

## Phase II Full Research Proposal

PROJECT TITLE	Theme 2.2, Encouraging Restorative Economies in NZ Marine Spaces
A. SHORT TITLE:	Restorative Marine Economies
B. THEME/PROGRAMME	Sustainable Seas, Theme 2: Creating Value From A Blue Economy (Phase II)

C. PROJECT KEY RESEARCHERS (CVs for all listed to be provided in SharePoint container using template provided in SharePoint)			
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Researcher	Dr. Emily Douglas	NIWA	
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Researcher, Environmental Economist, Māori governance	Sandra Cortes Acosta	EnviroStrat	
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D. CO-DEVELOPED WITH / reviewed by			
Name	Role	Organisation / company / agency	Level of partnership
Emma Judd, Rebecca Barclay	Advisor – Auckland Council needs and engagement	Auckland Council	Co-development partner
Mathilde Richer de Forges	MPAs benefits, blue economy advice	DOC	Co-development partner

Jane Harkness	SEEA, Natural capital accounting, environmental statistics	StatsNZ	Watching brief
Trudy Heath	Iwi / TRONT input and guidance regarding runanga engagement	Te Rūnanga o Ngāi Tahu	Co-development partner / watching brief (pending case study selection)
Blair Keenan	Advice - Regional Council economic policy and natural resource management	WRC	Co-development partner
Nina Murphy	Hazards and climate adaptation – district level	Hauraki District Council	Watching brief
Carl McGuinness	Marine impact investment – approaches and tools from international experience	The Nature Conservancy	Co-development partner
Brendon Barnes	Business and investment opportunity assessments	Quayside Holdings	Co-development partner

#### E. ABSTRACT (250 words)

Regional councils, iwi, philanthropic and impact investors, and community-scale ecological entrepreneurs are increasingly interested in Restorative Economies (RE) (EnviroStrat 2019). Transitions to RE require investment, new science and technology, altered practices and regulations, and new measures of performance (EIU 2015; OECD 2016).

##### What is RE

Although the concept and definition of RE continues to evolve, it refers to the melding of business activities and environmental restoration.<sup>1</sup> The aim is to **foster new investments and business enterprises that reverse environmental degradation** (instead of ignoring degradation or contributing to it)(Hewitt *et al.*, 2018).

This project will highlight opportunities and challenges in building coastal and marine RE in New Zealand, starting with defining and socialising the concept of RE among iwi and stakeholders. Interest in RE was established in Phase 1 and comes from various sources: **iwi, communities and individuals interested in restoring their local environment; businesses aiming for less environmental impact and more resilience through activity diversification; the sustainable finance sector and councils interested in using environmental credits to spur sustainability solutions and generate benefits in their communities** (EnviroStrat 2019).

<sup>1</sup> Paul Hawken initially introduced the concept of RE in the 1993 book - The Ecology of Commerce. He defines RE as “restorative economy tries to create a market in which every transaction feeds the integrity of the commons, as opposed to what we know today, when consumption causes degradation and harm.”

This research aims to develop knowledge and decision support tools to enable market mechanisms for restoration of coastal and marine environments to emerge. Investment propositions will leverage public and/or private sector investor interests, but require the development of frameworks to recognise and capture the full range of benefits (e.g. local and regional economic success; social and cultural well-being; maintenance and enhancement of ecosystem services and biodiversity; climate change mitigation and adaptation). Mechanisms for measuring impact and uncertainty will be incorporated into frameworks to provide the assurances that investors, guardians, and other beneficiaries require. We will illustrate thematic and geographic priorities for viable RE investments and develop proof-of-concepts using place-based research, building the relationships and roadmaps required for the future of the sector.

The project has significant policy relevance as Aotearoa New Zealand develops its natural accounting and experiments with green financing - especially in Regional Councils, corporate off-setting, and Iwi restoration and finance contexts, The research is intended to support government policy and inform the mainstreaming of RE – particularly in relation to investments for climate, water but also biodiversity<sup>2</sup>

#### F. RELEVANCE TO CHALLENGE OBJECTIVE (150 words)

The Sustainable Seas Challenge Objective is **“To enhance utilisation of our marine resources within environmental and biological constraints”**. The development of RE goes beyond the concept of operating within environmental and biological constraints by actively seeking to enhance the biodiversity and health of degraded ecosystems. It develops an economy where natural capital utilisation and ecosystem health are linked via market mechanisms where a broader range of resources and ecosystem services are valued. RE will enhance marine resources through investment and production practices that balance growth with a focus on regenerating ecological health, ensuring local-to-national scale *social, cultural and environmental well-being*. A restorative economy recognises all dimensions and beneficiaries of the economy and all values that marine environments currently produce; it enables community-based solutions and at-scale opportunities. This project will address the potential of RE at multiple scales, including using case study analysis to consider small, bottom-up, community-led RE projects, which play a pivotal role in delivering the public value of RE. Restoration initiatives commonly arise at a community scale, while RE have the potential to generate community scale solutions. This vision of a blue marine economy is increasingly expected by ethical investors and consumers and is aligned with Mātauranga Māori.

G. OUTPUTS	This project will produce the following Outputs:	Linked to which Theory of Change Outputs:	Explain briefly your plan to ensure uptake by iwi and stakeholders:
<b>RA1: Review of international and New Zealand models and best practice for restorative economies.</b>			
	Workshop to confirm approaches and scope of insights papers and establish coordination with research partner.  Strategic Project Advisory Group (SPAG) established consisting of stakeholder representatives and experts  A report about blue carbon markets, restorative economic	Frameworks for decision making that consider multiple values and blue economy activities developed and evaluated.	All outputs are co-designed by iwi and stakeholders – building on the engagement and input during progenitor projects (e.g. 2.1 <i>Transitioning to a blue economy in New Zealand</i> ) and conversations during the development of this proposal. Co-development will continue as 2.2 research is tailored over the life of the project.

<sup>2</sup> DOC has just published the Te mana o te taiao Aotearoa NZ biodiversity strategy 2020, which has a pillar on protection and restoration of ecosystems and biodiversity.

	<p>models &amp; innovative finance mechanisms (Output 1), and an article on the role of ecosystem services in RE (Output 2); These outputs will touch on the potential demand for carbon credits by NZ organisations (industry, corporate, government).</p> <p>Lay summaries of each output (1a, 1b) will also be produced.</p> <p>A policy landscape assessment report (Output 3) about NZ potential for transition to marine and coastal RE and barriers, risks and opportunities and potential business and investment models.</p>		<p>The co-development process will ensure that the research has identifiable benefits and value for iwi, and clear pathways for them to contribute and implement it.</p> <p>Research insights and outcomes will be summarised and shared through tailored events and platforms – for iwi, banking and investors, regional councils, other.</p> <p>Investment and finance knowledge gained from the project will be applied in ways that ensure relevance for iwi and investors.</p>
<b>RA2: Development of impact frameworks and measurement infrastructure for growing restorative economies</b>			
	<p>An article / briefing paper (Output 4) on the utility of integrated impact metrics and data frameworks to assess multiple benefits using appropriate methods, and where they accrue, derived from different scales and categories of RE.</p> <p>Guidelines (Output 5) on assessment tools and valuation methods for restoration outcomes – including how objectives are set, and appropriate monitoring and evaluation (within EBM)</p> <p>Workshop/round tables for discussing frameworks for combining metrics and considering risks</p>	<p>(i) Guidelines developed, opportunities identified and innovations, for transitioning to a blue economy for businesses operating in the marine sector.</p>	<p>Several approaches are deployed to ensure uptake:</p> <ul style="list-style-type: none"> <li>-co-design (decision-making) tools / guidelines / frameworks together with research partners and validate effectiveness through on the ground application. This includes collaboration with Maori researchers from 2.3. as well as co-design with iwi of case-studies – pending selection during RA2-3.</li> <li>- generate knowledge that is applicable in the context of business decision making – especially investment and finance decision.</li> <li>-combine the need for sectoral solutions (fisheries, tourism, aquaculture, renewable energy) with ecosystem and socio-economic considerations at local / regional level (intra-sectoral) and investor interests (commercial, philanthropy, public sector).</li> </ul>

			<p>-actively share the research insights through the co-development partners' networks to enable pro-active interventions (to climate mitigation, adaptation, land, and freshwater pressure etc.) through market-based solutions and entrepreneurship.</p> <p>In seeking uptake, Mātauranga Māori and potential IP implications will be considered – including the protocol for disclosure and use.</p> <p>The connection into SEEA and LSF is purposeful to ensure relevance to the well-being focus of the Government's agenda and the need for public budget allocation to catalyse broader sustainability solutions and private investment.</p>
<p><b>RA3: Establishing investor needs and investment prioritisation approaches for restoration and blue economy</b></p>			
	<p><b><i>Co-developed investment prioritisation and risk-assessment framework</i></b>, for scaling up within EBM (community/local – regional – national), explicitly incorporating Māori values, and investor and stakeholder priorities and perceptions of risk. This includes criteria informed by Māori values.</p> <p>A guide (Output 6b) on full-cost accounting assessment tools and evaluation methods that illustrates the status and opportunities for RE at selected priority coastal sites.</p> <p><b><i>Co-developed investment blueprint (Output 6a)</i></b> for at-scale restorative economies – leveraging opportunities / needs in both land (e.g. pollution mitigation in coastal catchments and estuaries) and sea (e.g. coastal water quality, storm surge protection) systems.</p>	<p>(i) Guidelines developed, opportunities identified and innovations, for transitioning to a blue economy for businesses operating in the marine sector.</p>	<p>Several approaches are deployed to ensure uptake:</p> <ul style="list-style-type: none"> <li>-co-design (decision-making) tools / guidelines / frameworks together with research partners and validate effectiveness through on the ground application. This includes collaboration with Maori researchers from 2.3. as well as co-design with iwi of case-studies – pending selection during RA2-3.</li> <li>- generate knowledge that is applicable in the context of business decision making – especially investment and finance decision.</li> <li>-combine the need for sectoral solutions (fisheries, tourism, aquaculture, renewable energy) with ecosystem and socio-economic considerations at local / regional level (intra-sectoral) and investor interests (commercial, philanthropy, public sector).</li> </ul>

	<p>Identify interests and barriers to uptake, potential investors, job creation etc.</p>		<p>-actively share the research insights through the co-development partners' networks to enable pro-active interventions (to climate mitigation, adaptation, land, and freshwater pressure etc.) through market-based solutions and entrepreneurship.</p> <p>In seeking uptake, Mātauranga Māori and potential IP implications will be considered – including the protocol for disclosure and use.</p> <p>The connection into SEEA and LSF is purposeful to ensure relevance to the well-being focus of the Government's agenda and the need for public budget allocation to catalyse broader sustainability solutions and private investment.</p>
<p><b>RA 4: In-depth analysis/modelling of selected initiatives using impact frameworks and measurement tools</b></p>			
	<p><b>Case studies selection and co-developed work plans</b> (with hapu and /or iwi and stakeholders) identifying the scope, scenario assumptions, metrics and tools</p> <p>Oral presentation and/or recorded/online webinar (Output 7) delivered to National Science Challenges about case study outcomes (see MS8 section S)</p> <ul style="list-style-type: none"> <li>- Workshop and hui</li> <li>- Co-governance meetings</li> <li>- Investor / impact workshop</li> </ul> <p><b>Report to StatsNZ and Treasury (Output 8) on pathways for RE uptake</b> including options for integration of models and frameworks into the System of Environmental Economic Accounts (SEEA) and Living Standards Framework (LSF). This output (linked to Ocean Accounting) would rely on outputs from impact</p>	<p>Metrics and tools trialled and opportunities for transitioning to blue economy confirmed.</p> <p>Remaining knowledge gaps identified.</p>	<p>Re. case studies, this may include platforms like:</p> <ul style="list-style-type: none"> <li>- Wānanga</li> <li>- Annual report</li> <li>- Board meetings.</li> </ul> <p>Through case study selection, the project's knowledge and tools may be linked to COVID-19-recovery projects that impact on marine environments to ensure 'blue/green growth'.</p> <p>A climate change and sustainability lens will be applied to inform and facilitate investment decisions by iwi and other stakeholders.</p>

	<p>metrics and investment frameworks and tools. Place-based research will also identify pathways for uptake, including investment pathways.</p> <p><b>Journal paper (Output 9) on knowledge gaps</b> and underlying methodological assumptions analysed how RE can be assessed within an EBM framework, and the contributions to risks to organisations and businesses undertaking RE as well as risks to ecological health and social and cultural outcomes.</p>		
<p>Short reports about the progress of the project, including information about engagement that will occur throughout the project (i.e. presentations, hui, contributions to public processes), will be provided every three months.</p>			

<p>H. OUTCOMES</p>	<p>This project will contribute to the following Theory of Change Outcomes:</p>
	<p>(1) The value of blue economy business models is recognised and adopted by Aotearoa New Zealand businesses</p>
	<p>(3) Knowledge from the Challenge (science and mātauranga Māori) is used in decision making to improve ecological health and influences Aotearoa New Zealand’s marine management practice and policy</p>
	<p>(8) Researchers and iwi and stakeholders involved during the life of the Challenge continue to actively promote, research in, and use knowledge from the Challenge</p>

**I. INTRODUCTION (max 500 words)**

New visions of economic possibilities that identify and capture multiple (not just economic) benefits are emerging (EU, 2019) and, in New Zealand, there is significant interest from iwi, regional councils, businesses and investors in developing Restorative Economies (RE). **RE aim to reverse environmental degradation and achieve multiple benefits (economic, environmental, social, and cultural). In the marine realm, examples of RE activities may include multi-trophic aquaculture, combined aquaculture/wild fisheries/eco-tourism, and specific local initiatives** (e.g., restoration of seafloor shellfish beds or wetland planting) that will improve ecological health, social and cultural well-being and create within-community jobs, businesses and investment. By their multi-activity and multiple benefit foci, RE are expected to create opportunities for economic, social and environmental diversity and resilience (UNEP 2020).

At present, RE opportunities are poorly understood and potentially conflict with existing (extractive) marine industries. **The overarching aim of this project is to build and disseminate specific knowledge and tools, to demonstrate proofs of concept, and to create an enabling environment for Re in NZ.** This research will provide the mechanisms to translate restoration needs into viable investment propositions that are appropriately scaled and where the degree of certainty with respect to markets, standards, prices, regulations and consents is detailed. To be successful, RE require new understandings of interactions between monetary and non-monetary economies (value creation), co-benefits with present

industries, and new ways of measuring economic, social, cultural and environmental successes. Measurement methods will facilitate prioritisations and enable successes in the four well-beings to be monitored. RE can be developed to dovetail with EBM, particularly as national economies are driven by concerns about climate change, ethical and responsible governance, and investment strategies and consumer priorities. Successful RE will maximise co-benefit opportunities for the Māori blue economy, community aquaculture and tourism enterprises, the public sector, and enterprises seeking to invest to (i) meet carbon targets or climate change adaptation needs, (ii) achieve nutrient reduction, biodiversity and ecosystem service delivery targets, and (iii) offset a range of environmental impacts (EnviroStrat 2019). Merging present understandings of RE with EBM requirements (which, by definition, includes ki uta ki tai, a holistic ‘mountains to the sea’ approach) should enable RE to move from fringe activities into the mainstream. The Parliamentary Commissioner for the Environment (2020) is calling for integrated catchments-to-estuaries approaches to estuarine management to maintain connections between people and land, people and water, and people with each other.

RE present an opportunity for building alliances between communities, iwi, investors and government agencies (UNEP & FAO, 2020<sup>3</sup>, UNESCO 2020<sup>4</sup>), which will encourage transitions to sustainability and greater recognition of the multi-benefits of restoration. The unprecedented challenge of COVID19 is an opportunity for increased recognition of the value of restoration (UNEP & FAO, 2020<sup>5</sup>, UNESCO 2020<sup>6</sup>) and to mitigate the potential socio-economic fallout from investment in community recovery projects.

#### J. AIMS

This project has four interrelated Research Aims (RA):

**RA1.** Based on the review of international and New Zealand models and best practice for restorative economies, we will (i) evaluate the potential for marine and coastal restorative economies (RE) to emerge and thrive in New Zealand, (ii) determine the benefits that can be identified and captured at different scales (community / local, ecosystem, regional, national) through different mechanisms and for different groups (hāpu, iwi, conservation, industry), and (iii) find existing international examples and models can be modified and applied here.

**RA2.** We will identify the structures, knowledge, policies, and measures that will enable the creation and management of RE within a multi-use EBM framework.

**RA3.** We will elucidate impact investment frameworks and models that incentivise RE growth and capture its potential. We will demonstrate how EBM and ecosystem services knowledge and practices can inform the design and application of impact frameworks for RE and specific investable projects. We will determine the viability of markets for ecosystem services provided by coastal and marine ecosystems in a RE context.

**RA4.** We will illustrate proof-of-concept and clarify investment opportunities through in-depth analysis/modelling of selected case studies using impact frameworks and measurement tools.

A cross-cutting or transversal aim is to identify how marine restorative economies can be co-designed with, or led by, Māori blue economy and Mātauranga Māori principles?

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<sup>3</sup> Strategy of the United Nations Decade on Ecosystem Restoration, draft February 2020. Available at <http://wedocs.unep.org/xmlui/handle/20.500.11822/31813>

<sup>4</sup> United Nations decade on Ocean Science for Sustainable Development <https://en.unesco.org/ocean-decade>



## K. PROPOSED RESEARCH (2000 word max)

Recognising the potential of RE requires new knowledge and decision-making tools, frameworks, and practices. Phase 1 identified emerging research opportunities and strategic research areas for blue economy such as Innovative Financing for Restoration & Ecosystem Services (ES), and Natural Capital and ES measurement of the Blue Economy. These will create an enabling environment for iwi, stakeholders and investors (iwi could be an investor too) to deliver positive social and environmental impact and enhance wellbeing while also achieving a financial return on investment. The co-development process for RE and the insights from Phase 1 helped identify four interconnected Research Areas (RA) for this project:

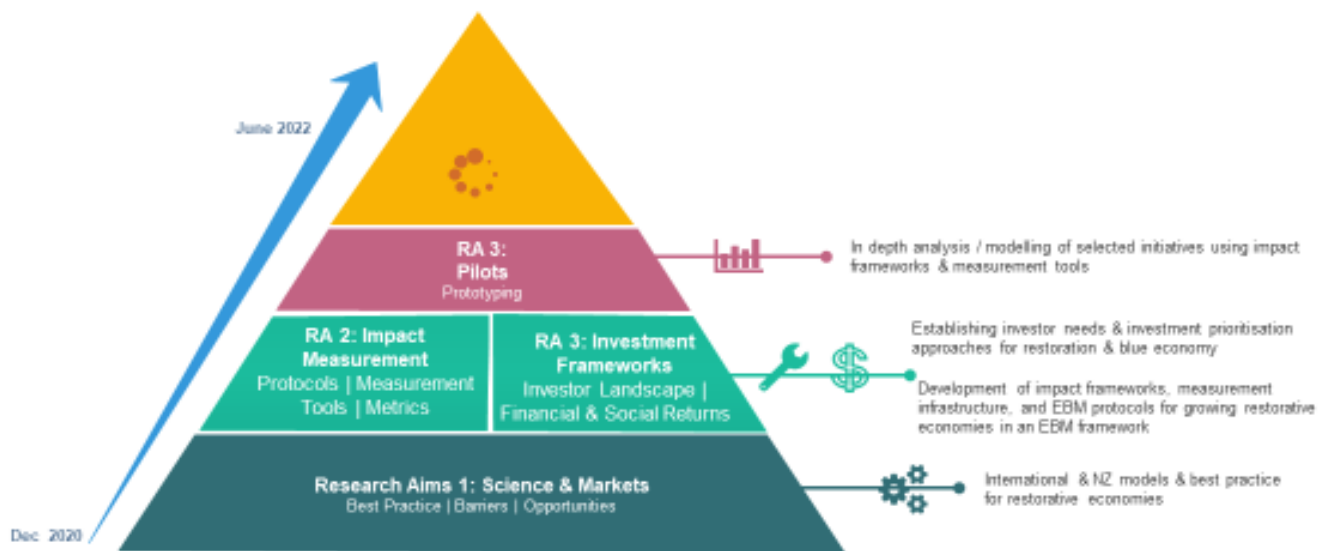


Figure 1: Illustration of the research areas and their sequence and connections

During the process of RA 2 & 3, two place-based research activities will be scoped to act as case studies and participation/action-learning opportunities to understand investment models and benefits, metrics frameworks and impact (see RA4). These case studies aim to provide proofs-of-concept for RE in Aotearoa New Zealand while allowing for development of a multiscale understanding and the likely consequences of isolated vs connected activities. These place-based research activities will be co-developed with the iwi or hapū involved during RA2 & 3.

### **RA1: Review of international and New Zealand models and best practice for restorative economies.**

Restorative economies and particularly blue economy concepts and definitions continue to evolve. Approaches and principles for blue growth differ according to country-specific needs and opportunities for restoration and impact (Wenhai et al., 2019<sup>7</sup>). There is increasing focus on how the ocean economy can increase resilience and ocean recovery (to climate change and environmental degradation). The current global COVID-19 pandemic is compounding uncertainties and challenges and the need to support recovery (Bardsley et al., 2020<sup>8</sup>).

This research aim will document and analyse international practice and models for restorative economies in NZ with respect to:

- **potential for transition to RE** – including RE definition and restorative potential, finance gap, opportunities, challenges, and barriers to public or private sector investment, and geographic locations, sectors and scales (e.g. single small businesses) where it has worked or most likely will work.

<sup>7</sup> Wenhai, L., et al. (2019). *Frontiers in Marine Science*. <https://doi.org/10.3389/fmars.2019.00261>

<sup>8</sup> Bardsley, A., et al. (2020). *The Environment is now*. <https://informedfutures.org/wp-content/uploads/Social-Cohesion-in-a-Post-Covid-World.pdf>

- **supporting communities to be involved in RE and develop the business models and skills** required to implement market-based solution for the restoration of coastal and marine ecosystems – like restorative aquaculture or polyculture systems.
- **innovative finance and environmental markets** - partnerships and instruments, i.e. green bonds, blended finance, equity, debt, green taxes (of externalities), offsets, payments/markets for ecosystem services, e.g. blue carbon, models for shared benefits
- **payments and markets for priority ecosystem services i.e. blue carbon**, including standards and rules in either voluntary or compliance markets (potentially additional to the constraints for voluntary market under the Paris Agreement), measurement, reporting and verification – to increase the viability of a market-based approach
- **enterprise and investment models** for shared benefits in blue economy development – including the need for broad partnerships (connection to Māori blue economy) and rationales for involvement for various partners and players
- **integration of indigenous knowledge and interests into measures and evaluative models**
- **relationships** – with management agencies, community and indigenous groups, including incentivising, building, and maintaining co-development relationships at different time scales
- **effects of scale and mechanisms for assessing success** – how the likelihood of success and ability to set objectives to measure success changes with scale of the activity – from community / hāpu level through to iwi
- **connections to EBM principles** – how each of these dimensions of restorative economies

The research team will leverage their network of international contacts and build on Phase 1 Project 2.2.1 *to gather insights and develop an enhanced understanding regarding the state of play for restorative economies and environmental markets*, including mechanisms for evaluating outcomes, pricing, and assurance.

As part of this research, a **stocktake of the range of marine or terrestrial restoration initiatives** currently in play in New Zealand that significantly affect coastal and marine resources/ecological health plus have a linkage to value-chains, will be undertaken. A sample of those identified will be selected for a more in-depth data gathering and scenario analysis as part of RA 2 & 3; with the most appropriate two case studies selected for deep analysis and prototyping as restoration economies in RA4 (according to criteria outlined below). A critical element is the pivotal role of Te Ao Māori and kaitiakitanga for understanding the rationale of/for restoration (in association with workstream identified in relation to RA 2 below) and an analysis of Mātauranga Māori (measures, interests, evaluative frameworks). This will feed into our assessments of the barriers and opportunities for expansion of an NZ restorative economy in the coastal marine realm.

The outcomes of RA1 are critical for socialising and building awareness about RE, and for the orientation and detailed focus of the other three research areas and the partnership and co-development approach sought in relation to case studies design. A series of reports/articles will be published and distributed through research (Sustainable Seas NSC, Science NZ, science journals) and business platforms (e.g. Aotearoa Circle, Pure Advantage, SBC).

**RA2: Development of impact frameworks and measurement infrastructure for growing RE** (to be developed in parallel and close coordination with RA3)

This research aim will focus on **development of potential impact frameworks and measurement infrastructure** which will underpin restorative blue economies in the NZ marine and coastal context aligning with kaitiakitanga. There will be two aspects: testing and development of metrics; and testing and development of frameworks that allow the metrics to be combined. This will facilitate **strategic planning and prioritisation of RE projects based on predicted impacts, delivery of multiple benefits, and uncertainties**.

**Desk-based reviews and meta-analyses of existing bio-physical data** of the New Zealand marine and coastal environment, in combination with learnings from Projects T1, T2, 2.3, 4.1 and 4.3, will be used to evaluate:

- Current metrics for assessing biodiversity and ecosystem health trends. It may be necessary to adapt existing metrics or to create new ones to measure relative success in achieving ecological, social and cultural RE objectives.
- Data availability for, and scale dependency of, measurements of ecosystem functions that underpin ecosystem services that RE may contribute to, e.g. carbon sequestration, nutrient cycling, and water quality modulation. International literature will be drawn on to better understand the ranges and uncertainties of recovery trajectories and management outcomes.

Frameworks for combining metrics to assess impacts will be judged on their ability to deliver RE objectives at different scales – starting at community level. The driver-pressure-state-impact-response (DPSIR) approach of Patricio *et al.* (2016<sup>9</sup>) is an example framework that may be used. Principles of EBM, cumulative effects assessments and marine spatial planning<sup>10</sup> will be considered by the project in conjunction with work in Projects 1.1 and 4.2. Synergies with Projects 1.2 and 3.2 will help us develop frameworks for prioritising RE activities and facilitating consenting processes and investment decisions.

The research timeframe means that measurement will be focused on priority estuarine ES (e.g., carbon sequestration; nitrogen removal; water clarification) and on ES for which tools for quantification and mapping were developed in Phase 1 project 2.1.3. ES can be measured directly in some cases, or using proxy variables (i.e., denitrification enzyme activity for the nitrogen removal service), with extrapolation and up-scaling achieved via spatial modelling approaches (Lohrer et al. 2020, Mapping the estuarine ecosystem service of pollutant removal using empirically validated boosted regression tree models). The indicators will be incorporated in the research as part of the impact and investment metrics.

We will test the assumptions and knowledge utilised in the development of the System of Environmental–Economic Accounting (SEEA)<sup>11</sup> and Ocean Accounts, to determine fitness for purpose, as well as contributing to progress in natural and social capital accounting by private sector and government.

We will consult regularly with Stats NZ as the project develops (a key element of our pathway to implementation) and we will deliver a report to them as one of the research outputs. Our approach is likely to involve an Ocean Accounts Methodology and an assessment of data needs and analysis for the application of Ocean Accounts (linked to ecosystem services and related classifications).

The measurement basis required for different stakeholders to grow restorative economies and account for different dimensions of positive impact will be assessed:

- Mātauranga Māori to guide feasibility assessments – recognising that iwi investment decisions are unique / bespoke and will likely involve a mixture of considerations linked to
  - Alignment with Treaty rights and interests
  - Settlement assets

<sup>9</sup> Patricio J, Elliott M, Mazik K, Papadopoulou K-N, Smith CJ, 2016. DPSIR – two decades of trying to develop a unifying framework for marine environmental management? *Frontiers in Marine Science* 3, 10.3389/fmars.2016.00177.

<sup>10</sup> E.g. Strategic planning at the Hauraki Gulf ecosystem scale via the MPI restoration strategy linked to Sea Change Ministerial Advisory Commission.

<sup>11</sup> The System of Environmental-Economic Accounting (SEEA) is a framework that integrates economic and environmental data to provide a more comprehensive and multipurpose view of the interrelationships between the economy and the environment and the stocks and changes in stocks of environmental assets, as they bring benefits to humanity. The SEEA framework follows a similar accounting structure as the System of National Accounts (SNA). <https://seea.un.org/>; <https://www.stats.govt.nz/information-releases/environmental-economic-accounts-2018>

- Preservation and enhancement of the mauri of the environment
- Cultural mapping
- Socio-environmental considerations
- Mana
- Institutional arrangements
- Political context and legislative horizon (e.g. water allocation)
- impact performance metrics for all four capitals (environmental, social, human, financial) – illustrating linkages to SEEA and Living Standards Framework
- valuation (market and non-market) of economic benefits
- due diligence (benefits, risk and returns)

The measurement infrastructure developed in RA2 will create benefits beyond the life of the project as we move towards EBM and a truly Blue Economy. By actively incorporating Mātauranga Māori and bringing it to the fore, the project will contribute to indigenising the Blue Economy. Improvements that our project will deliver in terms of strategic decision making, regulation and investment quality in the marine environmental space are urgently needed if we are to meet the Challenge goal of enhancing the sustainable use of marine resources.

### **RA3: Establishing investor needs and investment prioritisation approaches for restoration and blue economy**

This research aim is focused on generating new understanding and knowledge for unlocking finance for coastal and marine restoration in NZ by focusing on the needs of iwi and public and private sectors. This will include consideration of:

- **emerging viable business and investment models** for achieving multi-benefits within EBM frameworks (e.g. restorative aquaculture, tourism product and services, blue carbon markets) – including how public, private and iwi interests influence such models.
- identifying **the criteria that would need to be satisfied to attract iwi investment** into alternative blue economy initiatives
- **impact verification and reporting requirements** by impact investors and other stakeholders – meeting accountability expectations but keeping costs down (what kind of data and standards are required; what is the potential role of technology in measuring impact?)
- **role of regional councils, economic development and central government** agencies<sup>12</sup> in catalysing private sector investment – **prioritisation of the anticipated ecological, social and cultural benefits** and the likely success rates.
- identifying **priority feasible marine restoration initiatives** – where is the potential for recovery and co-benefits greatest and why? How are risks assessed and factored into prioritisations?
- **full-cost accounting assessment** to illustrate the economic status of example priority coastal sites and their terrestrial catchments bringing together market values, non-monetary externalities such as environmental and social assets as well as environmental taxes and expenditure.

These research aims (RA2 and RA3) will document and analyse:

- ***Integrated impact metrics and data frameworks*** to assess multiple benefits using appropriate methods, and where they accrue, derived from different scales and categories of RE.
- ***Assessment tools and valuation methods for restoration outcomes*** - including how objectives are initially set, and by whom, and how monitoring can occur.
- ***Investment prioritisation and risk-assessment framework***: models for scaling up within EBM (community/local – regional – national), while explicitly recognising investor, stakeholder, and Māori values, priorities and perceptions of risk. This includes criteria informed by Māori values.

<sup>12</sup> For example, to guide Treasury – e.g. on the 2020 Budget restoration investments to be disbursed via the PGF.

- **Blueprint of investment models** for at-scale restorative economies – leveraging opportunities / needs in both land (e.g. pollution mitigation in coastal catchments and estuaries) and sea (e.g. coastal water quality, storm surge protection) systems. Identify interests and barriers to uptake, potential investors, job creation etc.

#### **RA 4: In-depth analysis/modelling of selected initiatives using impact frameworks and measurement tools**

This research will apply the knowledge and tools developed in RA2 and RA3 at two specific locations (or contexts) following confirmation with iwi and stakeholders. These case studies may not both be field-based, as data requirements and methods may be more easily and broadly assessed in a modelling exercise. The goal of RA4 is to investigate pathways to implementation and demonstrate the value of research for end users by testing the knowledge and tools developed at RA2 and RA3, and measuring its impact through application in real contexts where market-driven restoration solutions are feasible. Transitional risks will be investigated, and potential de-risking strategies identified, illustrating where the benefits accrue across public/private actors and for realising measurable ecological health and restoration goals.

Locations we have tentatively identified at this stage for place-based research include Whangarei Harbour (Northland), Hauraki Gulf (Auckland and Waikato), and Te Waihora Ellesmere (Canterbury) or Waituna Lagoon – Awarua Wetland (Southland). Links to other projects (e.g. 1.1, 3.1, 3.2, 2.5, 2.4, 2.3) and their locations (e.g. Queen Charlotte Sound (Marlborough), Ōhiwa and Tauranga Harbours (Bay of Plenty), and Jacobs River Estuary (Southland)) will be forged. Decisions on case studies will develop from analyses in RA1-3 (see Fig 1). Criteria for selecting case studies will be based on their utility in achieving the fundamental objectives of the research: providing proof of concept for marine restoration as an investment class; construction of robust prototype investment frameworks and assurance metrics; bringing RE stakeholders together around material opportunities (including potential for income from a market-based mechanism); and realising demonstrable value in place for communities and whanau/hāpu/iwi. An important consideration worked through during RA2 & 3 will be understanding mana whenua over how a resource will be used or developed as a result of the research activity being proposed, and their interest, prior consent and co-development of research design. Selection criteria will include:

- Diversity of beneficiary stakeholders and investor parties represented (must include Māori Blue Economy options)
- Demonstrable interest from communities and whanau/hāpu/iwi.
- Prior existence of bio-physical data to allow testing and further development of impact and success metrics  
Whether restoration objectives have already been discussed or set, and whether these objectives including increases in ecological, social and cultural values.
- Potential for restoration gain; relative certainty of restoration success; market and non-market cumulative value of restoration intervention
- Likelihood of investments taking place (i.e. likelihood to act as a ‘proof-of-concept’ for restorative economies)
- Diversity of ecological systems and financial mechanisms represented
- Likely (social) return on investment ratio.

This research aim will document and analyse:

- **How RE could be best defined and assessed within an EBM framework** based on trialling the blueprints and in conjunction with Project 4.2, how management policies, planning and practices could evolve to create an enabling environment.
- **Pathways for uptake:** options for integration of models and frameworks into the System of Environmental Economic Accounts (SEEA) and Living Standards Framework (LSF). This output would rely on outputs from impact metrics and investment frameworks and tools. Place-based research will also identify pathways for uptake, These pathways for impact include:
  1. Top-down: Integration of RE models and framework into the System of Environmental Economic Accounts (SEEA) and / or Living Standards Framework (LSF) – through outputs like impact metrics and investment frameworks and tools – informed by insights from testing of Ocean accounts and monetary valuation

2. Bottom up: proof-of-concept and place-based prototyping to quantify where benefits occur, RE transition risks and appropriate investments.
3. Working with Māori from the outset to determine how RE can be co-designed using Māori blue economy and Mātauranga Māori principles.
4. Interactions with StatsNZ and Treasury (Output 8) including delivery of a report on options for integration of models and frameworks into SEEA and LSF.

**Knowledge gaps** and underlying methodological assumptions are listed and analysed for their contributions to risks to organisations and businesses undertaking RE as well as risks to ecological health and social and cultural outcomes. The research team has existing stakeholder relationships and on-going engagements for all of the top candidate prospective locations. Other locations will likely be able to be incorporated by drawing on interactions with other Sustainable Seas projects.

Below is a hypothetical community-based RE initiative for wetland restoration and creation:

## Community-based wetland restoration and creation

### Hypothetical example



**RE goal:** sustained investment in wetland restoration to reverse ecosystem degradation and restore wetland cover and associated uses and values (including resilience to climate change).

Strategy	Payment for ES & nature based solutions (supply of blue carbon offsets, nutrient mitigation to market demand, climate adaptation)
Initiator / RE owner	Papatipu Runanga, hapu, community group
Partners	Iwi, regional council, corporate
Technical	Restoration skills, measurement / metrics, verification (offset methodology) – Hapu, CRI, VERRA, NZ ETS
Investors (instrument dependent)	Upfront capital – retail, government funds / grants, corporates
Targeted ROI	\$
Beneficiaries	Hapu, local community, regional councils, corporates
Benefits	Environmental (C, N, sediment, habitat), Cultural (mahinga kai), economic (jobs, revenue, jobs), Climate resilience (SLR, flood protection)

### [L. Links to Phase I RESEARCH \(150 words\)](#)

This research is in response to, and directly addresses the insights and recommendations from Phase I, 2.1, 'Transitioning to a blue economy' which has shown that Aotearoa NZ has a growing marine economy with strategic research needs<sup>13</sup> and opportunities like Innovative Financing for Restoration & Ecosystem Services, and Natural capital and ecosystem services measurement of the Blue Economy (EnviroStrat 2019; Market Economics 2019). Phase 1 research highlighted the interest in nature and community-based solutions and placed-based research, multi-sectoral, multi-benefits and innovative financing and investment models to support large-scale restoration and leverage synergies with land-based opportunities / needs. Blue economy initiatives are being led by a range of champions at different scales and across different sectors, and increasingly a thriving Māori blue economy is leading the way.

Phase II will use insights from 2.1.1, 2.1.2 and 2.1.3 to inform impact frameworks and metrics, and design assessment tools and prioritise investments.

<sup>13</sup> Phase 1 research identified specific knowledge gaps and opportunities in several strategic research areas; see the report from Phase 1 for full details.

#### M. Links to, and interdependencies, with other Phase II RESEARCH PROJECTS (200 words)

As a foundation for exploring potential for restorative economies, information on overlapping stressor footprints, cumulative effects and spatial planning from Projects 1.1 and 1.2 will help us to clarify restoration needs and priorities, whilst knowledge of hysteresis (1.1) will help in defining appropriate restoration targets and timeframes for measuring success. Risk assessment frameworks for RE generated by this project and methods for de-risking new investment initiatives will be informed and strengthened by links to Project 3.2.

RE is pivotal potential dimension of indigenising BE (2.3) and links with the research team have been established, with related co-membership and discussion about potential case studies underway. Tourism (2.4) and seaweed/aquaculture (2.5) are potential recipients of RE investment and the project will also investigate how a new restorative marine sector can be built within an EBM framework (Enhancing EBM practices; identifying/addressing regulatory options/barriers).

The full suite of Tangaroa Programme projects<sup>14</sup> will be drawn upon, especially regarding community-level economic activities, non-monetary resource utilisation, and the wider indigenisation of blue economy at multiple scales. Links between restorative economies and restorative justice (4.2/T2) will be forged.

#### N. VISION MĀTAURANGA (VM) (400 words)

The project is a combination of research aims that involve Māori researchers and Māori-centred research design aiming to give effect to Vision Mātauranga through reciprocal contribution to/from iwi organisations, and Māori knowledge, resources and people. For this research project, Māori-centred research design means that cultural expertise is valued, Māori researchers are involved and their input and decisions are followed through, and Mātauranga Māori activities are resourced, Maori Project budget has been allocated to facilitate iwi involvement (e.g. wānanga, hui, and resourcing for cultural expertise and labour). Māori researchers, John Reid (UoC) and Jason Mika (Massey), have been involved in developing the project and will be contributing to the project directly. Dr Reid has worked closely with project leader Bradley in the past on developing Mātauranga Māori in related fields of study and engaging with iwi. It is anticipated that iwi will have access, via the project team and research outputs, to expertise, knowledge, technologies, and networks that will be beneficial to iwi. Validation with potential iwi research partners of the perceived benefits is currently being undertaken.

The project will be co-developed with iwi such as Ngai Tahu, Ngai Tai, Ngati Manuhiri, and Ngati Patuharakeke. Engagement and co-development processes with iwi will be developed with case study partners as these are selected during the work of RA1-RA3. Much of the Vision Mātauranga considerations will be worked through the case studies, in which iwi/hapū will be closely involved.

The potential case studies all have existing management / co-governance regimes established with iwi / hapū as Treaty Partner. The project recognises that iwi have a distinct role in RE in Aotearoa New Zealand - iwi/hapū hold multiple roles in their rohe as Treaty Partners (including pre and post-settlement arrangements), investors, beneficiaries, business owners and operators, natural resource managers, and kaitiaki.

#### **Vision Mātauranga Deliverables**

##### **Partnerships:**

**VM P1.** – RA1, RA2, RA3, RA4 - The project outcomes and outputs will be co-developed with iwi/hapū organisations as recognised research partners with the intent to empower Māori. Collaborative relationships and trust will be built with Māori during hui and wananga, with time spent listening and giving voice to Maori knowledge streams. The Māori worldview of excellence, impact and success is essential to RE in Aotearoa New Zealand. This will generate, co-developed iwi restoration initiatives (protect and enhance mauri), impact frameworks, investor needs, and investment prioritisation.

<sup>14</sup> e.g. T1, Awhi Mai Awhi Atu (Enacting a kaitiakitanga-based approach to EBM), aims to combine mātauranga Māori, western science and local kaitiakitanga to better understand degradation, assist recovery, and generate common management approaches and responses for culturally and ecologically important shellfish in Ōhiwa harbour.

**VM P2.** – RA4 - The project proof-of-concept will directly contribute to the identified goals of iwi organisations

**Distinctive contribution:**

**VM D1** – RA2, RA3 –This project recognises the distinct role iwi hold in RE. Distinctive iwi-investor and iwi-impact needs will be determined to ensure benefit and value to iwi, and will be delivered as a project output (e.g., 6a).

**VM D2** – RA4 – The case studies proof-of-concept will apply the knowledge and tools developed in RA2 and RA3 (developed with Maori Researchers and/or iwi) at two specific locations (or contexts) that exist due to iwi aspirations.

**VM D3** – RA2, RA3, RA4 – The outcomes and outputs of this project can be directed towards accomplishing immediate community goals of iwi research partners identified in existing initiatives e.g. Te Waihora Co-Governance and Joint Management Plan, Awarua Rūnanga – Whakamana te Waituna, Pare Hauraki.

**Meaningful outcomes:**

**VM M1** – RA1, RA2, RA3, RA4 - Activation of Māori resources – These will be case study specific application of the knowledge and tools developed to demonstrate the value and benefit for iwi research partners.

**VM M2** – RA1, RA2, RA3, RA4 - Agreement with iwi regarding IP ownership or co-ownership and appropriate dissemination of project mātauranga.

**O. ENGAGEMENT REQUIRED WITH IWI & STAKEHOLDERS (200 words)**

In undertaking this research, we are building on the on-going collaboration and engagement with iwi in Tai Tokerau, Hauraki, Bay of Plenty and South Island (Ngai Tahu, Ngai Tai, Ngati Pukenga, Ngati Manuhiri and Patuharakeke - amongst others) and stakeholders established in Phase 1 (and prior to that) by the core project team – at national and industry levels, and locally during place-based case studies (see RA 4). Iwi and stakeholder input and consultation will start with gathering perspectives and views during RA 1, continue with articulating needs, co-development and providing input and feedback during RA 2 & RA 3, and extend with actively testing of tools and impact framework during RA 4.

Engagement included discussions about scope and purpose with selected regional councils, iwi, StatsNZ, industry and individual experts (environmental markets, investment). Regional and district councils, iwi, individual experts, conservation organisations (TNC), MPI, DOC provided feedback on drafts of this proposal (written and verbal). Two key co-development regional council partners have been identified in the project proposal: Auckland Council and Waikato Regional Council. This input (discussions and feedback) translated into direct into specific proposal components (including criteria for case selection, measurement tools and outputs). We will also engage with John Hutton (Treaty Settlements Manager at AC), who is part of a Kaipara Harbour joint committee that will have 50-50 representation of council and Kaipara Uri representatives (3 Auckland Council, 3 Northland Regional Council, and 6 from the different Kaipara Uri entities).

Engagement is never finished; we are continuing to engage in a quickly moving landscape. We will engage collaboratively with those involved in the management and governance of coastal and marine areas to ensure that the research is of benefit to Māori communities and other stakeholders interested in coastal and marine RE in New Zealand.

Case studies will enable engagement with iwi and stakeholders at a variety of management scales. For example, impact frameworks and investors' needs and priorities (e.g. RA2 & RA3) will be co-developed with iwi and stakeholders, whereas prototyping will involve hāpu and local communities at case study locations. This will build capacity of iwi when applying the tools, activating Māori resources, and identifying the best fora and platforms for testing and uptake.

Engagement with iwi will include free, prior and informed consent of the hāpu and remuneration for taking part in the research. Appropriate IP protection for any Mātauranga Māori used (e.g. during verification processes) will be sought. Co-authorships on papers, and clarity on what mātauranga/knowledge is and is not controlled by Māori involved in the research, will be part of research dissemination processes.

**P. PROJECT COMMUNICATIONS (150 words)**

The project stages provide for specific communication and outreach opportunities, and the outputs and activities are designed with the express purpose of facilitating outreach towards broad stakeholder groups (insights papers), iwi and



specific targeted stakeholders (impact frameworks and metrics, case studies) and general audience. We have allocated funds specifically for communication and aim to use different methods of communication and tools, such as videos, written briefs, workshops and hui, social media and other online platforms. A decision will be made with the project team and expert input after project commencement on the opportunity to create a specific project website / social media presence for outreach. A significant focus will be placed on presentations and briefings to specific networks and events and we intend to leverage existing communications platforms that Sustainable Seas and wider Challenge provide to reach out to existing and new stakeholders – including impact investment and community trusts networks.

#### Q. RISK AND MITIGATION (150 words)

At the time of writing this proposal the process of identifying outcomes and outputs of benefit and value for iwi Māori as research partners is still underway. Many of the partnerships between the project team and tangata whenua – mana whenua existed prior to the development of this project and will extend well beyond its end. However, because the research design allows for co-development throughout the entire life of the project, there is a risk that disagreements could slow or derail progress. Another risk to research delivery is changes in circumstances and the project’s core personnel. Strong working relationships with members of the Challenge SLT (Hewitt, Cornelison, Pilditch, and Lewis—who is also a project researcher) will facilitate linkages to other challenge projects and partnerships and thereby minimise risk. PI’s will be supported by diverse and capable teams, which provides the redundancy and flexibility required for project success.

#### R. CONSENTS AND APPROVAL required to undertake research

Existing NIWA policy on research ethics and principles will be applied and include:

- Confidentiality of information
- Free and informed consent
- Minimisation of harm
- Responsibilities to participating and affected communities.



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## Glossary of acronyms and terms

BE	Blue economy	The World Bank defines the blue economy as an economy that “seeks to promote economic growth, social inclusion, and preservation or improvement of livelihoods while at the same time ensuring environmental sustainability” (World Bank, 2017).
EBM	Ecosystem-based management	A holistic and inclusive way to manage marine environments and the competing uses for, demands on, and ways New Zealanders value them.
ES	Ecosystem Services	Ecosystem services are the range of benefits that natural environment provides to people, for example production of clean water, raw materials used in economic activities,

		regulation of climate and flooding, and cultural benefits such as aesthetic value and recreational opportunities.
SPAG	Strategic Project Advisory Group	A selected group of experts and influencers who can be called upon for strategic advice
RE	Restorative Economies	Paul Hawken initially introduced the concept of RE in the 1993 book - The Ecology of Commerce. He defines RE as “restorative economy tries to create a market in which every transaction feeds the integrity of the commons, as opposed to what we know today, when consumption causes degradation and harm.” For the purpose of this research, the definition followed is that <b>RE uses novel approaches, collaborations and institutions to foster new investments aiming to reverse environmental degradation</b> (Hewitt et al., 2018).
SEEA	System of Environmental-Economic Accounting	The System of Environmental-Economic Accounting (SEEA) is an international statistical standard that uses a systems approach to bring together economic and environmental information to measure the contribution of the environment to the economy and the impact of the economy on the environment.
SNA	System of National Accounts	The System of National Accounts is an international standard system of national accounts <b>on how to compile measures of economic activity</b> . The SNA describes a coherent, consistent and integrated set of macroeconomic accounts in the context of a set of internationally agreed concepts, definitions, classifications and accounting rules.
LSF	Living Standards Framework	LSF represents NZ Treasury’s perspective on what matters for New Zealanders’ wellbeing, now and into the future. The LSF is a flexible framework about policy impacts across the different dimensions of wellbeing, as well as the long-term and distributional issues and implications.
NC	Natural Capital	<b>Natural capital</b> The stock of natural resources, which includes geology, soils, air, water and all living organisms. <ul style="list-style-type: none"> <li>○ <b>Living natural capital</b> Renewable stocks of natural resources that are harvested for use, such as fisheries</li> <li>○ <b>Non-living natural capital</b> Nonrenewable stocks of natural resources harvested for use, such as minerals from the seabed</li> </ul>

