Ideas for sustainable futures

Ahikā Consulting
Level 3, 2 Dowling St, Dunedin
PO Box 1320, Dunedin 9054
03 742 1093
info@ahika.co.nz
www.ahika.co.nz

Future-Proofing Implementation and Engagement Plan

Akapatiki A Block Incorporated

Prepared as part of the Our Land Water's Rural Professional Fund research project.

Ray Mohan

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Document Version History

Version	Purpose	Prepared by	Reviewer	Review date
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Contents

Introduction

Working with Māori agribusiness has shown that the concept of futureproofing is not solely based on meeting regulatory compliances. The cultural narrative and history of the landscape, and future goals for both whānau and whenua are at the forefront of decision-making when it comes to developing environmental plans and ensuring that management of the whenua will lead to an improvement in te Taiao; the natural world that contains and surrounds humanity in an interconnected relationship of respect.

While succession planning is an area of concern for numerous farms across Aotearoa, the multi-generational dynamics and complex governance and ownership structures of Māori Whenua Trusts add an extra aspect to the challenges of implementing land use plans growing from Mātauranga Māori.

The impact of increasing urbanisation has often weakened whānau connection to the whenua. This has resulted in a challenge for Māori trustees in identifying and reconnecting whānau back to the whenua, and to encourage growth in knowledge that enables kaitiaki responsibilities to be upheld. For some current trustees, there is a strong desire to improve the intergenerational connection to te Taiao.

Governance tools identify key factors such as the transfer of skills and knowledge, but emphasis is often on the transfer of assets, without consideration for Mātauranga Māori.

These tools do not address the big question asked by the Māori Whenua Trusts – How can trustees and whānau develop pathways to identify and re-connect the next generation of kaitiaki to ensure on-going enhancement of te Taiao?

For Whenua Trusts, engagement with the next generation of shareholders is proving to be a challenge. Annual shareholder meetings are often only attended by the older generation of existing shareholders, and the widespread locations of whānau makes it difficult to connect with the younger generation of future shareholders.

Current situation

The location of the whenua on the Otago Peninsula is unique by its exposure to both the coastal side which has a rugged topography weathered by the elements, as well as the more sheltered harbour side. The Otago Peninsula provides a habitat for internationally significant flora and fauna, including penguins, fur seals, sea lions, geckos and the Royal Albatross colony. This area is well used for tourism activities, mainly based around the wildlife present. In addition to the access for water-based recreational activities, there are also several walking tracks established in the area. Pukekura, which is now home to the Albatross Colony, was historically a Māori Pa site in pre-colonial times.

A key feature of the whenua is its proximity to Victory Beach and the adjacent Okia Flat reserve which is home to 'The Pyramids' – basalt volcanic columns that are a striking feature in the landscape.

The whenua's proximity to the harbour has several influencing factors on land use, both present and future. Under the Dunedin City Council 2nd Generation District Plan (2GP), a portion of land has been classified as Hazard 3 – Coastal, with approximately 10 ha also categorised as an archaeological site. The remainder of the land parcel does have an archaeological alert layer associated with the area.

Approximately 80% of the block is part of the Wahi Tupuna and Native Reserves mapped areas in accordance with Section 14 and 16 of the 2GP respectively.

Across the whenua which makes up the primary farming operation, there are several areas associated with an archaeological alert area, as well as areas categorised as having high class soils, in accordance with Section 8A of the 2GP. Similarly on the leased land, there are both types of alerts and classification present on the owned land parcels.

A portion of the whenua also borders the Ōtākou Marae that has a heritage classification in recognition of its historical importance and value to the site. An analysis was undertaken to understand the strengths, weaknesses, opportunities, and threats of the current farm system and landscape. Table 1 below summarises the findings of the analysis.

Table 1 SWOT assessment

Strengths	Weaknesses	Opportunities	Threats
Multi-generational farming knowledge and cultural history	No diversification in income streams	'Farm to Plate' – targeting conscious consumers who want sustainably produced food (meat, honey, and koura)	Regulations may restrict farming activities on steeper topography
The land has immense potential for primary and eco-tourism development- proximity to Penguin Place	Dry seasons have resulted in decreased stock numbers	Develop poorer producing areas into carbon forestry	Impacts of climate change and sea level rise on coastal land. Damage on land from rabbit population.
The block is located in a good location – proximity to city, Victory Beach, and the adjacent Okia Flat reserve	Creation and management of new ventures require capital to secure resources and workforce.	Eco-tourism - Developing existing tracks across property and accommodation options e.g., glamping.	Succession of farming operation unclear

Komiti goals

The following goals for the whenua were identified in consultation with the Komiti through facilitated hui.

- **Goal 1:** Restore whenua for future generations
- **Goal 2:** Establish viable ventures to ensure social and cultural benefits for shareholders.
- **Goal 3:** Develop income streams in alignment with restoration goals for whenua.
- **Goal 4:** Improve access for whanau and visitors across whenua.

Establishing implementation stages and requirements

Following consultation with Komiti representatives, the establishment of a native carbon forest was identified as a key land use opportunity for the whenua. These are identified in Figure 1 in the areas shaded in pink.

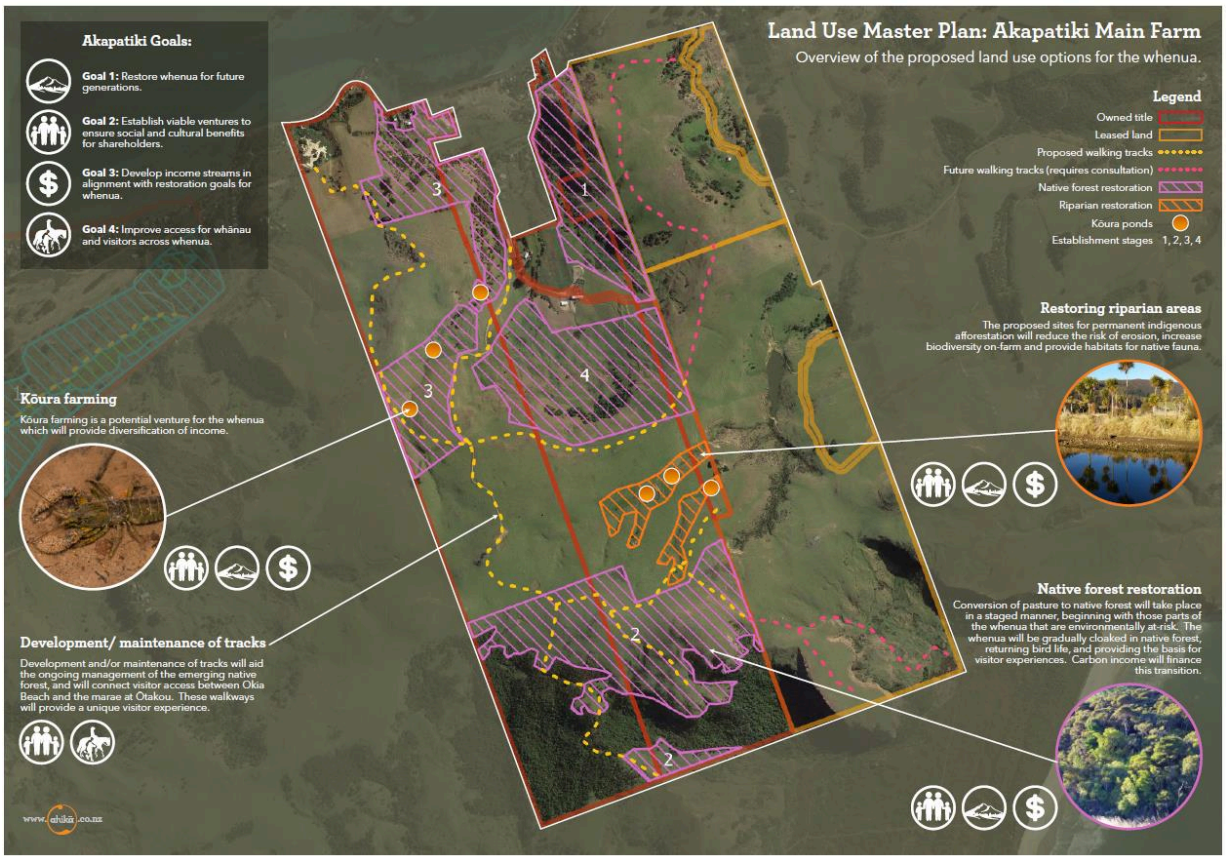

Figure 1 Future land use plan

Conversion of pasture to native forest is proposed to take place in 4 stages, beginning with parts of the whenua that are environmentally at -risk from erosion and soil loss. Building upon sites identified in a preliminary land use assessment previously undertaken by the Komiti, two approaches for the establishment of the native forests were explored.

Approach one - Incorporation-funded model - the planting and management of a native forest in Stage 1 will be fully funded by the incorporation.

Approach two - Partnership model, which would see additional capital from planting partners to kickstart the planting in Stage 1. In exchange, planting partners can then secure a portion of the resulting carbon credits.

To support the restoration aims of both projects, the establishment of a native plant nursery was also explored. This Is intended to support the incorporation by providing a portion of the native plants required for Stages 2-4 of the restoration.

The following section discusses the two potential pathways to establishment for Stage one which is a total area of 12.1 ha.

Forest establishment

The following section details the activities associated with the establishment of a native forest within the identified sites. Given the patches of regeneration of native woody vegetation already present on the property, an option for restoring the site to forest is simply to promote natural regeneration, through targeted plantings which will activate the forest regeneration.

This will involve removal of current livestock, control of any other pests, planting a low number of suitable native tree and shrub species, and controlling weeds as required.

Native seedlings should be planted at a rate of approximately 1500 stems per ha at an estimated total cost of $14,985/ha. These plants should be placed in locations where they are likely to establish successfully but are also in an ideal location to provide a seed source for further spread.

Table 2 summarises the preparation required for the site, planting densities and the costs associated with this. It should be noted that these are estimates only. Costs may be lower if there is funding received.

Table 2 Establishment costs per hectare of native forests

Site prep ($)[1]	Planting [2] [3] [4] ($)	Maintenance [5]($)	Total cost ($)
600	4,800	9,585	14,985

[1] Pre-plant spot spray - Calculated based on a cost of $0.4 per plant.

[2] Calculated based on a cost of $1.95 per plant.

[3] Calculated based on a cost of $1.25 per protector.

[4] Plant protectors may need to be considered alongside long-term value of rabbit control methods etc. only required if a high rabbit population exists. (tbc)

[5] Maintenance involves releasing of the plants by a contractor using herbicide and a spray cone; calculated based on a multiple release cost of $6.39 per plant

Approach one – Self-funded model

Overview

In this scenario, the incorporation will fully finance the restoration work. Establishment and maintenance will be undertaken by Incorporation, including day to day management of the planting sites. The following cashflow calculations have been prepared based on the following assumptions:

- Native forest planted as permanent stands.
- No additional funding has been factored into establishment costs.

Carbon cashflow scenarios

Figure 2 presents the anticipated gross carbon income from the establishment of Stage one (12.1 ha).

Figure 2 annual gross income from the establishment of Stage one.

Figure 3 states the cumulative net income from the establishment of Stage one.

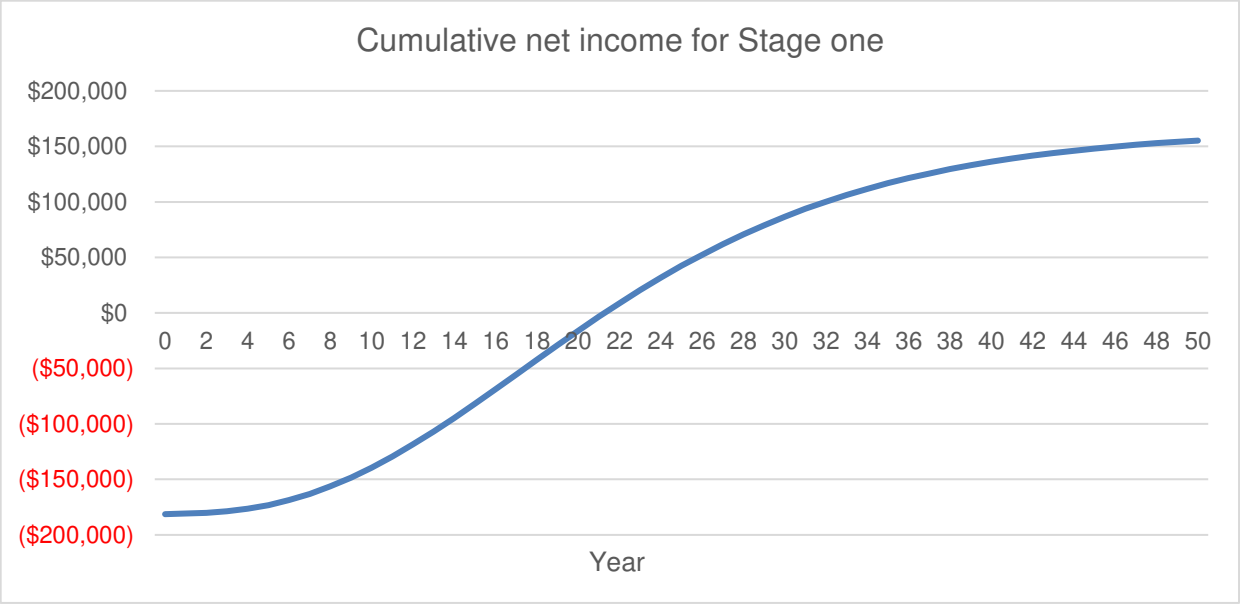

Figure 3 Cumulative net income from the establishment of Stage one

The following section presents the anticipated net income from the establishment of Stage one of the native forest restoration project using Approach one. Scenarios have been modelled using the following carbon prices:

Table 3 Carbon price scenario for Approach one

Carbon Price ($/NZU)	Net income at Year 50
$86	$155,212
$95	$190,430
$110	$249,127

Approach two – Partnership model

Approach two is a co-funding model, which would see additional capital from planting partners to kickstart the restoration work. In exchange, planting partners can then secure a portion of the resulting carbon credits.

The following cashflow calculations have been prepared based on the following assumptions:

- Native forest planted as permanent stands;
- Planting fully funded by planting partner;
- Scenarios to show different distribution of units.

Forest establishment

In this scenario, the restoration project on the whenua will be jointly funded with a planting partner.

The planting partner will provide up to 100% of the establishment and maintenance costs, with a portion of the accrued carbon credits transferred to the planting partner, in exchange.

There are several key elements to consider in this scenario:

Cost sharing – The cost associated with the development of planting plans, forest establishment, silviculture, pest/risk management, and ETS reporting requirements.

Carbon Credit Accrual and Profit sharing – The number of carbon units accrued and the distribution of the carbon credits between the parties in the partnership.

Duration of agreement- The duration of the partnership entered by both parties. The duration may be aligned to the ETS carbon accrual schedules for Native forests i.e., 50 years, or for a shorter term decided on by both parties.

Roles and Responsibilities – Confirmation of the respective roles and responsibilities to be fulfilled by individuals/groups within both parties. The labour force for planting may be potentially supplied by the Incorporation, with payment for the planting work undertaken paid to the incorporation. This can provide additional work opportunities for whanau and kin.

Carbon cashflow scenarios

The following section presents the anticipated cumulative cashflow from the establishment of Stage one of the native forest restoration project using Approach two. Scenarios have been modelled using different carbon credit distribution ratios and anticipated carbon prices.

As stated above, the scenarios have accounted for the planting costs (plants, labour and other requirements) are fully funded by the planting partner. A project management expense of $50,000 for year one has been factored into the calculations.

Scenario A - 50:50 split.

In Scenario A, a carbon credit distribution of 50:50 to planting partner and incorporation has been modelled.

Distribution of units accrued (%)			
Incorporation	50%	Planting partner	50%

The total number of NZUs that will be allocated to incorporation is **1956.5** NZUs. The table below presents the total anticipated income from selling the accrued NZUs at different carbon prices.

Table 4 Partnership model – Scenario A

Carbon Price ($/NZU)	Stage 1 Net Income at Year 50
$86	$118,265
$95	$118,265
$110	$118,265

Scenario 2 - 40:60 split.

In Scenario two, a carbon credit distribution of 40:60 to the incorporation and planting partner has been calculated.

Distribution of units accrued (%)			
Incorporation	40%	Planting partner	60%

The total number of NZUs that will be allocated to incorporation is **1565.2** NZUs. The table below presents the total anticipated income from selling the accrued NZUs at different carbon prices.

Table 5 Partnership model – Scenario B

Carbon Price ($/NZU)	Stage 1 Net Income at Year 50
$86	$84,612
$95	$84,612
$110	$84,612

Native nursery

To support the restoration work at Akapatiki A Block Inc, the establishment of a native plant nursery was also explored. This was investigated as an opportunity for the incorporation to grow their own native plants required for the Stages two-four of the restoration, whilst also serving as a pathway for whanau and kin to return to whenua through development of a social enterprise.

Nursery opportunities

- Employment opportunities for local whānau and community.
- Restoration of ecosystems across the wider peninsula area.
- Exercising kaitiakitānga, building whakapapa connectivity, and sharing whānau thinking.
- Training and skill development across a breadth of sectors, for whānau and community.
- Leadership, and an opportunity to influence the direction of restorative initiatives across the region.

Roles and requirements

Establishment of the nursery can help build the capacity and capability of whānau, through training and career development. A range of jobs are sought for whānau, including field-based restoration jobs, plant nursery jobs, and project management / management jobs.

Nursery site

Due to the availability of land at Akapatiki, it is recommended that the nursery incorporates an on-site propagation area. Keeping the operation to one main site will enable staff to monitor the progress of these plants regularly, without the requirement to travel and transport plant cells.

Site selection is a very important consideration in the establishment of the proposed nursery.

In general, the site needs to:

- Be flat, or slightly sloping.
- Have access to a consistent water supply for irrigation.
- Have access to electricity.
- Have sufficient area to enable wheeled vehicles (e.g., loader) to operate safely.

- Have good access for trucks and loading equipment.
- Be protected, or able to be protected, from significant adverse weather or climatic events (significant winds, floods, or heavy frosts).
- Be directly accessible to the roading network.
- Be close to the local community, allowing for ease of commute for employees.
- Meet regulatory rules and zones regarding use of land for commercial purposes.

The proposed operating model for the nursery does not require the site to have a shop front or be particularly accessible to retail customers.

Infrastructure required

The following infrastructure is considered the base level required for the marae.

1) **Potting shed and workshop**

A fully enclosed workshop and potting shed allows for cutting preparation, and small pot management. This is the 'engine-room' of the nursery, and where the potting up of cells into larger grades occurs. This space can also include the equipment storage area, and the employee facilities (below).

2) **Equipment storage**

A secure site to store equipment, tools, and a lockable fertiliser, petroleum and herbicide shed will be an essential component of each nursery. A herbicide and pesticide storage shed must be compliant with GrowSafe requirements. There is potential to incorporate this with the existing equipment shed.

3) **Employee facilities**

Eating and cooking areas, toilets, washing spaces, and storage areas should be provided for employees. These are presently available at the Marae.

4) **Potting mix store**

Potting media and mixing can occur at one central location where potting media or media components are stored in bulk quantities. Potting media and the various components are stored either in loose piles or in open bins, often constructed of concrete.

Potting media components are usually mixed by commercially available soil mixers, or front-end loaders that scoop and dump the media several times on a concrete slab. A raised concrete

slab prevents incorporation of field soil into the media during mixing and eliminates contamination from diseases and weed seeds.

5) Crop cover / poly tunnel

A poly tunnel of sufficient capacity is required to house the tender, recently germinated cells that arrive from the centralised propagation facility. This facility needs to be large enough to house more sensitive plants for periods over weather uncertainties, and in particular unseasonal frosts. Six metre truss width, with additions of modular three metre lengths, provides an excellent solution.

Figure 4 A typical poly tunnel

6) Hardening off areas

The production or plant growing areas will occupy the largest percentage of the nursery land. The growing areas will be adjacent to the potting areas, to ensure the orderly movement and placement of plants in the outdoor area. These areas need access ways that allow for large trolleys, and perhaps ATV trailers.

7) Protective covering

Frost sensitive plants should be situated in hardening off areas where a protective tunnel (a cloche) can quickly be installed at short notice. This is particularly important for younger, soft plants, that are vulnerable to unseasonal frost events.

Figure 5 Small cloche structures which allow covers to be quickly pulled up over plants during adverse weather events

8) Irrigation and water storage

Adequate water volume is essential for the adequate irrigation of plants. An irrigation system designed to meet the demands of each nursery is a wise and necessary investment. It is recommended that an irrigation design specialist is commissioned to design and scope the required system for each nursery.

The irrigation design will be influenced by the large storage capacity of the big pond, the type of plants grown, the number of plants grown, and the amount and distribution of rainfall. Sufficient storage needs to manage points of high risk, such as hot, dry periods. The storage system required will be heavily influenced by the ability and permissibility of accessing networked water supplies.

The layout and dimension of production areas must be known when designing the irrigation system. Production areas may be modified to maximise irrigation efficiency. Most irrigation systems used in nurseries are permanent overhead delivery systems with impulse nozzles which deliver water in a circular or rectangular pattern.

The use of drip irrigation systems is also common. Drip systems deliver a specific amount of water to each container. Drip systems must be properly designed to ensure adequate delivery rate.

9) Vehicles

A small tractor with front-end loader is required at each nursery site. This will be used for towing, loading potting mix, and general handling of bulky items.

A 4WD double-cab ute will be required for field work, and to get trees to the various sites. A large high-sided tandem axle trailer will also be required, as the primary method for transporting trees.

Whenua management and pathways for knowledge transfer

This section involved understanding the skillsets present in governance and leadership and identifying key areas/gaps to be filled by the next generation. It also explored pathways for the transfer of knowledge between generations of kaitiaki and building social capital (e.g., mentoring). In the context of succession planning, incorporating customary leadership values into kaitiaki roles and structures can help to promote a greater sense of shared responsibility and ownership among different generations of whānau.

Existing skillsets

An assessment of the existing skillsets of the whanau were undertaken with Stephen Owens, on behalf of the komiti.

- Governance and Leadership Skills: These were identified as crucial for the long-term success of whenua committees. These skills may include understanding the relevant legislation and regulations, financial management, strategic planning, and decision-making processes.

- Financial and Accounting Skills: These were identified as essential for effective management of the financial resources of whenua committees. These skills may include accounting principles, financial reporting, cash flow modelling and forecasting.

- Farm Management: Multi-generational, practical knowledge of soil science, pest and weed management, livestock management, and feed/cropping.

Future skillsets needed

An assessment of the future gaps in the skillsets required to future-proof the whenua was also then undertaken with the komiti and shareholders through the 1000minds survey.

- Understanding of the historical and cultural importance of the whenua: The future success of whenua groups will depend on a deep understanding and appreciation of the cultural and historical significance of the land. This may include knowledge of traditional land use practices, the importance of the whenua for mana whenua, and the unique cultural heritage associated with the land. By understanding the broader cultural and

historical context, whenua groups can better position themselves to make informed decisions and plan for the future.

- Whenua management: With the proposed change in current farm management, there will be a gap in the skillset around whenua management. Skills needed for whenua management include practical knowledge of soil science, pest and weed management, livestock management, cropping, complemented by experience around farm record keeping and compliance.

- Intergenerational knowledge transfer: This includes the engagement of the young, passing down knowledge and skills, and utilising the knowledge and experience of Māori elders who have inherited knowledge and experience from their ancestors to inform land management practices.

- Mentorship and guidance: This includes finding mentors who have successful experience in similar areas to guide and support future land management practices.

- Future planning and sustainability: This includes gathering and utilising knowledge about future environmental, social, and economic trends to inform long-term land management planning.

Opportunities for connecting and identifying whanau

By creating an environment in which younger members of the whānau can learn from and be mentored by older members who have a deep understanding of customary values, it is possible to ensure that these values are passed on and retained over time. This, in turn, can help to promote greater continuity and sustainability in the management of whenua and enhancement of te Taiao, as the next generation of kaitiaki are equipped with the necessary knowledge and skills to effectively manage these important resources.

The following section highlights the opportunities identified during the research project to connect whanau, in particular rangatahi and future shareholders, with activities and plans for the whenua.

- Developing a whānau database: To identify and connect with whānau members, it can be useful to create a database or list of current members of the whenua. This can include contact information, whanau connections, and any specific skills or expertise that can be useful for future plans and mahi.

- Use social media platforms: Social media platforms can be an effective way to connect with whānau, especially for younger generations. Posts can be made to provide updates on plans and activities for the whenua, and to encourage korero and engagement.
- Working bees and mahi on the whenua: Working bees and other events can be held to provide opportunities for whānau to get involved with the whenua. These events can be structured to allow for participation and engagement, and to build a sense of community around the whenua.

Summary of wider project outputs

As part of this research project, a number of outputs have been developed to share the insights and learnings gained throughout the process. The first of these is a short video series that documents the journey, issues, challenges, and development of approaches from Komiti members and whānau in their efforts to strengthen the connectedness of whānau to whenua. This video series serves as a way to share the experiences and lessons learned, and to provide inspiration and guidance for other Māori trusts and incorporations facing similar challenges.

In addition, a summary template has been created, which is specifically geared toward other whenua Māori trusts and incorporations. This template outlines the work undertaken during this project, as well as the key insights and potential approaches for addressing commonly shared challenges. This template can serve as a useful tool for other Māori trusts and incorporations to consider when developing their own strategies for engaging with their whānau and managing their whenua.