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Nga Pae O Te Maramatanga Research Contract: 12RF01 - Morgan K

CONTRACT 12RF01 FINAL REPORT

How can Mātauranga Māori contribute to the Rena disaster response?

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Introduction

Although the recovery efforts associated with the MV Rena Disaster are on-going, this report is provided in fulfilment of obligations for Ngā Pae O Te Maramatanga Research Contract: 12RF01 - Morgan K.

The research project titled 'How can Mātauranga Māori contribute to the Rena disaster response?' was initially prepared in April 2012 as a research proposal for consideration by Bay of Plenty Regional Council as part of the Government funded recovery plan. The research proposal was requested following the Rena Mauri Recovery Strategy Wānanga held in Tauranga 12 March 2012 with all impacted Iwi.

'To undertake an assessment of the environmental and cultural impacts of the grounding of the Rena on Otaiti with a particular focus on the impacted areas of Maketū, Mōtītī, Matakana Island, East Cape and Mauāo/Pāpāmoa, incorporating an assessment of the mauri of the impacted people within these areas and their environs.' (Rena Recovery Unit | Bay of Plenty Regional Council, 2012)

The research team were advised in May 2012 that the \$299,000 three year research proposal would not be funded on the grounds of cost and complexity. In particular the Rena Recovery Manager did not want the cumulative impact upon all four well-beings evaluated but rather that our research should simply focus on the cultural impacts in isolation. The suggested approach would have been a poor application of the Mauri Model and was inconsistent with the Wānanga discussions in March.

The research proposal was reformulated and submitted to Ngā Pae O Te Maramatanga for consideration as a time critical research need. That proposal was included in their 2012 research round and funded for the reduced timeframe of two years from October 2012.

The Ngā Pae O Te Maramatanga funding has facilitated the most significant contribution to clearly understanding the environmental, cultural, social, and economic impacts of the Rena Disaster. Our research findings are currently informing the selection and evaluation of options required to return the mauri to its pre-Rena state. Further these options can be differentiated according to priorities reflected by quantified world-views of various stakeholders. The key understanding that arises from this first phase of our research is that the expense and effort committed so far to the Rena recovery has contributed to reducing the negative impacts of the Rena grounding but no initiatives have yet been put in place other than by Tangata Whenua to enhance the mauri. The research project has been hugely successful although further work is still required.

It is now three years since the MV Rena ran aground on Otaiti. While research progress has been rapid over the past two years with significant interest in our work and a large quantity of research outputs that reflect this, the context of the research has also been dynamic and politically charged. Specific efforts have been made to counter politically motivated agenda regarding disaster recovery option selection and implementation. These agenda have been divisive of Iwi stakeholders affected by the MV Rena Grounding, and our strategic response has been to ensure that our research is shared in as many fora as possible in order to facilitate fully informed debate and analysis of the options available.

How can Mātauranga Māori contribute to the Rena disaster response?

The title of this research project asks the question; How can Mātauranga Māori contribute to the Rena disaster response? The research objectives for this project are central to the understanding necessary to make inclusive informed decisions about the remaining recovery effort. The Ministry for the Environment released the Rena Long-Term Environmental Recovery Plan on 26 January 2012, stating as its goal to “restore the mauri of the affected environment to its pre-Rena state” (MFE, 2012). The Government goal of mauri restoration is significant as it positions the environmental recovery in conceptual terms aligned to the aspirations of the indigenous peoples of the affected area. Therefore the research questions for this project are;

1	How can mātauranga Māori contribute to the Rena disaster response specifically, and the renovation of contaminated sites in a broader context?
2	If mātauranga Māori in tandem with available technologies and scientific knowledge are unable to fully restore the ecosystem mauri to its pre-Rena state, what interventions are necessary to avoid further disasters of a similar nature?
3	To provide an understanding of the following contributions of the Mauri Model: <ul style="list-style-type: none">i. How does the Mauri Model assist in the identification of the pre-Rena state of mauri?ii. How does the Mauri Model assist in determining the current state of mauri?iii. How has the mauri changed since the Rena ran aground on Otaiti?iv. What actions are required to return the mauri to its pre-Rena state?v. Are these actions differentiated on the basis of stakeholder worldviews?vi. Does the Mauri Model assist in empowering mātauranga Māori in local government and central government decision making?

Source: Research proposal ‘How can Mātauranga Māori contribute to the Rena disaster response?’

The mātauranga Māori contribution to the Rena disaster response

The Government in setting its goal to “restore the mauri of the affected environment to its pre-Rena state” acknowledged the submissions of Maketū-Te Arawa on the draft Rena MFE Longterm environmental recovery plan (Te Arawa, 2011). The Maketū-Te Arawa submission was made during the immediate aftermath of the Rena grounding during the clean-up response and at a time of considerable uncertainty as the MV Rena hull was separating and spilling containers and other debris into the ocean.

‘The singular goal does not recognise and provide for a tangata whenua cultural perspective to environmental restoration. The word “mauri” needs to be either inserted into this goal or a new goal added to properly encompass ... a Māori world-view of environmental restoration.’ (Te Arawa, 2011).

The Government in making its’ goal the restoration of mauri, effectively opened the door to the inclusion of mātauranga Māori in decision making regarding the long term recovery. This made it possible to genuinely evaluate the contribution of mātauranga Māori to the Rena disaster response.

The goal of mauri restoration is innovative but also problematic as conventional ‘western’ decision making processes have historically been incapable of effectively including considerations of impacts upon mauri. The Mauri Model (Morgan, 2006) is a holistic sustainability assessment tool that facilitates the integration of economic, environmental, social and cultural priorities. As such, it is optimally placed to assist decision making regarding the mauri restoration for the Otaiti (Astrolabe Reef) ecosystem that is inclusive of all relevant knowledges that are available.

Contributions of the Mauri Model

Our research methodology used the Mauri Model Decision Making Framework. The Mauri Model has significantly enhanced the relevance of indigenous knowledge within sustainability assessment such that Kaitiakitanga (RMA, S7(a), 1991) requires enhancing mauri, and the Rena environmental response is defined in terms of mauri. The Mauri Model has evolved at the fertile interface of our collective knowledge systems, and is now recognised as a decision making framework that communicates sustainability issues equally well in both the indigenous and scientific paradigms. This is reflected in the 2013 Cawthron Report 2224 findings that the Mauri Model is the sustainability indicator set that is the most useful regardless of the community (Challenger, 2013).

With regard to the MV Rena, some uncertainty has been introduced in decision making processes as an ignorance of mātauranga Māori and indigenous epistemologies amongst consultants frustrated a more effective response. The result has been constrained Iwi engagement leading to imperfect consideration of how impacts upon mauri should best be mitigated from an indigenous worldview. An extension of our highly proactive communication strategy has been the digitisation of the Mauri Model to provide access to this evaluation methodology for anyone with internet access. The mauriOmeter website development progressed rapidly and was launched in August 2013. It included the digitization of the Mauri Model as a Māori/English web-based interactive evaluation platform (see www.mauriometer.com).

Mauri is the life supporting capacity of an ecosystem inclusive of people who are an inseparable part of it. The restoration of mauri requires the assessment of human impact and important meta-physical considerations not otherwise included in conventional impact assessment and decision making. The Mauri Model is proving to be an ideal approach for the investigation of this challenge and determination of the sustainability implications of disaster mitigation strategies being promulgated. Participatory action based research approach is enhanced through digitisation of the mauriOmeter to encourage independent analysis by any party affected by the MV Rena grounding.

Significant new techniques for using the Mauri Model have been innovated during this research project; the determination of the pre-Rena state of mauri retrospectively; quantification of the constantly changing context of cumulative impacts of the disaster since the October 2011 grounding in mauri-years; and the evaluation and enhancement of final mauri restoration options.

The work carried out to determine the pre-Rena state of mauri is the most detailed application of the Mauri Model to date. The detailed evaluation over the period of one hundred years prior to the grounding of the MV Rena has only recently been completed. It involves twelve indicators for each mauri dimension and determines the pre-Rena state of the four dimensions separately and overall.

The current state of mauri for each dimension and overall has been identified based on the same indicator sets used for the pre-Rena mauri determination. These indicators have been scored every three months since the grounding occurred quantifying the cumulative impact resulting from the Rena disaster measured in mauri-years. The key understanding that arises from this first phase of the research (determination of the pre-Rena state of mauri and impacts on mauri since the grounding) is that the expense and effort committed so far to the Rena recovery has contributed to reducing the negative impacts but that initiatives have yet to be put in place (other than by Tangata Whenua) to enhance mauri. This work is significant and has yet to be completed.

Discussion

Significant progress has been made into understanding the questions proposed for this research project. The contributions to date are extensive and have made a very significant contribution to people's understanding of the Rena disaster response. The determination of the pre-Rena state, both the preliminary conservative estimation of +0.22 (first presented at He Manawa Whenua conference in July 2013 following the June 2013 Wānanga at Maketū) and the more refined determination of +0.48 (to be presented at Tū Kaha Māori Health Conference on 31 October 2014 following the Wānanga at Otāmarakau earlier this month) provides a quantified goal for the recovery effort.

Although the pre-Rena state of mauri has been adjusted upwards following the more detailed evaluation it is noted that the preliminary estimation of the pre-Rena state was deliberately conservative regarding the prior impacts upon mauri of previous resource management practices. The decision to establish the pre-Rena state in conservative terms was strategic in that it avoided the need to defend the preliminary estimate against accusations of it being overly optimistic and allowed a focus on the subsequent quantification of impacts since the grounding. Further the publication of the preliminary estimation was more a test of the use of the Mauri Model as a methodology in a disaster context and the rationale for determining the pre-Rena state.

It is also noted that despite the more accurate determination of the pre-Rena state being higher, the quantification of the impact upon mauri since the grounding has also been refined using the same more comprehensive indicator set. The cumulative impact upon mauri based on the preliminary pre-Rena state and indicator set was estimated as 2.98 mauri-years to October 2013 (first presented at He Manawa Whenua conference in July 2013 following the June 2013 Wānanga at Maketū). The quantification of cumulative mauri impact after three years is consistent with these findings. Over three years the cumulative impact is calculated as 3.69 mauri-years, an increase of approximately 0.7 mauri-years compared to the two year estimation of 2.98 mauri-years. The actual cumulative impact after two years using the refined analysis is 2.84 mauri-years meaning that the preliminary estimation was within 5% of this value.

The quantification of impact upon mauri has been very influential on the recovery process. In particular while the original intention was to whittle away the bow section wedged on Otaiti and then apply for Resource Consent to abandon the stern section and debris field, this approach has been progressively revised as the Mauri Model based research has revealed a greater requirement. The intention of decision makers involved in the direct actions at Otaiti is now to leave an environmentally benign situation, which includes the removal of a much greater proportion of the wreck and debris. In this regard the recovery options requiring analysis continue to change as the baseline for the Resource Consent application continues to improve.

Whether these insights influence local and central government decision making is yet to be established as while a Resource Consent application has been made a decision regarding the application will not be available until 3 November 2014. It is anticipated that the decision will be a direct referral to the Environment Court which means that the legal process regarding the fate of the wreck and remaining debris will not be determined until late 2015.

One objective for this research was to identify interventions required to avoid future disasters of a similar nature. Discussions at early wānanga identified potential changes to shipping behaviour that may avoid similar disasters occurring in the future. It was noted that there were several further land collisions within the vicinity of Mōtītī in the week following the MV Rena grounding. These were assumed to be a consequence of boats avoiding the exclusion zone but Te Arawa ki Tai representatives pointed out that the risks posed by commercial shipping taking ‘short-cuts’ in order to beat Port deadlines were already known and had been raised with Maritime New Zealand without any action being taken. Proposing interventions is considered to be of little value without the necessary mechanisms first being identified to ensure these interventions will be acted upon.

Research Outputs

This research is relatively unique as it involves extensive involvement of Iwi via marae based wānanga and in parallel the dissemination of results continuously at relevant conferences to gain input from national and international experts. The approach has been effective achieving a continued commitment to the recovery needs of Otaiti and the surrounding ecosystem beyond that originally anticipated. The approach has also facilitated a rapid evolution of the analytic capabilities of the Mauri Model. The success of the participatory action based research approach is entirely dependent upon the wānanga with Te Arawa Ki Tai. These wānanga have been held at a variety of marae and other communal meeting places situated along the affected coastline between Te Puke and Otāmarakau. The wānanga are summarised in the following table with full details provided in Appendix A.

Table 1: Wānanga Outputs for Rena Mauri Restoration Research Project

Date(s)	Wānanga / Workshop Title	Location	Participants	Facilitators
12/3/12	Rena: Mauri Recovery Strategy	Tauranga	Impacted Iwi	Morgan & Fa`aui
17-18/11/12	Mauri Wānanga	Maketū	Te Arawa Ki Tai	Morgan & Hikuroa
19/1/13	Rena Wānanga charter to Otaiti	Maketū	Impacted Iwi	Morgan & Bennett
16/6/13	Three Phase Research Project identifying how to Restore Mauri to pre-Rena State	Maketū/Cut	Te Arawa Ki Tai	Morgan & Bennett
11/7/13	Mauri Model Analysis Technique	Tauranga	BECA	Morgan & Bennett
16/2/14	Mauri Since Rena Grounding & Recovery Option Development	Te Puke	Te Arawa Ki Tai	Morgan & Bennett
23/6/14	Recovery Option Development	Te Puke	Te Arawa Ki Tai	Bennett & Morgan
17-18/10/14	Negotiating Restoration Options	Otāmarakau	Te Arawa Ki Tai	Morgan & Bennett
22/11/14	Restoration Package Evaluation	Otāmarakau	Te Arawa Ki Tai	Morgan & Bennett

The commitment and contribution of Te Arawa Ki Tai representatives is acknowledged with admiration as their sustained contributions to the success of this research has been essential and invaluable. Ngā mihi mo ngā ahuatanga o tenei wā ki a koutou katoa, ahakoa he mahi tonu, tū kaha mai koutou ngā ahi kā o Te Arawa Ki Tai.

Additional research outputs have been grouped as symposia and conference presentations including keynotes (B), seminars (C), guest lectures (D), refereed papers in conference proceedings and journal articles (E), and miscellaneous items including television and print public media.

The Rena Recovery has been the topic of three invited keynote presentations (Hastings, Christchurch and Napier) and a plenary presentation at the Ngā Pae O Te Maramatanga November 2013 Fostering Te Pā Harakeke Symposium in Tauranga. This research was also included as one of six international invited presentations for the NSF funded Traditional Ecological Knowledge Symposium; Ecosystem Stewardship through Traditional Resource and Environmental Management: Indigenous Management Models from Around the Globe being held as part of the 99th Ecology Society America Annual conference in Sacramento, California, USA. In total there have been twenty one presentations at conferences and symposia, with four more presentations for which abstracts have been accepted yet to be presented. These are listed in Appendix B along with six presentation title pages. Four seminar presentations are listed in Appendix C including the Ngā Pae O Te Maramatanga August 2013 seminar at which the www.mauriOmeter.com website was launched.

The digitisation of the Mauri Model for open source use on the internet was completed under contract to Native Software Ltd and launched within ten months of commencing the research contract. The Māori language version of the digitised Mauri Model went live in March 2014 and a review of the website was conducted this month with a number of recommended changes to be implemented in December. A Summer Studentship has been awarded to Tai Te Arika Stevens (Te Arawa, Ngāti Pīkiao) to carry out the changes and further evaluate the website functionality with the intention of enhancing its analytical capabilities.

Table 2 lists guest lectures delivered in five separate academic programmes in 2014 spanning the Schools of Planning, Business and Computer Science at the University of Auckland, the department of Engineering at UNITEC, and the Professional Doctorate taught at Te Whare Wānanga O Awanuiarangi in Whakatane. The range of faculties and institutions is an indication of the broad relevance of this research in a number of fields and also the relevance of the Mauri Model to a variety of evaluation settings. Full details of the guest lectures are provided in Appendix D.

Table 2: Guest Lectures for Rena Mauri Restoration Research

Date	Course / Lecture	Institution	Course
27/6/14	Professional Doctorate	Te Whare Wānanga O Awanuiarangi	Workshop (4 hrs)
7/8/14	Master of Urban Planning	University of Auckland, NICA	PLAN 706 (2 hrs)
5/9/14	Public Health and Water	UNITEC, Department of Engineering	(2 hrs)
3/10/14	Contemporary Theories of International Development	University of Auckland, Business School, Centre for International Devt	DEV 710 (2 hrs)
16/10/14	Advanced Topics in Human Computer Interaction	Uni of Auckland, Faculty of Science, Department of Computer Science	COMPSCI 705 (website review)

Six peer reviewed conference papers have been submitted for publication in proceedings and one journal article has been published in MAI Journal. The journal article shared the first estimate of the pre-Rena state of mauri and the cumulative impact upon mauri since the grounding.

Fa`aui, T.N., Morgan, T.K.K.B. (2014). Restoring The Mauri to the pre-MV Rena State. MAI Journal 3(1) p3-17.

Two further articles have been prepared that document the mauri dimension indicator sets used for the comprehensive evaluation of the pre-Rena state and the methodology used, and the quantification of impact upon mauri in the three years since the grounding on Otaiti. Our intention

is to publish these articles in Environmental Impact Assessment Review. Following the current analysis of recovery options a further journal article will be prepared and submitted for consideration in MAI Journal.

It has been important to share our research as it progresses as widely as possible taking every opportunity to profile our research given its relevance to the Iwi in the region, and similar contexts abroad. The Rena Research featured as an episode in the national television series Project Mātauranga (Project Mātauranga: Where Native Science Meets the World). Series II Episode 11/11 first screened on Māori TV in November 2013. Media coverage has been associated with the award of this research contract and the launch of the mauriOmeter website and is detailed in Appendix F. Further media coverage may now be timely with the more detailed evaluation of the pre-Rena state of mauri and the quantification of impact upon mauri three years since the grounding.

The final phase of this research involves the development and comparison of long-term solutions and identifying the most sustainable long-term solution. This phase is the most difficult as the comparison will incorporate a sensitivity analysis that takes into account the worldview bias of key stakeholders. The timeframes for this phase are dependent on the Resource Consent scope being applied for and the mitigation measures adopted within the Consent conditions or as side agreements. As mentioned these outcomes are likely to be completed within the next twelve months but outside the timeframe for this research contract.

The last and most significant outcome from this research project has been the involvement of Tumanako Ngawhika Fa'au BE (Ngāti Te Roro O Te Rangī, Te Arawa) who was awarded a postgraduate scholarship to complete his Masters of Engineering based on this research in 2012. Tumanako has now transferred to PhD study (approved earlier this year). This research is leading the understanding of Iwi and consultants in terms of identifying appropriate approaches for the restoration of the mauri of the affected environment to its pre-Rena state, and it is appropriate that it is being led by researchers with whakapapa to Te Arawa.

Conclusion

Regardless of the basis for assessment, the outputs produced from the research project; *How can Mātauranga Māori contribute to the Rena disaster response?* are impressive and reflect the ample opportunities that are available when the contributions of all relevant knowledge systems are empowered in the search for solutions. While the research plan is not yet complete, the outputs to date have significantly enhanced the understanding of how to return the mauri of the effected environment to its pre-Rena state.

Mauri Oho, Mauri Tū, Mauri ora, Kia Matāra!

Dr Te Kipa Kepa Brian Morgan CPEng

Principal Investigator

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Morgan, T.K.K.B. 'The Value of a Hapū Perspective to Municipal Water Management Practice: Mauri and potential contribution to Sustainability Decision Making in Aotearoa New Zealand', 2008, University of Auckland

Morgan, T.K.K.B. (2012) 'How can Mātauranga Māori contribute to the Rena disaster response?' Targeted Research Proposal: Rena Restoration of Mauri.

Morgan, T.K.K.B., Fa`au, T.N. (2013) www.mauriometer.com

Rena Recovery Unit, Bay of Plenty Regional Council (2012) 'PROJECT BRIEF Environmental and cultural impact assessment'. File: Environmental Cultural assessment Request for Proposal 24 04 12

Appendix A: Wānanga Outputs for Rena Mauri Restoration Research

Facilitation of full day workshop 'Rena: Mauri Recovery Strategy' Workshop held in Tauranga 12 March 2012. Morgan, T.K.K.B.

Facilitation of full day workshop 'Mauri Wānanga' held at Whakauekaipapa Marae, Maketū for Te Arawa ki Tai: Waitaha, Tapuika, Pikiāo, Makino, Whakaue, Whakahemo, me Rangitihi. 17-18 November 2012. Morgan, T.K.K.B., Bennett, P., Hikuroa, D.

Rena Wānanga charter to Otaiti, Mōtītī and debrief at Whakauekaipapa, Maketū 19 January 2013.

Wānanga presentation 'Three Phase Research Project identifying how to Restore Mauri to pre-Rena State' that shared evaluation of pre-Rena state of mauri methodology and discussion of further work required. First determination of pre-Rena state. 16 June 2013. Morgan, T.K.K.B. & Fa`aui, T.N.

Te Arawa Ki Tai Wānanga 'Three Phase Research Project identifying how to Restore Mauri to pre-Rena State'. Maketū. 16 June 2013. Morgan, T.K.K.B., & Fa`aui, T.N. & Bennett P.

BECA half day workshop on Mauri Model Analysis techniques, Tauranga. 11 July 2013.

Facilitation of full day workshop 'Mauri Changes Since Rena Grounding and Recovery Option Development' held at Hei Marae, Te Puke for Te Arawa ki Tai: Waitaha, Tapuika, Pikiāo, Makino, Whakaue, Whakahemo, me Rangitihi. 16 February 2014. Morgan, T.K.K.B., Bennett, P., Hikuroa, D.

Full day workshop 'Rena Recovery Option Development for Mauri Restoration' held at Te Puke War Memorial Hall for Te Arawa ki Tai: Waitaha, Tapuika, Pikiāo, Makino, Whakaue, Whakahemo, me Rangitihi. 23 June 2014. Morgan, T.K.K.B., Bennett, P., Hikuroa, D., T.N. Fa`aui.

Two day workshop 'Rena Recovery Mauri Restoration Discussions with BECA' held at Otāmarakau marae for Te Arawa ki Tai: Waitaha, Tapuika, Pikiāo, Makino, Whakaue, Whakahemo, me Rangitihi. 17 & 18 October 2014. Morgan, T.K.K.B., Bennett, P.

Notes: BECA have been engaged by the MV Rena owners and insurers to manage the recovery effort and prepare the Consent application. MV Rena owners have attended several of the workshops (16 February in person and 18 October by skype) while their representatives (BECA, Resolve, Legal) have attended and updated at the majority of wānanga.

HE MANAWA WHENUA
INDIGENOUS RESEARCH CONFERENCE 2013
13 JULY 2013 | CLAREMOUNT POINT CENTRAL, HAMILTON, NZ

UC Māori Postgraduate Symposium 2013

te matihiriapo Intercreate.org
3rd nature
SCANZ 2013
Developing the culture to create a sustainable civilisation

International Seminar on
'Water Related Disaster Solution'

IAIA13
CALGARY • CANADA

NGĀ PAE O TE MĀRAMATANGA

2013 IGU REGIONAL CONFERENCE

“WHAKARONGO KI A TANGAROA – HE TOHU”

Otamarakau Marae, 14th and 15th September 2014

(Raranga by Alixene Curtis: Son of Tangaroa – work in-progress)

Assessing Impacts Upon Mauri

Piatarahi Bennett Ngāti Mākino, Ngāti Pūkiao, Ngāti Ranginui, Ngaiterangi BAppSc, PGDipSc
Dr Kapa Morgan Ngāti Pūkiao, Te Arawa, Ngāti Rongomai, Ngāti Kahungunu, Kai Tahu
BE, MBA, PhD, FIPENZ, CPEng

Civil & Environmental Engineering

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WIPC:E 2014
World Indigenous Peoples Conference on Education
E Mau Ana Ka Mo'olelo

Empowering Us

Dr Te Kipa Kapa Brian Morgan BE, MBA, PhD, FIPENZ, CPEng
Ngāti Pūkiao, Te Arawa, Ngāti Rongomaiwahine, Ngāti Kahungunu, Ngai Tahu

Dr Robyn Manuel Te Rarawa, Ngāti Kahu, Ngāti Kuri, Te Aupouri
BSc, MSc (1st), PhD Chemistry, PGDipPublic Health

NGĀ PAE O TE MĀRAMATANGA

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IUCN WORLD PARKS CONGRESS SYDNEY 2014
Parks, people, planet: inspiring solutions
12–19 November 2014

Stream 6 Enhancing Diversity and Quality of Governance
Workshop 3.2 Effective and Equitable Governance of the Landscape

**Empowering Intrinsic Value and Indigenous Viewpoints
in Landscape Governance Frameworks**

Dr Kapa Morgan Ngāti Pūkiao, Te Arawa, Ngāti Kahungunu, Ngai Tahu
BE, MBA, PhD, FIPENZ, CPEng
Tumanako Ngawhika Fa` au Ngāti Te Roro O Te Rangī, Te Arawa

Civil & Environmental Engineering

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Appendix B: Conference and Symposia Outputs for Rena Mauri Restoration Research Project

Date(s)	Presentation Title	Location	Conference	Author(s)
14-16/11/12	Mātauranga Māori and its contribution to the Rena Disaster Response.	Rotorua	Enhancing Māori Distinctiveness	Morgan (panel)
1-3/2/13	Decision Making at Interface: Mauri contribution to the Rena Recovery.	Waitara	SCANZ 2013 Third Nature	Morgan & Fa`aui
12-16/5/13	Disaster Recovery Options: Restore Mauri to pre Rena State.	Canada	Int. Assoc. Impact Assessment conf.	Morgan et. al.
24-28/6/13	MAURI.	Hastings	Kaitiaki Science Wānanga	Morgan Keynote
27-29/6/13	How do we Return the Mauri of the Pre-Rena State?	Auckland	Tuia Ngā Aho o Te Mātauranga	Fa`aui & Morgan
30/6-3/7/13	Approach to Assessing the Restoration of Mauri to its pre Rena State	Hamilton	He Manawa Whenua conference	Morgan et. al.
3/8/13	Indigenous Knowledge and Modern Knowledge in Disaster Recovery.	Hokaido	Indigenous Geography Symposium	Morgan
4-9/8/13	Complementarity of Traditional Wisdom and Modern Knowledge.	Kyoto,	International Geographers Union,	Morgan et. al.
4-9/8/13	Can Indigenous Knowledge reduce risk, facilitate recovery, resilience?	Japan	Regional Disaster Conference.	Hikuroa
22-24/8/13	Ko Rongo Au I te Wai, Ka Rongo Au I te Mauri o Taku Waiora	Canterbury	UC Māori PG Symposium	Morgan Keynote
6-8/9/13	The Relevance Of Community-Led Disaster Response In Aotearoa NZ, To International Contexts.	Indonesia	HATHI International Seminar on Water Related Disaster Solutions.	Morgan, Fa`aui, & Bennett
25-26/11/13	Mehemea, ko mauri te kaupapa, he aha ngā pūtake?	Tauranga	Fostering Te Pā Harakeke Symposium	Morgan Plenary
21/2/14	Informing Culturally Just Environmental Decision Making	Auckland	Te Wharekura Annual Symposium	Morgan
5/3/14	Rena Recovery mauriOmeter assessment for Rena	Tauranga	Rena Governance Group Biennial Mtg.	Morgan & Bennett
19-24/5/14	Empowering Indigenous Wisdom through Alternative Decision Making	Honolulu	World Indig. Peoples Conf. Education	Morgan & Manuel
11/8/14	Ensuring Iwi and Community Concerns are Included: Rena	Auckland	Auckland Council 2 nd Environment Hui	Fa`aui
10-15/8/14	Integration of TEK and Systems Thinking to Create the Mauri Model	Sacramento	99th Ecological Society America Mtg	Morgan
17-21/8/14	Decision Support Systems Promoting Socially Just Environmental Mgmt	New York	11th Int. Conf. on Hydroinformatics	Morgan & Fa`aui
25-26/8/14	Mauri Tū, Mauri Ora, Kia Matāra	Karitāne, SI	Te Poutama Māori Research Symp.	Morgan
14-15/9/14	Assessing Impacts Upon Mauri	Otāmarakau	Whakarongo Ki A Tangaroa – He Tohu	Bennett & Morgan
29-31/10/14	Mauri Tū Mauri Ora – Sustaining the Mauri of our Ecosystems of Origin	Napier	Tū Kaha Māori Health Conference	Morgan Keynote
12-19/11/14	Empowering Intrinsic Value and Indigenous Viewpoints through DMFs	Sydney	IUCN World Parks Congress	Morgan & Manuel
25-28/11/14	Transformations of Mauri concerning the Rena Disaster	Auckland	6th Biennial Int. Indigenous Devt Conf.	Morgan et. al.
28/6-3/7/15	decision support systems: just about money or more than that?	Delft Hague	UNESCO-IHE IAHR Congress 2015	Morgan et. al.

Morgan, T.K.K.B. (2012). Mātauranga Māori and its contribution to the Rena Disaster Response. Presented at Enhancing Māori Distinctiveness The Contribution and Opportunity: Ko tā te Māori ake takoha ki te ao, Rotorua Energy Events Centre Queens Drive, Government Gardens. 14 - 16 November 2012. [online http://mediacentre.maramatanga.ac.nz/content/2012-symposium](http://mediacentre.maramatanga.ac.nz/content/2012-symposium)

Morgan, T.K.K.B. Fa`aui, T.N. (2013) **Decision Making at the Interface: Mauri and its contribution to the Rena Recovery**. SCANZ 2013 Third Nature. Owae Marae, Waitara, 1-3 February 2013.

Morgan, T.K.K.B., Fa`aui, T.N., Hikuroa, D.C.H. (2013). **Disaster Recovery Options: Restore Mauri to pre Rena State**. Presentation at International Association of Impact Assessment conference; Impact Assessment: The Next Generation, Calgary Stampede BMO Centre, Calgary, Alberta. Canada, 12 - 16 May 2013.

Morgan, T.K.K.B. (2013). MAURI. Kaitiaki Science Wananga Leadership Forum – Keynote at Taiwhenua, Napier. Kaitiaki Science Wananga, Te Taiwhenua o Heretaunga Leadership Forum, Hastings, 24 - 28 June, 2013. (Keynote Presentation).

Fa`aui, T.N., Morgan, T.K.K.B. (2013). How do we Return the Mauri of the Pre-Rena State? Presented at Tuia Ngā Aho o Te Mātauranga: Weaving the Threads of Indigenous Knowledges: Te Whare Kura: Indigenous Knowledges, Peoples and Identities Thematic Research Initiative Postgraduate Symposium 27 – 29 June, 2013.

Morgan, T.K.K.B., Hikuroa, D.C.H., Fa`aui, T.N. (2013). **Disaster Recovery: An approach to Assessing the Restoration of Mauri to its pre Rena State**. Selected for Innovation Panel. He Manawa Whenua Te Puna Manawa conference, Hamilton, 30 June – 3 July, 2013.

Morgan, T.K.K.B. Indigenous Knowledge and Modern Knowledge in Disaster Recovery. Pre-Congress Mini-Symposium on Indigenous Geography held the University of Sapporo, Hokaido. 3 August 2013.

Morgan, T.K.K.B., Manuel, R.D., Hikuroa, D.C.H., Fa`aui, T.N., Bennett, P., Bennett R., (2013). The Complementarity of Traditional Wisdom and Modern Knowledge in Disaster Recovery. Regional Disaster Conference Kyoto 'Traditional Wisdom and Modern Knowledge for the Earth's Future' August 4-9, 2013, Kyoto.

Hikuroa, D.C.H. (2013). Can Indigenous Knowledge reduce risk, facilitate recovery, and increase resilience? Regional Disaster Conference Kyoto 'Traditional Wisdom and Modern Knowledge for the Earth's Future' August 4-9, 2013, Kyoto.

Morgan, T.K.K.B. Ko Rongo Au I te Wai, Ka Rongo Au I te Mauri o Taku Waiora, University of Canterbury Māori PG Symposium, Christchurch, New Zealand. 22 – 24 August, 2013. (Keynote Presentation).

Morgan, T.K.K.B., Fa`aui, T.N., Bennett, P., (2013) **The Relevance Of Community-Led Disaster Response In Aotearoa NZ, To International Contexts.** HATHI International Seminar on Water Related Disaster Solutions. Yogyakarta, Indonesia, 6-8 September 2013.

Morgan, T.K.K.B. Mehemea, ko mauri te kaupapa, he aha ngā pūtake? Fostering Te Pā Harakeke: Healthy and Prosperous Families of Mana. Ngā Pae o Te Māramatanga Research Symposium, 25-26 November 2013. Trinity Wharf, Tauranga. <http://mediacentre.maramatanga.ac.nz/content/2013-symposium-dr-kepa-morgan>

Morgan, T.K.K.B. (2014). Informing Culturally Just Environmental Decision Making through Effective Collaboration. Te Whare Kura Annual Research Symposium, Waipapa Marae, Auckland. 21 Feb 2014.

Morgan, T.K.K.B., Bennett, P. (2014) mauriOmeter assessment for Rena. Rena Recovery Governance Group Biennial meeting Presentation. (Ministers for the Environment, Health, & Transport, BOP Mayors, BOPRC Chairman, Tauranga City Council chair, Rena Recovery Manager, Maritime NZ and Iwi representatives) 5 March 2014, Tauranga.

Morgan, T.K.K.B., Manuel, R.D. (2014). Empowering Indigenous Wisdom through Alternative Decision Making Frameworks. 2014 World Indigenous Peoples' Conference on Education , E Mau ana ka Mo'olelo. Honolulu, Hawai'i. 19 - 24, May 2014.

Fa`aui, T.N. (2014) Ensuring Iwi and Community Concerns are Included in the Rena Disaster Restoration: Why is This Relevant to You? Auckland Council 2nd Community Environment Hui Fickling Centre, Three Kings, Auckland. 11 August 2014.

Morgan, T.K.K.B. (2014) **Mauri Piki, Mauri Tū, Mauri Ora: The Integration of Traditional Ecological Knowledge and Systems Thinking Techniques to Create the Mauri Model.** 99th ESA Annual Meeting: Symposium on Traditional Ecological Knowledge (invited). Sacramento, California 10-15 August 2014.

Morgan, T.K.K.B. (2014) **Decision Support Systems and Promoting Socially Just Environmental Management.** 11th International Conference on Hydroinformatics HIC 2014, New York City, USA. 17-21 August 2014.

Morgan, T.K.K.B. (2014) Mauri Tū, Mauri Ora, Kia Matāra. 2014 Te Poutama Māori Otago International Research Symposium, Huirapa Marae, Karitāne, Dunedin. 25-26 August 2014.

Bennett, P., Morgan, T.K.K.B. (2014) Assessing Impacts Upon Mauri. Whakarongo Ki A Tangaroa – He Tohu. Otāmarakau Marae. 14-15 Sept 2014.

Morgan, T.K.K.B. (2014) Mauri Tū Mauri Ora – Sustaining the Mauri of our Ecosystems of Origin . Tū Kaha Māori Health Conference. Hawkes’ Bay Racing Centre, Hastings. 29-31 October 2014. (Keynote Presentation).

Morgan, T.K.K.B., Manuel, R.D., Fa`aui, T.N. (2014) Empowering Intrinsic Value and Indigenous Viewpoints through Alternative Decision Making Frameworks. IUCN World Parks Congress Sydney 2014: Parks, people, planet; inspiring solutions. Sydney, Australia. 12-19 November 2014.

Morgan, T.K.K.B., Bennett, P., Bennett, R., Manuel, R.D., Fa`aui, T.N., Hikuroa, D. (2014) Transformations of Mauri concerning the Rena Disaster . Sixth Biennial International Indigenous Development Research Conference 2014, University of Auckland. 25-28 November 2014.

Morgan, T.K.K.B., Bennett, P., Fa`aui, T.N. (2014) decision support systems: just about money or more than that? UNESCO-IHE 36th International Association of Hydro-Environmental Research World Congress 28 June – 3 July 2015.

Appendix C: Seminar Outputs for Rena Mauri Restoration Research Project

Date(s)	Seminar Title	Location	Seminar	Author(s)
16/4/13	Rena mauriOmeter Assessments Contradict Consultants Reports.	Auckland	SPPEEx Seminar Series	Morgan
15/8/13	Complexity Science meets Indigenous Wisdom: Restoring the Mauri to its pre-Rena State.	Auckland	ECE Research Seminar, Dept of Electronic & Computer Engineering	Morgan
21/8/13	Mauri Piki, Mauri Tū, Mauri Ora!	Auckland	Nga Pae O Te Maramatanga	Bennett, Morgan
17/7/14	Enhancing Mauri	Ōmapere	Hokianga Lecture, Ngā Pae O Te Maramatanga Writing Retreat	Morgan

Morgan, T.K.K.B. (2013) SPPEEx South Pacific Professional Engineers for Excellence Seminar Series: Rena mauriOmeter Assessments Contradict Insurer’s Consultants Reports. Auckland 16 April 2013

Morgan, T.K.K.B. (2013) ECE Research Seminar: Complexity Science meets Indigenous Wisdom: Restoring the Mauri to its pre-Rena State. Department of Electronic and Computer Engineering, 15 August 2013.

Morgan, T.K.K.B. Bennett, P., Fa`aui, T.N. (2013) Nga Pae O Te Maramatanga Seminar, Waipapa Marae: Mauri Piki, Mauri Tū, Mauri Ora! 21 August 2013. <http://mediacentre.maramatanga.ac.nz/content/mauri-piki-mauri-tu-mauri-ora>

Morgan, T.K.K.B. (2014) Hokianga Lecture delivered at Ngā Pae O Te Maramatanga Writing Retreat, Ōmapere: Enhancing Mauri. 17 July 2014.

Appendix D: Guest Lectures for Rena Mauri Restoration Research

Morgan, T.K.K.B. (2014). Empowering Us. Professional Doctorate Programme Te Whare Wānanga O Awanuiarangi Workshop (4 hrs). 27 June 2014.

Morgan, T.K.K.B. (2014). Holistic Planning Approaches Mauri Model Decision Making Framework. Master of Urban Planning PLAN 706, NICA University of Auckland (2 hrs). 7 August 2014.

Morgan, T.K.K.B. (2014). Ka Rongo Au I te Wai, Ko Rongo Au I te Mauri o Toku Waiora. Public Health and Water, UNITEC, Department of Engineering (2 hrs). 5 September 2014.

Morgan, T.K.K.B. (2014). Comparing Approaches to 'Development Evaluation' in Aotearoa New Zealand: The Mauri Model Decision Making Framework Contemporary Theories of International Development DEV 710, Business School, Centre for International Development, University of Auckland. (2 hrs). 3 October 2014.

Plimmer, B. (2014). Advanced Topics in Human Computer Interaction COMPSCI 705, University of Auckland, Faculty of Science, Department of Computer Science (website review). 16 October 2014.

Appendix E: Journal Articles & Conference Proceedings Rena Restoration

Fa`aui, T.N., Morgan, T.K.K.B. (2014). Restoring The Mauri to the pre-MV Rena State. MAI Journal 3(1) p3-17.

Morgan, T.K.K.B. Fa`aui, T.N. (2013) Decision Making at the Interface: Mauri and its contribution to the Rena Recovery. SCANZ 2013 Third Nature. Owae Marae, Waitara, 1-3 February 2013.

Morgan, T.K.K.B., Fa`aui, T.N., Hikuroa, D.C.H. (2013). Disaster Recovery Options: Restore Mauri to pre Rena State. Presentation at International Association of Impact Assessment conference; Impact Assessment: The Next Generation, Calgary Stampede BMO Centre, Calgary, Alberta. Canada, 12 - 16 May 2013.

Morgan, T.K.K.B., Hikuroa, D.C.H., Fa`aui, T.N. (2013). Disaster Recovery: An approach to Assessing the Restoration of Mauri to its pre Rena State. Selected for Innovation Panel. He Manawa Whenua Te Puna Manawa conference, Hamilton, 30 June – 3 July, 2013.

Morgan, T.K.K.B., Fa`aui, T.N., Bennett, P., (2013) The Relevance Of Community-Led Disaster Response In Aotearoa NZ, To International Contexts. HATHI International Seminar on Water Related Disaster Solutions. Yogyakarta, Indonesia, 6-8 September 2013.

Morgan, T.K.K.B. (2014) Mauri Piki, Mauri Tū, Mauri Ora: The Integration of Traditional Ecological Knowledge and Systems Thinking Techniques to Create the Mauri Model. 99th ESA Annual Meeting: Symposium on Traditional Ecological Knowledge (invited). Sacramento, California 10-15 August 2014.

Morgan, T.K.K.B. (2014) Decision Support Systems and Promoting Socially Just Environmental Management. 11th International Conference on Hydroinformatics HIC 2014, New York City, USA. 17-21 August 2014.

Appendix F: Miscellaneous Outputs for Rena Mauri Restoration Research

Morgan, T.K.K.B. (2012). Te Karere. Television news item on Mātauranga Māori and its contribution to the Rena Disaster Response presentation given at Enhancing Māori Distinctiveness The Contribution and Opportunity: Ko tā te Māori ake takoha ki te ao. 15 November 2012.

Morgan, T.K.K.B. & Fa`aui, T.N. (2012). MauriOmeter Assessment of Rena Recovery Options. Conference Poster. 30 November 2012.

Morgan, T.K.K.B. (2013). Interview on Radio Rhema with Dale Husband on Breakfast Show 21 August, 2013.

Morgan, T.K.K.B. (2013). Interview on Te Kaea, Māori TV 22 August 2013.

Project Mātauranga: Where Native Science Meets the World. Series II Episode 11/11. Rena Mauri. Aired 11 November 2013.

Fa`aui, T.N. (2013). Restoration of Mauri to The pre-Rena State. Faculty of Engineering Postgraduate poster competition.

Weerasinghe, C., Kang, K.P., Jung, K., Chae, J.O. (2014). Evaluation of mauriOmeter website Usability. P1-20.

Morgan, T.K.K.B. (2014). Te Whare O Ngātoro. Preliminary Feasibility Study for Restitution Proposal.

Online resources:

Mātauranga Māori and its contribution to the Rena Disaster Response. Available online <http://mediacentre.maramatanga.ac.nz/content/2012-symposium>

Mauri Piki, Mauri Tū, Mauri Ora! Available online <http://mediacentre.maramatanga.ac.nz/content/mauri-piki-mauri-tu-mauri-ora>

Mehemea, ko mauri te kaupapa, he aha ngā pūtake? Available online <http://mediacentre.maramatanga.ac.nz/content/2013-symposium-dr-kepa-morgan>