participants in the workshop included:

David Bell (NZ), Laura Donadini (Switzerland), Gunther Geller (Germany), Chris Hopman (NZ), Astrid Kirchner (Austria), Martina Kunz (Switzerland), Tom Mackenzie (NZ), Vicki Martin (NZ), Annette Otte (Germany), Paul Pritchett (NZ), Anton van Schaik (Netherlands), Helen Shaw (NZ), Shelley Washington (NZ), Stuart Wright-Stow (NZ), Mark Woess (Austria)

The time has come for both city and peninsula …to work together to ensure that the brilliant resource that is the Banks Peninsula is not only properly maintained for today's generation, but enhanced for those generations to come

Banks Peninsula DC Mayor Bob Parker, *The Press*, 15 Dec 2001, p 7.

WORKSHOP GOALS

The primary goal for this workshop was to offer an **ecological engineering** approach to a development strategy for the Banks Peninsula.

DEFINITIONS

Ecological engineering is the application of our knowledge of **ecosystems**, and our skills of technical and **engineering problem solving and design**, to achieve integration of human endeavour and creativity with the natural world, thereby achieving ongoing well-being for all the interdependent components of the ecosystem.

Ecosystem is defined as - communities *of interacting organisms and the physical environments in which they live* (UNDP[1]). The abiotic environment is an essential component of any ecosystem. Therefore the human species, and their built facilities, services and infrastructure, are not separate from but are interdependent and integral parts of ecosystems. The ecosystem knowledge required therefore includes not only the behaviour of the natural world but also human social and cultural aspects.

Engineering draws on a scientific knowledge of the properties and behaviour of biological, chemical and physical materials when subjected to real-world forces. **Problem solving and design** skills combine with this knowledge to provide safe, functional and economic facilities and services for our communities.

By these definitions it is clear that ecological engineering is an inter-discipline that leads humankind to a more sustainable relationship with the natural world – the only relationship that is authentic.

In order to use the occasion of the conference efficiently it was considered necessary to first gain some appreciation of the issues concerning development within the Banks Peninsula sub-region and then to select and prioritise those issues for which ecological engineering could be most helpful.

BANKS PENINSULA – A REGION OF DIVERSE ACTIVITIES

The Banks Peninsula is an interesting region, geologically, ecologically and culturally with considerable potential to be a unique and vibrant region if developed on a co-ordinated and sustainable manner. At present there are a diverse range of economic initiatives that are happening on an uncoordinated and non-strategic basis. Examples of these activities include:

- Agriculture and forestry
- Wineries and vineyards
- Growing of olives and tree crops
- Specialist nurseries - eg native plants
- Growing of herbs
- Marine aquaculture and fishing
- Conservation farming
- Mining of minerals
- Arts, craft and cottage industries
- Eco-tourism – e.g. swimming with dolphin, marine reserve trips, penguin parades, walkways Traditional tourism

In certain situations some of these activities will be in conflict over the use of and impact on natural resources. As more people move to the region increasing pressure is placed on the sensitive local ecosystems and regional resources in terms of water and energy supply, transport and roading systems, sanitation and stormwater services and solid waste management.

Vibrant economic initiatives and activities are essential to support the Banks Peninsula people and their communities. There are ecological, social and cultural limitations, constraints and conflicts that hinder some economic initiatives.

[1] UNDP, UNEP, World Bank and World Resources Institute, 2000. A guide to World Resources 2000-2001: People and Ecosystems. The fraying web of life. World Resources Institute, Washington

The knowledge of human development and the understanding of processes of the eco-system within which such development is embedded are vital for the success of any viable and sustainable project.

BANKS PENINSULA – THROUGH THE EYES OF SOME OF THE LOCALS

To identify the local issues, Andrew Dakers interviewed some of the local people. The following quotes paint a picture of how some people feel about the Banks Peninsula (BP) sub-region. These quotes are taken from the Environment Canterbury online webpage (http://www.ecan.govt.nz/coast/banks-peninsula/banks-peninsula-homepage.html)

- *I don't think anyone wants to see BP become home to waterfront condos overlooking marine farms; but then, no one wants it to be completely economically unviable either.*
- *In my experience, one of the major things that BP has not taken full advantage of yet is its unique beauty. I think this is quite possibly because to those who are local, it is special, but it isn't all that different than other places in NZ. The reality, however, is that in the scope of the entire world, BP is incredibly unique*
- *If you have been to many of the places that humankind has pilfered and destroyed, BP begins to stick out in your mind as one of the few places we have not had the opportunity to wreck (yet)During the summer months I do a fair bit of surfing in the bays on Banks Peninsula. I would hope that in 30 years time the beaches and surrounding environment will be undisturbed. There is nothing more peaceful and enjoying than sitting out in the surf and looking back toward the picturesque beauty of Hickory Bay and it's seal colony. My main concern is mostly to do with the preservation of the flora and fauna and water quality on Banks Peninsula.*
- *We … are involved in tourism, but not on the Peninsula. Hundreds of the tourists with whom we have been involved have raved about their visit to Akaroa Harbour, they see it as a wonder of the world, so untouched, so pristine, s o different to life in Tokyo or Tel Aviv or New York etc. Please keep it this wayBy all means bring prosperity to the area by sensitive development of the tourist industry- accommodation, cafes etc but don't touch our water and our coastlines.*

THE ISSUES

Pre-conference research identified the following issues:

TECHNICAL ISSUES

- Water supply (town and rural) for drinking, irrigation and other uses. Issues include: poor potable water quality, limited supply quantities and unreliability of supply. In some towns lack of potable water is impeding conventional development. Most water sources are surface supplies. Groundwater is available to towns such as Wainui, Governor's Bay and LyttletonSmall town and rural wastewater management. Issues of concern include the appropriateness, management and cost of centralised systems as against individual onsite systems in the context of public health and environmental criteria. In some towns lack of appropriate wastewater infrastructure is impeding conventional development.
- Solid waste management. Issues; costs, social and environmental impacts.
- Roading. Issues; costs and reliability (severe climate, steep slopes, erodable soils, flooding), visual and environmental impacts
- Energy (power) supply. Issues are: costs, reliability, visual and environmental impacts. There is some interest in wind energy and alternative remote area power systems.
- Communication. Email and mobile phone services to some of the more remote areas have been reported as being poor.

ECOLOGICAL ISSUES

- Erosion. Climate, soil and geological structure, topography and land management has created erosion problems. The consequences to ecosystems are in terms of slips, sediment loading in streams and coastal areas.
- Coastal and marine issues: Coastal pollution (from boat discharges, point discharges and sediment from land erosion) seaweed invasion, visual impact and aquatic ecosystem impact of marine farm structures.
- Biodiversity. The Banks Peninsula landscape is highly modified as a consequence of forestry and agriculture. This has resulted in loss of biodiversity, and disruption of the natural hydrological and nutrient cycles. Hugh Wilson (*Land Notes.* Summer 2001, Banks Peninsula Conservation Trust) notes that: *Human settlement over the last 1000 years has ripped away much of the original vegetation and wildlife. Old growth forests, for example, once covered nearly all the Peninsula's 100,00 ha, but it is reduced to less than one percent (800 ha). Few plant species were completely lost, but fauna fared very badly. Among the birds, for example, moa, eagle, pelican, swan, goose, parrots, parakeets, kiwi, kokako, saddleback, piopio, takahe, weka, môhua, and fernbird no longer share the Peninsula with us. It is a huge loss.*

SOCIAL AND CULTURAL ISSUES

The Banks Peninsula has a resident population of about 7600 people. Some of the small towns are populated by people on medium to low income, with many retired residents. This presents difficulties in funding the services to a large rural area with a small population. In addition to this, tourism (national and international) to the region is increasing and is economically important. This tourism demands a high standard of services and infrastructure (water, waste, roading) and comments have been that because of the close proximity of Christchurch city, most are day visitors and it is therefore difficult to capture (particularly in terms of accommodation) the tourist dollar.

The Banks Peninsula has rich Maori and colonial histories and cultures which are important to preserve for the benefit of the Canterbury region.

THE WORKSHOP PROCESS

During the Conference there were three 1_ hour workshop meetings. The themes for each of these sessions were;

- Scene setting.
- Identifying key issues.
- Problem solving using ecological engineering principles.
- Preparing recommendations.

SCENE SETTING

Geology

Dr David Bell, from the Geology Dept, University of Canterbury, presented an overview of the geology of the Banks Peninsula.

Geological setting

- Consists or eroded remnants of 2 large extinct stratovolcanoes (Lyttelton (first) and Akaroa).
- Formed by intraplate volcanism between approximately 11 and 8 million year ago (Miocene) on a continental crust.
- Rocks dominantly basaltic in composition, and lava flows alternate with airfall deposits.
- Older basement rocks present near the centre of the Lyttelton volcano, (Torlesse, about 200 million years old)

Geomorphological development

- Formed as offshore islands, and volcanoes reached to about 1500 m asl
- Radial drainage patterns developed and two dominant valleys formed harbours
- Present day topography results from sea level fluctuations (-100m) and continuing erosion.
- Last 2 million years characterised by glacial and interglacial climates and loess deposition (airflow and colluvial)

Loess deposits

- Vary up to 15m in depth and were derived under cold climate conditions
- Upper slopes and shoulders mantled by direct airfall loess (clayey or sandy silts)
- Lower slopes commonly colluvial (reworked) materials with minor volcanic fragments.
- Also recognise mixed and volcanic colluvium, plus residual regolith development.

Land-use constraints

- Sheet, rill and tunnel-gully erosion occur widely in loess solis.
- Rapid soil and debris slide-flows characteristic of storm-induced damage on steeper slopes.
- Rockfall hazards are significant due to natural weathering processes and impact of humans and animals.
- Inundation hazards on the valley floors and low-lying coastal land (runoff, storm surge etc).

Water Supply

- Limited supplies of groundwater in the valleys.
- Bedrock and colluvial springs on slopes sourced from infiltration recharge

- Most springs are seasonal and may dry up in the summer, but some high altitude springs yield > 50 L/sec.
- Some of these springs are important to supply base flows for surface streams.

Wastewater Disposal

- Loess soils and volcanic bedrock are relatively impermeable materials.
- Conventional septic disposal fields can be difficult and there is a preference for small package treatment plants (AWTS).
- Important to avoid contamination of waters from artificial fertilisers and animal manure.

KEY ISSUES

The workshop participants discussed the various issues and key problems. Many of those raised were similar to those identified in the pre-conference discussions reported earlier in this report. The following issues were raised as important and pivotal for the sustainable development of the peninsula:

- Landscape deterioration due to soil erosion, landslips and farm tracks.
- Vegetation needs and requirements.
- Water and energy related problems, including high water table, sanitation and sewage disposal and design, constraints to Green –energy etc.
- Solid and liquid waste disposal issues.
- The burden of irregular and segregated settlements and its structure
- The problems associated with local and foreign new –comers to peninsula
- The advantages and impacts of tourism on the environment
- The role of the community in communicating and exercising their needs and responsibilities in relation to the local council. Similarly issues of ownership were also touched upon.

PROBLEM SOLVING

The participants observed that most of the issues were inter-connected. The group identified three broad fields:

1. Landscape, trees and water
2. Tourism and education
3. Community process

The idea was to identify key areas of concern, organise them into categories based on their similarities and provide sustainable solutions to each.

LANDSCAPE, TREES AND WATER

There are a wide range of ecological engineering ideas, tools and technologies that may help to resolve some of the engineering, infrastucural and services problems experienced by the Banks Peninsula. These are more likely to be adopted once their worth has been demonstarted. The group identified the need for a park to demonstrate an integrated plan for water, landscape and vegetation resources, in the context of social, cultural and economic well-being. This demonstration park could act as a pilot project by including many of the amenities as would be needed by a large-scale ecologically engineered system. The group considered that this park could be realised by differentiated multi-scale planning with stakeholders based on a shared public and private ownership concept. The similar components of an aqua-terrain system can be placed together and rectified of any problems

found therein. This multi-disciplinary approach can reduce the costs of design and maintenance and provide sustainable options to the whole area.

The creation of such park needs proper planning preceded by appropriate awareness raising and education. Hence dissemination of eco-information was considered a vital part to the viability and success of this project.

The park will provide a place for ecologists and engineers, in partnership with the community, to exercise their skills and knowledge.

TOURISM AND EDUCATION

This group dealt with the issues of tourism and eco-tourism. The main suggestion put forward was to involve local people in tourism initiatives of Bank Peninsula. A Tourism and Education (T & E) program was proposed comprising of tangata whenua in partnership with local people who would form a working group to identify local needs and benefits. This idea is based on the concept of " our land, our responsibility". A joint strategy should be based on local needs and requirements to bring prosperity to their region within the context of ecological sustainability. The workshop proposed following actions to be included in T & E program:

- Arrangements of festivals to attract tourists and promote local culture and products
- Conduct bus tours to other regions that may provide opportunity to local community to share their knowledge with other communities and obtain a first-hand knowledge of the developments in neighbouring regions.
- Design and develop a web-page consisting of all information regarding Banks Peninsula and its surroundings. (Maybe use the existing Environment Canterbury web-page) The idea is to disseminate information about Peninsula on a broader scale for the public in general and tourists in particular.
- Engage in partnership programs within and outside the Peninsula. A public-private enterprise is one such example in this regard. Such an enterprise may solve the problems of finances, which usually is a hindrance to any sustainable venture.
- Prepare real-world case studies that incorporate the details and issues highlighted by the community. Where possible, these case studies should be from within the BP, but from an educational point of view, other national ad international case studies that could serve as appropriate models of development for the BP should also be promoted.

For the above propositions to be implemented, they obviously need to be financed on a sustainable basis. The workshop group offered the following financing suggestions, for further investigation and debate:

- Imposition of an eco-tourism tax. The group discussed an Eco-Toll-Gate of nominal value to generate funds for a clean and green environment. This proposal still needs lots of consideration and debate and could only be adopted after a careful and comprehensive review.
- Attract sponsorships from within and outside the Peninsula. This gives rise to the importance of marketing the Peninsula.
- "Each one, plant one" is another example of a self-sustained and green Peninsula. The concept of *adopt-a-tree* policy has worked well in other countries and regions and this formula can maintain the clean image of the Peninsula on an effective basis. There may be some other appealing and imaginative ideas in the community that would create revenue for BP.
- Redirection of the tourist GST to the region.

COMMUNITY PROCESS

As defined at the beginning of the report, humans and their society are an integral part of an ecosystem. Therefore, an ecological engineering approach necessitates a process that involves their appropriate participation. The participation of an informed community in strategic planning, decision-making and development is vital for any self-sustaining and self-organising system. This fact was recognised by the third group of the workshop. The group emphasised the important role played by the local population. The issues of ownership, the special role of the indigenous people and the reactions of the community to change were discussed in length and it was stressed that different focus groups, split on demographic basis, in conjunction with stakeholders must form a platform that generate development processes. The **stakeholders' platforms (SP)** could include representatives from district council and regional council, farmers, townies, business providers etc. The focus group that would form part of the SP may work on a community level as well as on the peninsula level, so that all aspects and regions of the Peninsula are well represented in the final development strategy.

The platform focus groups need to define issues, consider values and cultural norms, identify similarities and differences between groups. This may lead to a joint vision that includes the aspiration and support of the local community as a whole. The local community skills and expertise can prove as an essential input for this development process and must be used as such. The planning programs of regional districts and local Agenda 21 are also needed to be tapped as potential tools for progress and development.

The workshop deemed it necessary to employ professional facilitators and hire experts that will boost the development process and maintain cohesion for the production of a joint document based on a united vision of the community.

CONCLUSIONS.

Banks Peninsula is considered a unique and very special ecological region in the world. The aim of the workshop was to evolve an ecological engineering strategy that could contribute to the facilitation of and support for the necessary economic activities of a vibrant, secure and healthy society at the same time preserving and conserving the unique Banks Peninsula ecosystems.

This workshop had limited time to address the issues concerning a very complex region and ecosystem. To make some progress it was generally agreed that landscape products and services along with tourism were likely to be key for the continued well-being of the Peninsula communities. Having said this, it was acknowledged that further discussion should take place to confirm this view. There may be alternative and/or additional strategic options for the Peninsula's sustainable development.

Based on this the key findings of the workshop can be summarised as:

Landscape, trees and water

- **Idea:** To demonstrate the various ecological engineering ideas, tools and technologies that may help to resolve some of the engineering problems experienced by the Banks Peninsula this workshop recommended that a demonstration park be established. This park could, for example, demonstrate integrated planning of water (by employing eco-technologies and engineering) , landscape and vegetation resources and along with social and cultural wellbeing. This park would serve as a model for the local communities for integrating economic activities with local ecosystems.

- **Approach**: Differentiated multi scale planning with stakeholders
- **Space Concept**: Shared private-public ownership concept ("sustainable commons")
- **Dissemination**: Attached education program

Tourism and education

- **Idea**: Tourism initiatives owned by the local people
- **Institution**: Working group to identify local needs and benefits.
- **Actions**: Festivals, bus tours, web-page, partnership programs, case studies
- **Finances**: Taxes (Eco-Toll-Gate), Sponsorships, "Adopt tree", etc.

Community process

- **Internal Input**: Stakeholder platforms (tangata whenua, farmers to townies, etc.) and focus groups on the community level as well as on the peninsula level to generate development processes.
- **Procedure**:
  - Defining issues, values, visions, question
  - Identifying similarities and differences
  - Developing tools (e.g. Local Agenda 21)
- **External Input**: Developing innovation networks. Hiring professional facilitators and experts.

CHAIRMAN'S COMMENT (NOT DISCUSSED IN THE WORKSHOP)

This workshop has reinforced the view that the Banks Peninsula has very special and unique qualities with the potential to serve local residents and visitors well into the future. The Peninsula clearly offers opportunities for the development of landscape services and products that will benefit local residents, Christchurch city and the Canterbury region.

There is concern that if the region and its resources are not managed and developed in an ecologically integrated manner, the ongoing opportunities and benfits may not be realised and sustained. The ecological engineering approach is to ensure that we design and build our facilties and infrastructures so the both nature and human communities will benefit now and into the future. How we might move beyond the "talk" to make this happen has been outlined by this workshop. The key interconnected recommendations are:

1. Facilitated identification of local issues and problems and formulation of ecologically integrated development ideas - using informed community participation processes such as the stakeholder platform.
2. Education through the demonstration of real ecologically engineered projects.
3. The establishment of innovation networks.
4. The establishment of an appropriate financing structure for ecologically integrated initiatives.

This workshop recommended a demonstration park to address the second point mentioned above. The other option to consider would be to effectively declare the whole of Banks Peninsula a demonstration park for ecologically integrated (and therfore sustainable) development. Some initiatives already exists on the Peninsula that could be used to demonstrate ecologically integrated projects, e.g.; the formation of the Conservation Trust, the installation of composting toilets and remote area power systems, conservation farming, and eco-tourism. Such an approach would also offer marketing benefits for the Banks Peninsula.

OUTPUT AND RECOMMENDATION

The key output from this workshop has been this report.

It was recommended that this report be made available to the Banks Peninsula community, to interested individuals, to key Banks Peninsular stakeholders, to the regional and district councils and the other groups such as the BP Conservation Trust.

It is easy to identify an area for conservation but then what? We do live in the real world and have to make a living from our chosen activities

Pam Richardson, BP farmer and member of the BP Conservation Trust

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