A Tangata Whenua Perspective on Sustainability using the Mauri Model

Towards decision making balance with regard to our social, economic, environmental and cultural well-being

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Introduction

Local government authorities are now guided by the Local Government Act, 2002. This legislation prescribes that in their activities Regional and Territorial Authorities are to provide for democratic and effective local government and play a broad role in promoting the social, economic, environmental, and cultural well-being of their communities, taking a sustainable development approach.

The Resource Management Act 1991, defines sustainable development as sustaining the potential of natural and physical resources 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.

These two Acts form, to a large extent, the basis upon which sustainability is considered as local governance occurs in New Zealand. Neither of these documents exclude the input of the Tangata Whenua (people of the land) but rather acknowledge and indeed reinforce the indigenous concepts of kaitiakitanga (guardianship) and whakatipuranga (future generations). Nevertheless, resource management decision making in New Zealand has often been at odds with Tangata Whenua values and thinking.

To gain an understanding of this, it is necessary to consider the issues influencing the contemporary paradigm within which decisions are currently made. Trust is an issue because there is suspicion and fear of the indigenous values and practices of the Tangata Whenua and these are not very well understood. Power is also an issue, as the customary control of resource management decision making has resided entirely with local government and there is a reluctance to undermine that perceived authority by sharing power with the indigenous people.

Further, the goodwill of the Tangata Whenua has a reciprocal expectation of trust, of power sharing and a significant role in decision making. The loss and erosion of indigenous knowledge through lack of use or relevance, and the isolation from its origins in the physical environment is a huge threat to the cultural identity of hapu. Finally the Tangata Whenua, the people of this land have nowhere else to go. Nowhere else in the world is it more appropriate to assert Te Arawa cultural values and beliefs in relation to the environment, than within the Te Arawa rohe.

With the recent return of assets such as the Waiariki (Rotorua Lakes) to the Te Arawa people, and recognition by resource management decision makers in the Bay of Plenty region of the need to include the Tangata Whenua perspectives, social tensions are developing between the general public and Tangata Whenua at a regional level. Similarly the foreshore and seabed debate has created significant social tensions at a national level. These social tensions can be played upon by politicians for personal gain or alternatively the opportunities created can be used to educate. This conference provides an opportunity in the context of sharing an understanding of a different perspective.

This paper provides an enhanced understanding of the concept of Mauri, the basis of Tangata Whenua traditional belief and practice in relation to the environment. This understanding is then aligned with contemporary resource management thinking using the Mauri Model. Two examples are provided illustrating how the Mauri Model can be applied to contemporary resource management decision making.

Human Waste

The issue of appropriate treatment and disposal of human waste streams has been the focus of research for more than one hundred and fifty years. When water based transport and disposal of human effluent was being adopted in the 19th century, a paper by scientist James Prescott Joule in 1855, proposed that waste from London should not be dumped into the Thames through open drains, but collected in tanks under each street, and transferred by force-pump to carts to take it to the rail system, and to the farms.

Early in the 20th century, the British Royal Commission into Sewage Disposal (1898 to 1915) recommendations led to the adoption of a narrow range of sewage options approximately a century ago on the other side of the world. This has formed the basis for predominant practice in many countries of the world including New Zealand. This approach continues to be promoted as the most efficient and effective approach for dealing with human effluent today.

Why is this the case, when this practice is considered to be abhorrent by the Tangata Whenua. Does the consideration and adoption of land-based disposal of human effluent in recent times really indicate that much progress has been made or that much effort has even been applied to developing the alternatives available? Is this as far as alternative approaches to the disposal of human effluent have come in 150 years? The critical issue for Tangata Whenua, the use of water in association with human waste has still not been acknowledged or understood.

The intermediate solution, discharge of treated human effluent onto land at Rotorua, Taupo and Levin attracts a significant amount of scrutiny from mainstream municipal engineers. Proponents of the continued discharge of treated human effluent to water bodies are quick to point out problems that have been experienced with these land-based systems. What is not acknowledged however is that there are no water-based disposal examples in New Zealand that have not had problems in the past and several territorial authorities continue to fail to meet the minimum environmental standards required in their resource consents. Certainly most of these treatment plants have breached resource consent conditions unintentionally as a result of plant failure or loadings that exceed their design capacity.

A New Zealand wide survey of Local Authority approaches to municipal wastewater treatment and disposal (Burkhardt Macrae, 2002) found that increasing pressure from public and government is driving the industry to provide higher standards of treatment and more appropriate methods of disposal. Trends have been identified that indicate increased use of land-based treatment and disposal with a move away from discharges to water bodies. In particular the research identified that planned flow discharged to ocean will reduce by 12%, flow discharged to rivers, lakes and estuaries will reduce by 27%, and flow discharged to land or wetlands will increase by 300% to one fifth of total surveyed flow by 2010.

A recent study of international trends (18 countries) in stormwater management (Marsalek & Chocat, 2002) suggests that there is widespread acceptance of a holistic approach to stormwater management promoting sustainable urban drainage systems.

> "All national reports share a common vision with respect to the basic philosophy of coping with stormwater problems – by means of a holistically based management, rather than continuing the traditional expansion (or neglect) of urban drainage systems."

This study goes on to conclude that best management practice incorporates:

- Preserving water balance
- Preventing entry of sediment and pollutants into stormwater
- Emphasising source controls and preventing runoff generation
- Green infrastructure such as ponds, wetlands, swales and infiltration sites
- Public awareness, education, and participation

Recognition of the real value of potable water is being reflected internationally in project case studies promoted by the World Business Council for Sustainable Development. These studies feature several examples where significant economic savings have resulted from reductions in potable water use on industrial sites through collection and use of stormwater, separation of wastewater streams, and treatment and reuse of greywater (kitchen, laundry and bathroom waste). This approach stems from the realisation that waste streams from industry should be viewed as a mixture of the semi-processed raw materials that enter the process and therefore a recoverable source of some of those raw materials.

This approach is more consistent with indigenous thinking in that the Tangata Whenua have not traditionally considered waste streams as being useless, but rather that wastes of different types and activities involving waste had physical and spiritual attributes such as their associated tapu (sacrosanct nature) and could therefore have value in either context. The potential value of this approach to sustainability and decision making around waste management has been acknowledged in recent government strategy and policy.

The New Zealand Waste Strategy (Ministry for the Environment, March 2002) states;

> "Maori have a unique perspective and role in waste minimisation and management. They have **played an important role in pushing change in the area of wastewater treatment and disposal**… As New Zealand moves towards zero waste Maori are expected to become more active in waste management planning and waste prevention. **Decision-making must allow for direct Maori input into policy, standards and guidelines, monitoring and evaluation**, and iwi consultation in preparing waste minimisation and management plans.

However, while the government has stated a preference in terms of national strategy, adoption at the level of local governance has been very difficult and frustrating for both Tangata Whenua and local government leaders and administrators. This problem stems from the juxtaposed paradigms of municipal engineering on one hand and the Tangata Whenua values and beliefs on the other. Those promoting continued water-based transport, treatment, and disposal of human effluent do so from a paradigm of public health and safety. Faced with a choice between this and Tangata Whenua spiritual sensitivities it is not difficult to understand that resource management decision makers show a preference for the later.

What is needed then is a model that places the juxtaposed paradigms of municipal engineering and Tangata Whenua on a level playing field, and allows identification of the issues that are most contentious but also and more importantly identifies the issues upon which the two paradigms are in agreement. This common ground is sought as the basis for a positive relationship between the local authority and the Tangata Whenua that also involves municipal engineering.

It is possible to develop resource management policy and engineering design solutions consistently. The reality however is that the choice of what options are investigated and developed further is strongly influenced by a practitioners background. Professional experience has identified the need for a model that can be used to identify and explain the different planning and engineering priorities that result when practitioners develop solutions from different cultural backgrounds to the Tangata Whenua.

In searching for solutions the potential contribution of the Tangata Whenua is considered in this paper in the context of the Mauri Model. This model can assist decision making by constraining personal bias and therefore ensuring that the choice of solution is balanced with regard to our social, economic, environmental and cultural well-being.

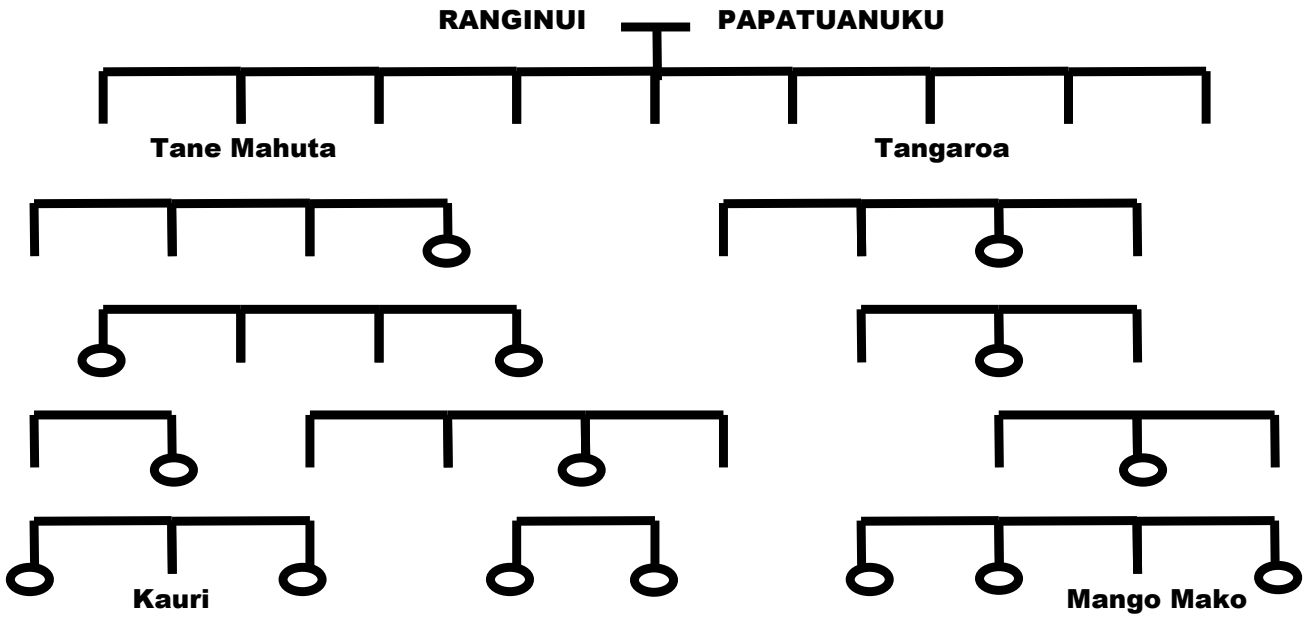
What is Mauri?

The concept of mauri is central to Tangata Whenua belief regarding the environment. Mauri is the binding force between the physical and the spiritual aspects. When the mauri is totally extinguished, this is associated with death.

Mauri is the essence that has been passed from Ranginui (Sky father) and Papatuanuku (Earth mother) to their progeny Tane mahuta (deity of the forests), Tangaroa (deity of the oceans) ma (and others), and down to all living things through whakapapa (genealogy) in the Maori notion of creation. Mauri is considered to be the essence or life force that provides life to all living things. Water also has mauri. The concept is central also in the context that whaikorero (speech making) is often begun with the phrase *Tihei Mauri Ora.* This is literally interpreted as the 'sneeze of life'.

The concept of mauri was incorporated into the Resource Management Bill however did not progress through to New Zealand legislation. This was argued on the basis that the New Zealand legal system could not cope with this concept at that time. Part II Section 7 of the Resource Management Act 1991, *Other matters* now includes 7(d) *Intrinsic values of ecosystems* which replaced *The mauri of ecosystems* in the Resource Management Bill that first went before parliament.

Mauri also establishes the inter-relatedness of all living things. The linkages between all living things within the ecosystem are based on the whakapapa or genealogies of creation. This establishes the basis for the holistic view of the environment and our ecosystem held by the Tangata Whenua.



Sustainability Models

Triple bottom line reporting is now widely adopted and understood by large corporations that have identified the value of positive public and shareholder perception of their businesses as responsible corporate citizens. Triple bottom line reporting requires organizations to disclose their performance in terms of the environmental and social impacts of their business in addition to their economic performance in annual reports.

Further refinement of this model has suggested that rather than reporting these outcomes separately, a corporation's economic, environmental and social responsibilities are inextricably linked when considered in terms of strategic planning timeframes. The relationship between these aspects has been modelled as three concentric circles that represent the economy as a subset of society, which is itself, a subset of our physical environment. This model is based on the understanding that our economy operates within society and that our social structure is established within our environment and is therefore dependent upon it for our continued survival.

The Local Government Act 2002 takes this thinking a step further, when it prescribes that in their activities Regional and Territorial Authorities are to provide for democratic and effective local government and play a broad role in promoting the social, economic, environmental, and cultural well-being of their communities, taking a sustainable development approach.

These criteria are identified also in the Sustainable development for New Zealand programme of Action 2003 with regard to achieving sustainable development. Specifically the programme requires our taking account of the social, economic, environmental and cultural effects of our decision making. These four criteria have been chosen as the basis for a sustainability measure using the mauri concept.

The Mauri Model

The mauri model is based on four circles that represent these interactive aspects of our ecosystem. These have been redefined as the impacts on the mauri of the family/whanau (economic), the community (social), the clan/hapu (cultural), and the ecosystem/taiao (environment) respectively. The relative importance of these aspects can be addressed independently by all users by choosing a weighting that is applied to each aspect before scoring is completed.

The Tangata Whenua evaluation is based on whether the option is identified as enhancing, diminishing, or neutral for the mauri of the aspect being considered. As mauri is a measure of the life-force in a particular living thing, then how the mauri is effected is a direct indication of the long-term viability and hence sustainability of a particular option from the Tangata Whenua perspective. The impact on the mauri is assessed independently from the weighting applied to each particular aspect.

In a similar way Pakeha communities can also use the model defining their own interpretation of what sustainability should reflect in each context based on their own values and beliefs. This approach is not new as a framework for assessment of sustainable urban water management proposed by Hellstrom et al (2000) uses five main categories of sustainability criteria. These are:

- Health and hygiene criterion – risk for infection
- Social and cultural criterion - acceptance
- Environmental criteria – eutrophication, spreading of toxic compounds to water, spreading of toxic compounds to arable soil, use of natural resources, life cycle assessment etc.

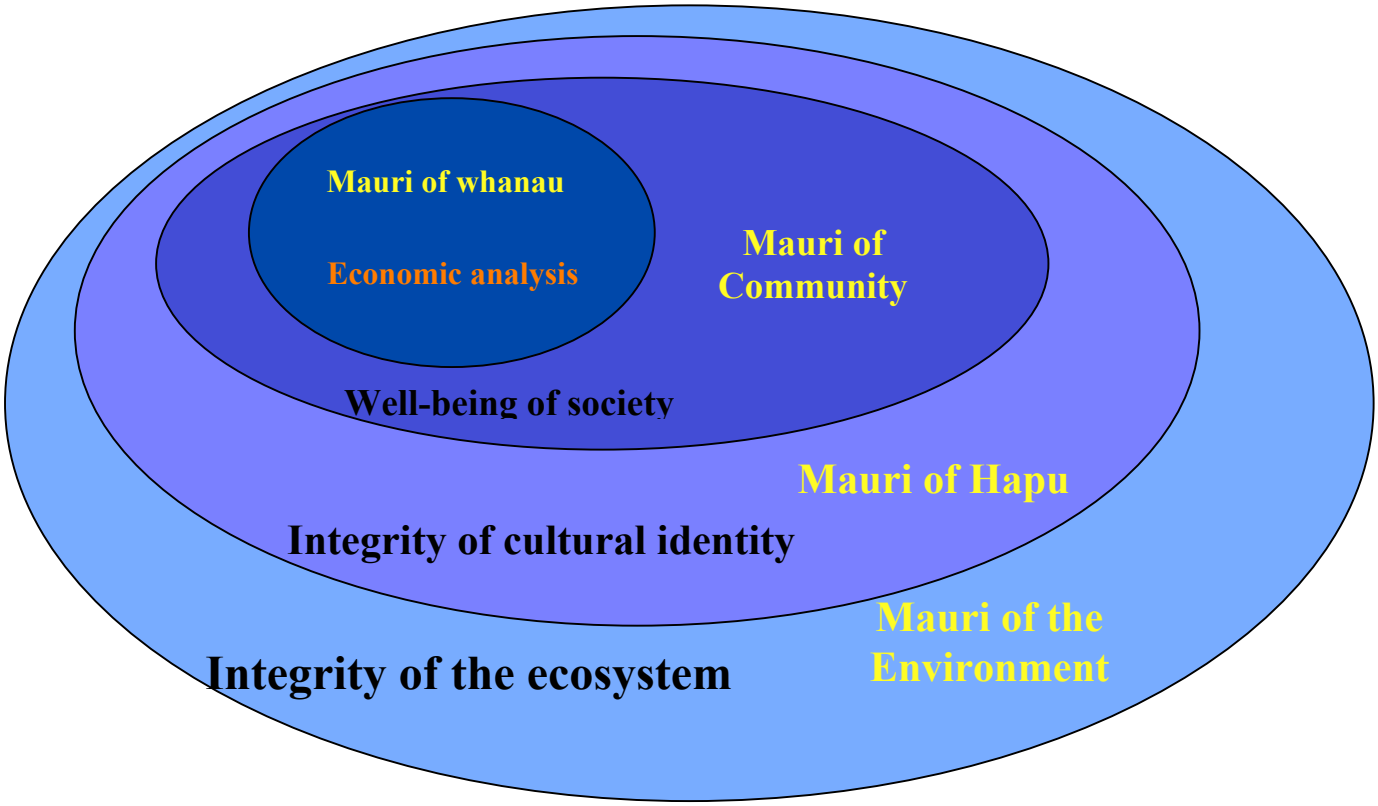
- Economic criterion – total cost, cost-benefit analysis
- Functional and technical criterion - robustness in terms of functional risk analysis

Hellstrom et al emphasised that their framework does not include all possible aspects of sustainability and that the main categories were chosen to simplify analysis and assessment. Further the categories were not all of equal importance. This framework was expanded by MWH NZ Ltd to accommodate Tangata Whenua perspectives by consideration of Maori cultural values as a separate criterion in their assessment of Sustainable Techniques for the Provision of Infrastructure for Urban Development to Papamoa East.

The Mauri model takes a similar approach incorporating the health and hygiene criterion within consideration of mauri of the community, and incorporating functional and technical criterion within the economic criterion. This has been done to better align the model with New Zealand policy on sustainability. Technical applicability is considered to be fundamentally a function of cost.

There are five ratings for the mauri of each aspect. A rating of 4 is considered a viable practice, which enhances that mauri and is therefore totally sustainable. A rating of 2 is neutral, and a rating of 0 means that the practice is considered to be significantly diminishing that mauri and therefore unsustainable.

The Mauri model is represented diagrammatically below:



Weighting of Aspects

The relative weighting for each aspect has been chosen based on the Tangata Whenua understanding of traditional practices or tikanga and how these relate to our ecosystem. The environment is considered the all-encompassing aspect being assessed and is given priority over the other aspects. In particular the environment encompasses culture as demonstrated by the tikanga of rahui. A rahui or prohibition is placed on an area or resource when its mauri is being jeopardised by overuse or some other significant event. This process prioritises the environment ahead of the other aspects until the mauri of that area or resource has recovered.

In terms of hierarchy the mauri of the hapu (clan) takes precedence over that of the community and the whanau (family). This is because of the relationship that exists between the Hapu and a specific geographic location or rohe. This relationship is permanent and established by whakapapa (genealogy) in the context of the Hapu practice of identifying with geographical features of their specific environment. This relationship is eternal and the relationship to the landscape is central to the identity and mana (prestige) of the hapu. The relationship that the community, or a whanau has with the environment is more transient than this traditional relationship.

The mauri or well-being of the community takes precedence over that of the whanau. This is demonstrated in the sacrifices made by whanau to ensure the security of the community and hapu. Examples of this are the commitment of time and resources made by our kaumatua (elders) to counter the impact of external influences on the environment.

Criteria for Mauri Assessment

The mauri of the Environment

This is effectively measuring the integrity of our ecosystem. The mauri of the ecosystem is directly impacted upon by the state of the environment. The state of the environment is considered by the Tangata Whenua to reflect its mauri. This includes all land, air, flora & fauna, and water - nga taonga I tuku iho (those treasures handed down). This holistic perspective of indigenous peoples is supported by the Resource Management Act 1991, in that clause 7d) identifies the intrinsic values of ecosystems as being a matter for which practitioners shall have due regard.

Okawa, Rotoiti viewed from State Highway 33 looking north.

The mauri of the environment is therefore measured in the context of both the physical health of the environment and its spiritual integrity. Consideration of the mauri in this context is related to the geographic boundaries established by a water catchment, typically the rohe of a specific hapu, and thus by definition includes consideration of impacts on the land, air, fauna and flora as well as the water within the rohe.

Therefore the effects of a specific practice need to be considered in terms of the effect on the waters within a specific catchment, and also the related impacts on harbours and the moana (seas). The Tangata Whenua have stated that water is a taonga (treasure) over which they have kaitiakitanga (guardianship). Further cross rohe transfer and disposal of wastewater is a serious concern.

The mauri of the Hapu

Rotoiti and Matawhaura viewed from the marae atea of Taurua marae.

The mauri of the hapu is measured in a variety of ways;

1. The state of the environment that a particular hapu have mana whenua over reflects on their mana and their authority to continue in the role of kaitiaki for that rohe or catchment. This is reinforced in clause 7(a) of the RMA 1991. The Waitangi Tribunal Kaituna Report (Wai 4) documents the challenge made by Ngati Pikiao to prevent the discharge of sewage into the headwaters of the Kaituna River in 1981. The Tangata whenua have stated that the actions to protect the waters of the Kaituna at its source shall be continued along its course to its connection with the moana. Further the mauri of the hapu is related to the mauri of the moana.

2. The condition of the environment that is passed on to future generations is most important and can be demonstrated in whakatauki (proverbs) referring to nga whakatipuranga (decendents).

3. The state of the environment also influences the ability of a hapu to manaki (respect) their visitors both on their marae and in their homes. Case law regarding Te Runanga O Taumarere vs. Northland Regional Council (NZRMA77) demonstrates the importance of this practice.

4. Maintenance of the knowledge base for the hapu is linked to the physical landscape and its appearance as the whakapapa of the hapu includes the place names within the rohe. Refer TV3 Network Ltd v Waikato District Council 1997 (NZRMA 539). The mauri of areas of cultural significance is to be protected, therefore a preference for no infrastructure on ancestral sites.

5. The ability of tohunga (experts) to teach traditional practices associated with weaving, customary food gathering, or carving is also dependent on the resources being available from the rohe. This was raised by Te Runanga O Ngati Pikiao v Minister for the Environment in 2000 (NZLR). The mauri of cultural resources shall be protected.

These factors among many others impact directly on the mauri of the hapu and are relevant in any assessment of sustainability. This aspect of an analysis should always be carried out by the Tangata Whenua.

The mauri of the Community

The community at large includes pakeha and taurahere (Maori from outside the area) as well as the Tangata Whenua. The general health, safety and wellbeing of the community is important in this context and includes the ability to accommodate future needs such as land availability to satisfy housing demand or create employment opportunities.

Rotorua western shores from Hamurana Road.

Community wellbeing includes most aspects of day-to-day life such as recreational access to parks, forests, beaches, reserves, rivers, lakes, estuaries and the ocean or opportunities for employment. This aspect of wellbeing is reasonably well represented by Local Authority decision making in their current capacity of providing local government although historically this has taken place in a relatively narrow consideration of issues that relate to the community at large.

Rotorua District Council water safety indicator State Highway 33 before Okawa / Mourea.

The mauri of the Whanau

This is a measure of the direct personal effect that a specific technique will have. The way that this is perceived varies from whanau to whanau. The relevance of the state of the environment and the status of the hapu are taken into account under these specific considerations. The health and well-being of the whanau are taken into account within the context of the mauri of the community. Thus the direct personal effect is how the whanau or family is affected and this is primarily measured in economic terms in today's world.

Therefore it may be considered as the impact of infrastructure on the individual;

1. as levied directly in terms of individual contribution, in terms of Development Impact Fees for example, towards the capital cost of a reticulated water supply for an existing community
2. through a portion of rates used to repay long term borrowing by local government
3. as a component of the purchase price for a section in a new subdivision.

This tends to be the level of analysis best understood when considering the options available for a technological solutions for an infrastructure requirement.

Mauri model presentation to Sustainability in Engineering and Science Conference 2004
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Analysis using the Mauri model

Assessment of Sustainable Infrastructure Techniques for Urban Development to Papamoa East

An analysis of sustainability from the perspective of the Tangata Whenua using the mauri model has demonstrated that there is general agreement with regard to the sustainability of techniques associated with water supply technology and best practice stormwater solutions being used in Europe and considered for adoption in New Zealand.

Comparison of stormwater management techniques demonstrated a high level of agreement with the exception of reticulated stormwater and disposal of treated stormwater to water bodies. Both of these options rated poorly for sustainability using the mauri model. This demonstrated the relatively limited recognition of the impacts that the concentrated disposal of stormwater to water bodies has. These impacts interfere significantly with the local receiving environment during standard conditions however have catastrophic impacts in flood events due to the flushing effect through that ecosystem.

Comparison of the assessment results for the wastewater treatment and disposal techniques demonstrated some agreement also however a general trend is that while the mauri model rated composting toilet systems higher in terms of sustainability, it also rated all reticulated systems lower, and in particular the traditional reticulated pipe in pipe out approaches.

The Waiariki Lakes Situation

Discussion regarding deterioration in the mauri of the Waiariki lakes with several Ngati Pikiao kaumatua and members of the Te Arawa Trust Board identified these primary contributors to the changes they had observed in their lifetimes;

- The introduction of trout over 100 yrs ago. In 1908 the Arawa people presented a claim to the Native Land Commission (Stout-Ngata) concerning the use of their main lakes in the Rotorua District. The Commissioners commented as follows "The trout were placed there as a great attraction to tourists and others visiting the Thermal Springs District. That the Maoris have suffered a grievous loss by the destruction of the indigenous fish cannot be denied." The effect of this action diminished the mauri of the environment, the hapu and whanau however could arguably have resulted in a net enhancement of the mauri of the community at large.
- Land development for farming in the early '50s resulted in the wholesale clearance of huge areas of native vegetation with major consequences for the characteristics of the Rotorua, Rotoiti and Rotoehu catchments. The effect of these actions destroyed the mauri of the forest and diminished the mauri of the catchment and lake ecosystems. This also greatly diminished the mauri of the hapu however could have been considered to have resulted in a net enhancement of the mauri of the farmers' families and the community at large.
- Superphosphate application increased from the early '50s with corresponding increases in nutrients entering the lakes. This again impacted upon the mauri of the environment and the hapu of Te Arawa.
- Reticulation of Rotorua township sewage occurred in the late '50s with a concentrated discharge at Sulphur Point from the early '60s with corresponding increases in nutrients and suspended solids entering the lakes. This treatment of Rotorua as the receptacle for human effluent further diminished the mauri of this ecosystem but more importantly made the lake food sources inappropriate thus directly impacting upon the mauri of the hapu around the lake. It was said at that time that the food bowl of Te Arawa had been changed into the toilet bowl for Rotorua township.
- Lake margin development from the early '60s as holiday baches spread along the lake shores using septic tanks for effluent treatment had a cumulative detrimental effect on the mauri of

the lakes. These systems are not suited to holiday accommodation or the increased loads on these systems associated with holiday activities.

- Modification of the Ohau channel in the early '80s to increase water flows from Rotorua into Rotoiti also increased the flow of nutrients from Rotorua into Rotoiti particularly at times when resuspension of sediment occurs in the shallows adjacent the channel entrance as a result of wind generated wave action. This impacted upon the mauri of the Rotoiti ecosystem.
- Flow control at Okere, the headwaters of the Kaituna in the late '80s resulted in altered flow patterns in Rotoiti, the loss of beaches due to artificially high lake levels, and ineffective septic tank soakage systems on the lake margins. This impacted detrimentally upon all aspects of the mauri model.
- Rafting activities on the headwaters of the Kaituna at Okere are desecrating urupa along the river banks and permanently destroyed historic nesting grounds for kotuku.
- The recent proliferation of introduced black swans on lakes Rotorua and Rotoiti reducing water quality for swimming and the aggressive behaviour of swans towards other lake users.

In all cases the integrity of the Waiariki ecosystem has been compromised and resulted in lakes with diminished mauri. The mauri of the hapu in the Waiariki region have also been diminished in the context of interruption of traditional practices, compromised mana, and marginalised ability to manaki guests with the offering of traditional foods. The mauri of the community has also been impacted as recreational use of the lakes is restricted due to public health concerns regarding water quality.

Early estimates of remediation costs associated with lake clean-ups are in the order of hundreds of millions of dollars. Whether funded from national funding or local rates, the costs of remediation will impact directly upon the mauri of whanau that have received little benefit from the previous management of the Waiariki catchment.

Discussion

The primary driver in our contemporary society is capitalism. Environmental issues are a relatively recent concern, and social and cultural considerations even more so. This is demonstrated by the fact that historic decision-making has been based on economic cost/benefit analysis. New models allow the factoring in of environmental impacts in the context of the cost to avoid, remedy or mitigate the negative effects of a particular development activity. Robust methods for effectively incorporating the social and cultural impacts of a particular development activity have yet to be created.

Urban development and associated infrastructure techniques have generated the momentum that allows denial of the true carrying capacity of our natural resources. Indigenous perspectives of the Tangata Whenua suggest that this will continue to be a problem until our collective cultural paradigm matures. With strong leadership, approaches can be adopted that reverse the inconsistent direction chosen in the 1900's.

Conclusion

Our contemporary way of life tends to prioritise economic well-being ahead of the other three criteria. Recognition of the relative importance of the environment for our continued existence is improving, however the connection between activities in the environment and social and cultural well-being is still not very well understood.

The case studies referred to identify the contrasting results that are likely when Tangata Whenua values are used as the decision-making criteria. In particular the new challenge is to develop general

understanding of the mauri model further to enable the inclusion of Tangata Whenua values and priorities in resource management decision-making for the future.

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