SUSTAINABLE SEAS | Ko ngā moana whakauka | National Science Challenges

Project Proposal

A. TITLE OF PROJECT

3.1.2 Kaitiakitanga in Practice – He Pou Tokomanawa

B. IDENTIFICATION

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C. ABSTRACT

This proposed project uses an iwi led and co-designed approach facilitated by Tiakina Te Taiao (an environmental management organisation that works for and on behalf of the six shareholders of Ngāti Tama manawhenua ki Te Tau Ihu Iwi Trust; Te Ātiawa Manawhenua ki Te Tau Ihu Iwi Trust; Ngāti Rārua Iwi Trust; Ngāti Koata Trust; and two Māori organisations: Ngāti Rārua Ātiawa Iwi Trust (NRAIT) and Wakatū Incorporation.[1] The four iwi of Tiakina Te Taiao are manawhenua iwi within the Sustainable Seas Challenge (the Challenge) case study area of Te Tai-o-Aorere/Tasman Bay and Mohua/Golden Bay (hereafter referred to as Te Tai-o-Aorere and Mohua).

As Treaty partners and owners of significant marine resources, iwi have a distinctive role in environmental management and contend that a culturally relevant pathway is required to enable manawhenua iwi to evaluate the potential and participate in the management of Ecosystem Based Management[2] (EBM) tools and processes. For Te Tai-o-Aorere and Mohua we will: (1) utilise appropriate mechanisms to bring together multiple manawhenua iwi perspectives, aspirations and priorities; (2) purposefully examine mātauranga Māori to define and restore the cultural context of Te Tai-o-Aorere and Mohua; (3) evaluate environmental frameworks from a mātauranga Māori perspective to inform the development of a kaitiakitanga framework; and (4) develop a working

[1] Note: NRAIT was formed via the Ngāti Rārua Ātiawa Iwi Trust Empowering Act 1993 and represents the descendants of the original owners for the Whakarewa native reserve lands in Motueka. Wakatū Incorporation represents approximately 4000 land owners who descend from Ngāti Koata, Ngāti Rārua, Ngāti Tama and Te Ātiawa. Collectively manawhenua iwi have customary rights and responsibilities as kaitiaki of the Wakatū Nelson and Aorere Tasman rohe, recognising the relationship of Māori and their culture and traditions with their ancestral lands, water, wāhi tapu and other taonga.

[2] While we use the term Ecosystem Based Management (EBM) throughout this project, we note that the development of an iwi-centered approach to marine management may not align with the western approach to EBM. The approaches put forward by iwi will not necessarily address or answer to the western notion of EBM. The extent to which each notion is relevant to the other will be considered where relevant, only after iwi-centered approaches have been independently articulated.

relationship with the wider Challenge programme to initiate a marine Ecosystem Based Management (EBM) 'interface' process referred to as 'Te Wheke Hononga'. In doing so, the project will support manawhenua iwi through their practice of kaitiakitanga, and offer significant insight into how to build a New Zealand wide Māori exemplar beyond the immediate Challenge case study area.

D. INTRODUCTION

Mātauranga Māori or Māori knowledge systems are specific to Māori, and the term has many definitions covering belief systems, epistemologies, values, and knowledge both in a traditional and contemporary sense (Harmsworth and Awatere 2013). Māori values (Barlow 1993; Harmsworth 1997, 2013; Henare 1988, 2001; Marsden 1988; Marsden and Henare 1992; Mead 2003) are derived from a traditional belief system based on mātauranga Māori and can be defined as concepts/constructs through which Māori make sense of, experience, interpret and manage their environment (Marsden 1988).

Treaty settlements have resulted in various assets of strategic and historical importance being placed under total Māori ownership or shared ownership with co-governance and co-management obligations and responsibilities. Many settlements include elements that are concerned with the protection, restoration and development of Māori values, knowledge, uses and services. We as Māori are involved in the ownership and management of natural resources including fisheries and aquaculture assets, as well as holding specific responsibilities, obligations and protocols under a range of legislation.

We increasingly assert our rights to effectively manage natural and cultural resources, including through the development of governance and management frameworks that enable more effective participation, ownership and co-management. This right is generally expressed as kaitiakitanga, a principle value and approach often seen as akin to Māori environmental law, policy and practice (Waitangi Tribunal 2011). Through the practice of kaitiakitanga, Māori have a long history of managing the resources of the sea bringing to bear their own unique, place-based knowledge, tools and mechanisms.

The application and practice of kaitiakitanga has become increasingly difficult against a backdrop of growing pressure for the use of and cumulative stressors on resources, and within a legislative and primarily science driven management framework not founded on tikanga and mātauranga Māori. Further, manawhenua iwi in looking at environmental management are experiencing the continuous loss of traditional knowledge. Although some provision for kaitiakitanga can be found in various resource and environmental management legislation, the application is inconsistent and reflects the limitations inherent in taking aspects of culture out of context.

Another significant issue for manawhenua iwi across New Zealand is that resource managers are applying frameworks to help analyse complex natural management environs that also generally undermine the Treaty partnership by assuming that stakeholders and Māori engage as 'equal' partners. Frameworks in use include EBM, social ecological systems (adapted from the institutional and analysis framework), ecosystem services, DSPIR, and cumulative impacts. We hypothesise that instead of effectively contributing to forums, Māori and communities may be systematically disadvantaged as they have to reconcile perspectives while having to understand complementary or conflicting frameworks they are not conversant with that carry an inherent risk of conflicting with their mātauranga Māori.

We understand that the need to recognise and provide for Māori values and measures in EBM tools is supported in principle. However, given that such tools are 'science driven', Māori ways of making sense of the world do not necessarily fit into EBM frameworks that are underpinned by western scientific ways of thinking across a range of ecological conceptual approaches (Šunde 2008). Developing a working relationship with the wider Challenge provides an opportunity to initiate a marine EBM 'interface' dialogue process 'Te Wheke Hononga'. Determining how to develop principles, language, success measures, and appropriate metrics 'at the interface' will provide opportunities to connect EBM tools with the kaitiakitanga framework (Lertzman 2010). This overlap of knowledge systems has been identified as the 'Third Space' (Wallace 2004) which acknowledges epistemological diversity. Hudson et al. (2012) also expresses this concept of research as negotiated spaces that allow a dialogue between both mātauranga Māori and science (Hudson et al. 2012). This component of our project will be critical if the Challenge is to achieve its claim of developing an EBM approach for managing our marine resources which will be an inclusive process involving Māori in resource management decisions.[3]

In response to our cultural context and the issues and opportunities discussed above this research will be implemented through a 'methodological approach to Māori Focused Research' that emphasises the importance and validity of manawhenua iwi knowledge and practices. This methodology is founded on the guiding principles inherent in: (1) Decolonising research; (2) Kaupapa Māori research (Smith 2012); and (3) Cross-cultural research (Baker 2009).

A number of committed and knowledgeable individuals from different institutions have contributed substantially to the development of this proposal. The final configuration is that the contract will be held by Tiakina Te Taiao, with project management support from the Cawthron Institute. The primary researchers, Aneika Young and Gail Tipa, will also be supported by a multi-disciplinary team within Cawthron. It is our intention to take a flexible and inclusive approach within the project team, in particular regarding the potential for capacity building with manawhenua iwi researchers, but also with involvement of other research institutes where development of the project requires currently unforeseen skill sets.

E. AIM OF THE RESEARCH AND RELEVANCE TO CHALLENGE OBJECTIVE

The overall objective of this project is to develop a culturally relevant pathway to enable iwi to evaluate the potential of, and contribute to the development of, EBM tools and processes that are unique to Aotearoa New Zealand.

The project is divided into three key aims to be investigated during phase 1 of the Challenge.

This research will:

- Enhance our ability as kaitiaki to utilise the resources of our marine environment in a manner consistent with our tikanga and mātauranga Māori, to sustain the resources and in so doing continue to nourish our peoples now and into the future;
- Provide improved mechanisms to support the increasingly significant role iwi play in our marine estate;
- Uphold the commitment towards Te Tiriti o Waitangi, mātauranga Māori and effective knowledge exchange;

[3] Sustainable Seas Research and Business Plan 2015 (pg 9).

- Develop and re-validate culturally appropriate processes to support the practice of kaitiakitanga;
- Enhance theory and demonstrate the practice of Māori responsive adaptive management to ultimately strengthen decision making to present and future environmental challenges.

F. PROPOSED RESEARCH

The project has the following three **Research Aims** to achieve its objective.

1. To purposefully examine mātauranga Māori to define and restore the cultural context of Te Tai-o-Aorere and Mohua by:
    i. Utilising appropriate mechanisms to develop a shared understanding of the manawhenua iwi priorities; and
    ii. Determining how to appropriately represent mātauranga Māori – how it is gathered, analysed and utilised.
2. To evaluate environmental frameworks from a mātauranga Māori perspective to inform the development of a kaitiakitanga framework by:
    i. Identifying important tensions and synergies between environmental management frameworks, and the interdisciplinary interactions that have the potential to enhance the ability of manawhenua iwi to understand and intervene.
3. To develop a working relationship with the wider Challenge projects to initiate a marine EBM 'interface' dialogue process 'Te Wheke Hononga' to:
    i. Identify critical knowledge exchange needs, capacities, capabilities and learning processes;
    ii. Examine how to develop 'at the interface' to provide shared solutions and opportunities to connect EBM tools with the kaitiakitanga framework; and
    iii. Support the trial of a culturally relevant EBM approach and pathway in the case study areas of Te Tai-o-Aorere and Mohua.[4]

Research has been designed to achieve the three research aims (above) and to answer a series of high-level **Research Questions**.

1. How can we appropriately develop and identify manawhenua iwi vision/s, goals and priorities for coastal marine management in Te Tai-o-Aorere and Mohua?
2. What are the mātauranga expressions and experiences of kaitiakitanga in Te Tai-o-Aorere and Mohua for example, pūrakau (stories) and tohu (indicators) of local species and coastal marine ecosystems? (both historically and contemporarily)
3. What is an appropriate kaitiakitanga framework for manawhenua in marine coastal ecosystem management, in Te Tai-o-Aorere and Mohua?
4. What are the necessary capacities, knowledge and processes required to develop at the interface of kaitiakitanga and EBM?
    i. How can we effectively engage different knowledge systems on their own terms, e.g., through language (including allegory), symbols, principles and/or metrics?
    ii. How can we provide an equitable exchange of knowledge systems and develop and build shared understanding and application of EBM tools?
    iii. How do we engender improved effectiveness in environmental decision making

[4] We will make contact early in the project with other Sustainable Seas Challenge projects (see also Section '*Kotahitanga Challenge hui*'), in particular 'Trialling EBM CP2.1'. For example, we will consider the value of sharing hui with other research programmes. However, we note that an aim of He Pou Tokomanawa is to define EBM on iwi terms, and close engagement may not be appropriate until iwi have had time to consider their own frameworks and priorities.

processes for manawhenua iwi?[5]

5. What are the lessons learned from this research? How might they be addressed to inform innovations in Māori co-governance and co-management mechanisms for other marine EBM initiatives outside the case study area?

Two important outcomes of this project for manawhenua iwi will be:

1. The co-learning and enhanced capacity of manawhenua iwi to access, manage and analyse different types and forms of information within our own cultural context, beliefs and practices.
2. The identification of tools and resources that are founded upon or align with our own cultural principles and realities in marine management.

Methods

Research Aims 1 and 2

Kotahitanga iwi hui: Our project will begin with kānohi ki te kānohi hui with each iwi entity (e.g., attendees to include Chairs, General Manager, iwi delegate, and the research team) to initiate the project, its approach, objective, aims, methods, outputs; and establish the 'Kai tohutohu – Kai rangahau' project approach that includes: (1) A Kai tohutohu 'governance' working group that will guide processes and review research outputs with the Principal Investigators e.g., cultural safety, intellectual property agreements, mentorship and interactions with the Kai rangahau working group; and review performance to deliverables and research timelines (2) A Kai rangahau 'research' working group which includes our research partners who will drive, trial and undertake the research activities of the project.

Kai rangahau workshop: To familiarise Kai rangahau with the methods and analysis components of this project, our research partners will workshop with the Kai rangahau working group to build capability.

Desk top literature review: There are two distinct literature reviews. Reviews undertaken for other projects may also provide relevant material, especially those already conducted or in progress as part of various Sustainable Seas projects under the Tangaroa and Vision Mātauranga programmes.

1. The Kai tohutohu governance group will support the identification and help source any relevant mātauranga Māori and other mātauranga to enable the Kai rangahau working group to, as far as is practicable, collate information via written material including for example Treaty of Waitangi Deeds of Settlements, Briefs of Evidence and Cultural Impact Assessments. There may be various other local projects to draw on to inform manawhenua kaitiaki perspectives in marine management (Young 2014). In addition, the project will draw on relevant information sourced as part of Challenge project 3.1.1.
2. Frameworks that have been used by First Nations and other indigenous peoples to bridge traditional knowledge and western science will be analysed. We envisage this review extending beyond the coastal and marine literature (Šunde 2012).

Case study trial of new methods: To enable manawhenua iwi participants of all ages to collect their own field data we will trial with Kai rangahau working group iwi members and rangātahi novel

[5] We will discuss this issue with the Valuable Seas project team 2.1.1, 'Development of valuation frameworks and principles', who are charged with developing frameworks and principles for improved consideration of values in decision-making processes that affect the marine environment.

methods that are expected to include: 1) Smartphone apps that are in existence (e.g., an app is used by Ngāi Tahu fishers to record the location of eels captured and the weight and length of the eels to enable spatial mapping; 2) Photovoice participatory photography and digital storytelling methods. These methods enable individuals of different ages to be directly represented and create tools for advocacy and communication. The final determination of the apps and Photovoice methods that will be used in the project will be agreed with the Kai tohutohu working group.

We have carefully considered the following participatory and qualitative methods to engage manawhenua iwi participants in this project including wānanga, focus groups, and questionnaires. We will roll out a series of coordinated wānanga for each manawhenua iwi and entity, and two collective wānanga (14 in total). The first wānanga will take 3-4 hours; all others will take between 2-2.5 hours and for these we envisage having two wānanga a day.

Wānanga 1: Timatanga and Focus Groups with each manawhenua iwi:

The purpose of this wānanga is to introduce the project, discuss our objective, research aims and methods with the wider manawhenua iwi membership, and introduce the Kai tohutohu and Kai rangahau working groups assembled to deliver the project. We will discuss any concerns that participants may have with regard to their mātauranga Māori and outline the approach to gather and analyse the mātauranga Māori held by manawhenua iwi members about Te Tai-o-Aorere and Mohua.

The Kai rangahau working group will facilitate several small break-out focus groups with manawhenua iwi members. Facilitators will use a set of starter questions, maps and aerial photographs to help stimulate and focus discussion. Participants will be invited to express their beliefs and values held with respect to their relationships with the spiritual and natural world, identify the connection of these beliefs, environmental management, their personal experiences of Te Tai-o-Aorere and Mohua, their interactions, and how this compares with their understanding of the environment that earlier generations lived and interacted with. It is envisioned that mātauranga Māori expressions and experiences of kaitiakitanga in Te Tai-o-Aorere and Mohua, for example pūrakau (stories) and tohu (indicators) of local species and coastal marine ecosystems, will become apparent and we will seek to identify and clarify those.

The intention is to elicit informant-initiated responses as it is tāngata whenua who understand their cultural landscape, how it is valued and used, and the resources it provides them.

Using this approach participants will be able to spatially map their Te Tai-o-Aorere and Mohua uses/issues/priorities for action.

Graphically representing interests on maps and aerial photographs involves the preparation of a base map or aerial upon which sites are identified together with the values associated with each site. The reasons for selecting the site as culturally significant will also be recorded.

If there are mātauranga Māori practitioners who are unable to attend this focus group wānanga we will undertake five additional semi structured one-on-one interviews per manawhenua iwi (up to 20 in total).

Wānanga 2: Prioritisation with each manawhenua iwi

Following the initial wānanga process and transcribing and analysis of the mātauranga Māori contributed by manawhenua iwi, we will report back preliminary findings to manawhenua iwi at 'wānanga 3' where the analysis will be discussed, evaluated and amended. Because it is never possible to act on all suggestions that are identified, there will be a need to distinguish and identify priorities

and develop implementation pathways for development of shared manawhenua iwi priorities. Development of a means to prioritise management effort will have applications beyond this case potentially benefitting hapū and iwi planning.

Wānanga 3: Shared aspirations – manawhenua iwi collective wānanga

Following the analysis of the mātauranga Māori contributed by tāngata whenua of each manawhenua iwi, we will report back the analysis, shared findings and trial an online survey to determine the preference for different management actions at a collective manawhenua iwi wānanga. Analysis of this process is explained below.

Questionnaire and prioritising actions: Questionnaires are sometimes problematic for Māori. There are often low response rates and only those who are IT literate respond, potentially skewing the results. However, there is value in trying to reach greater numbers of whānau than those who regularly attend wānanga. We will design the framework for an online survey to use with focus groups at wānanga 3 and other online participants. The questionnaire will enable whānau to make choices by asking them to indicate their preferences for 'simple' alternatives with each comparative criteria. The specific criteria will be determined by the Kai tohutohu and Kai rangahau working groups. Each comparison will require the respondent to reveal their willingness to trade-off an improvement in one criterion for a worsening of the other, and the software will use these responses to estimate each respondent's complete relative preference ranking over the defined criteria. The preference rankings over the separate criteria will provide a way of estimating how people value different options. Developing a methodology that enables Māori to prioritise in a safe, sensitive and transparent way will be a valuable output from this research.

Analysis

We will use several methods, identified below, to help organise and assess the knowledge contributed by manawhenua iwi participants, including:

Spatial mapping: We will uplift raw data from maps and aerial photos into a mapping interface, which ultimately will be GIS – but initially could be something simpler that displays attributes, as determined by the Kai tohutohu and Kai rangahau working groups, to be used to collate and organise mātauranga Māori.

Pressure-State-Response (PSR) framework: This framework has been used internationally (e.g., OECD 1999 and Rapport & Singh 2006), and may help communicate and describe the changes that manawhenua have observed in Te Tai-o-Aorere and Mohua and to initiate discussion around possible causes (Tipa et al. 2014). The pressure-state-response framework can assist with understanding how changes come about in any given environment or ecosystem where: *Pressures* are the activities or practices that cause changes to the state of the system (note: they may also be referred to as 'threats'); *State* refers to some quality or qualities of the Te Tai-o-Aorere and Mohua with which manawhenua iwi are concerned; and *Response* refers to the suggested mitigation or solution identified by manawhenua iwi to restore the state of the site and reduce the impact of the known pressure. Importantly, the pressure-state-response framework enables us to understand how the cultural context has changed over time, and how the changing context has impacted cultural beliefs and practices.

Concept Mapping: This will be undertaken to provide a visual representation of the conceptual models (i.e. representations of how tāngata whenua think Te Tai-o-Aorere and Mohua are visually

represented). This information and the subsequent analysis of key themes and literature feeds into the analysis of the pressure-state-response tables. Once the concept map is developed, different types of analyses will be undertaken using Decision Explorer3 (or similar) to identify common themes and priorities. Analytical tools such as domain analysis, centrality analysis and cluster analysis will enable the identification of the shared priority pressures and issues captured in the concept maps. The concept maps are also a valuable communication tool as they enable a considerable amount of written material to be summarised into a single-page diagram for whānau to first validate, and secondly, work with.

Research Aim 3

Kotahitanga Challenge hui: The purpose of this hui is to explore the potential of Te Wheke Hononga to undertake project participation and planning with other Challenge projects and researchers. We will make contact with other Sustainable Seas projects and begin to establish relationships with project leaders early in our project. We note, however, that an aim of He Pou Tokomanawa is to capture iwi approaches to EBM, and active cross-project engagement may not be appropriate until iwi have had time to consider their own frameworks and priorities. Nonetheless, we will explore options for engagement throughout the process; for example, it may be appropriate for other researchers to attend He Pou Tokomanawa hui and to present their projects to iwi. The Kai tohutohu and Kai rangahau working groups will consider the best way to interact with other programmes during the early stages of the research, i.e., before iwi have identified their preferred frameworks and priorities. This will ensure that engagement is coordinated and that the aims of He Pou Tokomanawa are prioritised.

Wānanga 4: Te Wheke Hononga

Following the results of the online survey of shared findings and preferred management actions, we will hold a collective manawhenua iwi wānanga to disseminate findings and key lessons learned to the wider Sustainable Seas Challenge audience, such as key researchers from the other Challenge projects. This will initiate the 'Te Wheke Hononga' dialogue process to determine how to develop 'at the interface' – principles, language, success measures, and appropriate metrics – to identify opportunities to connect EBM tools with the kaitiakitanga framework. This hui offers an opportunity to find synergies and align external objectives with manawhenua iwi vision/s, strategic goals and priorities.

Wider specific Challenge projects in Valuable Seas, Managed Seas and Our Seas and Tangaroa will have an opportunity to establish connections, research alignments and partnerships at the interface that can then look into developing synergies pertaining to manawhenua iwi priorities for marine EBM and kaitiakitanga outcomes. Such connections will enable those projects to fulfill stated Cross Programme Vision Mātauranga objectives as articulated in the Challenge Research Plan, whilst also ensuring iwi are adequately informed about, and have ample opportunity to contribute to, the development of models and resources for the trial of EBM within their rohe.

Te Wheke Hononga – Connections with the wider Sustainable Seas Challenge

He Poutokomanawa has evaluated the synergies and alignments with other potential projects across the wider Sustainable Seas Challenge, as mentioned above. The focus of Te Wheke Hononga is to establish the links to the science with respect to Aims 1 and 2 of He Poutokomanawa, with particular emphasis on establishing an interface with EBM through the results from the PSR tables and the spatial

mapping exercise. Wānanga 4 will also guide the way in which we connect with relevant projects. The following projects have linkages that will support the objectives of He Poutokomanawa, and assist the wider projects to achieve Vision Mātauranga aspects of their projects.

Trialling EBM CP2.1 (Lead – Judi Hewitt)

Trialing EBM is a cross-programme project. The first workstream of this project is to find out what aspirations iwi/hapū and different stakeholders, including community groups and the wider public, have with respect to the marine area. Information from Aims 1 and 2 of He Poutokomanawa during the project's first year will feed into the proposal development of CP2.1 (May 2017) and the first set of meetings (July – September 2017), where aspirations (and the ability of the Challenge to help achieve these) will be discussed. It is likely that some of these meetings will be He Poutokomanawa meetings with CP2.1 providing information on Challenge capabilities. Further joint meetings will be held in 2018 and 2019 as He Poutokomanawa and CP2.1 connections grow.

Valuable Seas 2.1.1 (Development of valuation frameworks and principles; Lead – Jim Sinner)

Information from the first two aims of He Poutokomanawa will also feed into this project, particularly Milestones 2.3 (stakeholder workshop to be held in March 2017) and 2.4 (tentative framework drafted June 2017). The results will be disseminated for comment at 2.5 (workshop to present draft framework in October 2017) in part through He Poutokomanawa. Finally, the validation of the framework will take place in the case study area in conjunction with work in He Poutokomanawa and CP2.1 (beginning December 2017, finishing June 2019).

Valuable Seas 2.1.2 (Mauri Moana, Mauri Tangata, Mauri Ora – Documenting social values; Lead – Shaun Awatere)

This project has strong alignments with He Poutokomanawa. Information collected in Aims 1 and 2 of He Poutokomanawa will feed into workstreams 2 and 3 (end date December 2017). A work plan for workstream 3 (October 2017 – June 2019) will be determined in conjunction with He Poutokomanawa and CP2.1.

Our Seas 1.1.1 (Testing EBM – Supportive participatory processes for application in multi-use marine environments; Lead – Paula Blackett)

This project may have connection with a local Māori researcher with regard to the process of engagement and understanding the way in which iwi in the research area are responding to the wider Sustainable Seas projects, in particular the participatory processes of iwi.

Connections with Managed Seas projects[6]

The majority of Managed Seas projects in the first phase of the Challenge will be focused on developing tools for the case study area, and in particular Tasman and Golden Bays. There are three projects currently underway; one on risk and uncertainty in decision-making, which will begin in 2017. He Poutokomanawa connections with the projects underway are indicated below. Detailed proposals for these can be found on the Sustainable Seas website.

[6] This Managed Seas section has been adopted from Chris Cornelison, retrieved through email (2016).

Managed Seas 5.1.1 (Ecosystem models; Lead – Ian Tuck)

This project is largely centred on the development of an Atlantis model for the Tasman Bay and Golden Bay regions. Ecosystem models such as Atlantis can be used to simulate the real world, and explore "what if" scenarios to help understand the implication of alternative management or environmental conditions. Close engagement (e.g. embedded participants) with stakeholders and iwi is required to ensure that the models developed address their needs and can be used to support decision-making processes. Aims 1 and 2 will assist in contributing knowledge that informs these models and in developing scenarios that incorporate iwi interests. Iwi engagement with the models, for instance through co-developed participatory tools (see project 5.1.4), is a good example of how the project might link to Aim 3 of He Poutokomanawa.

The biggest challenge for this project at the moment is timing around obtaining stakeholder and iwi input. Ideally the project would have an engagement process in place to connect with iwi in the Top of the South right now that would enable and ensure continued and strengthening engagement over the course of the Challenge. In talking with Shaun Ogilvie, one way of addressing this might be to identify some people within the different iwi who can act as early connectors to this project and related engagement (i.e. early workshops), and in turn link back to He Poutokomanawa as Aim 3 develops. It is anticipated that engagement would grow and strengthen as Aims 1 and 2 are completed and Aim 3 progresses.

Managed Seas 5.1.2 (Spatially Explicit Decision Support (SEDS) Tools; Lead – Carolyn Lundquist)

This project aims to develop tools that are able to explore trade-offs between different resource uses, objectives and stakeholder values, and their impacts on biodiversity and ecosystem health. In terms of the Tasman-Golden Bay region, the project aims to develop spatial models for examining cumulative impacts of multiple stressors on marine ecosystems and resources. These tools will be developed in partnership with a number of key stakeholders as well as Māori; participatory interactions would be assisted through the Challenge's Cross Programme activities (Judi's project described above). As in the case of the ecosystem models above, the knowledge from Aims 1 and 2 will contribute to the development of SEDS tools, and there is also good potential for co-development opportunities with Māori that would link with Aim 3.

Managed Seas 5.1.4 (Participatory tools; Lead – Ross Vennell)

This project aims to develop and implement widely accessible tools for facilitating participation in decision-making and communicating science findings and knowledge in new and exciting ways. The project includes two strands: 1) interactive interfaces for underlying models that support decision-making (specifically, interactive tools developed to assist in communication of results from 5.1.1 Ecosystem models), and 2) digital platforms for two-way exchange of data and knowledge (e.g. interacting with models of connectivity between SS regions). There is scope in this project to take on an early career Māori researcher, for instance to help co-develop the technical interfaces. These opportunities for 'co-development' could connect nicely with Research Aim 3 of He Poutokomanawa. This concept could go wider than this project, and you might imagine a network of Māori researchers across the Challenge who could collectively contribute to the lessons expressed in Aim 3 and this would also link with the VM programme.

EBM trial and tool development

To evaluate environmental frameworks to inform the development of a kaitiakitanga framework, we will examine characteristic attributes and examples of practice to review relevant theoretical positions using triangulation methods. Triangulation describes the use of multiple observations, datasets, techniques or conceptual frameworks to examine an issue (Moris and Copestake, 1993). Triangulation is already used in participatory appraisals and development studies (Olsen, 2004).

We plan to select a set of conceptual frameworks, each of which is of potential value to the use of mātauranga Māori and EBM. The five frameworks we plan to analyse are EBM, ecosystem services, social ecological systems, DPSIR, and cumulative effects assessments. Additional frameworks may be identified by the Kai rangahau team. Triangulation will require us to explore what it means to improve understanding and management of marine ecosystems according to the five frameworks selected. Taking each framework in turn, we will: (i) examine characteristic attributes and examples of practice; (ii) review relevant theoretical positions; (iii) summarise the framework's normative vision and its actual and potential contribution to marine management; (iv) assess its ability to examine changing cultural contexts, beliefs and practices; and (v) review international applications with First Nations to assess its conceptual and operational utility and limitations for manawhenua iwi. Finally, we plan to systematically analyse interactions among the frameworks. We plan to identify important tensions as well as synergies to provide fresh thinking to inform the development of our kaitiakitanga framework. We believe this in-depth analysis will enable us to recommend key elements that EBM needs to recognise and provide for a restored cultural context that sustains the beliefs and practices sought by manawhenua iwi.

As noted above, the outputs from Research Aims 1 and 2 of the project will inform the dialogue process 'Te Wheke Hononga' to provide for the development of kaitiakitanga based and/or informed EBM tools and mechanisms. The nature and extent of the contribution manawhenua iwi will have in such developments, and in the trial of EBM in Te Tai-o-Aorere and Mohua, will be determined and negotiated with key Challenge personnel (particularly for projects within Our Seas, Valuable Seas and Managed Seas) and the project lead for the trial (Judi Hewitt).

Beyond 2019

The Research Plan notes the need for Phase 2 of the Challenge to extend and test its work across the broader focal region and nationally to iwi and hapū with growing marine resource pressures. In addition, other iwi involved in future phases of the Challenge could leverage off this project to support effective extension of the culturally relevant pathway and Te Wheke Hononga to other regions. Depending on timing, iwi from the case study area for Phase 2 of the Challenge could be involved in this dialogue and negotiation process.

As a manawhenua iwi collective, we are well placed to support the Challenge in sharing information and tools to a wider Māori audience and to aid in the development of partnerships with other groups. In addition, the partnership approach represented in this proposal is unique and will likely offer a range of useful lessons and opportunities for improvement in any Phase 2 research undertaken with iwi in the broader focal region.

We are aware that aspects of this proposal are ambitious and will require some ongoing activity beyond Phase 1 of the Challenge to ensure uptake of outputs produced in the case study area. Outputs are reliant on Te Tai-o-Aorere and Mohua manawhenua iwi participation and involvement to inform

the project, while fulfilling their kaitiaki objectives for the management of marine resources in our rohe. The capacity building opportunities offered through this project, and our overall involvement in the Challenge, will greatly enhance our ability to use and apply Challenge outputs into the future.

G. LINKAGES AND DEPENDENCIES

Aspects of this proposal are reliant on sound connections and collaborations with other programmes and projects across the Challenge. In particular (as noted above), it will be important to work in partnership with Valuable Seas project 2.1.2 'Mauri Moana, Mauri Tāngata, Mauri Ora'. Our proposal provides a sound iwi-founded platform for project 2.1.2 to explore iwi values in the marine estate, and where possible should be conducted collaboratively to reduce engagement fatigue and inefficiencies.

In addition, this project will inform the Challenge's collective approach to project methodologies, milestones and mechanisms for information exchange and engagement with case study area iwi. As noted in section F – Aim 3, a key task will be to determine how to develop 'at the interface' in the assessment of the relationship between the knowledge and application of kaitiakitanga and EBM principles and science. Our proposal will draw on the expertise of project team members within 2.1.2 and other projects (particularly within the Our Seas and Managed Seas programmes). We will be able to provide the place-based kaitiakitanga foundation to those assessments, and to the development of tools and models for EBM.

This project will also link with projects from the Dynamic Seas and Managed Seas programmes in terms of undertaking some of the work required in Aim 3 to identify, develop and explore kaitiakitanga informed EBM tools and opportunities for practical support to kaitiaki initiatives. The structure provided in the project will enable work with these projects at a practical level to maximise efficiencies and broaden the scope of tool development/testing and physical science that will benefit the iwi and the Challenge as a whole.

Finally, there are also a number of linkages to other projects within the Tangaroa programme including:

- 3.1.1 – Using information of relevance to Te Tai-o-Aorere and Mohua obtained in 3.1.1 to inform wānanga and analysis in the development of the kaitiakitanga framework;
- 3.1.3 – Producing information that will inform and form the potential basis for the development of resources and strategies for kaitiaki based marine management;
- 3.3.1 – Informing the 'in-practice' realities of the application of Māori lore and law in marine management.

H. COLLABORATIONS

Given the unique and place-based nature of this project, we are not dependent on any national or international collaborations.

I. INTERNATIONAL LINKAGES

We are aware of international work of potential relevance to this project including in Canada[7], Australia[8] and the United States of America.[9] We will monitor progress in these projects and the lessons they may offer, and many of our research partners bring with them relevant linkages that our project may benefit from. In addition, the timing of VM project 2.1 'International comparative study: Incorporation of indigenous approaches to guardianship and stewardship' is such that the exploration of our indigenous interaction with EBM may benefit from the findings and outputs of this work.

However, the place-based nature of our project means that, while we are open to opportunities for connecting with other indigenous peoples, we are not dependent on those international links to complete the aims set out in this research proposal.

J. ALIGNED FUNDING AND CO-FUNDING

This project relies on the generosity, participation and contribution of Te Tai-o-Aorere and Mohua tāngata whenua of manawhenua iwi in terms of time, mātauranga Māori and input to research that will enhance outcomes across the Challenge. We highlight and acknowledge the capacity and resource limitations of these groups and, given there is no commercially-driven element to this proposal, there is currently no co-funding identified for this project.

However, we will be actively exploring the Challenge Innovation Fund or MBIE investment opportunities for iwi-centred research that builds on or aligns with the research and outputs provided for in this project.

K. VISION MĀTAURANGA

As inherently 'island people', the sea has played a dominant role in our manawhenua iwi histories, knowledge, survival and society. Over thousands of years we, and our Polynesian ancestors, have learned to live with the perils and the bounties of the ocean. We have a unique and ancient place-based understanding and relationship with the sea. This relationship and the beliefs and practices that evolved from that context is both customary and commercial in nature, and continues to be a critical part of our manawhenua iwi life and wellbeing.

This project recognises that as tāngata whenua and Treaty of Waitangi partners, we have a central role to play in creating mātauranga Māori pathways for developing options and solutions for living sustainably from the resources of the sea now and for future generations. This approach aligns strongly to the Vision Mātauranga (VM) Policy and its aim to 'unlock the innovation potential of Māori knowledge, people and resources'. This project contributes to the VM themes outlined below, providing credible pathways for the implementation and uptake of results.

- Indigenous innovation – Identify distinctive approaches and options founded upon tikanga and mātauranga Māori, and in conjunction with complementary Challenge programmes, that marine management in New Zealand will benefit from.

[7] http://mappocean.org/
[8] http://www.ecosmagazine.com/print/EC12276.htm
[9] http://www.opc.ca.gov/category/programs-marine-protected-areas/

- Mātauranga – Work with knowledge holders to develop novel kaitiakitanga informed EBM tools and models.
- Taiao – Development and maintenance of effective relationships and stakeholder collaborations required to enable kaitiakitanga and manage marine environments and associated taonga species.
- Hauora / Oranga – Provision of frameworks and tools to manage and monitor the success of initiatives to improve the health and wellbeing of Māori communities through effective and meaningful marine management.

L. ENGAGEMENT AND CAPACITY BUILDING

As a potential Pou Tokomanawa project for the focal area manawhenua iwi, a critical and central element to our proposal is the effective engagement, participation and partnership of our people. In addition, given our connections and networks within other Te Tau Ihu iwi and iwi nationally, we anticipate being able to support Challenge engagements beyond the case study area.

In terms of capacity building, manawhenua iwi will benefit from specific mentoring and participation in:

- Science design, development and production;
- Kai tohutohu governance and leadership and Kai rangahau research working groups;
- Te Tau Ihu student participation in wānanga, tool and resource development;
- Engagement with, and presentation of research to other iwi, agencies and communities;
- Development of a responsive framework that will have potential beyond the current case;
- Development of a means to prioritise management effort which will have application in hapū and iwi planning.

The western scientific community will benefit from the improved relationship between research institutes and iwi, and from the process and outcomes of establishing genuinely iwi-motivated research priorities. We aim to provide a model of meaningful engagement that can be emulated in other parts of the country, and in *Te Wheke Hononga* we will facilitate well-informed and productive engagement for mutual benefit to iwi and established research projects.

All project participants will seek opportunities to engage with Māori researchers (including local experts or kaitiaki), or potential future researchers. We will look for opportunities to establish student research projects (such as honours or masters theses), studentships or contracts to maximise engagement of new Māori researchers. As appropriate, the tasks or roles of the initial research team may be transferred to emerging Māori researchers as the project progresses.

M. ROLES, RESOURCES

A multi-disciplinary, multi-agency research team is required to deliver the project led by Tiakina Te Taiao. The best team has been assembled with a proven and demonstrable track record of working

with Māori, with expertise in mātauranga Māori, social science, participatory approaches, and marine science to contribute to this project. This includes:

i. Manawhenua iwi decision makers, and kaitiaki / knowledge holders;
ii. Facilitation, social science and design of frameworks to execute multiple methods of data collection, analysis (including GIS) and writing up to explore the interface of mātauranga Māori and science;
iii. Communication and capacity building to facilitate shared understanding within the Te Tai-o-Aorere and Mohua iwi and the Challenge EBM science community.

The project team includes:

Frank Hippolite (Ngāti Koata) – Project leader: to provide leadership and oversight; coordination of the Kai tohutohu and Kai rangahau working groups under the mantle of Tiakina Te Taiao. Frank will be responsible for facilitation of connections and relationships with manawhenua iwi; and information to other iwi within Te Tau Ihu and nationally.

Dr Gail Tipa (Ngāi Tahu) – Principal Investigator; Social science and Planning Team Leader. Dr Gail Tipa of Tipa and Associates is an experienced social scientist based in Dunedin. Key areas of research expertise include investigations into what collaborative management means in a New Zealand context, undertaking research that investigates linkages between environmental condition and the health and well-being of Māori, iwi participation in planning and management (primary focus is natural resource planning and management), developing resource management tools for communities to use to increase their participation in resource management (e.g., Cultural Health Index, Community Opportunity Mapping and Assessment (COMAR6), decision support systems), developing capacity within Māori communities to take advantage of existing tools and mechanisms (e.g., iwi plans, inventories, Cultural Impact Assessments), developing models of participation (relationship agreements, protocols, etc.) and documenting cultural association with areas and resources. Dr Tipa developed the participatory methodology used during the WRISS and the Maniapoto Special Project to engage Waikato River Iwi, and has continued to develop and improve these approaches based on her vast experience in working with Māori.

Aneika Young (Ngāti Rārua, Te Ātiawa) – Co-principal investigator; intermediary between scientists and manawhenua iwi, coordination of Tiakina Te Taiao communications to manawhenua iwi. Aneika has whakapapa affiliations to both Te Ātiawa and Ngāti Rārua in Te Tau Ihu o te Waka a Māui, with direct connection to Motueka. Aneika is an active kaitiaki within Te Tau Ihu o te Waka a Māui for her whānau and hapū which is reflected in her roles and iwi representation on various boards and entities in the rohe. She completed her masters in 2014 “Ngā Uara Tangaroa o Ngāti Rārua me te Ātiawa whānau, mō Te Tai o Aorere: A Motueka mana moana perspective on cultural values within the ecosystem services framework for the Tasman Bay”, providing relevance to the current project for Te Tai o Aorere and Mohua. Her research interests include working at the interface between mātauranga Māori and western science. Her expertise and work experience is heavily focussed in the Māori resource management space on the ground, through iwi engagement, preparation of Cultural Impact Assessments and Cultural Health Indicators reports advocating for whānau, hapū and iwi values in environmental decision-making. She currently holds a contract with Cawthron, of which her role facilitates connection between iwi and Cawthron Institute scientists on various projects providing science capability for Tiakina, while building Māori capability within Cawthron.

Dr Emma Newcombe – Project management and research oversight, coordination and planning; intermediary between scientists and manawhenua iwi; facilitator of information between

manawhenua iwi and other Challenge projects. Research input in biophysical science. Emma is a Coastal Ecologist, with experience in project management and of working in the cross-cultural research space.

Dr Charlotte Šunde (Ngāti Tārara, Pākehā) – Social science research support to Kai rangahau and engagement with other projects in the Challenge through Te Wheke Hononga. Charlotte has whakapapa to the Nelson region dating from 1841. She is an experienced social science researcher at the Cawthron Institute in Nelson, and is involved in other Sustainable Seas Challenge projects in the Valuable Seas and Our Seas programmes. Her qualifications in Resource and Environmental Planning include environmental science and a strong focus on cross-cultural understanding in environmental practice. She has contributed to a number of national science research programmes partnered with iwi and Māori researchers (such as the FRST-funded Iwi Ecosystem Services and Manaaki Taha Moana projects). Her key outputs relevant to this project include a published report that critiqued the 'ecosystem approach' from the perspectives of different cultural knowledge systems, a published report that reviewed and critiqued the international literature on building effective cross-cultural relationships in environmental management, and a chapter exploring spiritual and cultural values of the oceans and coasts for an international book, *Ecological Economics of the Oceans and Coasts* (Edward Elgar, 2008).

Robyn Crisford – Geospatial Analyst Consultant**.** Robyn previously worked for the Geospatial Team at the Department of Conservation as a geospatial analyst. She has led several high level pieces of work such coordinating all GIS support for the Battle for the Birds project, as well as being a key contact and trainer for the Pesticide, Weeds and ROFS mapping applications. Robyn also acted in the role of the South Island GIS team coordinator when needed. This position involved a high level of mapping support for field operations such as aerial pest control, weed control and fire responses. Requirements included daily support of mapping applications, GPS support, facilitating training sessions, and developing training material. Robyn's relevant skills include the ability to engage successfully with stakeholders such as TB Free New Zealand, Banks Peninsula Conservation Trust, Rural and Urban Fire Authorities and Ngā Whenua Rāhui. Robyn has a competent understanding of Māori culture and tikanga, through studying Māori Resource Management and Te Reo Māori. A strong component of her expertise includes cultural mapping and recognising the sensitivities for Māori when developing maps. She attended and presented at the recent Māori GIS conference in 2015 at Waitangi where she gained understanding around the complexities of cultural mapping and GIS for Māori across Aotearoa, while building GIS capabilities for Māori communities through her presentation.

We will also establish:

- A Kai tohutohu Leadership Group (approx. 8 members) made up of manawhenua iwi representatives that have been endorsed by the four iwi, including relevant iwi leadership representatives and Principal Investigators.
- A Kai rangahau working group (approx. 8 members) made up of iwi researchers from the four iwi, key project personnel and key personnel from project 2.1.2 to facilitate and operationalise aspects of the project.
- Science capability through accessing expertise at Cawthron, NIWA, and other scientists where appropriate for Aim 3, particularly where relationships have already developed.

N. RISKS AND MITIGATION.

The following risks have been identified:

Risks	**Mitigation measures**	**Responsibility**
Inability of manawhenua iwi to participate effectively in project requirements given their involvement in other Challenge projects, and other challenges.	To work with the Challenge on ensuring effective and efficient coordination of research and interactions relevant to case study area iwi. Communication Strategy for each iwi will also assist to ensure full participation and involvement of the right manawhenua whānau, hapū and iwi participants.	Project Lead and research team
Differences of opinion between representatives of iwi during the project.	As a collective body of the manawhenua iwi, Tiakina Te Taiao is well placed to manage this risk and identify mechanisms to address their impacts.	Project Lead

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