

Te Waiariki Iwi Aquaculture Stage 2 Options Refinement – Summary

Prepared by Envirostrat Ltd | 16 02 2020

Recap: Background

Ngā Iwi i te Rohe o Te Waiariki, in partnership with the Ministry for Primary Industries, are exploring opportunities and pathways to the development of a **sustainable, resilient, and world-class** Māori aquaculture industry in the Bay of Plenty.

The project primarily focusses on offshore water space but is also considering land and geothermal-based aquaculture opportunities.

Key drivers for Iwi for this kaupapa are:

1. **Māori economic development:** growing people through job creation, training, career pathways, and research and leadership opportunities.
2. Empowering and exercising **kaitiakitanga** and maintaining and enhancing the **mauri** of Te Moana Nui-a-Toi.



Recap: Stage 1 & 2 Governance



Chris Karamea Insley (Te Arawa), Dickie Farrar (Whakatōhea) and Rikirangi Gage (Te-Whānau-ā-Apanui) are the lead Iwi representatives within the project and provide an oversight role, including regularly disseminating information with Bay of Plenty Iwi. The Aquaculture Team (Fisheries NZ) and Te Ohu Kaimoana are helping to facilitate and fund the project, which is being managed by a multi-disciplinary team at EnviroStrat, in collaboration with Aquaculture Direct Ltd.

Recap: What Does Success Look Like?

Sustainable



- Social, cultural, environmental, and economic wellbeing are in balance.
- Systems thinking – the whole is greater than the sum of its parts.
- Aquaculture pathways for Iwi upscale and amplify impact across these four pou of wellbeing (ripple effect).
- A best practice sector within Te Ohanga Māori that benefits NZ.
- Exercising Mana Motuhake - ownership and autonomy.
- Provision of significant long-term employment for Māori communities and connection to the marine-based economy.
- Strengthening the traditional Iwi and community relationship with the ocean.
- Replicable, scalable, whānau and hapū-centric models with collective power.



Recap: What Does Success Look Like?

Resilient



- Intergenerational knowledge transfer of mātauranga Māori.
- Implementing data science and artificial intelligence to deliver adaptive management.
- Responsive to changing risks and opportunities (including climate change) and competing demands.
- Future-focussed, helping to drive alignment between policy/regulation to support industry growth.
- A long-term strategic roadmap supported by partnership with the Crown.

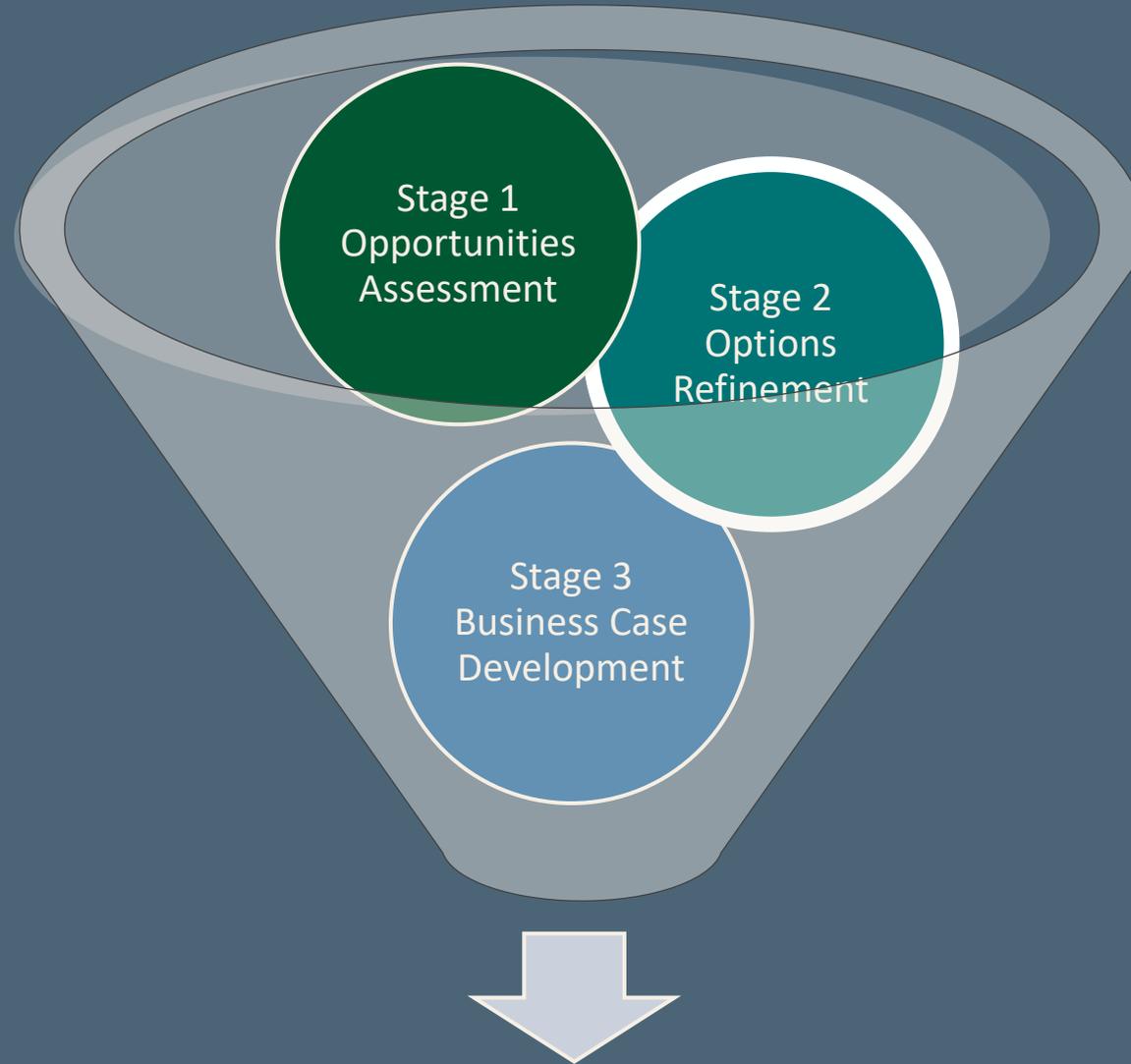
World-Class



- Excellence and creativity in technology, people, and systems.
- Astute commercial and scientific partnerships with a shared values base.
- Collaboration and knowledge sharing 'mana to mana' with indigenous businesses and initiatives around the world.
- Creating and adding value across the supply chain.
- A world leader in intellectual property, provenance, and brand identity.



Methodology



Investment-ready propositions

Stage 2 Refinement Process

- Long list of opportunities → Shortlist of opportunities
- Application of option refinement support tools:
 - Ngā Pou e Whā – Four Pou Multi-criteria Analysis
 - Commercial Matrix
- Intellectual Property
 - High level review
 - Focus on patents for Stage 2

Four Pou Analysis

- It is crucial to Iwi that social, cultural, environmental, and economic wellbeing are in balance throughout the development of Iwi aquaculture initiatives in Te Waiariki. Aquaculture pathways for Iwi must upscale and amplify impact across these four pou of wellbeing.
- The Four Pou Multi-Criteria Analysis is a tool to help realise this holistic approach, and to support the Options Refinement process.

Criteria

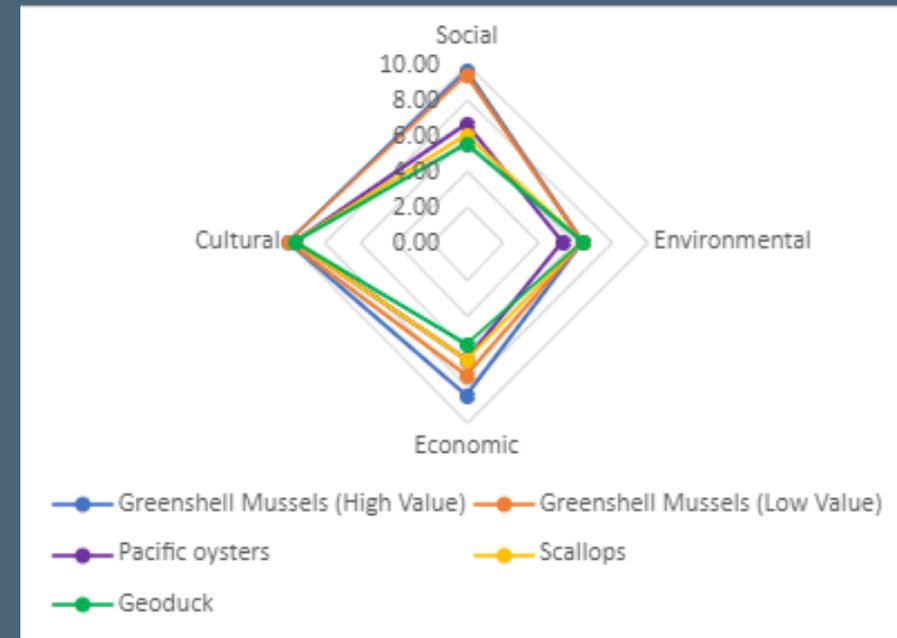
Representatives from participating Iwi determined that the Four Pou / Ngā Pou E Whā framework should be used to evaluate the potential aquaculture opportunities identified in Stage 1 against identified criteria:

- Pou tahi: Te Pāpori (Social)
- Pou rua: Te Taiao (Environmental)
- Pou toru: Te Ahurea (Cultural)
- Pou whā: Te Ōhanga (Economic)

Four Pou Overall Results*

- Environmental criteria: On average, each grouping (e.g., finfish, shellfish, land-based) scores positively against all four criteria - with the exception of finfish, which scores slightly negatively.
- Cultural criteria: All groupings on average score well, with native species scoring higher than non-native species.
- Social and Economic criteria: All groupings on average score positively. Finfish options scored strongest.
- The following species scored the best against the criteria within Ngā Pou E Whā: **Greenshell mussel, Scallop, Rainbow trout, Kingfish, Ecklonia.**

Shellfish analysis output



*The project team received expert guidance to help inform this qualitative analysis.

Commercial Matrix

We applied commercial criteria to the long-list of options identified in Stage 1:

- Job creation (on water and processing)
- Scalability
- Market premium
- Pricing (retail and farm gate)
- Competition (NZ and overseas)
- Potential market size
- Commercial viability timeframe



Commercial Matrix Findings

- The greatest **job creation** potential (generally) exists through finfish opportunities – macro-cascading product refinement is a good way to maximise employment as well as value-added benefits.
- Offshore opportunities offer the greatest opportunity to **scale farming** operations (spatially).
- In terms of **market premiums**, all opportunities are likely to be enhanced by organic / best practice certifications (e.g. Aquaculture Stewardship Council).
- In terms of **pricing by volume**, high value nutraceuticals lead from the front with a strong price point.
- From a **competition** perspective (lack of competitors) key standouts were trout, native seaweed, kōura, whitebait, scallop, hāpuku, and Greenshell mussels (if not sold as seafood).
- Further research is required around the **interplay** between NZ finfish aquaculture and wild fishery catch, and how this relates to the market(s) and price.
- Based on information available we believe the **strongest market potential** exists for trout, kingfish, Greenshell mussels (nutraceuticals), scallop, and Ecklonia.
- In terms of **commercial viability timeframes**, we expect the Greenshell mussel and seaweed opportunities to be relatively quick off the mark, reflecting the overall maturity of the sector (in regard to mussels) and the anticipated lower cost boundaries to implement.

Recommendations and Conclusions

Based on the results of this Options Refinement, we believe the most promising aquaculture opportunities available to BoP Iwi are:

- Sea-run rainbow trout* for premium seafood. (Land-based RAS and offshore).
- Land-based RAS and offshore kingfish for premium seafood.
- Offshore seaweed (*Ecklonia radiata*) for agricultural feed and fertiliser / biostimulants.
- Offshore Greenshell mussel including high value nutraceuticals.
- Offshore scallop for premium seafood.
- *Potential for RAS and offshore hāpuku in the longer term.*

** Commercial trout farming is currently prohibited in New Zealand. Commercial trout farming is currently prohibited in New Zealand. The government's formal position (Feb 2021) stated that "a review of legislation preventing trout farming is not a priority for the Government at this time. Significant economic and employment gains can be made through the current actions set out in the 2019 Aquaculture Strategy. The Government does not propose to consider the merits of commercial trout farming at this time but remains open to doing so in future once implementation of the strategy is more advanced".*



Recommendations for Business Case Preparation

In light of potential short listed opportunities and pathways, we recommend that three distinct, yet interconnected business cases should be undertaken, focussing on the following primary opportunities:

- *Offshore finfish with kingfish & seaweed co-culture. Potential for offshore hāpuku in longer term.**
- *Land-based RAS finfish with kingfish. Potential for RAS hāpuku in longer term.**
- *Offshore Greenshell mussels with scallop co-culture.*

The comprehensive approach weaves Te Ao Māori principles throughout and will result in an output that meets the aspirations, values and needs of Iwi.

The recommended focus areas of the business case are subject to deeper analysis (and potential change) in Stage 3 as new information comes to light regarding environmental conditions in offshore Bay of Plenty (provided by Cawthron Institute), as well as in-depth market analysis.

** Also noting potential to develop RAS and sea-run rainbow trout business cases in the longer term, if the regulatory environment shifts.*

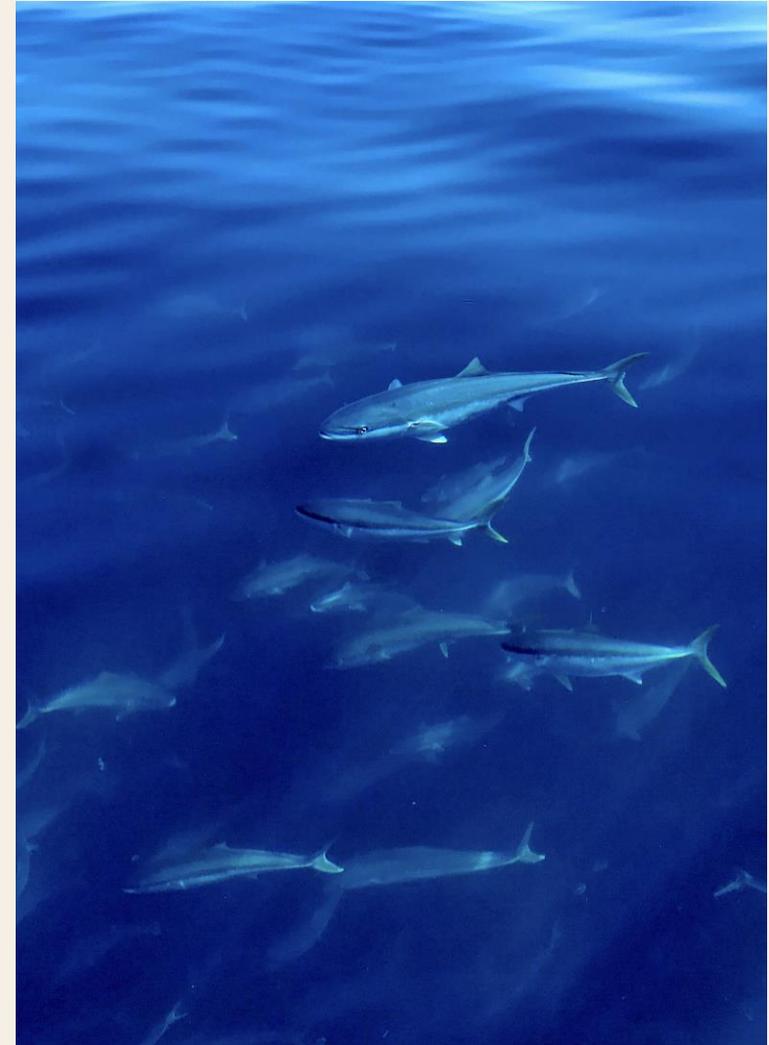
Te Waiariki Iwi Aquaculture Stage 3 Business Case – Next Steps

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Stage 3 Business Case Development

- Application for funding through the Sustainable Food and Fibre Futures Fund was successful.
- The development of business cases in an integrated package will:
 - Help inform potential future Iwi investment in aquaculture in Te Waiariki
 - Holistically take into account the social, cultural environmental and economic outcomes (“the Four Pou”) that will occur
 - Give increased certainty to the type / amount of investment required and the resulting economic impact to Iwi, and the Bay of Plenty Region as a whole, in terms of jobs and GDP growth.

Deepening of Ngā Iwi collaboration will achieve strategic and tactical alignment and identify joint and collective opportunities, while respecting mana motuhake.



Workstreams

- **Financial modelling:** Richard O’Hara – Trigpoint Capital
- **Economics:** Lawrence McIlrath - Market Economics
- **Market validation:** Coriolis
- **Intellectual Property:** Dr Penelope Gibson
- **Legal/commercial structuring:** Kāhui Legal / Oceanlaw / Te Ohu Kaimoana
- **Workforce Development:** Toi Ohomai / Te Pūtea Whakatupu Trust
- **Engineering:** Offshore & Coastal Engineering Ltd
- **Technical:** Aquaculture Direct Ltd, Iwi and research institutes (eg NIWA, Waikato University, Plant & Food, Cawthron)
- **Pre-consenting strategies:** Aquaculture Direct Ltd
- **Environmental, social, cultural assessments:** Iwi and Envirostrat
- **Geothermal opportunities:** Iwi and Envirostrat
- **Māori business to business opportunities:** Iwi and Envirostrat



This kaupapa supports Iwi decision-making with respect to on-water and on-land aquaculture opportunities. It provides a potential roadmap towards an Iwi-owned and led BOP aquaculture industry that contributes to Māori economic development and exercises kaitiakitanga.

Ngā mihi nui ki a koutou.