

Decision making at the Interface: Mauri and its contribution to the Rena Recovery

Authors: Te Kipa Kepa Brian Morgan, Tumanako N. Fa'au and Robyn Desma Manuel

Abstract

Throughout the 1980's and 1990's, a consistent theme of indigenous opposition reported by the Waitangi Tribunal introduces a spiritual and cultural perspective of environment that hitherto had not been considered in resource management decision making in Aotearoa New Zealand. Earlier claims made to the Waitangi Tribunal; Motunui, Kaituna, Manukau, Orakei, concerned themselves with engineering projects that were denigrating the water ecosystems and environment. Indigenous concepts raised in the Tribunal hearings for these cases included; the retention of intrinsic values / mauri; 'Māori' spiritual and cultural values; kaitiakitanga and manākitanga; and nga whakatipuranga / future generations of descendants.

These early claims accumulated as a series of abandoned engineering projects that represented a significant waste of engineering effort, expended with an inadequate understanding of the full social and cultural context within which these projects were being proposed. There were also significant costs for the Hapū and Iwi forced to delay other commitments to challenge poorly thought through projects. Settlements for these successful Treaty claims made necessary the introduction of legislation that incorporated the lessons being provided from Indigenous Knowledge / mātauranga Māori.

The Mauri Model acknowledges the valuable insights embodied in mātauranga Māori, and indicates how diametrically opposed cultural perspectives can be better recognised and engaged, even synthesised to facilitate better resource management decision making. This paper shows how the Recovery of the mauri to its pre-Rena state can be facilitated through the combination of scientific and indigenous knowledge, and can produce decisions that are robust and defensible from multiple perspectives.

Introduction

Following the grounding of the Rena on 5 October 2011 and the subsequent oil spill and release of containers and container debris, the Ministry for the Environment prepared the Rena Long-Term Environmental Recovery Plan [1]. The plan was launched on 26 January 2012, with the goal to “restore the mauri of the affected environment to its pre-Rena state”. The goal of mauri restoration is significant as it positions the environmental recovery in conceptual terms aligned to the aspirations of Tangata Whenua. The reference to mauri facilitates the recognition of important meta-physical considerations not otherwise included in conventional impact assessment and monitoring. Figure 1 indicates the location of the Rena.

The research objective is primarily to understand the most preferable strategies to facilitate the restoration of mauri impacted by the Rena stranding on Otaiti (see Figure 2). The research will also provide insights into the further development of the Mauri Model as an assessment tool in its application to disaster response decision making. The research will provide capacity for Iwi to make contributions based on their own mātāuranga in a way that can effectively influence decision making processes. This means positive change to local government and central government decision making from the Iwi perspective. The research adds a strengthened decision making context able to incorporate culturally relevant knowledge previously ignored in decision making based solely on a western scientific perspective.



Figure 1: Location Plan Showing Otaiti, Motiti, and the Bay of Plenty Coastline [12]

Kaitiakitanga is the active protection and enhancement of the mauri of ecosystems [3]. When mauri is defined as the life supporting capacity of the air, water and soil,

effectively the attractive force between the physical and spiritual attributes of something, the theoretical basis is created for relevance in terms of New Zealand legislation and a means to measure and evaluate impacts. The Mauri Model Decision Making Framework is well suited to this challenge and is to be adopted as the methodological basis for this research. The Mauri Model uses a participatory action research approach that involves all stakeholders as active contributors and owners of the research outcomes. This approach does not constrain the actions of the Tangata Whenua in their roles as kaitiaki, but rather seeks to provide additional insights into how the challenge created by the Rena grounding can be addressed.



Figure 2: The Bow Section of the Rena Remaining on Otaiti 19 January 2013

The Rena Long-Term Environmental Recovery Plan makes the following statement: “Toitu te Moana a Toi, Toitu te Iwi”. Thus when the mana of Te Moana a Toi is restored, so the mana of the Iwi is strengthened. The effective implementation of the plan is critical to restoring the ecosystem’s mauri to its pre-Rena state.

Mauri Model

The Mauri Model Decision Making Framework [4] forms the basis of the mauri analysis proposed in this research. The Mauri Model uses a series of steps to provide insights into the drivers of different worldviews, how these drivers influence the selection and prioritisation of indicators used in decision making. It is possible therefore to determine how different worldviews can best be accommodated and involved within a collective and inclusive decision making process.

The eight steps are;

1. Analytic Hierarchy Process and Likert Scales determine dimension ranking;
2. Ranked results are normalised and converted to percentage weightings;
3. Performance indicators for each dimension are selected;

4. Each performance indicator is assessed for sustainability (mauri-ometer);
5. Average scores for each mauri dimension are determined;
6. The sensitivity of each result to different worldviews is analysed;
7. Options for solutions are evaluated;
8. A preferred option is selected or new options are generated.

The series of steps comprise two stages each involving an assessment process. The first identifies differences in worldviews and values. This stage of assessment has previously been conducted for other projects involving the same stakeholder groups. The value of this stage is that it helps participants understand the limitations of their worldviews, essential in terms of fairly representing the values of others. The Analytic Hierarchy Process (AHP) is a multi-attribute decision support process [5] and also guides the selection of performance indicators. AHP is used to clarify relationships between dimensions with dissimilar attributes that defy intuitive direct comparison.

Next the focus shifts to the actual problem definition, and selection of performance indicators. Potential solutions can be assessed using the mauri-ometer (Figure 3) which gives an absolute determination of the impact upon mauri of each indicator. The purpose of the mauri-ometer assessment is to determine long-term trends, and whether an option is identified as fully restoring, enhancing, maintaining, diminishing, or denigrating the mauri of the indicator being considered. As mauri is the measure of sustainability, how the mauri is affected indicates an option's viability and sustainability. Five ratings for the mauri of each dimension are shown in Figure 3.

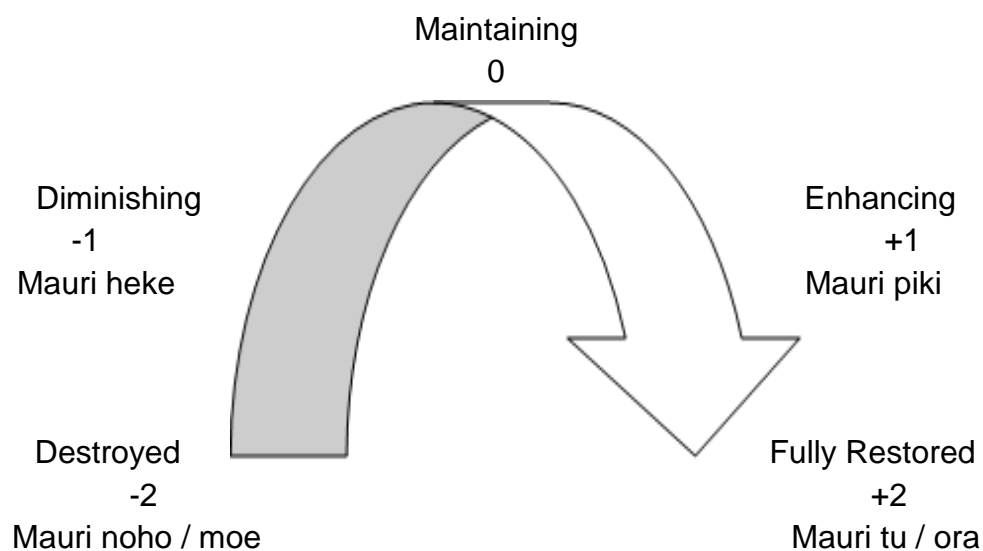


Figure 3: Mauri-ometer for Indicator Assessment

The rating (raw score) for each indicator is finally multiplied by the relative dimension weighting, summed, and then divided by the number of indicators used in each dimension, to indicate the sensitivity of the result to different worldviews.

The choice of mauri as the base metric for assessments, and the sequence of steps, is deliberate. Mauri is the binding force, the power of the gods [6], the fusion that makes it possible for everything to exist, by holding the physical and spiritual elements of a being or thing together in unison. When actions impact negatively upon the mauri of something, this essential bond is weakened, and can potentially result in the separation of the physical and spiritual elements resulting in the death of a living thing or alternatively the loss of capacity to support other life.

Analysis of the Rena Mauri Restoration and consideration of the sustainability context of this project, indicate that it would be prudent to adopt a decision making framework that can accommodate different and potentially opposed culturally-based worldviews. Given the responsibilities held by the Rena Recovery Team on one hand, and the traditional responsibilities of the Tangata Whenua in terms of responsibilities of kaitiakitanga (enhancing the mauri of all things), the Mauri Model approach is considered as ideal approach to identify and more accurately define the most acceptable solution(s).

The Mauri Model has been applied to recent research that contributes contexts of understanding that will help anchor and inform the participatory action research process.

- Following the Christchurch earthquake in September 2010, four final year research projects evaluated the implications for wastewater and water supply infrastructure replacement options [7]. This work indirectly assists with understanding the disaster response component of the research.
- The Mauri Model DMF was used by two summer research interns over the recent summer vacation to investigate the restoration of Okahu Bay within the context of long term development impacts not dissimilar to the albeit short term impacts caused by the Rena grounding [8]. This work informs the application of the Mauri Model from a marine / estuarine perspective.
- The Mauri Model has been used to evaluate the remediation of contaminated sites such as Rotoitipaku at Kawerau [9] and the impacts of Fracking on the Blood Reservation in Ontario [10]. This work provides insights into how different remediation strategies can be assessed holistically to ensure that evaluation of options is based on all four mauri dimensions.

Therefore previous research where the Mauri Model has been adopted provides a strong basis from which to implement this research proposal successfully.

Research Methodology

The research is action based and participatory in nature. The research incorporates marae based wānanga and appropriate techniques following an established sequence that has been successful previously when dealing with reticulated wastewater proposals evaluating the impact upon Hapu in an assessment integrating

the environmental, social, economic and cultural impacts upon Mauri. The participating Iwi groupings will be led by Te Arawa ki Tai (Ngāti Pikiao, Ngāti Makino, Ngāti Whakaue, Waitaha, Tapuika, Ngāti Whakahemo and Ngāti Rangitahi).

This is the first time that the Mauri Model DMF has been applied to a man-made disaster recovery situation. In the context of Aotearoa New Zealand; the cultural dimension plays just as important a part in decision making as economic, social and environmental dimensions. Applying the Mauri Model allows the changes in Mauri to be accurately assessed over extended periods of time. The assessment helps to show the long term effects of the impacts on Mauri caused by the Rena in absolute terms.

The Rena disaster was seen and felt nationally, as well as gaining international attention. Decisions that the government make should be heavily scrutinised by the public and groups affected. It is imperative that research outcomes are shared in a timely manner before any major decisions are made, as long term problems will ensue if inadequate consideration is given to the cumulative impact upon Mauri that will occur.

In order to effectively engage with all iwi affected by the Rena disaster, digitisation of the Mauri Model DMF is being progressed and a web-based version has been developed. The digitised framework allows the Iwi groupings to progress their assessments independently and at their own pace. The staggered approach is expected to provide opportunities to hone the research teams thinking regarding each of the steps in the Mauri Model framework. The research is well positioned to incorporate an existing shellfish monitoring [11]; a partnership between Waikato University, Canterbury University, Te Whare Wānanga O Awanuiā Rangi and the BOP Polytechnic, which has created an extensive database tracking pollutant concentrations in the ecosystem since the disaster.

Discussion

The Rena was visited by representatives of Te Arawa ki Tai and the research team on 19 January 2013. The visit was undertaken under the supervision of Resolve, who hold the current contract for removal of the Rena debris from the wreck and Otaiti reef. This visit was the first time a group of iwi representatives had visited the site since the disaster. The Resolve contract only extends to the removal of Rena debris in water depths up to 20m and removal of the wreck above the water line.

The contractual limitation to only remove the visible parts of the wreck and debris indicate the prioritisation of cosmetic outcomes. This is evident as there are still containers with potentially toxic contents on board the Rena stern section on the seabed (approximately 60m depth) and in the debris scatter zone. These containers are easier to recover than parts of the wreck and debris from on Otaiti due to the complications and risk created by surface conditions and localised currents and surge. While the containers are at a depth greater than 20m, which necessitates

decompression procedures for divers, the containers are less than 1/3 the mass of the sections of wreck currently being removed in more challenging conditions. These actions and priorities suggests the prioritisation of a cosmetic approach, that is “out of sight, out of mind”, rather than recovering the potentially dangerous cargo, and minimising the harmful effects of more heavy metals, oil and toxic chemicals leaching into the water.

Current wreck recovery efforts for the Rena have been slow and sporadic due to the unpredictability of the weather at sea. High winds and currents can be dangerous for divers, who require relatively calm conditions to work in given the close proximity to the reef and the wreck. Recovery efforts more distant from Otaiti are less sensitive to weather conditions and would therefore allow greater productivity.

To date Māori have been given a limited role to participate in the recovery process. The recent visit was also the first opportunity to conduct karakia intended to aid the meta-physical recovery alongside the physical changes occurring. Limitations hampering active Iwi involvement and meaningful engagement are not conducive to the goals stated in the Government’s recovery plan.

Preliminary Findings

A preliminary Mauri-ometer analysis has been conducted during a workshop with Te Arawa ki Tai representatives. The analysis looked at the change in mauri – using the Mauri-ometer over a period of one hundred years (1911-2011). The knowledge and experience of those who have lived in the area was incorporated in the analysis – allowing a first-hand account into the changes in mauri to be included, strengthening the results that are produced from the assessment. The analysis showed the change in ecosystem mauri (environment), whanau mauri (economic), hapori mauri (social) and Te Arawa ki Tai Mauri (cultural) over this time period. The results of these individual dimensions were combined to give the overall impact upon Mauri over this time period.

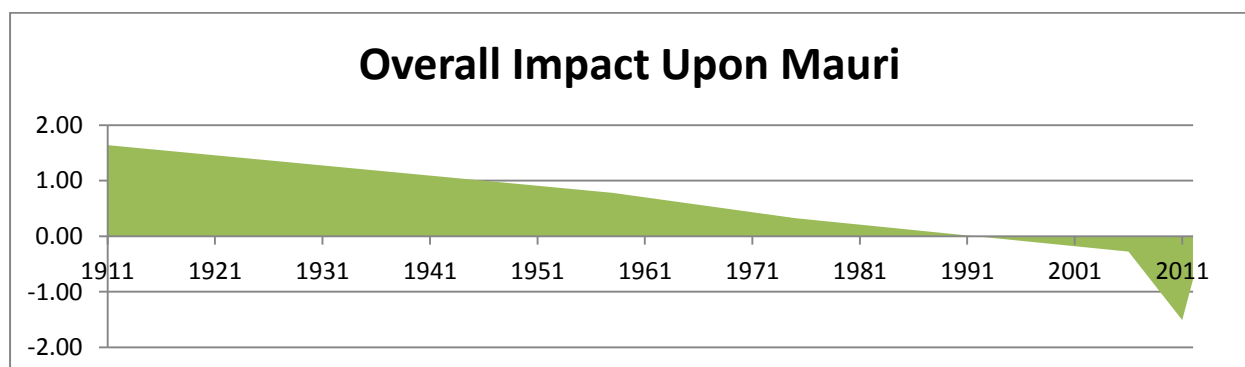


Figure 4: Graph showing overall impact upon mauri

The results show an overall decline in Mauri from 1911 to 2011. There is a sharp decrease in Mauri between 2006 and 2011. This can be attributed to the Rena running aground Otaiti, negatively impacting all Mauri dimensions. This assessment

especially highlights the change in Mauri from before the Rena incident occurred to what is currently being done to remediate the situation.

This preliminary assessment will be used as a baseline for future assessments – where the impacts upon Mauri due to the different recovery options for the Rena can be assessed and compared with the Mauri pre-Rena and the present state of Mauri as defined by stakeholders worldviews. This will provide a guideline for recovery – indicating the impacts of Mauri of the different recovery options – and effectiveness in restoring Mauri to the pre-Rena state.

Summary/Conclusions

The research objective is primarily to understand the most preferable strategies to facilitate the restoration of mauri impacted by the Rena stranding on Otaiti and consequent de-spoiling of Te Moana Nui A Toi. The restoration of the environment, and assessing the environmental and cultural impacts on Iwi and Hapū resulting from the Rena grounding is a priority issue for the five most impacted areas of Maketū, Mōtītī, Matakana Island, Mauāo/Pāpāmoa and East Cape. The work streams undertaken by Iwi and Hapu are already underway, and therefore some urgency is necessary in establishing the structures that will support robust research in the very near future.

From observations and meeting with salvage operations directors during the recent visit to Rena, it is apparent that removal of containers could be carried out in a faster and safer procedure than is currently employed. The current situation and quality of decision making has resulted in the ecosystem degradation evident in other studies. This highlights the need for a decision process that can adequately integrate all impacts upon the Mauri dimensions.

The Mauri Model DMF provides a basis of assessment of the environment affected by the Rena, using Mauri as the base metric for comparative assessment – allowing all cultural, environmental, social and economic factors to be included in the decision making framework. This is important as it allows matauranga Maori to be incorporated in the decision making process – especially as the Ministry of the Environment outlined the primary goal of the recovery effort is to “restore the mauri of the affected environment to its pre-Rena state” [2].

Initial phase has been expanded into digitisation of the Mauri Model DMF – giving Iwi and Hapu the tools to carry out their own assessments in a timeframe that suits them, allowing better understanding and wider usage of the decision making framework.

Endnotes

[1] Ministry for the Environment, "Rena Long Term Environmental Recovery Plan" in *Rena Long Term Environmental Recovery Plan*, (2011).

[2] Ibid

[3] Morgan, T.K.K.B., SARDELIC D.S., WARETINI, A.F, "Three Gorges Project: How Sustainable" in *Journal of Hydrology*, (2012).

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[6] Barlow, C, "Tikanga Whakaaro: Key Concepts in Maori Culture.", Oxford University Press Auckland, (1991).

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[12] Ministry for the Environment, "Coastline affected by the spill of oil from the Rena as at 1 November 2011.jpeg." in *Rena Long Term Environmental Recovery Plan*, (2011).