

Pest control

*Mahia Coordinated Management Area Feral Goat
Control*

*Landcare project : Possibilities for collective decision
making for pest control on Mahia Peninsula*

Pest control proposal maps

Mahia Coordinated Management Area Feral Goat Control

Operational & Risk Management Plan



1. Project Description

The Hawkes Bay Regional Council has been investigating the viability of developing a management plan for the control of feral goats (*Capra hircus*) in the Hawkes Bay region. Feral goats are well established in high numbers across most of the northern half of Hawkes Bay farmland and exotic forestry areas. To a lesser extent in the higher indigenous areas. This population of feral goats pose a significant threat to areas of nationally and regionally important ecological areas. However these feral goats are also seen by many farmers in the region as both a weed control tool and a source of income.

The formation of a key stakeholders group was established 3 years ago to determine the format that the control of feral goats should take in Hawkes Bay. It has been through this process that it has been decided a non-regulatory approach to the management of feral goats is established.

A project plan was developed on the principal of voluntary co-ordinated management areas where landholder/stakeholders in a given project area develop a management plan for the control of feral goats. Key ecological values within the management area will need to be established particularly those affected by goat grazing and then given suitable weighting when developing a management plan.

The initial project area on the Mahia Peninsula is partly being proposed for control due to a catchment planting programme. A significant planting program is proposed in the Whangarei Catchment over the next three years. The required control of feral goats to enable this planting also gives opportunity to expand the control and develop improved management of feral goats through coordinating resources.

Current control being carried out in the Coordinated Management Area (CMA) is by DOC and forestry companies and to a lesser extent adhoc farmer control. This has been carried out through a variety of techniques, Heli shooting, ground shooting and mustering. Each of these stakeholders has been conducting their control independently of each other.

The aim of the Co-ordinated Management Area is to gain both more effective control and cost benefits from having a collective control programme being conducted by one contractor working the control area systematically.

This document is for a five year management plan however any control past year two is subject to result targets being achieved and maintained and the continued support by stakeholders and funding agencies.

2. Historical Control

The initial area is currently receiving the following control independently of each other:

1. Forestry companies conduct control within the areas on plantings under 5 years of age. Once the trees have passed these criteria no further control is targeted however some adhoc control is conducted. This control is primary ground shooting.

Three forest companies operate within the initial control area, PF Olsen managing the HBRC planting, Dickies Forest managed by Forest Management and Grandy Lake Forest (NZ) Ltd. Grandy Lake Forest and the HBRC plantings appear to be the only areas receiving control at this time due to the age of the stock planted.

2. P & S O'Brien (Taharoa Trust) and R Coop (Okepuha Station) conduct mustering control with professional musters (all landholders use Graham William) as the goat population dictates.

Taharoa Trust conducts control around 12-18 month intervals mustering around 200 feral goats each time. This control has reduced the number on their property to moderate numbers with reinvasion being a significant issue.

Okepuha Station musters ever 2-3 years with about 800-1000 feral goats recovered.

Hautaaroa Station has received control around the Mahia Peninsula SR historical as part of DoC control. This control has been carried out intermittently.

Moemoutu Station receives intermittent control around the Mahia Peninsula SR historical as part of the DoC control. This is targeted around the QEII blocks on the property. The lease (Hautaaroa Station) conducts some mustering every 2/3 years and some control in the QEII blocks.

KiniKini Station musters every 2/3 years with average success. This is one of the main income streams for the property.

Onenui Station is currently conducting their own control with the intent to control feral goats on their property.

Dickies Forests appear to be have low to nil control due to age of asset.

Remaining properties appear to have mixed level of control.

3. The Department of Conservation primarily conduct ground control on an annual basis supported with some heli shooting as required in the Mahia Peninsula Scenic Reserve. Hunting numbers from the 10/11 to 12/13 show a total of approximately 120 feral goats culled over this period indicating the control in the reserve has been effective in keeping numbers down; however the very high population surrounding the reserve means the current level of control will have to be sustained indefinitely to maintain this protection.

3. Operational Delivery

3.1 Operation Planning

Prior to the completion of the operational plan Habitat BPM Ltd will meet with all the landholders in the operation area to identify the attitude toward feral goats and the type of management they would like on their land. This management may potentially range from containment areas, fencing, mustering or ground and aerial control (shooting): *see attachment 1 for details on control techniques.*

A key part of the operation is the need for high level communication with the local community. Landholders have very mixed views on feral goat control, the need for any control, the value of goats for farming and some are cautious of any council involvement with projects.

Once all landholders have been consulted the operational plan will be finalised but will likely be managed in the following pattern;

Areas that have requested feral goat control and have a high population will be targeted first. Primary control will be mustering to utilise this asset. This will be followed by ground control, shooting by a professional hunter with trained dogs. Control will be systematic across the operational area to minimize goat herd movement risks.

The project manager will work with landholders that want to utilise feral goats for weed control to develop a management plan that will meet both parties needs.

The final operation plan will identify key requirements, control timing issues, forestry requirements and operational risk. The control design has purposely been designed to not be too prescriptive due to the variability in goat control with animal movement.

3.2 Control Methodology

Control in years 1 (stage 1), Yr 2 (stage 2) and Yr 3 (the top end of stage 3) are designed to support the planting planned for the Whangawehi Catchment. (See Map 1, Map 2 and Map 3).

The remainder of the control (low stage 3, stage 4 and stage 5) is designed to support the biodiversity and land management on the peninsula with these areas being incorporated over the subsequent years.

Proposed planting programme

Winter 2014

- 11,000 plants Taharoa Trust (O'Brien), *to be finalised*
- 6,000 plants Nga Whenua Rahui in the low catchment area (Maori ownership land). *To be finalised.*
- Pongaroa Station: possible planting but still to be confirmed (potentially 6,000).

Winter 2015 (estimated)

- Taharoa Trust/ Grandy Lakes 11,000 plants
- Pongaroa Station 20,000

Winter 2016 (estimated)

- Hautaaroa Station 5,000 plants
- Pongaroa Station 30,000

Control Year 1: August 2013- June 2014

Stage 1: 2197 ha

Block Status

A significant part of the stage one control area has had some control or management of goat previously with the exception of the Maori ownership land above the coastal area.

Feral goat numbers are relatively low on the open farmland. Taharoa Trust has recently conducted mustering with good results (180 goats mustered) but reinvasion from the Ormond property and Grandy Forest will be an ongoing issue. Approximately 70 goats have already come through in the 6 weeks since the muster.

Pongaroa Station has an ongoing shooting programme with the population down to approximately 40 head.

Grandy Lakes Forest has ongoing control within the forestry but numbers have been indicated by the forest manager as still being high.

All three of these landholders would like eradication control.

Jack Brown (Grandy Lake farmland lessee) is conducting management of the goats on his property by containing them in the inner gully for weed control. He is supportive of the programme and is prepared to work within a management plan of goat containment and exclusion areas.

The coastal section contains multiple small blocks with typically Maori ownership (see attachment 2). No communication has been carried out with the landholders within this area to date. The area appears to have a low to moderate number of feral goats.

Control

Initial control hours are approximately 100hr for year 1 with all control being ground shooting. Year one will consist of a full sweep of the ground control area targeting eradication in the clean farmland and close proximity to the planting areas. This will be approximately 40-50hrs.

The remaining control hours will target Grandy Forests and the southern boundary targeting sensitive areas and higher population/ reinvasion areas. These buffer controls will be carried out monthly at 8-10hours per control.

The contractor will also have to check with landholders in the eradication area that no feral goats have been seen prior to their monthly visits to determine if further control is required in these areas.

Estimating that the first control will be conducted in November 2013 there will be enough hours to conduct monthly visits for the remainder of the control period (June 2014).

After each round of control a review of kill data and contract notes and recommendations will be conducted and will provide the basis of the next control design. Each days control will be subject to landholder limitations, weather and witnessed feral goat movements. Any issues arising that cannot be managed by the contractor will be directed to the coordinator.

Control Techniques & Timing

The control field operation is planned to be carried out as follows:

Control Year 1:

2013/14: 1st Rotation

Ground control shooting Nov 2013 40-50hrs

Monthly maintenance- Ground Control shooting Dec- June 2014 50-60 hrs total.

100hrs/ \$45 per hr = \$4500.00

Funding: Grandy Forest Ltd: \$1000.00

HBRC: \$3500.00

Control Year 2:

July 2014/ June 2015

Stage 1: 2197 ha maintenance

Stage 2: 3966 ha initial

Block Status:

Stage 1:
Maintenance control

Stage 2:
50% of the stage 2 control areas have had some control or management of feral goat previously with the exception of the Ormond property and eastern coastal farms.

Feral goat numbers are relatively moderate to high on the open farmland. Okepuha Station (Coop) has recently conducted mustering with good results (560 goats mustered) but time restraints meant approximately 500 feral goats still remain. These are targeted for a muster soon.

The Department of Conservation has an ongoing shooting programme with it investing 10 mandays annually. Numbers are still moderate.

Grandy Lakes Forest has ongoing control within the forestry but numbers have been indicated by the forest manager as still being high.

All three of these landholders want eradication control.

The coastal section is made up of multiple small blocks. No communication has been conducted with the landholders within this area to date. The area appears to have moderate numbers.

There are properties contain high feral goat numbers with no management being conducted. If control cannot be obtained the target will be to develop a management plan with goat exclusion areas and population caps.

Control

Stage 1 area:
30hours maintenance control.

Stage 2 areas:
Initial control will be to muster all high population areas. This will be followed with ground control shooting. Hours are approximately 170 for year 1 with all control being ground shooting. Year 1 will consist of a full sweep of the ground control area targeting eradication in the clean farmland areas. This will be approximately 120hours.

The remaining controls hours will target Grandy Forests, the Mahia SR and surrounding buffer within the control area targeted to reduce the higher population and reinvasion areas. This will be three rotations of 16hours each.

The contractor will also have to check with landholders in the eradication area that no goats have been seen prior to their monthly visits to determine if further control is required in these areas.

After each round of control a review of kill data, contract notes and recommendations will be conducted and will provide the basis of the next control design. Each days control carried out will be subject to landholder limitations, weather and witnessed goat movements. Any issues arising that cannot be managed by the contractor will be directed to the coordinator.

Control Techniques & Timing

The control field operation is planned to conduct the following rotations:

2014/15:

Muster any high population areas- June-July 2014

1st Rotation-Ground control shooting July 2014 120hrs

Three Rotations- Ground Control shooting Aug- June 2014 50 hrs total.

Maintenance control Stage 1 area- conducted with work above Aug-June 30 hrs

Mustering:

\$0.00 (50/50 split from revenue of selling goats to landholder and muster)

Hunter 200hrs/ \$45 per hr = \$9000.00

Funding:

Grandy Forest Ltd \$2500.00

HBRC \$4000.00

DOC \$2500.00

Control Year 3: July 2015/ June 2016

Stage 1: 2197 ha maintenance

Stage 2: 3966 ha maintenance

Stage 3: 2729 ha initial control

Block Status

Stage 1:

Maintenance control

Stage 2:

Maintenance control

Stage 3:

Goat numbers are relatively moderate to high on the open farmland. A majority of stage 3 is managed by L Symes (Hautaaroa Station and lessee of Moemoutu Station). Primary control of the feral goats is mustering on a two to three year cycle. This is run in conjunction with mustering on Kinikini Station. The numbers mustered are not high (100-200 Kinikini/Moemoutu and 200-300 of Hautaaruoa) and there appears to be a moderate to high population remaining.

HBRC has a block of land at the northern end of stage 3. This is part of the Mahia Effluent system. This block is being actively controlled as it has had new plantings.

Dickies Forests have the last area remaining area of Stage 3 on the East Coast. No contact was able to be made with the forest Manager however it appears to be in mature pine and containing a high population.

Control

Stage 1 area:
20hrs maintenance control.

Stage 2 areas:
100 hrs maintenance control.

Stage 3 areas:
Initial contact with Len Symes indicates he is not wanting eradication on his property as feral goat are utilised as both a weed management tool and an income stream. As part of the control a management plan will be incorporated with Len targeting goat exclusion areas, population caps managed with mustering and heli shooting on coastal faces. Currently Moemoutu Station is leased by Len however the owners have retired land into QEII and new native plantings and have a preference for feral goat eradication.

Only the top end of Kinikini Station is in the control area. It is expected that this can be reduced to low levels to create a buffer for Mahia SR and Okepuha Station.

The aim of Dickie Forest is to reduce the feral goat population to an acceptable level with the long term aim being eradication.

On the northern corner the aim is to muster high populations and utilize ground control with the target of eradication.

On Hautaaroa Station the management plan is a 1 hour heli muster and/or shoot of coastal faces. No ground control.

All remaining areas will be mustered if suitable. This will then be followed by ground shooting estimated at 100hrs

After each round of control a review of kill data, contract notes and recommendations will be conducted and will provide the basis of the next control design. Each days control will be subject to landholder limitations, weather and witnessed goat movements. Any issues arising that cannot be managed by the contractor will be directed to the coordinator.

Control Techniques & Timing

The control field operation is planned to conduct the following rotations:

2015/16:

Muster any high population areas: June/Sept 2015
Five Rotations Ground Control shooting Aug/June 2014, 180 hrs total.

Mustering:

\$0.00 (50/50 split from revenue of selling goats to landholder and muster)

Hunter 220hrs/ \$45 per hr = \$9900.00

Helicopter control 1hrs @\$1250/hr=~~\$1250.00~~
\$11150.00

Funding:	Grandy Forest Ltd	\$2500.00
	HBRC	\$5000.00
	DOC	\$2500.00
	Dickies Forest	\$1150.00

Control Year 4: July 2016 onwards

Stage 1: 2197 ha maintenance

Stage 2: 3966 ha maintenance

Stage 3: 2729 ha maintenance

Stage 4 & 5: 5761 ha maintenance

Block Status and Control

Stage 1: Maintenance control 20hrs

Stage 2: Maintenance control 40hrs

Stage 3: Maintenance control 30hrs

Stage 4 & 5: Initial control

Goat numbers are relatively moderate to high on the open farmland. Stage 4 is a mix of forestry and farmland (Kinikini Station, Ahimanawa Station and Peter Hynes). Landholders have a preference for maintaining feral goats indicating primary control will be via management plans.

A majority of stage 5 control is on Onenui Station who is carrying out some control with the intent for eradication.

3.3 Budget

The following budget has been based on the initial control area being constant over the first three years. No budget has been allowed for the inclusion of Stage 4 & Stage 5 years as further communication with these landholders is required. However if primary control is via a management plan hunter cost will be low (20-30hrs).

2013/14 Hunter **100hrs @ \$45/hr**

Total cost Yr 1 = **\$4500+ GST**

2014/15: Hunter **200hrs @ \$45/hr**

Total cost Yr 2 = **\$9000+ GST**

2015/16 Hunter **220hrs @ \$45/hr**
Helicopter **1hr @ \$1250/hr**

Total cost Yr 3 = **\$11150+ GST**

2016 +: Hunter **90hrs @ \$45/hr**

Total cost Yr 2 = **\$4050+ GST**

3.4 Funding

Initial discussion has been had with DoC, Grandy Forest and some landholders have indicated that they are comfortable with funding to a central fund for control. Other CMAs funding has come from DoC, Forestry Companies and HBRC Biodiversity fund.

3.5 Resources

The use of a professional musterer is recommended for the mustering. The preferred contractor is Graham Williams (Gisborne) who has conducted work within the area with very good results.

There are two known hunting contractors in the Wairoa area that are capable of carrying out this type of control. Once the project is finalised they will be contacted to request an EOI and pricing for work to be conducted.

4. Health and Safety

Operational Health & Safety risks will be identified in conjunction with landholders during the sign-up process. All hazards will be noted within the landholder data base and required controls put in place.

5. Risk Management Plan

Prior to the project starting a review of the following operational risk management plan will be carried out and developed. This is an active management plan and will be updated as further operational risks are identified.

Risk Analysis & Management Plan			
Activity	Hazard Description	Hazard Level	Risk Management
Project History			
Work History	60% of the block has had a high level of control	Low	Identify reinvasion areas
Previous Control issues	Some landholders have some historical issues towards hunting and goat control	Medium	Landholder concerns to be managed by Project coordinator prior to control on their property
Contract Knowledge	Do personal conducting work have knowledge of the control area	Unknown	To be confirmed once contractor is commissioned.
Community Communication	A high level of communication will be required with the landholders and community	High	Regular communication and updates to landholders in the early stages. Combination of mail outs and meetings.

Project Constraints			
Weather	Wet- Project area is free draining	Low	Confirm with landholders for access after wet periods. The free draining nature of the area
	Heat- Dog over exposure	Medium	Rest dogs throughout the day, shorter hrs, avoid extreme heat
Habitat	Deep gorges and younger regeneration areas(dense habitat)	Medium	Good dogs and heli shooting will manage risk
Topography	Mix of rolling to steep gorges and cliff faces	Low	Good dogs and heli shooting will manage risk

Control Risks			
Non Target Species	Stock, Deer	low	Under no circumstances will non targets be hunted. Target verification standard hunting procedure.
Timing constraints		Low	Flexibility of operation time places no constraints
Resources	For the success of the project well trained and qualified professional hunters are required	Medium	There are three know contractors in the Wairoa area that will be requested to tender for the control.

Affected Parties			
Iwi		Low	Generally supportive of feral goat control
DoC		Low	Co funder, Targeting zero population
Forestry		Low	Co funder, Targeting zero population
Landholders		Medium	Good landholder communication required

Other/miscellaneous (list)

Poaching	The is an issues of poaching occurring within the area	Medium	Avoid contract with any illegal hunting. Report to the respective landholder if encounters occur.

Attachment 1

Control Techniques

Mustering

Mustering can be a profitable option to remove goats off a property. Not only does this option remove carcass issues from the property but it may also generate income for weed control that can be more target specific than goats.

The HBRC encourages the use professional goat musters. They have had considerable experience handling goats and well trained dogs which is essential. They will conduct the mustering themselves and arrange the transport of the goats to the meat works. The Musters usually work out a 50/50 split of the profits obtained with the land owner.

Shooting

Shooting should not be confused with recreational hunting. Recreational hunting may help keep goat numbers down, but more often only keeps the goat population dispersed and difficult to control. Dedicated shooting operations which effectively cull the target population are the best option.

- Where goats are living in open country, the shooters should position themselves to cover all escape routes and if possible force them into an area where they can be easily seen and shot.
- The herd will usually have a leader, normally an old nanny, which by shooting the leader first (and any others that appear to be leading) will confuse the mob and slow them down.
- Priorities targets by shooting coloured animals first as the remaining lighter colored goats are easier to locate.
- Shooting should only be attempted if it is feasible to get a good position to shoot as many goats as possible, as missed goats will become much harder to shoot in the future.
- In heavy cover, goats can be stalked to within quite close range. Often their bleating and the strong smell of the male 'Billy' goats will betray their location.
- Always stalk upwind towards goats as they have an acute sense of smell. They also have very good eyesight, which should be taken into account especially in more open country.

- Most common centre-fire rifle calibers will kill goats humanely with well placed shots in the chest or shoulder area. 223, 7.62x39, 243 and .308 are all suitable rifle choices. Always use appropriate ammunition that will expand rapidly and will deliver a humane outcome i.e soft point (not FMJ or solids).
- Suppressed centre fires are a good option due to the decreased noise signature. Often mobs will become confused and disorientated by being unable to determine the location of the shooter.

Note that landholders are required under the Dog Control and Hydatids Act 1982 to ensure that any carcasses of any goats killed during goat control operations are either buried or destroyed.

Professional contractors are often a good choice to effectively cull a feral goat population.

Fencing

Goats are notoriously difficult to fence in. The best control fence is a netting fence secured to the ground. The recognised minimum fence requirements to control goats are:

- Standard nine wire high tensile fence with post at 4m intervals
- Bottom wire no higher than 8cm or barbed wire for uneven ground
- Maximum batten spacing's 1m
- Electrified wires at 30cm, 60cm & 120cm
- Blocked access on post stays

Containment grazing

Containment grazing is an option where farmers prefer not to manage feral goats as they want them for weed control and they are neighboring sensitive areas (new forestry plantings, DoC reserves, neighbour's who want to eradicate goats).

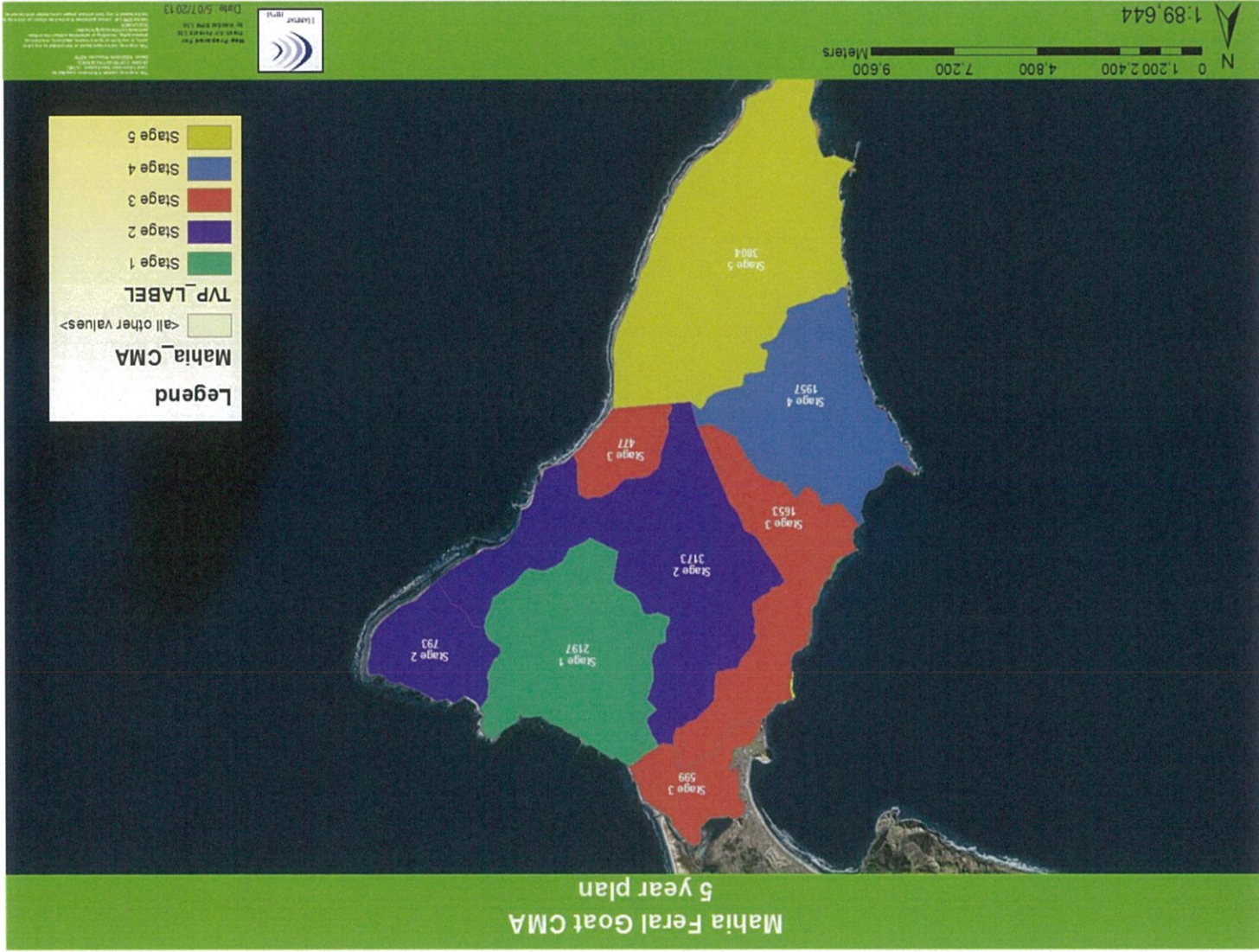
The land holder agrees to contain the goats with a one or two paddock buffer from the respective sensitive boundary and conduct the weed control in the buffer paddocks by another method.

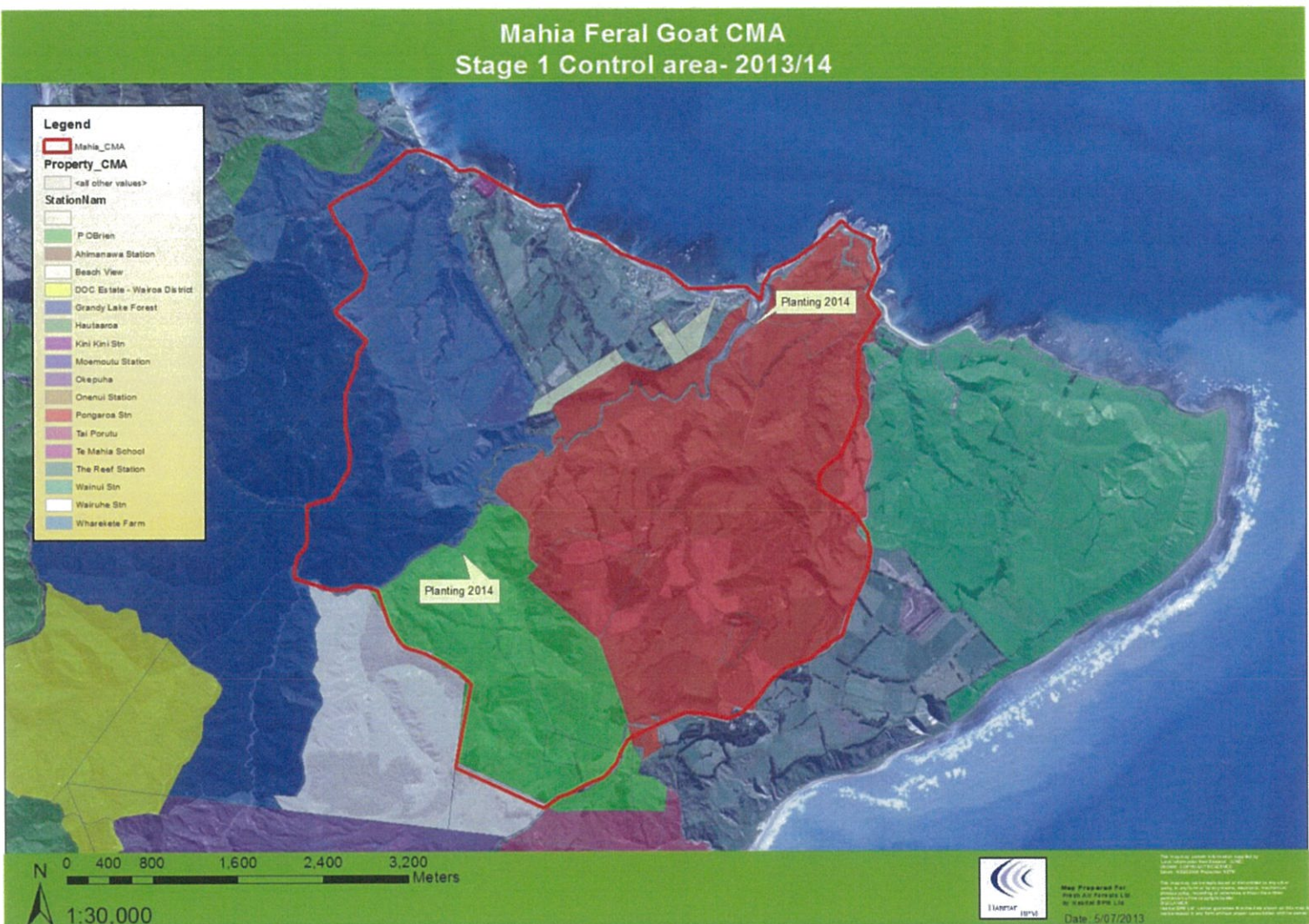
This is also conducted with an agreed population level to help manage the goats and reduce pressure from the herd to move around.

Daily work procedure:

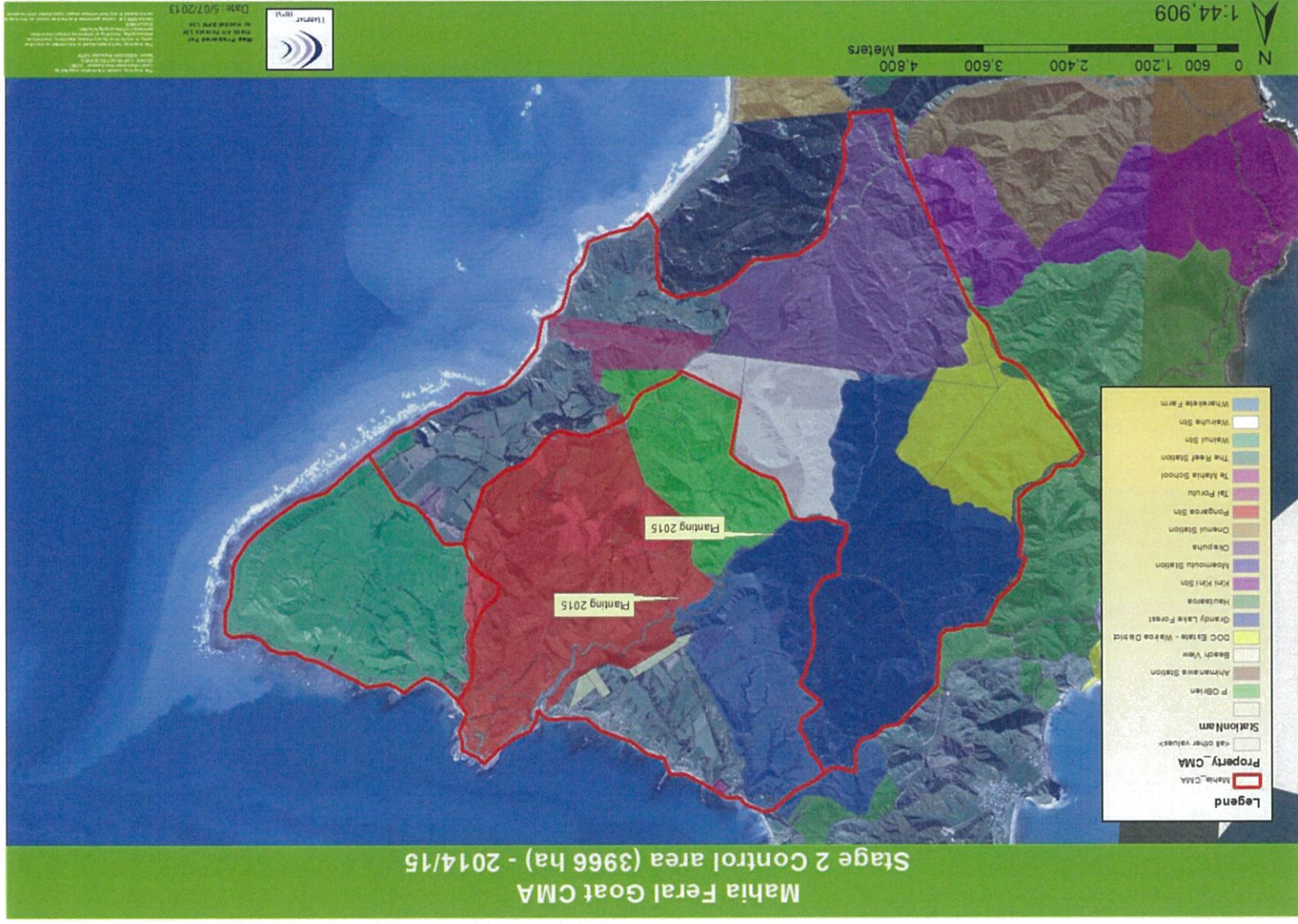
- Work separately the majority of time but in the same area so if back up is required it is available.
- 1 or 2 dogs each, all dogs will work separately if need be.
- Communication between hunters throughout the day will be with the use of walkie talkies.
- Use a map to preplan hunt so area is covered efficiently as possible e.g. coverage, back up dog, bike/vehicle location.
- 4 wheeler and or 2 wheeler motorbike used on farmland to help with coverage and dog transportation.
- Work day time is usually mid-morning to late evening to work in with goat movements.
- Tracking data saved and kill recorded as per contract requirements.

Map 1:5 year plan

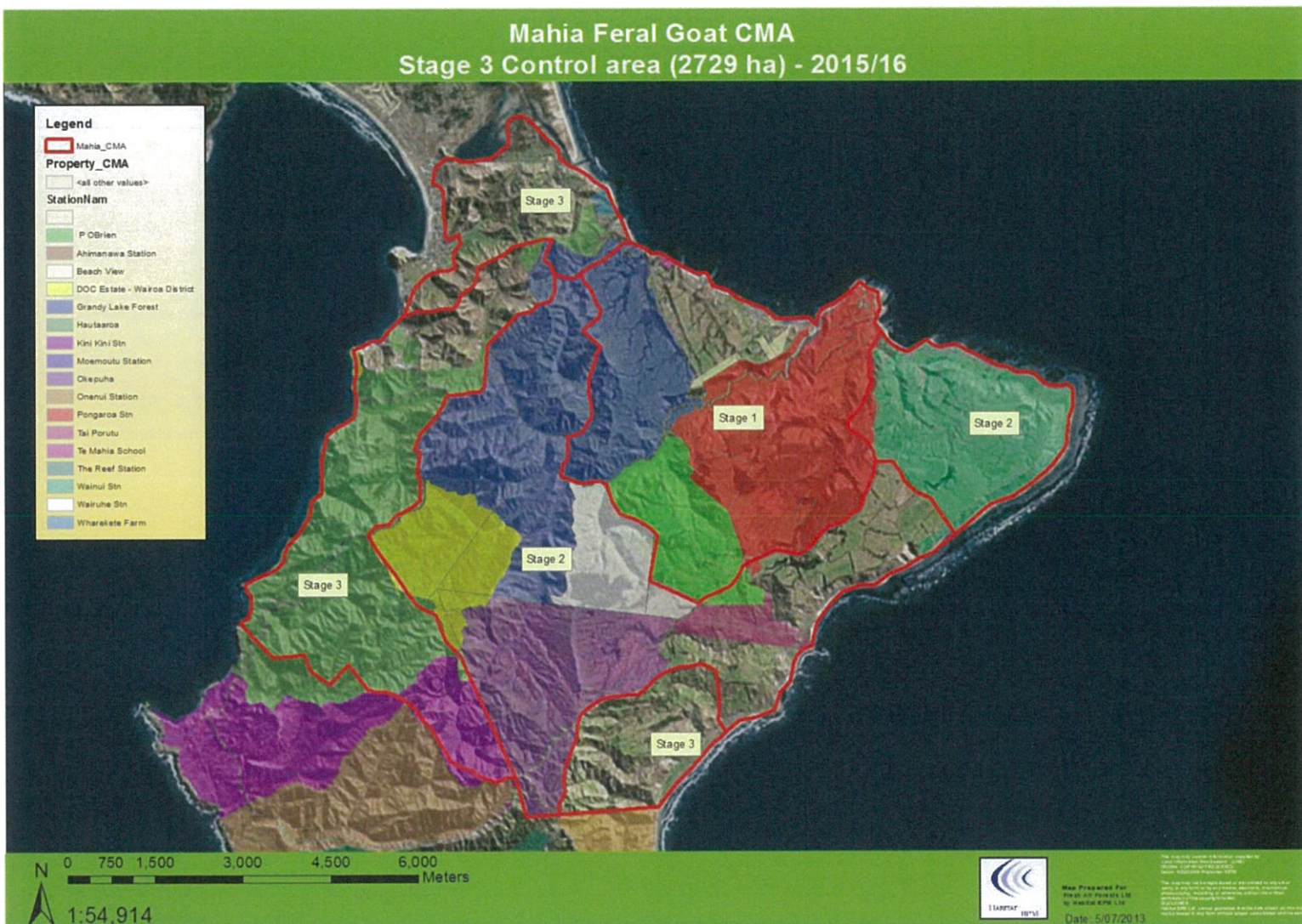




Map 3: Stage 2



Map 4: Stage 3



**Mahia Feral Goat CMA
5 year plan**



Legend

Mahia_CMA

☐ <all other values>

TVP_LABEL

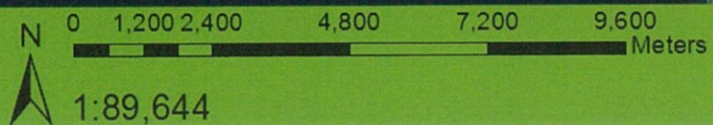
Stage 1

Stage 2

Stage 3

Stage 4

Stage 5



Map Prepared For
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Possibilities for collective decision making for pest control on the Mahia Peninsula: Results from an initial stakeholder analysis



Landcare Research
Manaaki Whenua

**Possibilities for collective decision making for pest control on the
Mahia Peninsula: results from an initial stakeholder analysis**

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Summary

Project and Client

- Hawke's Bay Regional Council has an interest in expanding its current possum control programme to cover a wider area and include a wider range of pest species, if it is cost-effective to do so. The Council is aware of the need for community engagement in the development and implementation of pest management plans. Thus, it contracted Landcare Research to use the Mahia Peninsula community as a case study to identify participatory processes the Council could use to improve stakeholder engagement. This report summarises an initial situational and stakeholder analysis of the Mahia Peninsula that was conducted to help support future participatory processes.

Objectives

- To identify:
 - diverse citizen perspectives about pests and pest control on Mahia Peninsula
 - citizen visions for the future of the peninsula and how these visions may or may not be aided by future pest control efforts
 - key decision-making processes on the peninsula and resources for future stakeholder engagement
 - current best practices for participatory processes in the literature and next steps for a participatory process for making decisions about pest control on Mahia Peninsula.

Methods

- We undertook an initial stakeholder analysis on the Mahia Peninsula using community meetings and semi-structured interviews with diverse community members.
- We also conducted a literature review of best practices for collective decision-making to develop recommendations for next steps for a participatory process in Mahia.

Findings

- The most commonly discussed pests on Mahia were goats and plant pests such as gorse and blackberry. Predators, such as feral cats, stoats, and rats, were also commonly cited as being threats to native biodiversity. While goats and cats were seen as pests by some community members, others saw them as assets.
- Interviewees' visions for the Mahia Peninsula, which include increased ecotourism, restoration of native bush, and the return of native birds, suggest that a coordinated pest control programme, developed through a participatory process, may provide benefits to the community.
- Community members suggested that a future participatory process in Mahia should involve the Whangawehi Catchment Management Group, the 10–12 key landowners on

the peninsula (in terms of land area), and small landowners, bach owners, and other interested community members. Interviewees also suggested that a future process should involve the building of trust with tangata whenua ; this could begin with representatives from the Council or Landcare Research attending monthly marae meetings on the peninsula.

- A review of the literature suggests that any future participatory process:
 - 1) should have clearly defined goals that can be formulated by the stakeholders themselves,
 - 2) be inclusive of diverse perspectives and informed by a more in-depth stakeholder analysis,
 - 3) be run by an impartial and experienced mediator, and
 - 4) be flexible.

Conclusions

- We recommend three alternative methods for designing and leading such a participatory process for collective decision making in Mahia. Which of these should be followed on Mahia will depend on the results of a more in-depth stakeholder analysis and the goals for the participatory process, which can be defined by community members at future meetings.

Recommendations

- We provide a timeline for Council and Landcare Research staff to proceed towards a participatory process in Mahia. This timeline includes, firstly:
 - sharing this report with the Whangawehi Catchment Management Group, then,
 - conducting a more in-depth stakeholder analysis using Q-methodology, and finally,
 - holding an open meeting, advertised to all interested community members, to share findings and discuss next steps.

1 Introduction

Management of animal and plant pests by national or regional agencies often impacts a wide range of stakeholders that hold a diverse range of values and perspectives. Consequently, pest control can often lead to public dissatisfaction with the management plans and their implementation, especially if multiple values have not been considered in the planning process. Hawke's Bay Regional Council (HBRC) has an interest in expanding its current possum control programme to cover a wider area and include a wider range of pest species, if it is cost-effective to do so. HBRC is aware of the need for community engagement in the development and implementation of pest management plans. Thus, it contracted Landcare Research to use the Mahia Peninsula community as a case study to identify participatory processes it could use to improve stakeholder engagement. This report summarises an initial situational and stakeholder analysis of the Mahia Peninsula that was carried out between 12 and 22 April 2014 to help support future participatory processes. We conducted semi-structured interviews with 16 residents in Mahia with diverse backgrounds and connections to the area, ranging from landowners, farmers and foresters to students, homeowners, and conservationists. In this report, we synthesise findings from these interviews and current literature on participatory processes to suggest future possibilities for collective decision-making for pest control on the Mahia Peninsula.

2 Background

Management of pests typically affects a wide range of citizens with different values (Maguire 2004). Furthermore, the impacts of pests and pest management strategies on ecosystems are often complex and uncertain, allowing for diverse interpretations of facts and risks among stakeholders (Maguire 2004; Green & Rohan 2012). Thus, pest management can often lead to public dissatisfaction with plans if diverse public perspectives and values are not considered in decision making (Green & Rohan 2012). Such public dissatisfaction can reduce the effectiveness of pest management plans in New Zealand, especially if stakeholders refuse to comply with plans, hinder the implementation of plans through protesting, or increase the costs of planning by filing lawsuits or submitting information requests under the Official Information Act.

Stakeholder engagement in decision making, or 'collective decision making', is increasingly recognised in the literature as a method for increasing public support for environmental planning processes (Reed 2008). Stakeholder engagement has been suggested to increase stakeholder trust in the decision-making process, as long as decisions are perceived to be transparent and consider multiple values (Richards et al. 2004). Stakeholder engagement may also lead to social learning, in which stakeholders and wider society develop an increased understanding of the conservation problem and solution through deliberation (Blackstock et al. 2007; Cundill 2010; Reed et al. 2009). Social learning can result in more creative solutions for environmental planning that better consider a variety of perspectives and are thus more likely to meet a wide range of citizen needs (Reed 2008). Stakeholder participation in decision-making has also been suggested to lead to higher quality decisions due to the incorporation of diverse sources of knowledge in planning, which may improve the ability for management plans to prevent negative unexpected outcomes (Newig 2007; Reed 2008).

While the benefits of stakeholder participation in decision making are increasingly recognised in the literature, in planning for pest management in New Zealand, opportunities

for citizens to engage in decision making are currently limited (Green & Rohan 2012; Greenaway et al. in press). Citizens do engage with pest management at other levels, such as conducting control on their own lands or participating in control programmes on public lands, making submissions on pest management plans, attending information sessions, protesting against the use of control techniques or, sometimes, helping to monitor the impacts of various control options on the ecosystem (Greenaway et al. in press). However, citizens are often dissatisfied with their ability to engage at an early stage to develop plans that satisfy the diversity of local values and perspectives.

In response to this need for enhanced collective decision making about pest control in New Zealand, our team of researchers – Alison Greenaway, a social geographer, Bruce Warburton, a wildlife ecologist, and Rebecca Niemiec, a student researcher from the US – is conducting social research through a series of case studies across the country. In this report, we examine possibilities for increasing citizen involvement in decision making on pest control on Mahia Peninsula, Hawke's Bay Region. The Mahia Peninsula and nearby Portland Island have high biodiversity values, particularly in terms of coastal birds, such as the New Zealand dotterel, shore plover, white-fronted terns, and black-winged petrels. Current pest control on the peninsula includes HBRC's Possum Control Area (PCA) programme, which subsidises large landowners for ground control of possums (HBRCb no date), and Mahia Coordinated Management Area Feral Goat Control programme, which seeks to manage feral goat populations across the peninsula over the next five years (Habitat BPM no date). However, a variety of other pest species exist on the peninsula that are currently not being managed through a large-scale coordinated programme, including rats, rabbits, feral cats, stoats, and various plant pests.

To understand the diversity of stakeholder perspectives concerning pests and HBRC's current control programmes, as well as to examine future possibilities for public participation in pest control decision making in Mahia, we undertook an initial stakeholder analysis. To do this we used community meetings and semi-structured interviews with a variety of community members. On 10 April 2014, we met with the Whangawehi Catchment Management Group at its monthly meeting at Tuahuru Marae in Mahia. The group, which is made up of landowners, tangata whenua, and agency members, was formed in response to community concerns about a proposed wastewater treatment facility for Mahia Beach and a Memorandum of Understanding was signed in 2011. Recently, the group has been working to restore the Whangawehi catchment and improve water quality through riparian plantings. On 11 April, we held a community meeting at Kaiku Marae to discuss local perspectives on pests and visions for Mahia: 16 community members, including landowners and tangata whenua, attended. From 11 to 22 April we completed 11 semi-structured interviews with 16 community members identified from those meetings. Interviews lasted between one and four hours, and interviewees were chosen from a variety of backgrounds and connections with the peninsula. They included tangata whenua, a Department of Conservation employee, owners of large stations, small landholders, environmental activists/community leaders, a retired teacher, a student, and a forester. In the semi-structured interviews, citizens were asked to speak about their connection to Mahia, what they believed were pests on the peninsula and why, their view on pest control practices, how decisions were made or could be made in the future on Mahia, and their vision for the Mahia Peninsula.

In this report, we synthesise findings from these meetings and interviews, as well as from the literature, to suggest possibilities for collective decision making for pest management on Mahia. We begin in section 3 by discussing stakeholder perspectives on pests and past and

present pest control on the peninsula; the relevant organisations and decision-making processes; and citizen visions for Mahia gathered from the meetings and interviews. Then (section 4) we discuss examples of participatory processes for decision making from the literature and suggest options for Mahia. After our conclusions (section 5) we provide recommendations (section 6) for a future process for the peninsula.

3 Situation and stakeholder analysis for Mahia Peninsula

3.1 Land ownership and use on the peninsula

Mahia Peninsula is an isthmus of about 22×11 km (Figure 1) in Hawke Bay, situated between Napier and Gisborne on the East Coast of Hawke's Bay Region. In 2006 it had a permanent population of 849 (Pollock 2012). It has a wide range of land ownership types and use, including farm stations, forestry plots, multiple-ownership Māori land, seasonal bachs (holiday homes), and the Mahia Peninsula Scenic Reserve, which protects 374 ha of tawa (*Beilschmiedia tawa*) and kohekohe (*Dysoxylum spectabile*) coastal forest. The peninsula was an important area of Māori settlement in pre-colonial times, being the tribal area of Ngāti Rongomauiwahine, and in 2006, 64% of residents identified as Māori (Pollock 2012). The peninsula was also a site of early settlement for whalers, who founded a whaling station on nearby Waikawa, or Portland Island, in the 1840s (Pollock 2012).

The peninsula is approached via Nūhaka, a small settlement to the north-west. There are two main settlements on the peninsula itself: Mahia Beach, on the west, and Mahia, on the east; both consist of a mix of permanent residences and holiday homes. The populations of these two settlements increase significantly during summer months, when tourists visit for surfing, diving, and enjoying the beaches. Sheep and beef farming is common and 11 stations cover the majority of the land area. While most of these farms are privately owned, Onenui Station at the southern tip of the peninsula is multiple-ownership Māori land (Pollock 2012).

The diversity of land use and ownership on the Mahia Peninsula was often mentioned in interviews. Some community members felt the diversity of land owners and lifestyles made it difficult to make decisions or move forward on community projects. One interviewee described the Mahia Peninsula as 'not having a lot of like-minded people' and many interviewees expressed concern or frustration over the alternative ways in which other landowners were managing their land. Topics of concern among the community ranged from the forestry blocks causing damage to water quality to absentee landowners not being present to actively manage land.

However, despite the great diversity of land use practices and lifestyles, almost every interviewee expressed a strong connection with the natural environment and history of the peninsula. In interviews, people talked about how they have noticed the flora and fauna, climate, and seas change in recent decades. Interviewees shared books on the history of the local Wairoa District Council and told stories about Moko, a bottlenose dolphin at Mahia Beach that led trapped pygmy whales out to sea, and the S.S. *Tasmania*, a ship that sank off the coast of Mahia in 1897. Many interviewees had been born and raised in Mahia and had returned to their family land after travelling and working elsewhere. Several of them spoke of being raised in Mahia learning to live off the land and sea, and one interviewee said: 'Mahia is paradise.'

3.2 Pests on the peninsula

When asked what they thought were pests on the Mahia Peninsula, interviewees provided responses that often varied depending on their relationship to and use of the land. Plant pests, particularly gorse, were mentioned often because this species was believed to encroach on native forest and farmland and was difficult to control. Goats were also mentioned often by interviewees, although in some cases goats were seen as assets rather than pests. Rats, stoats, hares, and feral cats were also discussed, but often only after we specifically asked interviewees about them. Interviewees generally felt that possums were well controlled on Mahia because of HBRC's Possum Control Area programme. Other pests mentioned were blackberry, wilding pines, blackbirds, cockroaches, spiders, mosquitoes, and wasps.

When speaking about goats, interviewees often mentioned 'the two schools of thought' about goats that existed on the peninsula. Some community members felt that goats were a pest that should be eradicated, while others thought that, as one interviewee put it, 'goats aren't pests, they are money.' Many of those who regarded goats as a pest had been involved in plantings of native bush or gardens. These interviewees described how goats could decimate new plantings and gardens in a day by finding a low point in the fence where erosion has occurred or a wire is loose. While it was possible to keep goats out of plantings by 'double fencing' or using an electric fence, interviewees claimed that these options were very expensive. Goats were also mentioned in terms of being a road safety hazard, giving foot rot and worms to sheep, causing erosion especially around coastal areas, and getting caught in fences then dying and rotting. One interviewee even told a story of being 'chased' by a goat at night-time.

However, several large landowners on the peninsula currently make an income from either hiring a professional to muster goats or mustering goats themselves. Thus, these landowners wanted to sustainably harvest the goats, instead of eradicate them, to continue to use them as a source of income. In addition, some landowners use goats for weed control. However, several interviewees noted that more efficient options for weed control, which involve spraying herbicides from a helicopter, are now becoming cost-effective for landowners.

Some interviewees spoke about other animals, such as rats, stoats, possums, and hares, as being pests on Mahia, but these animals were not mentioned as frequently as goats or plant species such as gorse and blackberry. Two reasons why interviewees believed rats were pests were because they got into hay for livestock and threatened native biodiversity; however, several people said they did not think rats were any more of a problem on Mahia than elsewhere in New Zealand. Many interviewees felt stoats were pests because they ate native birds; one interviewee called them 'nasty animals'. Hares were seen to be a pest because they ate saplings, garden plants, and pasture land. Possums were acknowledged as a pest because they ate native vegetation and, if uncontrolled, could spread bovine tuberculosis. However, it was generally believed among interviewees that HBRC's PCA programme successfully controlled possum populations, and one interviewee did not understand why the programme was still happening given that she had not seen possums for years. There were questions among some interviewees, however, about whether or not possums were being adequately controlled in forestry blocks and concerns that possum numbers were growing in those areas and would spread to nearby farms.

Interviewees expressed mixed perceptions about whether or not feral cats were pests. Some believed that feral cats were a pest because they preyed on native birds. Interviewees expressed concern that cats in the more highly populated area of Mahia Beach would threaten

native bird species in the Mahia Scenic Reserve. One station owner also mentioned how feral cats are pests because they transfer toxoplasmosis to sheep, which can cause the sheep to abort. However, others spoke about how feral cats are useful for killing rats and can be companions. One interviewee picked up a feral cat that she had been feeding and began petting it when asked about her view on feral cats as pests. Many interviewees mentioned how a feral cat control programme would be unlikely to be accepted by the community, especially because traps for feral cats might kill people's pet cats. However, one interviewee felt that all cats should be spayed and neutered to prevent their population from increasing.

Wasps, mosquitoes, and cockroaches were mentioned as being household nuisances. In addition, the wilding pines around the sand dunes by Oraka at the neck of the peninsula were mentioned several times as posing a risk to the unique coastal sand dune ecosystem there.

When asked about potential pest control strategies, several interviewees spoke about how they felt it was important to consider the humaneness of control options when killing animal pests. One interviewee spoke of the importance of killing and disposing of pest animals in a respectful way so that animal carcasses were not just left to rot. Several community members mentioned that if any aerial spraying of toxins was to occur, there should be scientific evidence that the toxins do not have harmful effects on the environment and native bush. While several interviewees discussed how they had read about the effectiveness of aerial 1080 as a tool for pest control, others talked about how this tool would not be acceptable under any circumstances on Mahia.

When asked about a potential future management programme, one interviewee expressed concern that certain large landowners will be forced to pay a great amount for pest management despite not reaping the benefits of control. Other interviewees spoke about their concern that small landowners, people trying to restore native bush, and foresters were currently experiencing and paying for all the negative impacts from pests that were migrating to their property from adjacent unmanaged land.

3.3 Current and past pest control on the peninsula

Current coordinated, wide-scale pest control programmes on the peninsula include HBRC's Possum Control Area programme, which targets possums on farmland, and the Mahia Coordinated Action Feral Goat Control programme. There are no current wide-scale pest programmes on the peninsula aimed specifically at controlling rats, stoats, feral cats, and plant pests, although control does happen in the Mahia Peninsula Scenic Reserve through the Department of Conservation. However, some coordinated, large-scale predator control has occurred in the past on three stations with the goal of releasing game birds. In addition, ECO-ED, a conservation organisation, sought to establish a predator-proof fence across the isthmus six years ago but encountered considerable community opposition.

Possum Control Area (PCA) Programme

The Possum Control Area (PCA) programme is a subsidised 'self-help' programme run by HBRC under its Regional Pest Management Strategy (Greer 2006). Around 500 000 ha are managed under this programme in the Hawke's Bay Region (HBRCa no date). The programme provides subsidies to reduce costs of possum control for landowners once 75% of

landowners (in terms of area) have agreed to participate (HBRCb no date). Once an area is deemed to be under the PCA programme, HBRC conducts initial knockdown control. Landowners within the area are then bound to the conditions of the programme, which means they must continue to do control to maintain possum levels down to a Residual Trap-Catch of <5% (HBRCb no date). The programme is generally supported by landowners because of the known risks that possums pose to farmers' livelihoods due to possums being vectors of bovine TB and feeding on pasture land (Greer 2006). While the majority of landowners interviewed on Mahia Peninsula greatly appreciated the PCA programme, one interviewee felt that there were no longer possums in the area and did not want to keep paying for continued maintenance control.

Mahia Coordinated Management Area Feral Goat Control Programme

Current goat control practices on the peninsula include mustering done by landowners or hired professionals, ground control (shooting) done by foresters and individual landowners, and shooting and heli shooting of goats done by the Department of Conservation in Mahia Peninsula Scenic Reserve (Habitat BPM no date). However, high numbers of goats in areas surrounding the reserve and forestry plots mean that without a strategic peninsula-wide plan for goat control, DOC and foresters will have to continue to apply current levels of control indefinitely (Habitat BPM no date). In addition, current goat populations may put the Whangawehi Catchment Management Group's proposed riparian plantings at risk. Thus, HBRC has hired the consultant firm Habitat BPM (<http://www.habitatbpm.co.nz/>) to develop a five-year coordinated management area feral goat control programme. The programme aims to achieve more cost-effective control by implementing a peninsula-wide strategic approach carried out by a single contractor (Habitat BPM no date). The programme will begin by focusing control efforts around the Whangawehi catchment and then expand out across the peninsula. The programme leader is planning to begin working with landowners who have requested goat control in winter 2014 (Habitat BPM no date).

Red-legged partridge release

Several interviewees spoke about a coordinated predator control effort that was carried out on three large stations. The predator control was inspired by a German gamekeeper, who came to Mahia Peninsula because he saw it as a good place to introduce game species, particularly the red-legged partridge, for hunting. He worked with three current station owners who were interested in the partridge release for game hunting, and together they conducted ground control of mustelids and feral cats throughout their properties so they could release the partridge in a predator-free environment. However, once released, the partridges all perished due to the harsh climate. Some interviewees noted that one landowner with a property in between the three carrying out predator control would not conduct any control. The interviewees mentioned that for the following two years after starting predator control, the landowners saw a vast increase in numbers of rats and rabbits on their farms due to the decreases in cats and stoats achieved by the control. Because of this, several interviewees spoke of the need for a strategic pest management plan on Mahia that would control multiple species at once, instead of just stoats and feral cats.

ECO-ED and a predator-proof fence

Community members also spoke about how six to seven years ago, ECO-ED, a conservation organisation based in the Hawke's Bay (<http://www.ecoed.org.nz/>) proposed to build a predator-proof fence across the western portion of the peninsula. Interviewees believed that the organisation was planning on establishing a sanctuary for kiwi on the peninsula after the fence was built. However, interviews thought that the proposal for the fence called for management of cats and dogs across the peninsula, which caused a significant amount of outrage from several people who highly valued their pets. In addition, some interviewees felt that the organisation did not actively engage the community in planning or decision making, and one community member felt 'they were being told what to do in their own backyards.' The proposal was subsequently dropped; however, interviewees spoke about how there still remains a great deal of resentment among certain community members towards outside organisations coming into Mahia with ideas for pest control and conservation initiatives. When asked about ECO-ED's experience in Mahia, Wendy Rakete-Stones, general manager of ECO-ED, provided the following statement:

"Representatives of ECOED have taken part in at least 2 public meetings and various informal discussions in Mahia over the past 8 years to discuss the concept of a pest free Mahia. As a peninsula, Mahia would be a relatively easy area to defend against predators with positive results to biodiversity. ECOED's intent has been to float the idea and support a local driven project. Local response has been varied, with some very keen and others wary or opposed. ECOED has always believed the success of a project such as this lies in local buy in and ownership of the project and that our previous experience could add some value and support to the project."

3.4 Key interests, organisations, and decision-making processes

Several interviewees spoke of the challenges to community decision making posed by the diversity of land use, ownership, and lifestyles present on the Mahia Peninsula and discussed ways in which decisions could be made. Interviewees noted there are 10–12 key landowners who own and manage the majority of the land on the peninsula and should be involved in any decisions that involve management practices across the entire peninsula. However, interviewees also spoke about how several of these are absentee owners and thus are difficult to get to community meetings.

Community members emphasised that proper involvement and consultation with tangata whenua is key to decision making on the peninsula. Interviewees spoke about how, several times in the past, agencies had talked to one or two tangata whenua and considered such interaction 'consultation with Māori', which interviewees said was 'inappropriate'. They suggested that proper consultation and decision making should involve the slow building of trust between agencies and tangata whenua, which can begin with an agency or research representative attending monthly marae meetings.

Interviewees also mentioned the challenge of making decisions for management of Māori multiple-ownership land and land that is under trusts. Before a decision can be reached about such land, proposals must first be discussed with all landowners or trust members, which can be time-consuming and resource intensive, as landowners may not even live locally.

Despite these challenges one community-led process that has successfully set up collaboration between landowners, tangata whenua and agencies on the Mahia Peninsula involves the Whangawehi Catchment Management Group. In July 2010, the community of Whangawehi was concerned about the impact of the proposed Mahia Beach Community Waste Water System on water quality in the Whangawehi River, the sacred river of the Rongomaiahine Iwi o Te Mahia mai Tawhiti (Whangawehi Catchment Newsletter 2013). There was also concern over the negative impacts the wastewater system and other land use practices could have on sacred ocean fishing grounds and mahinga kai shellfish beds at the mouth of the Whangawehi River.

The Whangawehi Catchment Management Group was started by Kathleen Mato, who believed the best way to address community concerns about the wastewater system and improve water quality in the Whangawehi catchment would be to work alongside agencies instead of against them. Kathleen went door-to-door speaking with people about her ideas and attended numerous meetings to promote a collaborative process for addressing community concerns. By 2011, a Memorandum of Understanding was signed between three marae, Hawke's Bay Regional Council and Wairoa District Council. In 2012, a second signing was done by the Department of Conservation, a forestry company, a farmer, and the Mahia Māori Committee. Shortly after this, the community developed a catchment management plan to coordinate restoration and education projects (which was released in July 2012; Whangawehi Catchment Newsletter 2013). Two of the projects currently run by the Catchment Management Group are a community-based water monitoring programme, which uses a cultural health index framework for evaluating stream health and prioritising restoration of streams of high cultural significance, and a riparian planting programme, which has funded the building of fences on farmland and is planned to result in the planting of 6000 native trees this winter (Whangawehi Catchment Newsletter 2013).

The riparian plantings and habitat restoration happening through the Whangawehi Catchment Management Group tie in closely with Habitat's five-year goat control programme and other potential future pest control on the peninsula. Many of the Catchment Group members we interviewed discussed how it will be necessary to undertake widespread goat control in order to protect riparian plantings. Group members felt that a widespread pest control programme would be much more effective and much less costly than continually building and maintaining fences to protect plantings.

In addition to improving water quality, interviewees mentioned the possibility of the riparian plantings also bringing back habitat for native birds. Many mentioned how future predator management of stoats and rats could help aid in the return and survival of these native birds.

3.5 Visions for Mahia Peninsula

When asked about their visions for the future of the Mahia Peninsula, interviewees provided diverse but often overlapping perspectives. One landowner, Janice Edwards, shared a poem she had written for a Māori language class and which she felt strongly related to her vision for Mahia (see box). Other interviewees' visions for Mahia included:

- Pest-free Mahia
- Increased eco-tourism and people coming to enjoy the natural beauty of the peninsula
- More native bush retired on farmlands
- Return of native birds, especially kiwi
- More plantings of native bush, especially in the Whangawehi catchment
- Decreased erosion – improved water quality
- Preservation of farmland but some steep unusable land converted to forestry or native bush
- Return of native trees that can be used for weaving and rongoa Māori, or medicinal purposes
- Better protection of coastal sand dune habitat and nesting birds, especially from encroaching wilding pines
- Creation of a Mahia brand of beef, in which cattle can be advertised as being raised on farmland supporting rich native biodiversity
- Better management and sustainable use of mahinga kai and traditional fishing waters
- Education and involvement of local schools in environmental issues

During interviews, several community members described their visions for Mahia as relating to specific areas on the peninsula. In Figure 1, we show examples of some of these spatially-explicit visions.

HE MANAKO / GOAL

Ko tōku manako

My goal

ki te noho i waenga i ngā hua o te taiao,

is to be surrounded by the fruits of nature

hei whāngaia tōku whānau, me ngā manu o Tāne Mahuta.

so that I may care for/feed my family, and the birds of Tane Mahuta.

Ko te pūtake o tēnei manako

The purpose of this dream

ki te whāngai i te waiora me te wairua o āku tamariki, me āku mokopuna.

is to care for/feed the body and the spirit of my children, and my mokopuna.

Ka taea e au te tutuki i tōku manako

I will reach my goal

mā te pukumahi, mā ngā ringa raupo,

by way of hard work, by way of calloused hands,

mā te werawera o tōku mata,

by way of a hot, sweaty face,

waihoki, mā te aroha.

as well, by way of love.

- Janice Edwards 2013

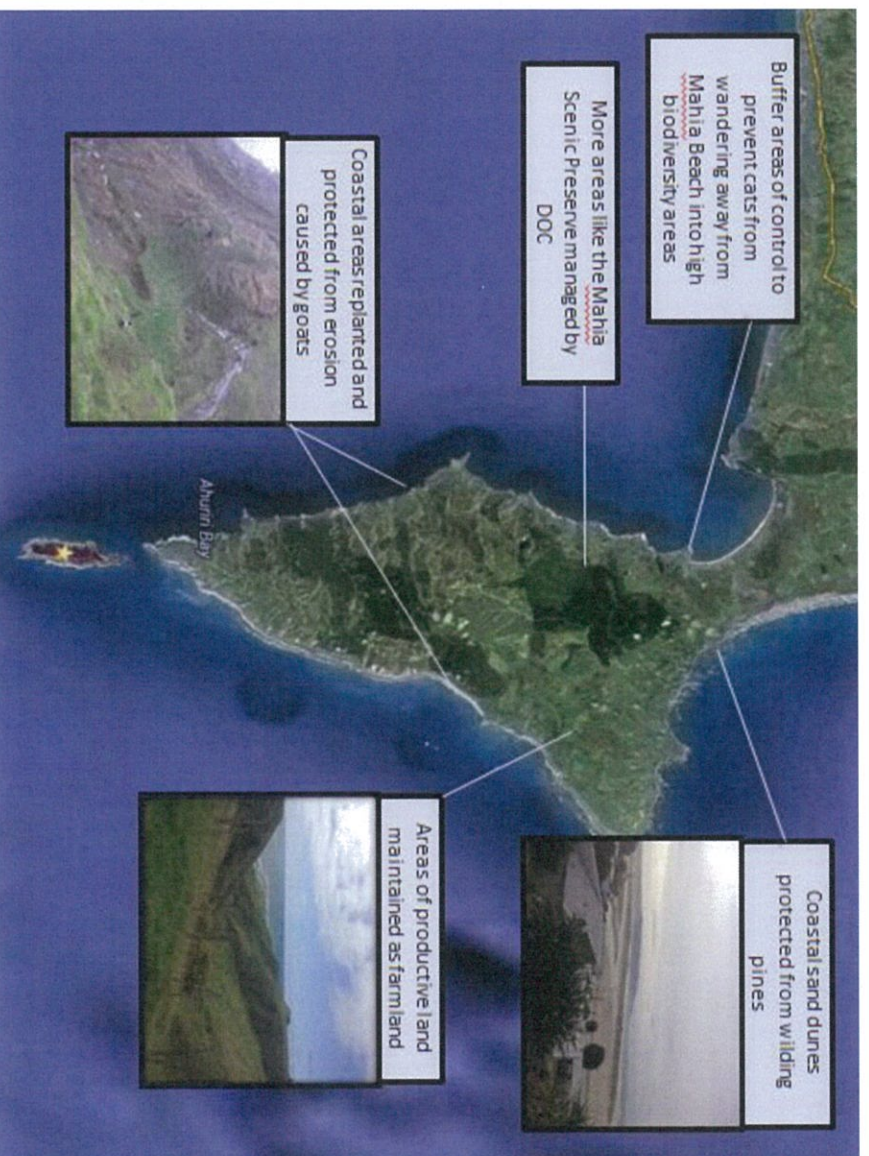


Figure 1 Some of the visions for specific areas on Mahia expressed by interviewees. The examples shown are not comprehensive of all visions expressed and were not shared by every interviewee.

4 Proposal for collective decision making

Some of the interviewee's visions for the Mahia Peninsula –increased ecotourism, restoration of native bush, and the return of native birds – suggest that a coordinated pest control programme may provide benefits to the community. However, the community members interviewed had varying and diverse perspectives on what were pests on the peninsula and who should pay for pest management. So, although many interviewees agreed that the current PCA programme on the peninsula has been successful, expanding such a programme to include other pests mentioned, such as stoats, rats, cats and gorse, will be a challenge given that many community members do not currently see all of these pests as threats.

Therefore, a participatory process for decision making is needed that can engage community members in dialogue, and also with scientists, to begin to explore the different perspectives on pests and potential future alternative control options. Such a participatory process could encourage the community of Mahia to engage in deliberation and negotiation with the goal of working towards a mutual vision for the future of the peninsula's pests. A participatory process for collective decision making would be especially timely, given the proposed five-year goat control plan under HBRC and the proposed restoration projects happening with the Whangawehi Catchment Management group.

What would a process for collective decision making for pest control look like for Mahia? In this section we review the literature on participatory processes for decision making and examine examples from New Zealand and elsewhere. We then outline three options for Mahia, and make recommendations for leading a successful process. Finally, in the appendix, we offer a template and research methods for a Q-methodology study, which can help inform a future collective decision making process for Mahia.

4.1 Collective decision making in the literature

The call for increased stakeholder involvement in decision making has been driven by both 'top-down' (institutions and policies) and 'bottom-up' (citizens) pressures, which advocate for a more just, inclusive, democratic society (Brechin et al. 2002; Richards et al. 2004). In addition, public participation in decision making has been advocated for as a method for increasing the quality and sustainability of decisions by allowing for diverse perspectives and sources of knowledge to be considered (Reed 2008). Public participation in decision making has been increasingly used in environmental management issues in particular because often cooperation among stakeholders is necessary to achieve management objectives (Richards et al. 2004).

A variety of methodologies exist for facilitating stakeholder involvement in decision making, including focus groups, structured workshops, citizen juries, and consensus conferences (Reed 2008). Crucial to all of these methodologies is that they shift the nature of public involvement processes away from consultation and towards local empowerment (Richards et al. 2004). Thus, such collective-decision-making processes allow for environmental management decisions to be made by a group of relevant local stakeholders instead of just government agencies. Such a shift often must involve a 'negotiated transformation in rules and power dynamics' among participants (Rist et al. 2007) that results from a deliberative approach that promotes debate and compromise among stakeholders (Brechin et al. 2002).

Most participatory decision making processes use a variety of techniques and a skilled mediator to facilitate dialogue and negotiation, or 'collective action and reflection', among a diverse group of stakeholders (Keen et al. 2005; Rist et al. 2007). Participatory processes can also use scientific tools, such as models and decision support systems, to aid the process of negotiation and reflection about various management options (Allen et al. 2001; Borsuk et al. 2001). Such decision making processes may take several months or several years of relationship building across agencies and stakeholders using a variety of techniques for interacting that accommodate multiple interests, learning styles and ways of communicating.

There are several agreed-upon 'best practices' for collective decision making processes outlined in the literature. First, it is generally agreed that for a collective decision making process to yield positive outcomes, such as increased public acceptance of management plans, a wide diversity of existing stakeholder interests and perspectives should be identified and included in the process (Reed 2008). This is typically done through a stakeholder analysis. Reed (2008) defines stakeholder analysis in natural resource management as a process that identifies systems, individuals, and groups that may be affected by a decision, and prioritises individuals or representative individuals for involvement in a participatory process. Potential affected social and natural systems and individuals (stakeholders) may be identified through a variety of methods, including focus groups or semi-structured interviews, as was done in this study. Stakeholders can then be prioritised for involvement in decision

making through methods such as social network analysis, which identifies relationships between stakeholders, and Q-methodology, which can categorise stakeholders and identify differences and overlaps in stakeholder perspectives (Reed et al. 2009).

Another important component of successful participatory processes for decision making is the use of an impartial, skilled mediator to guide discussions (Richards et al. 2004). A mediator should be able to encourage participants to question their own assumptions as well as effectively manage group dynamics (Richards et al. 2004; Reed 2008). In addition, a mediator must have no stake in the decision being made and be seen by participants as respectful and open (Richards et al. 2004).

There are many examples of collective decision making processes for environmental management that have been implemented in New Zealand and elsewhere. Such processes have addressed diverse environmental management topics ranging from sustainable soil and water management to wolf management (Allen et al. 2001; Todd 2002; Rist et al. 2007). Below, we describe some examples. For each, we outline how participants were chosen, why a participatory process for decision making was needed, and what techniques were used to facilitate dialogue and decision making among stakeholders.

Integrated systems for knowledge management for possum management for TB control in North Canterbury, New Zealand

Allen et al. (2001) describe a participatory process for decision making headed by Landcare Research and the former Animal Health Board for possum management to reduce risks of bovine tuberculosis (TB) in North Canterbury. The researchers used the ‘integrated systems for knowledge management’ (ISKM) approach for stakeholder engagement in decision-making, which they describe as an iterative participatory approach for planning and implementation that integrates scientific and local knowledge and perspectives to develop new resource management practices. The project was initiated because individual farmers needed to be involved in possum management if regional-scale efforts at eradicating TB were to be effective; however, there was a great diversity among farmers of perceptions on optimal management practices. In addition, knowledge about the effectiveness of various pest management techniques was fragmented among researchers and agencies. Thus, researchers began a participatory process to aid in the collection of knowledge and involvement of farmers in developing a management plan. Researchers began the process by contacting a representative advisory group in the region –the North Canterbury TB Management Committee – to organise meetings between farmers and pest control scientists. Researchers then ran facilitated workshops with key stakeholders focused on the sharing of understanding and knowledge between local land managers and scientists. Community dialogue in workshops covered the social, economic, and ecological contexts of particular pieces of information. Computer-based decision-support systems (DSS), or decision tree programs, were used to guide participants in the workshops in problem solving and knowledge sharing and searching.

Community dialogue for pest control in Hawke's Bay, New Zealand, 2003–2004

Hayes et al. (2008) discuss another participatory process developed by Landcare Research scientists, this time to include community representatives in dialogue about future pest control in the Hawke's Bay Region. Run in September 2003 and April 2004, the process was developed to test the community dialogue process as a future means for decision making for the development of a regional pest control plan for the Hawke's Bay. Researchers recruited a wide range of stakeholders to participate in a series of facilitated workshops, including Māori, government departments, pest control agencies, the Environmental Risk Management Authority, and scientists and industry groups. Four workshops were run, at a marae and a winery, with 16 to 31 participants in each, to begin dialogue on (a) biological control of weeds and (b) 1080 use for mammalian pests. Later, a similar process was used to aid in the development of a pest control strategy for the region. In the workshops, a skilled facilitator ran exercises in which participants were asked to present the perspectives of other participants – to encourage active listening and respectful participation. For several of the workshops, participants stayed overnight on the marae, to encourage informal social interactions and building of trust. In a final meeting in May 2004, the larger group of participants was divided into smaller groups to use their new-found understandings of participants' perspectives to examine and discuss potential outcomes of various future management scenarios.

Integrating stakeholder engagement, ecosystem service mapping, and scenario analysis in Albemarle-Pamlico Basin, Virginia, USA

Angermeier and Villamagna (2013) describe how researchers at Virginia Tech and the U.S. Geological Survey used a series of facilitated workshops to involve stakeholders in conservation planning in the Albemarle-Pamlico Watershed Basin. Researchers recruited 27 representatives of conservation-oriented organisations, including state and federal representatives, to participate in a series of workshops that integrated scientific mapping and modelling with facilitated discussions. In workshops, trained facilitators helped stakeholders co-develop conceptual models of environmental issues associated with catchment management, including relevant ecosystem services. Stakeholders expressed hopes and fears for management, co-developed key factors to consider in management, and then co-developed several alternative possible management scenarios for the basin. Researchers then gathered local biophysical and social data to model the effects on ecosystem services and various other factors of potential management scenarios suggested by stakeholders, which they then presented in workshops to further facilitate stakeholder dialogue about management options.

Stakeholder engagement for the Greater Heretaunga and Ahuriri catchment plans, Hawke's Bay, New Zealand

Cradock-Henry et al. (2013) outline how HBRC, with the help of Landcare Research, developed a collaborative process to guide changes in the Greater Heretaunga and Ahuriri Catchment Plan in 2012. The stakeholder group involved in collective decision making, called TANK, for the Tutaekuri, Ahuriri, Nauroro and Karamu river catchments, was made up of 30 representative individuals impacted by the catchment plan, including people from agriculture, horticulture, environmental groups, and tangata whenua. The initial group of representatives was recruited by HBRC from key

organisations, and those representatives were asked who else needed to be present in the group to ensure that diverse interests were represented. High standing members of tangata whenua were involved in the process from the start, and representatives of organisations were asked if their organisations would formally support any consensus reached in TANK. Workshops were run by a hired mediator who was unaffiliated with HBRC, and regional councillors were included as participants to represent the interests of HBRC (Berkett & Sinner 2013). Through facilitated workshops, participants were asked to identify objectives and assess the potential effects of various management options on objectives. Council members were used as technical experts, who provided information on the social, environmental, and economic implications of various management options when needed (Berkett & Sinner 2013). Stakeholders were given an interim report of the process and encouraged to continue to communicate with their organisations and networks (Cradock-Henry et al. 2013). Survey evaluations were used throughout the process to assess social learning and identify any potential stakeholder concerns (Cradock-Henry 2013).

4.2 Participants and resources for collective decision making in Mahia

There are several resources and key individuals and groups that can aid in a collective decision making process for Mahia in the future. The Whangawehi Catchment Management Group will be a key interest group that should be involved in such a process because it has already set up a successful collaboration among a wide range of stakeholders and agencies on the peninsula, including farmers, a forester, HBRC, DOC, and the Wairoa District Council. In addition, because of their proposed riparian plantings for this upcoming winter and beyond, they have an interest in pest management on the peninsula in the future. The Catchment Management Group has monthly meetings, which could provide an avenue for beginning a collaborative process.

The 10–12 major station owners on the peninsula will also be important to involve in a future collective-decision-making process. Many community members interviewed discussed how they believed the success of a future process would depend greatly on whether or not all of these major landowners were involved because if a management plan was agreed upon but several large station owners refused to comply, their properties could act as refuges for pest populations.

Other important interest groups that should be represented in a collaborative decision making process in Mahia include foresters, tangata whenua, bach owners, and local government and conservation agencies, such as HBRC, DOC, and the Wairoa District Council. Interviewees suggested that to engage tangata whenua in a potential future planning process, researchers should begin by attending monthly marae meetings at Kaiuku Marae and bringing up the idea of a collaborative process for decision making about pest management on the peninsula. Aaryn Walker, daughter of Leon Symes who is manager of Kaiuku Marae, said she would be interested in helping to organise researchers' attendance at these meetings and accompany researchers to them.

Finally, many community members indicated that Landcare Research scientists should participate in a future process, to provide the scientific 'perspective' and expertise needed to answer technical questions about pests on the peninsula and potential pest management strategies.

4.3 Options for a participatory process for collective decision making on Mahia

On the basis of our situational and stakeholder analysis in Mahia, as well as a review of current literature, we propose three options for leading a participatory process on the peninsula. For all three options, we first recommend that a more robust stakeholder analysis using Q-methodology be conducted to inform the participatory process. Such a Q-methodology study will identify the variety of social discourses [the ways people articulate their rationale for their perspectives] that exist in the community around pest management on Mahia (Reed et al. 2009), which can help researchers better understand the differences and overlaps between those discourses and identify who should be involved in a process. In Appendix 1, we list statements that could be used in a Q-methodology study for Mahia in the future. We also recommend, following interviewees' requests, that a community-wide meeting advertised to everyone on the peninsula be held to discuss the idea of a participatory process for pest management planning, before a more in-depth process is begun. We recommend such a meeting because many community members interviewed felt strongly that given that Mahia is such a small community and everyone may be affected by pest control, everyone should be informed and given the option to provide feedback to a future participatory process.

The three options we provide for a future participatory process vary in the techniques they use to facilitate dialogue and negotiation among stakeholders and the way in which scientific information is integrated into the discussion. We assume that all three processes have the goal of encouraging diverse community members to arrive at a shared understanding of Mahia and each other's interests and aspirations for the future of Mahia's pests. However, the way in which knowledge and visions might be shared and become manifest will be guided by the community participants themselves at the beginning of the process. Of course, the costs of various options should be taken into consideration, but managing a budget should be a part of the participatory process, not something that is predetermined by agencies. Thus, when initiating a participatory process, HBRC should provide participants with information on what resources are available for the process so as to facilitate a discussion about the best uses of those resources.

The participatory process may have various desired outcomes, which should be determined by participants themselves and which may include a shared vision to be outlined in a document of community needs and concerns delivered to HBRC or a more detailed funding proposal to be delivered to conservation agencies or philanthropists. Definition of clear and specific goals for the process will be a fundamental first step, as these goals may greatly impact which of the three options below may be the most effective way to proceed. However, it is also likely that goals for the process will change throughout the process as stakeholders gather more information or begin to better understand differing perspectives and needs. Thus, any process should be flexible, as after several workshops there may be a need to change the methodology that is followed, given changing stakeholder goals and needs (Reed 2008).

Option 1: Integrating stakeholder engagement with scenario building

A first option for a future participatory process in Mahia could involve facilitated community meetings, in which landowners, Māori, Landcare Research scientists, HBRC, DOC, and other interested community members co-develop and analyse potential future pest control scenarios. This option would involve first inviting major

station landowners as well as representatives of the Whangawehi Catchment Management Group, tangata whenua, and smaller landowners to a facilitated community meeting. In this first community meeting, Landcare Research staff would present findings of key hopes, fears, and questions raised in interviews in Mahia and ask for community feedback on these. Then, Landcare Research staff could present answers to as many of the community questions as they could (see Appendix 2 for a list of community questions developed from interviews) and present various control/management options available, as well as examples of pest control in other areas. Finally, Landcare research staff could ask participants if all interests in Mahia were adequately represented at the meeting and who should be included in a more in-depth participatory process.

The next step in this process would involve conducting a Q-methodology study of 20–40 Mahia residents, to help guide subsequent meetings. Then, two to three additional facilitated workshops could be run with stakeholders identified from the first meeting and the Q-methodology. In these workshops, stakeholders would first be asked to define goals for the process. Stakeholders would then be asked to co-develop objectives for future pest control on the peninsula as well as three or four possible different management scenarios for the peninsula.

Outside of meetings, Landcare Research scientists would then model the outcomes of different management scenarios for stakeholder-defined objectives. Such scenario modelling could involve ecological economics modelling to identify ecological and socio-economic impacts of various management options, and/or 3-D visualisations of the landscape. After Landcare Research scientists complete modelling, one to two other facilitated workshops would be held with community members to discuss results of scenario modelling. In these workshops, stakeholders would engage in a co-analysis of various management options based on scenario results and potentially arrive at a set of agreed-upon management guidelines for the peninsula.

This scenario-building approach can be useful to decision making because the results of the modelling, which can come in the form of graphs of replanted vegetation or the distributions of pest populations across the landscape, for example, can help stakeholders visualise the future of the peninsula in a concrete, nuanced way. This may thus aid stakeholders in moving away from deeply entrenched views of the present towards a common vision for the future (Peterson et al. 2003). However, such an approach will be resource intensive, as it will not only require a significant time investment from a facilitator but also from Landcare Research scientists who can do the modelling work and attend meetings.

Option 2: Using integrated systems of knowledge management (ISKM) for collaborative planning

A second approach for moving forward towards collaborative pest management planning in Mahia would involve facilitated workshops using the iterative ISKM approach, in which stakeholders share information through in-person and Internet-based platforms. Like the previous approach, this would first involve a community meeting in which key questions, hopes, and concerns gathered from the community are reported back for feedback, and additional stakeholders are identified. The meeting would then also be followed by a Q-methodology study. However, unlike the scenario-

building option (which will involve more formal scientific modelling in which stakeholders define the scenarios that will be examined by scientists), through the ISKM approach, subsequent facilitated meetings will involve more informal sharing of information between scientists and stakeholders about pest management options and potential outcomes.

In this approach, after the Q-methodology study, a series of facilitated workshops will be held in which stakeholders will be asked to formulate objectives for pest management and share information and questions about various control options. An online wiki could be created for the greater Mahia community to share information and concerns to inform workshops. In workshops, the facilitator and/or Landcare Research scientists could use a decision-support system (DSS) to help guide the problem-solving and information-gathering process. One DSS that could be used is Excel's PrecisionTree, which allows facilitators to easily enter in probability distributions for the relationships between variables, on the basis of diverse forms of existing knowledge among stakeholders and scientists. The DSS can then be used to assess the impact of various decisions on objectives based on those probability distributions and conduct sensitivity analyses with different forms of information. Such a tool can thus help stakeholders arrive at an understanding of the potential impacts of various control options given high levels of uncertainty or diverse forms of knowledge.

The ISKM approach may not provide as accurate, detailed, or nuanced scientific information or visualisations of future scenarios as the scenario-building option. However, unlike the scenario-building option, it will allow for stakeholders to be involved in data collection and for the analysis of various management options to take place through an iterative, flexible process led by community members (Allen et al. 2001). Thus, stakeholders, with help from the DSS, may begin to arrive at a mutual vision through the process of asking questions, searching for answers, and reassessing the potential outcomes of various control options themselves. Such a process may be especially useful if the next community meeting and Q-methodology study reveals that there are diverse forms of understanding around management implications and/or distrust among citizens of the scientific community. In addition, this method may be useful if stakeholder-defined goals for the process do not necessitate a highly detailed understanding of the ecological or socio-economic implications of various management plans.

Option 3: Structured dialogue through community workshops

A third option for how to proceed could be a series of facilitated community workshops for promoting dialogue between scientists and diverse interested and representative stakeholders. As in the previous options, an initial community meeting and Q-methodology study analysing the various stakeholder perspectives and groups can be used to inform the workshop design. Such workshops, which would be highly structured and guided by a skilled facilitator, could involve techniques such as a 'paired-down process' (Hayes et al. 2008), in which participants are paired and have to report their partner's perspective back to the group. Such techniques can be used to encourage a culture of listening and respect before moving into discussions of specific management options.

In subsequent workshops, participants could be asked to discuss and define objectives, performance measures, various possible management strategies, and the impacts of various management strategies on performance measures. Joint fact finding, in which stakeholders divide into smaller groups of participants to answer questions brought up by the group (Todd 2002), could be used to gain a better understanding of how various management strategies may affect performance measures. Landcare Research scientists, DOC, and HBRC council members could be involved as stakeholders in the process. Additional scientific specialists could be brought to workshops or contacted for support during the joint-fact-finding phase.

This approach would be the least scientifically technical of the three options, as no scenario modelling or DSS would be involved. Thus, dissemination of scientific information will occur through more informal interactions between scientists and stakeholders. Like ISKM, this method will be very useful if there is community distrust in scientists and if stakeholder goals for the process do not require highly detailed understanding of the potential impacts of various management options on the peninsula. In addition, unlike scenario building or ISKM, this approach will be useful if there are highly variable levels of scientific understanding among participating stakeholders, and a more technical approach involving modelling or DSS could risk silencing some participants who do not feel comfortable with these modes of information sharing.

4.4 Risks of a collective process

While participatory processes may result in a variety of positive outcomes, it is also possible that such processes may not lead to consensus or can even exacerbate conflicts. It is possible that collaborative decision making processes can reinforce existing power dynamics within a community, which can prevent the diversity of stakeholder concerns and perspectives from being adequately considered in decision making (Nelson & Wright 1995). In addition, certain stakeholders with non-negotiable perspectives may stall or prevent the process from moving forward, preventing any sort of consensus (Reed 2008).

In addition, participatory processes can take a lot of time and resources as participants work through diverse perspectives, seek information, and reshape goals of the process as learning takes place (Allen et al. 2001). If the participatory process is not properly managed, this can lead to stakeholder 'fatigue' or frustration with the process (Reed 2008) in which stakeholders feel that their involvement has been time intensive but has not produced any results that benefit them (Burton et al. 2004). This can lead to increased distrust in the researchers or government agencies running the process.

These risks can be mitigated by clearly outlining expectations and goals for the participatory process from the outset, and by careful mediation of workshops and community meetings by a skilled mediator who is perceived by the group to be impartial (Reed 2008). In fact, the success of participatory processes has often been more dependent on the mediation and the way in which a process is run than the actual tools or processes that are used (Richards et al. 2004).

4.5 Key issues to be considered

In summary, we recommend that any future participatory process should: (1) have clearly defined goals that may be formulated by the stakeholders themselves, (2) be inclusive of diverse perspectives and informed by a more in-depth stakeholder analysis, (3) be run by an impartial and experienced mediator, and (4) be flexible. Below, we provide further key issues to be considered in a future process.

1. Cradock-Henry et al. (2013) discussed how the Treaty of Waitangi provides tangata whenua with the standing of a direct treaty partner with the Crown, which raises issues on how tangata whenua can be included in the participatory process given their unique role beyond just a representative stakeholder group. Thus, when developing a participatory process, building a relationship with tangata whenua to define goals and expectations for the process is crucial (Cradock-Henry et al. 2013). In our interviews on Mahia, we found that several tangata whenua reinforced this point by expressing that involving one or two community members does not constitute a Māori consultation because, as one interviewee said, ‘one or two people do not speak for the entire community.’ They suggested that engaging tangata whenua in the participatory process will have to involve time, patience, and relationship building with the tangata whenua community. They suggested that the concept of a new pest management plan will have to be introduced several times to the monthly marae meetings before having the first community meeting for the whole peninsula. They also suggested that if a participatory process for pest management were to be introduced by a Landcare Research/Regional Council representative, he/she should be accompanied by a local community member.
2. As discussed earlier, measurable stakeholder goals for the participatory process should be defined early on the process. Goals for the process may include specific products that will come out of the process (i.e. a document of recommendations or a funding proposal) or less concrete objectives, such as ensuring all perspectives are represented and listened to. Goals should be evaluated throughout the participatory process by interviews or surveys to identify stakeholder concerns early on and allow for improvements and adjustments throughout the process (Cradock-Henry 2013). For example, in the TANK process, surveys of participants early on in collaboration identified the need for stakeholder access to more extensive scientific information, so experts were quickly brought in to answer questions. Such flexibility to alter methods or rules of engagement with changing contexts is essential to ensuring stakeholder needs are met (Richards et al. 2004).

5 Conclusions

Our stakeholder analysis identified that community members on Mahia have diverse but often overlapping visions for the future of the peninsula. These visions include increased areas of restored native bush, reduced erosion, improved water quality and fishing grounds, more opportunities to harvest traditional medicinal plants, or Rongoa Māori, and green marketing for cattle and increased ecotourism. Many community members already linked potential future pest management planning with their visions for Mahia. However, participants’ perspectives on pests and what pests should be managed were often varying, and some pests, particularly feral cats and goats, were seen as pests by some people and assets by others. Thus, there is a need for a participatory process for decision making on Mahia that can allow

community members to engage with scientists and each other to share diverse perspectives and values. Such a process has the potential to allow for community members to converge on a mutual vision for the future of pest management on the peninsula.

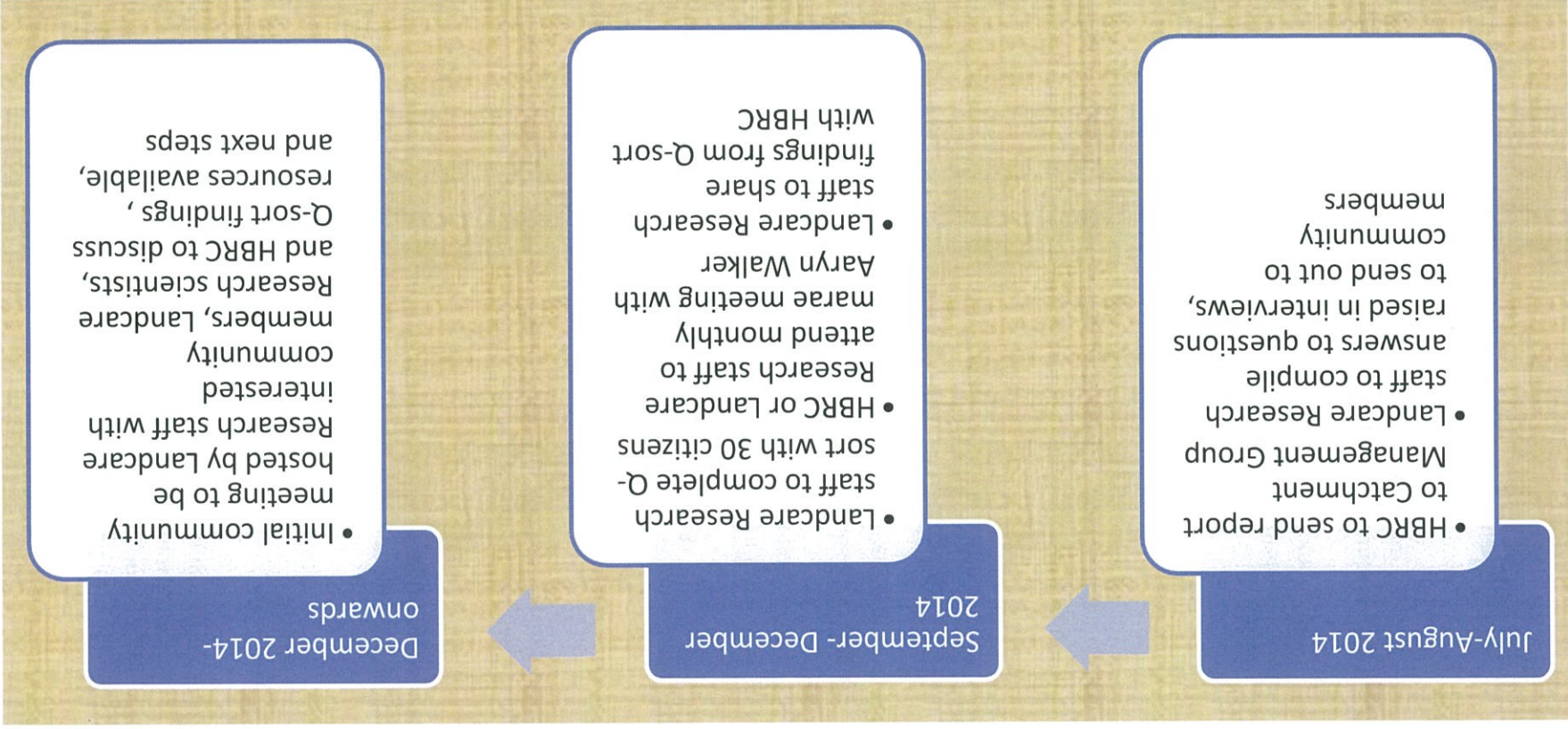
We recommend three different methods for designing and leading such a participatory process for collective decision making on Mahia. The method of these three that should be followed on Mahia will depend on findings from the Q-methodology study as well as the goals for the participatory process, which can be defined by community members in future meetings. However, we note that the outcomes and success of participatory processes are not as dependent on the 'toolkit' approach (Richards et al. 2004), or the type of participatory process that is followed, but instead on the use of skilled facilitation, the definition of clear goals for the participatory process from the outset, and the flexibility and inclusiveness of the process.

6 Recommendations

To progress the ideas developed in this report in a timely manner we recommend the following next steps for HBRC, which are also outlined in the timeline in Figure 2 (overleaf):

1. Campbell Leckie to present this report to the Whangawehi Catchment Group by August 2014.
2. Landcare Research staff to compile a document answering as many as possible of the key questions raised in interviews (see Appendix 2), to send out to the Whangawehi Catchment Group, interviewees, and other interested groups or people on the peninsula by September 2014.
3. Landcare Research staff to complete a Q-sort with 30 citizens in Mahia, based on the Q-statements outlined in Appendix 1 (representatives from ECO-ED should be included in the Q-sort). Landcare Research to share findings back to HBRC by December 2014.
4. Representative(s) from HBRC or Landcare Research to attend a monthly marae meeting with Aaryn Walker by November 2014, to introduce the concept of a participatory process for decision-making and to answer questions.
5. Landcare Research and HBRC to host a community meeting, advertised widely throughout the Mahia Peninsula, to discuss next steps and present research findings by December 2014. In this community meeting, we recommend that the following should happen:
 - 1) Landcare Research staff will present findings from the Q-sort.
 - 2) Landcare Research scientists will present answers to questions raised by community members in interviews.
 - 3) Landcare Research and HBRC staff will present the three options outlined in this report for proceeding forward with a participatory process, and potential resources available for the process.
 - 4) Landcare Research staff will facilitate a discussion on next steps and the potential outcomes that could be generated from such participatory processes.

Figure 2 A timeline of recommended next steps for HBRC and Landcare Research staff to proceed towards a participatory process for pest management decision making in Mahia.



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Appendix 1 – Statements for Q-methodology study

Q-methodology

Q-methodology is a technique used in stakeholder analysis for identifying various discourses around a topic and categorising stakeholders on the basis of those discourses (Reed et al. 2009). Typically, researchers construct a set of over 40 ‘Q-statements’ that cover a wide range of perceptions on an issue (Van Exel & de Graaf 2005). Researchers then ask study subjects to participate in a ‘Q-sort’, in which they sort the set of statements on a template board in terms of how much they agree or disagree with each. Researchers may then use factor analysis to identify key groups of stakeholders using participants’ agreement or disagreement with particular statements. We provide a set of 40 statements below that can be used in a Q-sort for Mahia:

Q-statements

Visions for Mahia

- Controlling pests on the Mahia Peninsula can result in economic benefits to the community.*
- The ecosystems of the Mahia Peninsula ‘will be very difficult, if not impossible, to return to some “more natural” state in terms of time, effort and money’*
- The Mahia community should strive to eradicate all non-native animal pests on the peninsula.*
- Increased eco-tourism on the Mahia Peninsula would be beneficial to the local community.*
- Replanting native bush will improve local water quality.*
- I am concerned that future conservation efforts to bring back native birds on Mahia will threaten the livelihoods of local farmers.*
- Future restoration efforts to bring back native bush and birds should only happen if they are not too costly.*
- Any restoration of native bush that happens on the peninsula should primarily be focused on steep slopes and other areas of land that are otherwise unsuitable for farming.*
- The Mahia community would benefit from plantings of Rongoa Māori, or plants used traditionally for medicine and weaving.*
- Restoration of native bush could provide beneficial educational opportunities for local schools.*
- Large-scale restoration efforts should happen on the Mahia Peninsula to bring back native birds and bush.*

What are pests and why?

‘What defines a pest depends as much on one’s perspective and on economic opportunities as on the ecology of a given species.’

The success of future planting and native bush restoration efforts will be influenced by the effectiveness of pest control programmes on the peninsula.

Any overly abundant animal species that negatively affects native biodiversity in New Zealand, regardless of its economic impacts, is a pest.

The Mahia Peninsula does not have any plants and animals that negatively affect people on the peninsula.

Goats are pests because they feed on native plants and gardens and cause erosion.

Goats are an important source of income for some people on the peninsula.

The pests that are most problematic on the peninsula are plant pests such as gorse and blackberry.

Control of feral cat populations would be of concern to me because cats kill rats.

Rats, mustelids, and feral cats are a significant threat to native birds and/or other wildlife on the peninsula.

The spread of pests from properties where these pests are not managed to my own property is often of concern to me.

Control strategies

All animal life is sacred and should be valued.

Spraying and neutering dogs and cats would reduce their long-term negative impacts on native biodiversity.

Some non-native animal species in New Zealand should have the same levels of protection as native species.

I am concerned that a management plan focused on one or two species will 'upset the balance' of the current ecosystem in Mahia.

Helicopter sowing of herbicides to control gorse and other weeds is less of a threat to the environment than goats are.

The risks to the environment and native biodiversity posed by rats and stoats are greater than risks posed to the environment by toxins used in bait stations for ground control of animal pests.

I am concerned about native birds and animals being harmed by toxins used in ground control for pest management.

Aerial use of 1080 in Mahia is unacceptable under all circumstances.

Implementation

Regional pest control plans are necessary to enforce the 'Good Neighbour Rule' under the Biosecurity Act of 1993, which states that landowners should have to manage the 'impacts of pest spread onto adjacent land occupiers'.

I am concerned that any future pest management scheme for the peninsula would result in individual landowners paying for management of pests that are not directly affecting them.

If the majority of large landowners and community members in Mahia can agree on a future pest control scheme for the peninsula, all landowners should have to comply with the pest control scheme.

Regional pest control programmes should only focus on areas where pest populations are directly causing economic harm to landowners.

I am concerned that a pest control scheme will result in reductions of populations of animals that I find economically valuable.

Government agencies, such as the regional or district councils, should not be involved in pest management on private property.

Regional or peninsula-wide intervention by councils is necessary to effectively control pest species like rabbits and stoats that can disperse far distances.

Any regional pest control intervention on Mahia should include weeds such as blackberry and gorse in addition to animal pests.

Managing multiple pest species simultaneously will create a more effective pest control programme.

Pests are a problem that affects the larger Mahia community, not just large landowners.

Process

The Mahia community has not been properly consulted in the past regarding proposed conservation or pest control programmes on the peninsula.

Making decisions is often difficult in the Mahia community.

Mahia does not have a lot of like-minded people.

Controlling pests on the Mahia Peninsula should ideally be a collaborative process, with the variety of interests and types of landowners being involved in decision making.

Only large landowners should be able to have a say in future pest control planning on the peninsula.

Appendix 2– Community questions about pest control

Key questions raised in interviews

- Are there examples of other areas in New Zealand where native biodiversity was able to return and flourish after a coordinated pest management effort occurred? What lessons were learned from those previous efforts? What do those areas look like now?
- What pest control strategies will most effectively cause a decrease in pest populations?
- Will pest control strategies cause an increase in native birds and other species?
- What control strategies are cost-effective and how much are they going to cost?
- Do the control strategies damage the environment in any way?
- Do the control strategies kill humanely and what sort of other animals might be killed?
- After initial pest control efforts, how could more pests be prevented from coming into Mahia?
- Can pest animals be disposed of in a respectful way after control efforts?
- How many pests (particularly goats, stoats, and rats) are there on the peninsula? Where are pest populations most prevalent?

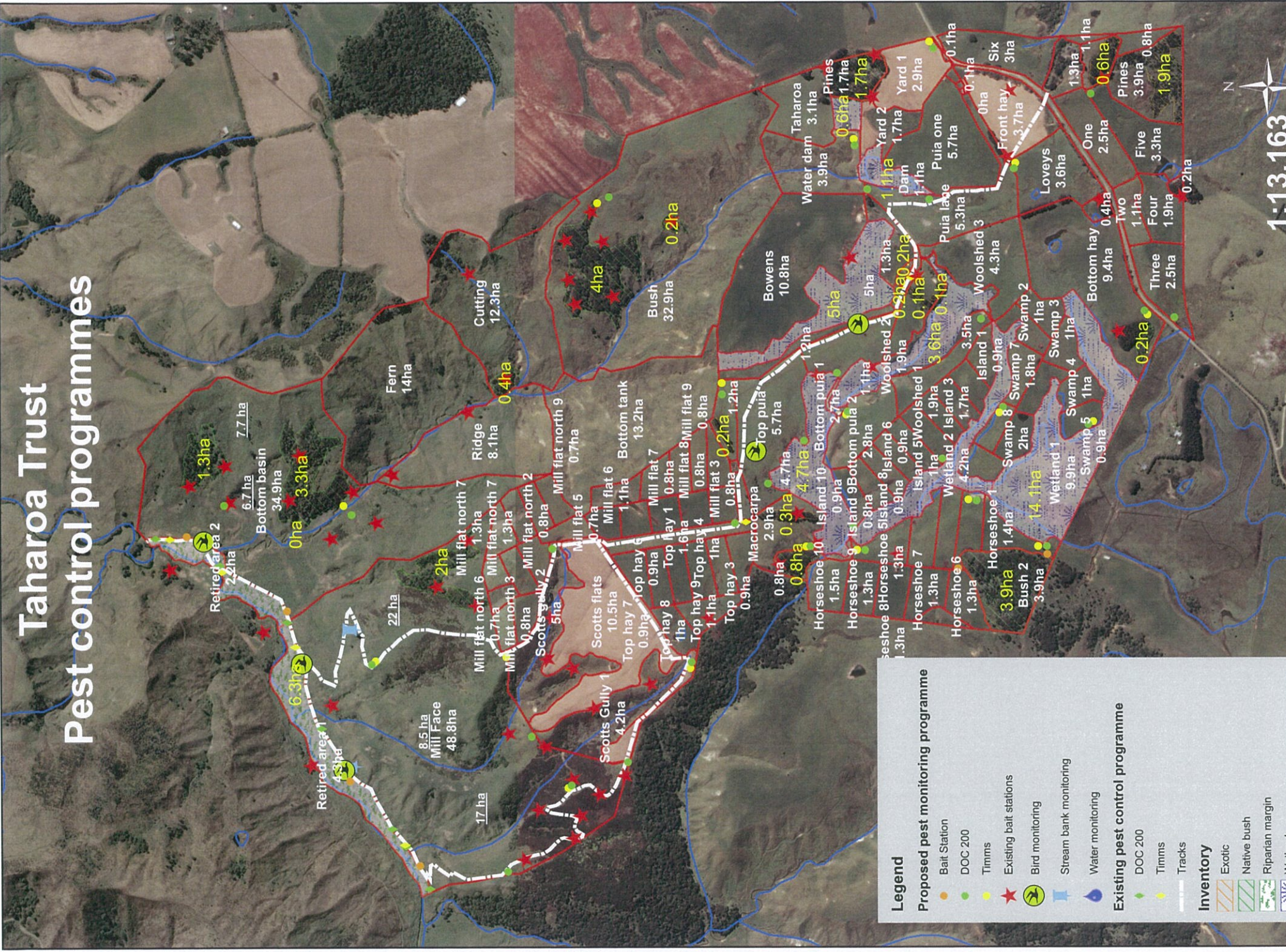
Whangawehi catchment Pest Control proposal



1:28,000

- Legend**
- GLF Proposed pest control programme
 - Streams
 - ATV access
 - 4x4 track
 - Trap, type
 - Bait Station
 - DOC 200
 - Traps



[illegible]

School programme

School project – Whangawehi Catchment Management Group

A Matauranga Maori Kaupapa developed and delivered by the Whangawehi Community

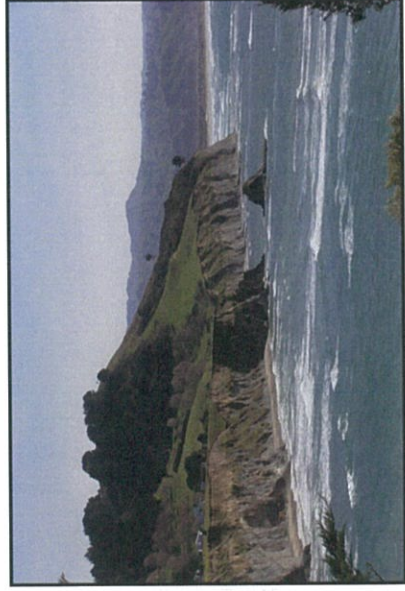
Context

The Whangawehi catchment management group was created in 2010 when locals were concerned by the proposed site for a new waste water treatment management plant within the Whangawehi Catchment. After several years of engagement with the locals and Agencies involved, a group was initiated looking at better managing the natural, physical, cultural and spiritual resources of the catchment. The first step of this collaborative approach was the signing of a Memorandum of Understanding in July 2011 and in February 2013.

In the meantime the group decided to develop in 2011 a catchment management plan with the intention of implementing actions in order to achieve the group's vision:

“To maintain or improve the different cultural, ecological, recreational and economical values of the Whangawehi catchment”

Since January 2013 the group focused a lot on gathering enough funding to be able to fence off and plant native trees along the Whangawehi river. Even if this focus will remain strong over the years, developing a partnership with the local school is also a key priority for the group.



View from the School



School boxed gardens



Te Mahia School

Te Mahia School is a vibrant small rural school situated 65 kilometres north-east of Wairoa. It provides education for 57 students in Years 1 to 8. The contributing community is mainly Māori with two small groups of Cook Island Māori and New Zealand European/Pākehā residents. The school roll reflects this composition. The school is strongly supported by community members, many of whom have whānau connections. Parents, extended family and iwi provide wrap-around support for students and their learning and are a constant presence in the life of the school. 2 years ago the structure embraced the Enviro School Kaupapa and developed multiple activities around gardening, waste management and sustainability etc. A shade house was erected in 20011 as part of a HBRC and Genesis funding project. Native plants are grown by the students and planted in a nearby wetland in Opoutama managed by the NZ Native Forests Restoration trust. The school has demonstrated a real interest and commitment to sustainability.

Our goals through this proposed project are :

- To develop a new reflection on sustainable land management practise within the Whangawehi catchment and beyond, identify issues, search for solutions etc.
- To help the local students and their parents to be reconnected with their awa, their culture and traditional practises (customary fisheries etc.).
- To involve the locals (kaumatua and Kuia) in the transmission of local knowledge through the school. They take an active part in the education programme.
- To develop practical activities (planting project, weaving workshop etc.) where the student can learn through real experience and participation.
- To create the link between students and professionals working in the management of the environment through several workshops organised over the year (DOC, Forestry Manager, Marine biologist etc.). This could help develop interest and maybe vocations for these young Tamariki looking for carrier opportunities in that industry.

Delivery of the curriculum:

- The Whangawehi community plays a key role in the delivery of this Kaupapa and Kuia, Kaumatua and Kaitiaki are right behind the school to transfer their knowledge and understanding of their environment.
- The school receives ongoing support from the Enviro school framework via a local coordinator who assists and helps in the implementation phase of the curriculum.
- The school also receives the help and support from the Fresh Water Education programme via The Department of Conservation, Fish and Game, Hawkes Bay Regional Council and the National Aquarium of NZ.

Outline of the project:

The group is quite supportive of the Enviro School Kaupapa and would like to link with Te Mahia school through this channel.

We have identified with the Principle of the School several common points of interest that could be developed during the year with a specific focus for each term.

Details and deliverables

Term 1 (27th /01/2014 to 17/04/2014) : Focus on the Whangawehi catchment and its people.

Goal : reconnect the students with the Whangawehi catchment (biophysical), the people who live there now, its past traditions and legends.

Activities:

- Activity 1 : Presentation of the catchment: wander though the catchment using a map and identify/locate the main streams, the main land use/ landowners (farming, forestry, DOC blocks, waste water treatment plant), soil types and raise awareness around possible environmental concerns. This can be quite interactive. The catchment trip planned at the end of the term will be an opportunity for each student to meet with every stakeholder and learn more about their work and create maybe some vocations. The students could work in different groups and prepare questions for the interviews. They could organise a presentation at the end of the term and share the information with the younger students.

Timeframe: 4h session.

Deliverable : a land use map of the catchment with the main features highlighted, a list of questions for each stakeholder.

Resource needed: a A0 map and a local to guide the discussion.

- Activity 2 : **Presentation of how the catchment was in the past:** the local will explain how busy was the harbour in the past, what activities were undertaken and how the landscape looked like.

Timeframe: 2 h workshop.

Deliverable : A map with information on the past history of the catchment.

Resource needed: a A0 map, old photos if possible and someone with good local knowledge.

- Activity 3 : Description of the Cultural significance of the catchment : a local will talk about customary activities/fisheries, identify some sites of interest in the catchment (the rapids, White pine etc.) and explain why they were used, when, how. Legends will be taught and recorded.

Timeframe: 2 h session.

Deliverable: A map with the cultural significance of the catchment, the stories and legends.

Resource needed: a A0 map and someone with good local knowledge.

- Activity 4 : Catchment trip : after learning more about the catchment, the students could visit the area for the day with a focus on meeting with the main stakeholders (Kaunatua, Farmer, Forest Company, Department of Conservation, HBRC/WDC, Commercial Fisherman).

Timeframe: day trip across the catchment. (8h)

Deliverable : presentation of the different stakeholders by the different groups to the class.

Resource needed: someone with good local knowledge, parents, bus, pick nick etc. Someone to organise a meeting with the main stakeholders prior to the trip.

- Activity 5 : Presentation of how the catchment could be in the future: the students after learning more about their catchment will be asked to draw an imaginary map of the catchment they would like to have in 50 years. On this map will figure the main biophysical features of the catchment, the cultural and significant sites with their story and a series of wished features. This map will be a team exercise and several groups could be drawing different topics (biophysical, cultural sites, Kaimoana etc.)

Deliverable : A wish map for the catchment. The final draft will be used for the main sign that the Whangawehi catchment group is planning on putting up at the Whangawehi car park later on during the year. This map will be the Milestone for this first focus on the Whangawehi catchment.

Timeframe (to be defined): 4h session.

Resource needed: a A0 map, someone with good local knowledge and a number of pencils, crayons and rubbers.

Term 2 (5 /05/2014 to 4/07/2014) : Focus on the awa

Goal : develop an interest for the water and its ecosystems (sea and rivers). How healthy is our awa / what can affect the health of a river /estuarine. What are the remediation measures.

Tasks :

- Activity 1 : Estuarine/reef workshop : Field day along the beach/reef with a local marine biologist (if possible) looking at the ecology of a reef/ beach etc (discussion around habitats, indicators etc.). Local knowledge should be able to explain what have been the trends over the years in terms of Marine life decline and increase. What are the reasons, how can we find out and what can we do about it etc. Possibility to try to talk about sedimentation issues and their impact on the coastal ecosystems as well.

Timeframe: 4h workshop.

Deliverable : a report of the findings

Resources needed: a local Marine biologist or local Kaitiaki, and parents. Depending on the site chosen we may need to organise a bus. Possibility to use the beach just next to the school.

- Activity 2 : Fresh water workshop : The Cultural Health Index Coordinator will carry out similar activities in a fresh water environment. Activities could be organised around the identification of bugs and the use of a SHMAK kit. Students will have the chance to do a full assessment of their area and find out more about the health of their river.

This field trip will be an opportunity to talk about the different fresh water species that live in the Whangawehi Stream, their life cycle and ecological requirements. Local knowledge should be able to explain what have been the trends over the years in terms of fresh water fish species ie decline or increase. What are the reasons, how can we find out and what can we do about it etc. Sedimentation issues will be raised along with habitat destruction by stock etc.

Timeframe: 4h workshop.

Deliverable : a report of the findings

Resources needed: 2 or 3 Kits, experts in fresh water monitoring (CHI coordinator, local Kaitiaki), parents and probably a bus trip (depending on site).

Term 3 (21 /07/2014 to 26/09/2014) : Focus on the Whenua

Goal : develop general knowledge on native trees, their ecological benefits and cultural/traditional use (weaving, medicine Rongoa and Culinary purposes)

Tasks :

- Activity 1 : Trees identification and properties : Identify what native trees grow in the area, their name, properties and ecological requirement. Because the school is already involved in a planting programme, this topic may have been already covered. Each kid could dry the main plants and create his own booklet of dry plants including names, site of harvest, medicinal properties, traditional use etc.

Timeframe: 4h workshop

Deliverable : dry trees/plants booklet with trees properties

Resources needed: sectors, newspapers, booklets. Local person with knowledge in the field (Rongoa, traditional use etc.), DOC officer, parents and a bus.

- Activity 2 : Weaving workshop: Because Flaxes play such an important part in Maori traditions, it seems important to look closer at the Flax Family under a Maori/cultural perspective. A local could explain through this activity how the Flaxes were used and managed in the past and how they could be used in the future for conservation and traditional purposes.

Timeframe: 2 ½ day workshop on weaving (8h in total).

Deliverable : each student should be able to craft something with flax, it could be either a little individual kete or a component of a bigger project connected with the water (ie each student or class could focus on one part of a fish net that they could use later on depending on the level of difficulty and time).

Resources needed: Several local persons with weaving expertise.

- Activity 3 : Planning a planting project : The intention of this session is to guide step by step the students in the planning of a planting project including putting together a budget. The students should be familiar with the site (possibly the car park area), with the trees and their properties/requirements and should be able to take ownership of a small scale planting project. This planning session will be followed by the actual planting which will take place at the end of the term.

Timeframe: 4h workshop looking at identifying the steps to follow when planning a planting project. The older students could be involved under the guidance of a coordinator in solving some of the issues raised.

Deliverable: a clear and detailed planting programme with a budget.

Resources needed: local coordinator

- Activity 4 : Planting project : The car park area at Whangawehi will be an ideal site. This project will be the end result of all the planning realised by the students. The planting themes will be Rongoa, Weaving, Culinary plants, birds and bees... plus other ecological themes.

Timeframe: full day for the students with a possible full day of ground preparation prior to planting including pre spraying, drilling holes etc (local support for this preparation work will be critical).

Deliverable : a site planted with appropriate native plants looking at multiple ecological services including riparian protection for fresh water species/water quality / soil conservation, amenities, birds /bees, medicinal, culinary and cultural properties. This project could lead the following year to develop interpretative signs.

Resources needed: a coordinator, a good team of locals and parents plus trees, tools etc.

Term 4 (13/10/2014 to 19/12/2014) : Focus on observation and taste / degustation !

Goal : With spring coming back it would be a good time to look closely at what's happening along the sea/water ways. The focus could be on bird watching and fish / kaimoana monitoring.

Tasks :

- **Activity 1 : Bird watching session** : this activity is designed to develop curiosity / observation around birds / nature evolving around water ways and sea front.

Timeframe: 4 h workshop with a local Kaitiaki / DOC officer with binoculars and id books. This activity could be done in conjunction with "Nature Watch". Insect's observation could be continued indoors with dissecting microscopes etc. A workshop on the NZ Dotterel could be organised with the help of DOC.

Deliverable : a list of birds/insects observed with a little story on their life cycle. One particular specie could be developed (bleu penguin/ Dotterel ?) and discussion around conservation measures could be initiated?

Resources needed: a local with knowledge and expertise in this field. DOC ranger

- **Activity 2 : Fish/Kaimoana monitoring session** : The students will be taken to a site where fish/kaimoana monitoring is undertaken and contribute to the monitoring protocol. This would be a good opportunity to learn more about the fish species that live in the river/sea and get a taste of it later on!

Discussion around stock management, sustainable fish harvesting rules and reasons behind quotas / permits / total allowable catch sizes and regulations will be undertaken. A mention will be made about legal authorities for the protection and management of species ie DOC and Primary industry.

This could lead to future projects (creating a reserve somewhere along the reef).

Timeframe: 4 h workshop

Deliverable : a list of fish observed and a poster with the life story of one specie (eels for example).

Resources needed: Cultural health Index coordinator/Kaitiaki and his team

- **Activity 3 : Cooking workshop/Kaitiaki competition** : This would be a good way, before the holidays, to close up these series of workshops by tasting the kaimoana available and **harvested under sustainable practises**. The same day, the winner of the Kaitiaki competition will be announced and will spend 3 days with Helen Jonas from DOC on Waikawa (Portland Island) and help her during her daily work as a ranger.

Timeframe: ½ day on how to prepare and cook the traditional way sea weed/fresh water fish/kaimoana in general.

Deliverable : a poster with photos of the different techniques used to cook/prepare the kaimoana.

Resources needed: parents and local experts in that field.

Health and Safety

Code of practice

Safety inspection checklist

Pre operation physical hazard identification

Emergency procedures

Prescriptions (planting and spraying)

Contractor's booklet for minor work

Risk manager

No 32 – MOTOR VEHICLE USE

1. BACKGROUND TO COP

Reason for COP:	To minimise danger to staff while driving Council vehicles. To provide a process that ensures adequate maintenance and upkeep of vehicles.
Relevant Regulations:	NZ Road Code.
Employee Training/Skills Required:	- Current driver's licence – 'restricted' minimum. - COP adherence. - Designated driver responsibilities.
Purchasing Policy Tools/Plant:	HBRC will ensure resources are available to provide adequate maintenance for its vehicle fleet. HBRC will purchase vehicles that are adequate for the role they need to undertake and where appropriate consider the opinions of staff that will drive the vehicle. Provide relevant safety measures to minimise possible danger to staff – eg, parcel barriers, RT's etc.

2. COP WORK PROCEDURE

- Staff must have a current, relevant licence and have it with them while driving a Council vehicle.
- Staff must drive courteously.
- Staff must wear their seatbelt when driving a Council vehicle both on and off road.
- Staff should not use a cell phone while driving a Council vehicle unless through a 'hands free' phone connection.
- Staff should only use the vehicle RT to receive calls when it is safe to do so while driving. To make an RT call the driver should pull over.
- Staff who are 'designated drivers' must ensure that all legal requirements associated with that vehicle are current – eg, warrant of fitness, registration, road user charge (RUC), extinguisher expiry (where relevant) etc.
- 'Designated Drivers' are also responsible for ensuring the vehicle is kept clean and tidy.
- Before leaving for a trip staff should check loads, tow connections or trailers, tyre pressure, oil, water and fuel levels. Appropriate food and water for the relevant location and duration should be taken.
- Staff must report any defects or suspected problems as soon as they return to base, or radio in if the problem seems urgent.
- All staff driving a Council vehicle must obey relevant road rules and legal requirements and report any near miss or actual accidents that occur while driving.
- Pay any fines incurred while driving and directly incurred as a result of an infringement/mistake by the driver.
- Drivers must watch for the warning signs of driver fatigue and take appropriate action (see attached checklist).

Hazard Identification & Analysis Worksheet – HBRC

Work Task, Veh or Item of Equipment	What can cause harm?	How could potential harm situation arise?	Significant Hazard Veh/It	Controls that Reduce Harm	Status
2 – MOTOR VEHICLE USE					
ing On Road	Injury from loss of control or vehicle impact	Traveling too fast for conditions Vehicle mechanical failure Load shift in or on vehicle Poor weather conditions	Y M Y	Correct licence and training Correct speed for the conditions All vehicles serviced and warranted All loads internally and externally secured	In place In place In place In place
	Impact from lost load	Load shift and movement Load not tied down or covered Load caught in the wind	Y M Y	Ensure correct tie points and ropes or chains are used Cover all loads Maintain a low centre of gravity.	In place In place In place
	Loss of concentration	Use of cellphone Use of RT while driving Fatigue	Y M M	No cellphone use permitted while driving unless by a handsfree unit Only use RT to receive calls. Pull over to make a call. Take regular breaks or share driving – (see attached checklist)	In place In place In place
	Runaway vehicle and impact	Handbrake not engaged Vehicle not in gear	Y M	Engage hand break Leave in low gear	In place In place
ing/recovering vehicle	Impact from rope	Tow rope/attachment failure Tow rope too short	Y M	Use rated/approved ropes and tie down points Spectators to stand well clear of operation	In place In place
	Impact from loss of control of vehicle	Tow rope too short Traveling too fast	Y M	Use rated/approved ropes and tie down points Travel at correct speed.	In place Training
	Working outside generic hazards				
ing Off Road	Injury from loss of control, vehicle impact or rolling	Loss of traction and sliding Traveling too fast for conditions Loss of brakes Not having 4wd engaged	Y M Y	Correct tyre pressure and good tread Correct speed and steering water Dry brakes after crossing water Wear seatbelt Trained persons	In place In place In place In place In place
	Drowning from loss of control while crossing river	Not having 4wd engaged Incorrect approach angle and crossing point	Y M	Correct tyre pressure and good tread Correct speed and steering angle Do not wear seatbelt Windows down Trained persons	In place In place In place In place In place
	Remote breakdown	Hunger and dehydration	Y	Take food and water appropriate for the duration and destination	Driver responsibility
	Ref COP 00 – General Fieldworker Operations				

No 25 – DISTANT WORKING ALONE SAFETY POLICY

1. BACKGROUND TO COP

Reason for COP:	To provide a system that ensures early notification of failure to return from a distant work site.
Relevant Regulations/Guidelines:	None
Employee Training/Skills Required:	• Knowledge and understanding of guidelines. • Adherence to policy. • Use of RT system.
Purchasing Policy Tools/Plant:	HBRC will provide relevant equipment to ensure staff safety. HBRC shall maintain relevant equipment to the required safety standard. This includes the maintenance of the Council's RT system and the purchase of locator beacons. Provision of white boards.

2. COP WORK PROCEDURE

1. All staff based at Dalton Street must indicate on the white board their intended destination (reasonably specific) and their likely return time. In addition, the same information should be provided on the Council's computer based staff location system.
2. All staff who work in the field must ensure their supervisor/overseer or a designated work associate knows their intended work place(s). The supervisor/overseer/work associate will be responsible for acknowledging their safe return, particularly if they are going to be later back than notified or after 4.30 pm. The staff member should then contact that supervisor/overseer/work associate when they have returned. This policy applies to ALL staff who work in the field including Wairoa and Waipukurau staff.
3. Staff working alone in remote or high-risk areas must take a Council approved location device with them. These are available through sections or reception.
4. Any staff member working off site and outdoors, outside normal working hours must ensure that either their partner or the Council's Duty Manager is aware of their location and is notified or their return home.
5. Special attention needs to be afforded inexperienced staff and/or students when they are asked to drive alone on Council business. Managers must ensure these staff are aware of this policy.
6. Check for any health and safety risks at the site and follow relevant COP's where relevant.

COP HAZARD ID & CONTROL

Hazard Identification & Analysis Worksheet – HBRC

Job Task, Equipment or Item of Interest	What can cause harm?	How could potential harm situation arise?	Significant Hazard Yes/No	Controls that Reduce Harm		Status
				Date: March 2012		

Distant Working Alone Safety Policy

Working outside generic hazards all duties	Unknown whereabouts	Accident, immobilised, unconscious	Y	Follow communication protocol	In place
	Exposure sickness from immobilisation	Trip, slip or fall	Y	Maintain clean site and correct footwear.	In place
	Loss of consciousness or death from impact	Trip, slip or fall Impact from falling object	Y	Maintain clean site and correct footwear. Assess risk for need for 2 person job	In place
	Injury from vehicle accident	Fatigue from driving long distances Impact from another vehicle on road	Y	Plan day and personal responsibility for taking rests Plan for overnight accommodation if required	In place
	Exposure from getting lost	Change of plans Poor planning or job details Inadequate communications	Y	Plan day with contingencies, have additional gear Ensure communication devices works in the area you are going to.	In place
	Loss of consciousness	Entering unknown confined space	Y	Apply COP 21 for working in confined spaces Do not enter confined spaces alone If working with powered generators, 2 man job always. Ensure exhaust fumes are vented away	Ref COP 21 Confined spaces
	Impact from working in poor visibility	Delays on job and need to work into the dark Emergency work at night.	Y	Plan day with contingencies, all extra time. Close site down if risk increases 2 man job always if emergency situation.	In place
			M		In place
					In place
					In place

No 50 – RECREATIONAL WATER QUALITY MONITORING

1. BACKGROUND TO COP

Reason for COP:	To ensure the safety of staff and students when undertaking sampling for the Recreational Water Quality Monitoring Programme.
Relevant Regulations:	• None
Employee Training/Skills Required:	• Current drivers license • Site hazard ID • Use of RT, Satellite phone and SPOT • COP adherence • Sampling techniques • Swimming • Confidence around water

2. COP WORK PROCEDURE

1. Staff undertaking fieldwork for the Water Quality Monitoring programme must have read and become familiar with:
 - a) COP 25 – Distant Working Alone Safety Policy
 - b) COP 32 – Motor Vehicle Use
 - c) COP 39 - Sampling
2. Ensure you have filled in your fieldtrip details and obtained and advised your contact of your return time and contact information. Ensure that you have adhered to the Water Quality and Ecology Health and Safety requirements (PROMAPP/Monitoring Environments/Water Quality and Ecology/3.0).
3. Ensure that you have checked the weather forecast and any warnings in place (metservice.co.nz). If adverse weather and/or driving conditions are forecast, check with the project manager about whether to cancel sampling for that day.
4. Be aware of hazards on the road (e.g. stock movements etc).
5. Ensure you have appropriate clothing for the conditions, appropriate personal protective equipment (PPE) and footwear, sunscreen (available from reception), insect repellent, first aid kit, drinking and washing water, cell phone (charged) and notice at the office as per #2. Jandals and bare feet are not appropriate when driving.
6. On arrival at a site a hazard assessment must be carried out and ways to manage those hazards identified. Look for dangers including rips, rough seas, unstable sands, and dangerous conditions due to people or animals. If there is any concern for your safety, return to the vehicle and leave the site. Contact the office to report the issue.
7. **DO NOT UNDERTAKE ANY SAMPLING WHEN WATERS ARE TOO ROUGH/DANGEROUS.** Specific care needs to be taken at Waipatiki Beach (steep drop off and unstable sands), and Marine Parade (rough seas at times). Lifejackets should be worn when the risk assessment in #5 indicates that it is appropriate.
8. Report any near miss or accidents that occur while sampling to your project manager
9. Wash hands before eating.

Hazard Identification & Analysis Worksheet – HBRC

Work Task or Activity	What can cause harm?	How could potential harm situation arise?	Significant Hazard Yes/No*	Controls that Reduce Harm	Status
COP No 50 – RECREATIONAL WATER QUALITY MONITORING					Date: December 201
Dangerous waterways	Drowning	Dangerous/rough seas High river levels Turbid water reducing visibility	Y	Check weather conditions before leaving for sampling If in doubt – stay out Extreme caution to be taken at sites such as Marine Parade and Waipatiki Beach Lifejacket to be worn if appropriate Do not enter water beyond mid-calf in any circumstances while working alone Do not enter way at all if seas appear rough, or river levels high. If water is turbid, proceed with caution, use the sapling pole to test the stability of the ground if necessary or do not proceed if dangerous to do so. Note Te Mahia Boat Ramp site drops off steeply, proceed with caution.	
Driving on road	Injury from loss of control or vehicle impact	In experienced driver Travelling too fast for conditions Vehicle mechanical failure Load shift in or on vehicle Poor weather conditions	Y	Personal responsibility to drive to ability Correct licence and training Correct speed for the conditions All vehicles serviced and warranted All loads internally and externally secured	
	Loss of concentration	Use of cellphone Use of RT while driving Fatigue	Y	No cellphone use permitted while driving unless by a hands free unit Only use RT to receive calls. Pull over to make a call. Take regular breaks or share driving – <i>(see attached checklist)</i>	
Hygiene	Illness	Contamination from waterways	M	Wash hands before eating and use hand sanitiser between sites.	
Biological injury	Wasp, bee stings	Loss of attention Allergies	N Y	Observations If you have allergies that may be life threatening, let the team or project leader know and specific mitigation steps can be taken (e.g. epi-pen etc).	

No 12 – USE OF MOTORCYCLES/ATV'S

1. BACKGROUND TO COP

Reason for COP:

To prevent injury and damage to plant when undertaking motorcycle use. This work is generally conducted for property inspections, service delivery work including poisoning, night shooting of animal pests and noxious plants inspections. Used to transport single staff members and equipment in mainly an off road situations to enable access to rural terrain.

Relevant Regulations:

NZ Road Code

<http://www.dol.govt.nz/quad-bikes/reducing-accidents.asp>

Employee Training/Skills Req'd:

- Must hold a motorcycle licence where relevant.
- Trained by their immediate supervisors or other suitably experienced nominated staff on hilly terrain.
- Follow up training will be given to an operator who has not used a motorcycle for a period of time (ie, six months) if an operator is going to use the machine in terrain which there has been no prior experience, or upon request.

Purchasing Policy Tools/Plant:

HBRC shall provide motorcycles which are adequately powered and have a reliable engine (200-250cc) and are designed for continuous off road use.

2. COP WORK PROCEDURE

1. Conduct a safety check on the motorcycle before riding.
2. Wear protective clothing at all times including helmet.
3. Where a manufacturer's provision for a passenger, passengers to ride in approved manner with necessary PPE.
4. If manufacturer recommends no passenger transportation, passengers are not to be carried.
5. Check with landowners or occupiers for known hazards – eg, washed out crossing, tomo areas, and stock dangers and on route check continuously for physical hazards - eg, water pipes, battens, posts, cut scrub, wire at ground level, other vehicles and workers.
6. Good control of the motorcycle depends on a correct gear selection, throttle control and balance.
7. Ensure correct tyre inflation for terrain and speed.
8. Ensure all tools well secured and tied down to motorcycle.
9. Make sure others know your route and carry approved emergency locator beacon when working alone in remote areas. Ensure you know how to use it.
10. Load a motorcycle onto a trailer or vehicle using two ramps of adequate length. Push or guide the motorcycle (running in first gear) up one ramp while walking up the other.
11. Use an adequate number of tie downs designed for motorcycle use to secure the motorcycle on the trailer or vehicle.
12. Unload onto a flat surface with the motor off.
13. Start motorcycle and test drive before loading to ensure motor runs smooth.
14. Do not accept offers of transportation on landowners bikes if not designed to carry passengers.

Hazard Identification & Analysis Worksheet – HBRC

Work Task, Activity or Item of Equipment	What can cause harm?	How could potential harm situation arise?	Significant Hazard Yes/No*	Controls that Reduce Harm	Status
012 – Use of Motor Cycles and ATV's					Date: Sept 2011
Performing general duties	Working outside generic hazards Carrying passenger when bike not designed for it.			Ref COP 00 – General Fieldworker Operations Conform with manufacturer's recommendations e.g. don't carry passengers	
Driving off road	Loss of control and flipping or bike causing injury to operator	Too fast for terrain Descending or ascending and loss of traction Loss of brakes Hidden Obstacles	Y M	Correct tyre pressure and good tread Correct speed and steering angle Dry brakes after crossing water Trained persons Stay on tracks or question land owners of potential obstacles Use of PPE including mandatory use of helmet	In place
	Drowning from loss of control while crossing waterway	Incorrect approach angle and crossing point Overloaded vehicle	Y M	Correct tyre pressure and good tread Correct speed and steering angle Trained persons Secure all loads	In place
Driving On road	Impact from vehicle accident	Vehicle not seen by motorists Loss of control of machine	Y M	Only registered vehicles on roads Lights on Max speed for ATV 30kmph Use of PPE including wearing helmet.	In Place
Loading and Transporting	Impact from loss of control of vehicle	Travelling too fast Loss of load	Y M	Use approved ropes and tie down points Travel at correct speed.	In place Training
	Crush from motorcycling/ATV falling during loading	Ramps too short or not sturdy enough Ramps not fixed Angle of approach too steep	Y M	Use custom built ramps Walk machine up ramps. Do not ride. Load on a flat surface Comply with loading COP	In place

No 28 – DISCOVERY OF DRUG CROPS**1. BACKGROUND TO COP**

Reason for COP:	To minimise any safety issues for staff that find drug crops in the course of their work.
Relevant Regulations/Guidelines:	Advice from Police.
Employee Training/Skills Required:	• Knowledge and understanding of guidelines. • Adherence to policy.
Purchasing Policy Tools/Plant:	

2. COP WORK PROCEDURE

1. All staff that find a drug crop in the course of their work should leave the vicinity immediately if someone is present and contact the WCMG as soon as is possible to indicate where they are and what they are doing. If they feel they are in immediate danger they need to convey that urgently.
2. If no other persons are present, staff should quickly note what is present and any other information they feel might be useful and then leave the vicinity.
3. Be especially careful and aware that growers may protect their crops with booby traps and poisons; do not snoop around in an effort to gain more information; if possible, leave the area via the same route you came in by.
4. If confronted directly by someone at the site staff should indicate that they work for the WCMG and why they are there and what they are doing. Staff should not give their name unless forced to do so.
5. Once safe to do so, staff are to convey to the WCMG what they discovered to ensure other staff are warned clear of that area and suitable action can be taken.
6. The Police will be involved but have indicated that they will postpone action to avoid compromising any staff that may have come across the crop.
7. The Police will only require the staff members name if they require further information.
8. Staff security is paramount in this issue.

No 39 – SAMPLING**1. BACKGROUND TO COP**

Reason for COP: To minimise danger to staff while undertaking a variety of sampling work.

Relevant Regulations:

- Hydrologist's Safety Manual

Employee Training/Skills Req'd:

- Experience
- Swimming ability
- Sampling techniques
- Site Hazard ID
- Wader training

2. COP WORK PROCEDURE

1. Unless specifically sanctioned by their Manager and detailed within the project design, staff must always carry out sampling activities with a minimum of two people present.
2. Ensure you have appropriate clothing for the conditions, appropriate personal protective equipment (PPE) and footwear, sunscreen, insect repellent, first aid kit, drinking and washing water, cell phone (charged) and notice at the office of location and estimated return time.
3. On arrival at a site a hazard assessment must be carried out and ways to manage those hazards identified. While important for experienced staff it is even more important for new or inexperienced staff in potentially hazardous situations.
4. When undertaking sampling activities with two people, staff shall remain within hearing and sight contact of the second person.
5. **Standard Water Sampling:** As per *Hydrologist's Safety Manual* and *National Protocol for SOE Sampling in NZ*.
6. If crossing a river or stream extreme caution needs to be taken particularly if carrying equipment. Choose an appropriate place to cross considering flow rate and depth, and if any doubt arises DO NOT CROSS.
7. **Sampling with Waders:** Must only be used with two staff present. Staff using waders must be experienced and certified.
8. **Beach Sampling:** Never to be undertaken when seas are too rough or rips are present.
9. **Boat Sampling:** Adhere to small boat use COP.
10. Report any near miss or actual accidents that occur while sampling.
11. Wash hands before eating.

Hazard Identification & Analysis Worksheet – WCMG					
Task or liability	What can cause harm?	How could potential harm situation arise?	Significant Hazard Vehicle?	Controls that Reduce Harm	
Date: Jan 2012					
Duties	Confrontation with crop owner	Coming across owner and crop a potential crop	N	Avoid eye contact, leave the area State your role and intention to continue working un aware of their actions Coverly note location and details of persons and other vehicles and report to management	In place In place In place In place
	Injury from a booby trap or poison	Working in area where large crops are with traps and poisons to kill animal pests	Y	If crops are found leave the area carefully Note tracks to suspicious areas and do not enter	In place In place
	Damage to council assets or vehicles	Vandalism from crop owners if crops found or destroyed	N	If crops are found leave the area carefully Park vehicles in a safe place away from suspected crop areas.	In place In place
			M		

Status

Source of Hazard & Associated Harm.	Risk Rating (A) 1-5	Freq. of Exposure (B) 1-5	Risk Total (Ax B)	Risk Management (Eliminate, Isolate, Minimise).	Action Already and/or Taken or Proposed.	Person Responsible (First Name)	Date Completed/Sign.
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dangerous access ways or pathways – slips and falls, vehicle control lost				Minimise	Driver training. Inspect track before committing. Maintain tracks to good standard. Inspect for hazards before commencing.	Staff Members	
after crossing – slips /falls/owning				Minimise	Extreme caution. Don't carry too much. Selection of crossing site. Ascertain down stream escape route. If in doubt-don't cross.	Staff	
small boat use – falls,owning				Minimise	Ensure compliance with COP. Training in small boat use. Monitoring of conditions. Use of lifejackets.	Staff	
ological injury – wasps, bees etc				Minimise	Observations.	Staff	
/giene – illness				Minimise	Reinforce hygiene issues. Provision of hand washing water.	Staff	

Reviewed by OSH Committee:

Date:

sk Rating:
eq. Of Risk:

5-Very Significant
5-Continuous

4-Quite Significant
4-More than 1 exposure/week

3-Significant
3-Exposure between 1/week & 1/month

2-A Risk
2-Exposure between 1/month & 1/6 months

1-Not Much of a Risk
1-Exposure less than 1/6 months

No 49 – ENTERING PRIVATE PROPERTY

1. BACKGROUND TO COP

Reason for COP:	To respect the rights of private property owners and minimise danger to staff who need to enter the private property in the course of their work.
Relevant Regulations:	-
Employee Training/Skills Required:	• Adherence to COP. • Access permission sheet.

2. COP WORK PROCEDURE

1. Entry onto property is considered a privilege, not a right. Always advise an owner of your visit, the work you are planning and check:
 - 2.1 That access is available.
 - 2.2 Dogs or livestock are secure.
 - 2.3 If there are any significant risks that the staff member should be aware of, such as:
 - 2.3.1 Bee hives on site.
 - 2.3.2 PSA infected kiwifruit vines.
 - 2.3.3 Spraying operations.
2. If your visit times change, let the landowner know.
3. If it is suspected an aggressive dog is on site, request owner locks the dog away.
4. Use your vehicle as a secure place from aggressive dogs or stock.
5. If confronted by aggressive dog or stock, the initial reaction should be to stop and remain still and avoid eye contact, avoid sudden movement and slowly retreat to your vehicle. Use what you are carrying or slowly remove an article of clothing to be used as a distraction should an attack occur. If knocked to the ground try to remain motionless in the foetal position. (COP 42 – Aggressive Dogs).
6. Ensure all gates left as you found them, locked or open. Do not leave a gate open for a short period.
7. If confronted by an aggressive landowner, leave the property and make contact at a later stage.
8. Leave the property as you find it. Report any damage caused by you to you manager and the property owner as soon as possible.

Hazard Identification & Analysis Worksheet – WCMG					
Activity	What can cause harm?	How could potential harm situation arise?	Significant Hazard You're At	Controls that Reduce Harm	Status
Ref COP 00 – Generic Fieldworker Operations					
Injury to people and livestock from aggressive dogs	Injury from livestock or aggressive dogs	Landowner not contacted Gates left open Aggressive Dog Startled Chased by stock	N - M N - I Y - M Y - M	Maintain regular contact with owner or occupier prior to work. Leave all gates as you find them Contact landowner before entering. Remain calm, slow movement, retreat to vehicle. Use objects to protect yourself, don't hit animal. Report incidents.	In place In place In Place
	Poisoning, inhalation of sprays or residue	Landowner not contacted Spray drift from wind Incorrect PPE Vehicle not enclosed	Y - I Y - M Y - I	Maintain regular contact with owner or occupier prior to work. Determine where wash facilities are Cease work and exit drift area. Change clothing and shower immediately Vehicle with a cab and air conditioning	In place In place In place In place
	Insect Stings	Bee hives on site Insect swarms	Y - M Y - I	Maintain regular contact with owner or occupier prior to work. Determine areas where hives are Do not work close to or try to move hives If a swarm is encountered, leave area to safety of vehicle ASAP. Record position and report to manager.	In place In place In place
	Failure of structures on private property	Entering or crossing structure not certified or inspected	Y - M	No not use unknown structures Check with landowner integrity of structures	In place
	Electrocution	Touching electric fences Operating private property tools or machinery Touching overhead wires	Y - I Y - E Y - M	Isolate sections of fence Do not use machinery or tools not owned by HBRC Check site before starting work. Haz ID	In place In place In Place
	Aggressive Landowner	Landowner not contacted Not following instructions People who just don't like HBRC	N - E N - M N - M	Maintain regular contact with owner or occupier prior to work. Do not proceed with work if significant changes need to occur. Remain calm, leave site and report abusive behaviour	In place In Place In place
	Failure of structures on private property	Crossing farm bridges with machinery	Y - E	Do not use unknown structures Check with landowner integrity of structures	In place
	Fire or property damage	Hot work in dry conditions Turf damage in wet conditions Impact to fences, structures or buildings Excavating through underground services	Y - M N - M N - M Y - M	Assesses site risk, fire control on site. One track in and out. Delay work Avoid hast. Plan job route Ask landowner of services. Locate or pothole.	In place In place In place In place

Whangawehi Catchment Management Group

720 East Coast Road -Mahia

Pre-Operation Physical Hazard Identification

Prior to any work commencing at a new site the Contractor or their representative(s) and the Whangawehi Catchment Management Groups' project Coordinator will inspect the site together (where possible) to identify as far as practicable all known hazards. Agreement will be reached on who will be responsible for managing whatever hazards have been identified. The contractor and his/her employees will manage operational hazards as they arise with their internal system and hazards beyond their control will be managed by Merrill and Ring Forest Manager.

Forest:	Work Description:
Date:	Area:
Contractor:	Compartment:

HAZARDS TO BE MANAGED BY THE CONTRACTOR / OPERATOR

Hazard	E / I / M	Action to Control Hazard

HAZARDS TO BE MANAGED BY MERRILL & RING NEW ZEALAND LTD

Hazard	E / I / M	Action to Control Hazard

E = Eliminate I = Isolate M = Minimise

Comments: _____

The Contractor / Operator has been made aware of the above known hazards

Signatures: _____ Forest Manager: _____ Contractor: _____

Whangawehi Catchment Management Group

720 East Coast Road -Mahia

Pre-Commencement Checklist For WCMG Contractors.

To Be Completed by the Principle Contractor and the WCMGs' project coordinator

1. Before commencing operations, the principal shall verify that the employer has in place a safety management plan which complies with the requirements of the HSE Act and HSE Regulations:

I. Active Management commitment	Yes / No
II. Hazard Identification and control	Yes / No
III. Information training and supervision	Yes / No
IV. Accident reporting and investigation	Yes / No
V. Emergency procedures	Yes / No
2. Training and Supervision: Does the crew have enough skills and resources to ensure all workers are either trained or are under training for the task.

Yes / No

3. Is there a training plan for all employees?

Yes / No

5. Has the contractor read the Rules for Protective Clothing and Equipment stated in the Approved Code of Practice for Safety and Health in Riparian Planting Operations and meets its requirements?

I. Safety Footwear	Yes / No
II. High Vis	Yes / No
III. Leg Protection	Yes / No
IV. Safety Helmets	Yes / No
V. Hearing Protection	Yes / No
VI. Eye Protection	Yes / No
8. Does the Contractor have a Drug and Alcohol policy that meets the requirements of the HSE Act and HSE Regulations?

Yes / No

9. Have all employees been drug tested within the last three months? Yes / No
11. Does all machinery and vehicles meet Occupational Safety and Health, and Industry standards?

Yes / No

12. Has the contractor the required amount of insurance?

I. Public Liability of \$5,000,000 with an extension of \$500,000 for costs that may arise pursuant to the Forest and Rural Fires Act 1977.	Yes / No
---	----------

Can the contractor commence operations?

Yes / No

If YES sign the bottom – if NO go to (a) or (b)

- a). If the contractor has only minor non-compliance then these need to be noted in the comments section and a written notice issued or authority to commence work gained from the WCMG project coordinator.
- b). If any of the following apply then the contractor cannot commence operations until such a time that compliance is met:
- I. No Health and Safety Plan
 - II. Machinery not up to standard
 - III. Not the required insurance

Comments:

Date:

Contractors Name:

Signed:

WCMG project coordinator :

Signed:

Note: Having satisfied yourself the contractor can commence operations. The contractor must be issued with the following prior to commencing any block operation.

- I. Prescription
- II. Hazard Identification
- III. Maps

Yes / No

Yes / No

Yes / No

Whangawehi Catchment Management Group

720 East Coast Road -Mahia

Safety Inspection Checklist

Date:

Contractor:

Operation:

Inspection By:

Documentation	Yes	No
Health & Safety Manual		
Emergency Procedure		
Job Prescription		
Hazard ID		
Approved C.O.P for Safety & Health in Forest Ops		
Training records		
Drivers Licence		

Personal Safety	Yes	No
Gloves		
Eye Protection		
Safety Helmet		
Clothing for Conditions		
Safety Boots		
High Vis		
Belt First Aid Kit		

Chainsaw Operations	Yes	No
Road Signs		
Ear Protection		
Leg Protection		
Cut Resistant Boots		
Equipment Belt / First Aid Kit		
Fire Extinguisher		
Fuel Container		
Refuelling Procedures		
Wedge & Maul		
Exhaust		
Idle		
Stop / Start Switch		
Chain Brake		
Chain Catcher		
Felling Technique		
Pruning Technique		
Safe Working Distance		
Work Method		

First Aid Kit Yes / No

WOF / COF / Rego Yes / No

Trailer WOF / Rego Yes / No

Radio Yes / No

Fire Extinguisher Charged Yes / No

Fuel / Equipment Storage Yes / No

Parking (Comments) Yes / No

Hand Tool Operations	Yes	No
Condition of Tools		
Sharpening of Tools		
Carrying of Tools		
Tool Pouch		
Loppers / Jacksaw		
Safe Working Distance		
Work Method		

Planting	Yes	No
Spade		
Harness / Frame		
Work Method		

Ladder Operations	Yes	No
Ladder Condition		
Ladder Placement		
Safety Chain Attached		
Climbing / Ascending		
Safety Harness		
Step Condition		
Step Placement		

Herbicide Operations	Yes	No
Storage of Herbicides		
Mixing Location		
Mixing Method / Clothing		
Equipment Condition		
Calibration		
Safety Clothing		
Change of Clothing		
Soap & Water		
Work Method		

Hazard Rating	Description
A	Likelihood of death, serious injury, major property damage. Operations cease immediately until corrective action is taken.
B	Likelihood of minor loss. Remedial action to be effective within 3-5 days.
C	Meeting required standards
D	Certified time

[illegible]

EMERGENCY PROCEDURE FOR ACCIDENT &

FIRE

1. PHONE FOR HELP – DIAL 111

**Explain situation clearly as your call may be received in
Christchurch.**

- SAY →**
- (1) WHAT** – the nature of the emergency is, accident or fire
 - (2) WHO YOU ARE** – give your name
 - (3) YOUR** – location, road name, & GPS co-ordinates
 - (4) WHAT** – you require
 - If accident give details
 - If fire, what you require

STAY BY PHONE OR RADIO & WAIT FOR FURTHER

INSTRUCTIONS

STAY CALM!!

- Fire Service

- Wairoa (06) 838 77 55
- Nuhaka (06) 837 87 99

- Police

- Wairoa (06) 838 8345
- Nuhaka (06) 837 88 00
- Kotemaori (06) 837 68 85
- Tuai (06) 837 38 24

- Ambulance

- Wairoa (06) 838 97 16

- Project Coordinator

- Nicolas Caviale Delzescaux :
- Office : 068388527- A/H : 068384042

Email : caviale@hbrc.govt.nz

- Management Committee Whangawehi Catchment Management Group

- Jamie Cox (Chairman) : 0274549156
- Leon Symes (Treasurer) : 021398380
- Rae Te Nahu (Secretary) : 068375537

- Landowners phone numbers
 - Pat O'Brien (06) 837 56 87 or 0274527994
 - Richard Coops (06) 837 58 41 or 027 65 37 842
 - Shane Mildenhall (06) 837 50 89 or 027 6661323
 - Malcolm Smith : 0274998527
 - Graham Douglas (Grandy lake Forest) : 0273752524

Whangawehi Catchment Management Group

720 East Coast Road -Mahia

Planting Prescription

*Objective: To plant trees to allow early and even growth with best possible survival
at the prescribed stocking.*

Project Coordinator of WCMG :		Property:
Contractor:		Compartment:
Date:		Area:
Plot Numbers:	Odds / Evens	Stocking:
Spacing Between Rows:	Spacing Within Rows:	Stocking (Stems/ha):
1.8	1.8	3086

Additional Prescription Requirements

Potential production thinning, water supplies, line directions, screening, hard hats e.t.c
Remove all rubbish from the worksite.

Special Requirements

Adjustments to prescriptions and issued work packages may be required. If changes are to be made they will be discussed between the supplier and the operator.

General Requirements

1. **Pre-operation Physical Hazard Identification:** The Project Coordinator will list all known physical hazards for each planting block. After the consultation with the Project Coordinator convey those physical hazards together with operational hazards to the employees.
2. **Make sure all employees understand and meet the following:**
 - This prescription and Job Specifications for Planting.

- OSH Approved Code of Practice for Safety and Health in Forest Operations.
 - The New Zealand Environmental Code of Practice for Plantation Forestry.
3. **Quality Assessment (Quality check by the contractor):**
- Carry out quality assessment to make sure that all the requirements defined in this Prescription and Specifications are met.

Site Specific Requirements

Do not plant trees:

- Within **30 horizontal metres** off live power lines on the prevailing upwind side and **20 horizontal metres** on the down-wind or down-hill side.
- Within **3 metres** of culverts and water tables on road or track edges.
- Within **2 metres** of external fences.

Tools

1. Sharp spade with the following dimensions:
 - Minimum blade length of 25cm.
 - Minimum tip width of 12.5cm.
 - Minimum top width of 20cm
2. Suitable planting frame and belt system.

Operational Guidelines

1. Select a good site keeping the planting row as straight as possible.
2. Follow the planting techniques defined by the following:
 - a) Select the best possible site within a 1 metre radius of the specified spacing, considering:
 - 2m minimum spacing from any other crop tree.
 - Not where vertical growth will be impeded.
 - 25cm away from obstacles such as stumps, logs, or banks.
 - b) Screed the ground and clear any competing weeds or grass.
 - c) Holding the spade along the line you are travelling make a cut approximately 5cm into the soil (this is where the seedling will be planted after cultivation).

- d) Come back 10-15cm from this cut and with the spade across the line, make a cut, and pull the spade handle to an angle of approximately 45° to cultivate to a **minimum** depth of 25cm.

Note: On steep sites, facing across the slope to make the planting hole will ensure the soft cultivated soil will not roll down the hill.

- e) Go forward approximately 30cm from this cut and make another cut, push the spade away from you to an angle of approximately 45° to cultivate to a **minimum** depth of 25cm.
- f) With the spade held the same way open a planting hole in the middle of the cultivated soil to the depth of cultivation, and by pushing the spade into the soil and pushing away to an angle of approximately 45°.
- g) While at this angle push the spade a little further into the soil, then pull it back to a vertical position. You will have to repeat this to open a hole large enough to get the roots in comfortably.
- h) **Do not carry more than one tree in your hand while planting.**
- i) With the spade holding the soil back, place the seedlings roots down into the bottom of the hole.
- j) Remove the spade gently and replace some loose soil (**do not firm the soil**). Give the tree a pull up of approximately 10cm to straighten any distorted roots and ensure that the nursery collar will be 3-5cm below ground level. The roots of the tree must be in mineral soil.
- k) With the tree held straight, replace removed soil and firm with the toe of your boot (be careful not to damage the collar of the tree).
- l) Check the tree is straight and firm in the soil with the nursery collar below ground level. Move to the next site.
3. Keep a record of daily tree stocks used and pass this onto the Project Coordinator or their representative.
4. Common planting faults are listed below. Additional costs associated with planting faults and resulting reworks (e.g. seedling cost and plotting cost) will be charged back to the contractor.

Cultivation	Any tree not planted in the centre of a cultivated zone of 25cm deep, a width of an Atlas spade and a length of 25cm as a result of spade placement during planting.
Damage	Any stripping or damage to the needles or bark on the stem or roots.
Depth	Tree planted greater than or less than 3-5cm above the nursery collar or the roots are not in mineral soil.
Loose Trees	If the tree is given a gentle but firm pull or pushed mid stem and it moves, the tree is too loose.
Roots	Any tree root twisted up or to the side, or its roots are squashed tight together as a result of poor planting technique.
Site Selection	The tree is not planted in the best site within a metre radius of the specified planting site and preferably planted within the tree row.
Spacing	Any row varying more than one metre from the specified row spacing. Any tree varying more than half a metre from the specified spacing, for no reason. This will also include unplanted spot cultivated sites.
Vertical	(Not straight) – Top of tree when planted varies more than 10cm from its vertical base.
Understocking	The acceptably planted trees per plot have a stocking less than 2800 for prescribed stocking of 3086 spha.

The Field Procedure for Quality Control Plots is as follows:

1. From the map determine the plot locations and proceed to the first plot starting point.
2. Once plot location has been determined place your spade vertically in the ground.
3. Use a Suunto to determine the slope of the plot area and find the slope correction for plot radii.
4. Tie the end of the tape to the neck of the spade and run out the required distance specified in the slope correction chart.
5. Walk around the boundary using a spray can to mark the boundary trees either in or out of the plot.
6. Once the boundary is defined walk up and each line within the plot radius, counting and spraying a dot beside each tree as you go.

7. All trees need to be checked for firmness. Other faults assessed visually. Closer inspection should be done if felt necessary. A minimum of 6 trees should be dug up in each plot to assess depth, root displacement, and cultivation.
8. All **plots** shall be located as near as possible to the map location. Plot layouts shall be clearly indicated on the hill with spray paint with the plot number, plot centre, counted trees, and dug up trees all clearly marked.
9. Details of the inspection shall be recorded as per the field sheet.
10. All headings on the field sheet must be filled out and made neat and legible.
11. Field Sheets must be handed to the Forest Manager or their representative at the end of each day with an explanation of any problems encountered and remedies made. Once a compartment is completed all maps and field sheets must be collated, providing an average final stocking figure by compartment and handed to the Forest Manager or their representative for processing.
12. It is preferable that the contractor accompany the quality controller if the quality is inconsistent or poor.

Quality Control Rules

1. The contractor and supervisor will establish systemic plots to assess quality of the work for payment and record purposes. Contractors will be able to accompany supervisors/managers on quality control checks.
2. Any substandard work indicated by such plots will be communicated to the Contractor as a formal warning of such substandard work. If one reject plot is found, another shall be done in the same area. If the second plot is rejected this will mean a rework of 2.0 hectares immediately around that plot.
3. If the total demerit points exceed 9 in the prescribed stocking of 1000 spha the contractor will be required to rework the faulty area. Frequent reject or borderline plots as defined above are not acceptable.

Fault		Demerit Points
R	Bunched or J Roots	3
De	Incorrect Depth	3
Da	Damaged Tree / Root Collar	3

L	Loose Trees	3
V	Not Vertical	3
Wb	Wide Between Rows	3
Wi	Wide Within Rows	3
C	Not Cultivated Sufficiently	3
U	Understocked < 2800 spha	3
O	Overstocked > 3086 spha	3

4. **Stocking.** If tree numbers fall below 2800 spha of the 3086 spha stocking then the contractor will have to restock the faulty area before payment of contract monies.
5. **Quality Control.** The contractor will be liable to any costs of tree seedlings left on site by planters/donkeys or damaged by mishandling. The charge will be \$0.40 per tree. *Please note* that each plot represents an area of two hectares and each tree in the plot represents 16.7 trees / ha.
6. Quality Control Plots are to be carried out immediately behind the gang and any substandard work reworked accordingly.
7. All trees in the rework shall be lifted out and only replanted if the demerits reflected non physical damage e.g.; *not firm, incorrect spacing*. Trees which have been awarded demerits because of physical damage shall be discarded and replaced with fresh trees. The area shall be plotted again after the rework has been completed. The contractor will not be paid for the rework and will liable for the cost of any replacements.

I understand and accept the terms and conditions of this prescription.

Dated this day of 2011

Contractor:.....

Name:.....

Forest Manager:.....

Name:.....

Whangawehi Catchment Management Group

720 East Coast Road -Mahia

Herbicide Spot Spraying - Prescription.

Objective: To release planted trees from weed competition

Note: Be familiar with your job specifications

Date:	Spacing & Stocking:		
Project Coordinator:	Between Rows:		Metres
Contractor:	Within Rows:		Metres
Forest:	Stocking:		Stems/ha
Compartment:	Wind:		Km/hr
Area:	*Stop operation when wind speed exceeds 15km/hr		
Map Provided:	Hectares		
Physical Hazard I.D			

Site Specific Requirements:

Water Table	Yes/No	Do not carry out mixing unless unavoidable
Permanent Water Courses	Yes/No	
Restricted Areas	Yes/No	

Additional Prescription Requirements:

Mixing sites, wind, rain, water supply, neighbour's property, buildings, etc.

General Requirements:

- 1. Pre-Operation Physical Hazard Identification:** The Project Coordinator will list all the known physical hazards for each compartment. After consultation with the Forest Manager, convey those physical hazards together with operational hazards to the employees.
- 2. Quality Assessment (quality check by the contractor):** Carry out quality assessment to make sure that all requirements defined in this Prescription and Specifications are met.
- 3. Make sure that all employees understand and meet the following:**
 - The Prescription and Job Specifications for Herbicide Spot Spraying.
 - Approved Code of Practice for Safety and Health in Forest Operations.
 - The Management of Agrichemicals Code of Practice NZS 8409:2004.
 - The New Zealand Environmental Code of Practice for Plantation Forestry.
 - Safety Code for Forest Operations, Part 1 Establishment and Silviculture

- Rules for General Safety, Part 2 Approved Code of Practice for Safety and Health in Forest Operations
 - Contactors Safety Plan
- 4. **Safety Data Sheets:** Read and understand thoroughly, and always keep it on site.
- 5. **Daily Record Sheet:** You must fill this out and provide it to the Project Coordinator daily.
- 7. Use herbicide in accordance with the recommendations set on manufacturer's label.

Operational Guidelines:

1. Application/Mixing Rates:

Application Rates		Mixing Rates 20 Litre Mix	
Spot Diameter	1.5 metres	Round up 360	200 ml
Dose/Spot	20 ml	Metsulfuron methyl	140 gr
		Dye	100 mls
		Water	19Litres

2. Clothing Minimum Requirements:

Always wear the correct clean gear in good condition, for your own protection. Wash all contaminated clothes separately from all other clothing.

When Spraying... Overalls (washable cotton or disposable). Rubber/PVC steelcap boots – spikes recommended. PVC leggings to cover all skin of legs. Long sleeved shirt or overalls (sleeves mustn't be rolled up). PVC cape.	When Mixing... Overalls (washable cotton or disposable). PVC leggings to cover all skin of legs. PVC gauntlet gloves. Rubber/PVC steelcap boots – chemical resistant. Face shield or safety glasses.
---	--

3. Equipment:

Provide and maintain all equipment listed below.

Equipment	Purpose	Requirements
Knapsack Sprayers	To spray an accurate dose	With strainers and no leakage
Nozzles	To spray an accurate dose and spot size	Cone, FL 15VC or 18VC
Measuring Tumbler	To regularly audit 20ml measured dose	
Measuring Pole	To check spot size	With 1.5 m mark on it
Measuring Jugs	For mixing and calibration of 20ml per spot	With clear markings
Spill Kit	For collecting spilt herbicide and contaminated soil. See spraying technique	With shovel and heavy plastic bag with a tie on top and absorbent material
	5. – f) below	

4. **Mixing:** *Contractor or a senior crew member must do this task. Both must hold an Applied Growsafe Certificate.*

- Have a spill kit at the mixing site and when transporting herbicide.
- Carry out mixing on a large flat surface.

Signed by:
Project Coordinator :

Contractor:

Date:

- c) Mix only enough herbicide for the day and allow for weather change.
- d) Always stir well the pure and mixed herbicide.
- e) Half fill the mixing tank or container with water, **then** add concentrated herbicide while stirring, **then** fill the rest of the tank with water. For powder or granule herbicides, you may need to mix them into a slurry prior to pouring them into the mixing tank.
- f) Add spray marker dye and wetting agent (if required) after all other mixing has been done. Then stir gently.
- g) Avoid carrying mixed chemical over from previous day.

5. Spraying Technique:

- a) Develop a rhythm during spraying by keeping up an even walking pace.
- b) Hold the wands at a sufficient height above the ground (generally 1m above ground approximately at waist height) to give a required spot size (1.5 m in diameter). Use dye, measuring pole, and measuring tumbler to check the dosage and spot size regularly.
- c) On slopes, spray the tree from the side or from the uphill side. Two thirds of the spot needs to be on the top side of the tree. This is important because the weeds on the top side of the tree have a “height advantage”.
- d) Always mix/stir liquid within the sprayer after any breaks.
- e) Do not put your foot/feet by the target tree when spraying.
- f) Always have a spill kit at the worksite. Pick up any spilt herbicide and contaminated soil using the kit, then label the bag with the type of herbicides, whether it is a concentrate or herbicide mix. Return the bag to the Forest Manager.
- g) When refilling knapsacks, use a jug or funnel to prevent spillage.

6. After The Operation:

- a) Empty herbicide containers: Triple rinse with water and pour the waste water into another empty container. Keep the lids on when cleaning inside and outside. Then return all containers to the Forest Manager.
- b) Rinse the knapsack sprayers and measuring gear with water. Put the waste water into an empty container (or a container being used for rinsing).
- c) Keep daily records of herbicide usage by completing a Daily Record Sheet. Also mark up the area being treated on the map. Provide this record to the Forest Manager.

7. Safety:

- a) Read and understand the Safety Data Sheets (SDS).
- b) Avoid herbicide contact with the skin, eyes, and avoid breathing fumes, dust, or drift.
- c) Know the location of clean water suitable for personal first aid.
- d) Avoid spraying upwind or downwind of others.
- e) Wash your hands before smoking or eating.
- f) Prepare clothes in case of a heavy spill or for alternative work.

CONTRACTOR MONITORING AND EVALUATION FORM

Contract Name: _____

Contractor Name: _____

Type of Monitoring:
(delete one - or use
same form for both)

CONTRACT MONITORING

POST CONTRACT EVALUATION

Auditor Name: _____

Date: _____

MONITORING

Hazard Management	Yes/No/NA	Health and Safety Systems	Yes/No/NA
The health and safety plan is in active use		Health and safety procedures are being followed	
Hazards are being regularly reviewed		A safety person is nominated and readily available	
New hazards are being identified and controlled		Health and safety is discussed at staff meetings	
General housekeeping of the work area is good			
PPE is used effectively and is appropriate to the task			
The public is protected from the site			
Plant and equipment is guarded/ tagged/maintained			
Plant and equipment is being operated on a safe manner			
Hazardous substances are being appropriately controlled			
There is evidence of staff briefings occurring			
Emergency Plan is on site, and staff understand it			
First Aid facilities are available			
Appropriate signage is in place			
Temporary Traffic Management Plans are in place			

Accident and Incidents

Incidents, incl no injury and near misses have been appropriately recorded
The Department has been notified of all incidents
Hazard management has been reviewed following incidents

Employee Competence

Employees are trained and competent for the work being undertaken
A qualified first aider is always available

Comments/Recommendations/Corrective Actions:

POST CONTRACT EVALUATION

Health and safety standards met in conformance with contract requirements? Yes No N/A
Contractor was responsive and professional? Yes No N/A
Are you satisfied with the quality of the work performed by the contractor? Yes No N/A
Would you use the contractor for future work? Yes No N/A
Contractor Overall H&S Performance (select one): Excellent Good Fair Poor
General Comments incl. best practice and improvements:

Signed: _____

**WHANGAWEHI CATCHMENT
MANAGEMENT GROUP
INCORPORATED**

**CONTRACTORS' BOOKLET
HEALTH SAFETY & ENVIRONMENT
(Minor Works)**

*To be completed for all minor works
where Contractors are used*

Project Name: _____

Project Timeframe: _____

Project Manager: _____

Please return completed signed documents to
the Whangawehi Catchment Management Group
Committee for filing

Introduction	1
What are 'Minor Contracts'?	1
Major Contracts	1
Requirements for Contracts	2
CMW1a – Minor Contractor Health & Safety Selection Criteria	3
CMW1b - Contractor's Acknowledgement of Health & Safety Obligations	4
CMW2 - Contractor Induction Details	5
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Introduction

As the 'Principal', the Whangawehi Catchment Management Group (WCMG) has important health and safety responsibilities that are not necessarily devolved when employing a contractor.

Section 18, Duties of Principals, of the Health and Safety in Employment Act 1992 focuses on taking all practical steps to ensure that contractors and subcontractors, or their employees, are not harmed while undertaking work on the contract.

Section 16, Duties of Persons with Control of Places of Work also places responsibilities on WCMG and applies where a contractor, subcontractor, or their employees, may be exposed to hazards in a workplace other than those arising from the work the contractor is engaged to do.

The Principal's duty under the Act is limited to matters, which the Principal can reasonably be expected to control.

The action the Principal will need to take will depend on some of the following considerations:

- Size and nature of the contract.
- The type of work to be undertaken.
- The contractor's knowledge of the work to be undertaken.
- The nature of hazards the contractor may undertake.
- The use of subcontractors.

What are 'Minor Contracts'?

In the main Minor contracts are characterised by:

- Being short term and lower cost.
- Being ongoing contracts that are narrowly focused and/or where the work is of a routine nature.
- Not being tendered.
- Being for work that has clearly defined hazards that are effectively covered by 'standard' control measures.

Major Contracts

Major contracts generally:

- Have significant hazards which are associated with the contract.
- Are a longer term contract.
- Are tendered and over a \$50,000 value.
- Are where a number of subcontractors may be involved.

Requirements for Contracts

Major Contracts

Will be tendered and in terms of Health and Safety, must include appropriate reference to the requirements of the Health and Safety in Employment Act. Failure to supply this information will void the tender.

'Maintenance' Contracts – Generally Minor Contracts

Jobbing contracts, usually involving recurring activities, over a period of time. May not be tendered, may be by quote or straight engagement through past service.

Contractors in this category will be required to provide information supporting their compliance with relevant health and safety requirements. WCMG documentation that needs to be signed by contractors will help with this requirement. (CMW1b)

One-off jobs/Projects – Minor Contracts

As for Maintenance contracts. (CMW1b)

CMW1a – Minor Contractor Health & Safety Selection Criteria

(This checklist is used to determine if the contractor has met the contracts health and safety weighting requirement. To be completed annually. Make an appointment with the contractor's project manager to discuss the items below):

Company Name:
Contact Person:
Contact Details:

Insurances

Insurance Type	Yes	No	Comment
Public liability insurance \$2 million			
Professional indemnity \$1 million			

Previous Post Contractor Review

Document to be Verified	Yes	No	Comment
Post contractor review document			

External Verification (Use either of the audit types below)

Document to be Verified	Yes	No	Comment
ACC – WSD entry			
ACC – WSMP – Primary			
ACC Partnership Programme - Primary			
HB Safety Forum or NZS 4801			
References			

Internal Verification (Use either of the audit types below)

Document to be Verified	Yes	No	Comment
Employees trained for tasks			
Hazard management processes and hazard registers			
Accident/incident reporting and investigation			
Emergency response processes			

Comments:

Sign Off:

Contractor's Manager: _____ **Date:** _____

Principal's Project Manager: _____ **Date:** _____

Contractors Health and Safety Booklet (Minor Works)

CMW1b - Contractor's Acknowledgement of Health & Safety Obligations

The Principal:	Whangawehi Catchment Management Group Incorporated
The Contractor:	
Description of Services:	

The Contractor acknowledges that:

1. They understand their obligations to themselves, their subcontractors (if used) and their employees under the Health and Safety in Employment Act 1992 and confirm their intention to comply at all times with those obligations while working on this contract.
2. They recognise that the Principal is responsible for advising the nature of, and methods of controlling, hazards specific to the Principal's business or work site and that the Contractor shall apply best industry practice to ensure the safety of all involved at all times.
3. Where appropriate the Principal will notify the Contractor of the emergency procedures, location of emergency equipment, any known hazards and/or no-go areas within the working area of the Contractor.
4. The Contractor shall ensure that all their subcontractors (if used) and their employees are informed of the above and that no person shall be engaged on the work site without being so informed.
5. The Contractor has a Health and Safety management system that ensures their compliance with the legislation in connection with this contract.
6. They have environmental management systems in place that avoid or mitigate any actual or potential adverse effect on the environment that may result from work carried out in connection with this contract.
7. They will advise the Principal and HBRC Pollution Hotline immediately of any environmental incidents or potential adverse effect and ensure that correct procedures are followed.
8. The Contractor agrees to make available for inspection by the Principal, any documentation related to health and safety in connection with this contract.
9. The Principal has the right to monitor the Contractor's work and carry out safety audit(s) from time to time during the process of the contract.
10. The Principal has the right to suspend work at the Contractor's expense where the Principal is not satisfied that all practicable steps are being taken to ensure the health and safety of employees and others in connection with the contract.
11. The Contractor will advise the Principal immediately of any accident on the contract work site and ensure that the correct reporting process is followed in terms of a serious harm accident.
12. The Contractor will advise the Principal immediately of any new hazard(s) created during the contract and will take all practicable steps to avoid harm being caused to any person as a result of such hazard(s).
13. Before beginning work on the contract the Contractor will carry out a systematic identification of hazards likely to be encountered and will develop controls for all those identified as being significant hazards.
14. Where not on site themselves, the Contractor nominates _____ as their onsite agent.

Contractor: _____ **For Principal:** _____

Name (Please Print): _____ **Name (Please Print):** _____

Date: ____/____/____ **Date:** ____/____/____ *Revised October 2010*

Contractors Health and Safety Booklet (Minor Works)

CMW2 - Contractor Induction Details

(Where there is an ongoing contractual relationship, this induction form is to be completed annually. Make an appointment with the contractor's Project Manager to discuss the items below):

Name: _____

Contract Details: _____

Timeframe: _____

Contact Details

	Name	Phone/Cell	Fax	Email
Principal				
Contractor				
Project Manager				
Site Safety Supervisor				
Sub Contractor				

Discussion Checklist

Items to be Discussed	Date	Yes	No	N/A
Contract agreed and signed				
Public liability insurance				
Hazard management process				
Hazard Control Plans/Code of Practice				
Notifiable hazardous works				
Site/Project Safety Plan/Hazard Register				
Environmental Management Systems				
Accident/incident reporting process				
Emergency response process				
Staff trained to carry out works				
Tasks Safety Analysis/Training				
Safety equipment calibrated/certified				
Personal protective equipment				
Impact on utilities – eg, power, pipework				
Traffic Management Plan				
Protection of public				
Usage of sub-contractors				
New staff induction/Training				
Site inspection				

Comments:

Sign Off:

Principal's Project Manager: _____ **Date:** ____/____/____

Contractor's Project Manager: _____ **Date:** ____/____/____

Contractors Health and Safety Booklet (Minor Works)

CMW2a - Principal's Code of Practice Register

Appropriate Principal's COP's to be used for this contract - if any:

Project: _____ Date: _____

CODES OF PRACTICE				
Tick Relevant COP No(s)	COP No	Hazard Control Plan/Code of Practice	Received and Acknowledged	Date
	0	GENERAL FIELDWORKER OPERATIONS		
	1	SCRUBBAR OPERATIONS		
	2	CHAINSAW OPERATIONS		
	3	SMALL BOAT OPERATIONS		
	4	WATERWEED CUTTING OPERATIONS		
	5	4WD DRIVING OPERATIONS		
	6	PILE DRIVING AND POST RAMMING		
	7	OPERATION OF FORKLIFT		
	8	CONTAINMENT OF HAZARDOUS SPILLS		
	9	WORKING ON THE ROAD		
	10	BURNING RUBBISH PILES		
	11	NIGHTSHOOTING AND FIREARM USE		
✓	12	USE OF MOTORCYCLES/ATVS		
	13	USE OF LONGREACH MOWERS		
	14	USE OF POISONS		
	15	USE OF CARROT CUTTER		
	16	WORKING WITH AIRCRAFT		
	17	SCUBA AND SNOKEL OPERATIONS		
	18	WORKING AROUND UTILITIES		
	19	WORKING WITH TRACTORS		
	20	PUMP STATION OPERATIONS		
	21	WORKING IN CONFINED SPACES		
	22	WORKING IN FORESTS		
	23	WORKING IN/AROUND FLOOR PIT		
	24	WORKING WITH VEHICLE HOIST		
	25	DISTANT WORK SAFETY POLICY		
	26	VISITORS		
	27	EMERGENCY EVENTS		
✓	28	DISCOVERY OF DRUG CROPS		
	29	ELECTRICAL SAFETY		
	30	WORKING AT HEIGHTS (GAUGING)		
	31	WORKING AT HEIGHTS (LADDERS)		
	32	MOTOR VEHICLE USE		
	33	ELECTRIC FISHING		
	34	FLOOD EMERGENCY WORK		
	35	SUSPICION OF CRIMINAL ACTIVITIES		
	36	POISONOUS PLANTS		
	37	EXCAVATOR POLE PLANTING		

Contd...

Contractors Health and Safety Booklet (Minor Works)

CODES OF PRACTICE Contd...				
Tick Relevant COP No(s)	COP No	Hazard Control Plan/Code of Practice	Received and Acknowledged	Date
	38	EXCAVATOR LOPPING		
✓	39	SAMPLING		
	40	BAIT MIXER		
	41	CARROT SCREENER		
	42	AGGRESSIVE DOGS		
	43	PIPE AND GABION CONSTRUCTION		
	44	DAVIDSON BAIT FEEDER		
	45	HANDLING, STORING AND TRANSPORTING HAZARDOUS SUBSTANCES		
✓	46	LOADING ATVS/MOTOR BIKES ONTO UTES/TRAILERS		
	47	EFFLUENT POND INSPECTIONS		
	48	WORKING IN AND AROUND PUMP SHEDS DURING COMPLIANCE AND INCIDENT RESPONSE VISITS		
✓	49	ENTERING PRIVATE PROPERTY		
✓	50	RECREATIONAL WATER QUALITY MONITORING		

Contractors Health and Safety Booklet (Minor Works)

CMW3 - Project Monitoring Sheet

(This document is for the Principal's use when monitoring the performance of the Contractor. It is a record of Health & Safety and general issues discussed between contractor/principle for the project year. Should be at least two entries per six months and at least one entry for shorter contracts):

Date	Attendees	Meeting Discussion Record: Suggested topics to discuss: Update on hazards, warning signs displayed, work area cordoned off as appropriate, activities for day, incident/accidents, supervisor, sub-contractors, hazardous substances, corrective actions identified by principal's representative, informing principal's representative when on/leaving site and results from workplace inspections	Corrective Action required	Review Date

(This form is to be used to report any/all Health & Safety issues – eg, accidents, incidents, hazards, improvement ideas, near misses etc – a copy must be provided to the Principal):

The employee completes the first two sections of this form. The Manager/First Aider only completes this form if the employee is too injured/unwell to do so themselves. Fill in the reserves side for injuries only.				
Name:		Date of Incident:		Time of Incident:
Plant/Equipment Description:				
Hours worked before incident occurred:				
Incident Location:				
Period of Employment: ☐ Non-Employee ☐ 1 st mth ☐ 1-6 mths ☐ 6 mths – 1 yr ☐ 1-5 yrs ☐ over 5 yrs				
Type of Report: ☐ Accident ☐ Incident ☐ Environmental Incident ☐ Hazard				
☐ Injury/Illness ☐ Improvement ☐ Near Miss ☐ Property Damage ☐ Other (describe below)				
Description: Describe the incident/issue in detail – eg, how the accident occurred, what the hazard is (if possible include sketches, diagrams – use a separate sheet if necessary). Complete the back of this form if you have been injured.				
Recommendation for Improvement:				

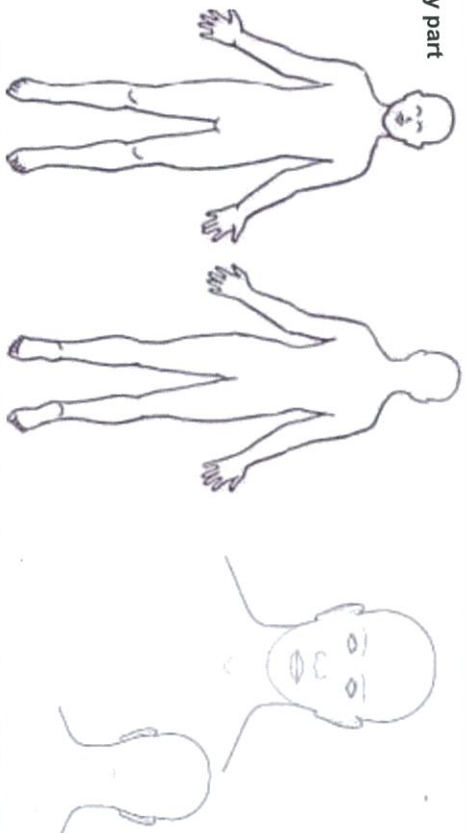
Employee's Signature: _____ Date: _____

Corrective Action Plan (Completed by Team Leader/Manager)	
Corrective Action to be taken:	
Responsibility:	Completed by Date:
Corrective Action to be taken:	
Responsibility:	Completed by Date:

Full Investigation Required: Yes ☐ No ☐

Project Manager's Signature: _____ **Date:** _____

Injury Details Only

Accident type/mechanism: ☐ Fall, from elevation ☐ Struck against object ☐ Chemicals/substance ☐ Other (specify) ☐ Fall, same level ☐ Struck by object ☐ Electricity ☐ Slip or trip (no fall) ☐ Caught in, under, between ☐ Temperature extremes ☐ Overexertion ☐ Motor vehicle ☐ Noise/sound/pressure ☐ Radiation or energy ☐ Insect bite/sting ☐ Glass																																															
Agency of accident: ☐ Machinery (fixed plant) ☐ Chemicals or chemical product ☐ Mobile plant or transport ☐ Materials or substance ☐ Powered equipment or tool ☐ Environmental agency (dust or gas) ☐ Non powered equipment or tool ☐ Animal, human or biological agency ☐ Bacterial or virus																																															
Accident type/mechanism: ☐ Fracture of spine ☐ Puncture wound ☐ Other fracture ☐ Poisoning or toxic effects ☐ Dislocation ☐ Multiple injuries ☐ Sprain or strain ☐ Head injury ☐ Internal injury of trunk ☐ Amputation, including eye ☐ Open wound ☐ Superficial injury ☐ Bruising or crushing ☐ Foreign body ☐ Burns ☐ Tumor (malignant or benign) ☐ Nerves or spinal cord ☐ Mental disorder ☐ Damage to artificial aid ☐ Disease, nervous system ☐ Disease, skin ☐ Disease, digestive system ☐ Disease, respiratory system ☐ Disease, circulatory system ☐ Disease, musculoskeletal system ☐ Disease, infectious or parasitic																																															
Indicate body part affected: 																																															
Describe what treatment was given on site and any other details relating to the specific injury:																																															
Name of First Aider:																																															
Treatment given:																																															
<table border="1"> <tr> <td colspan="4">HBRC Only</td> </tr> <tr> <td colspan="2">Severity of injury/illness</td> <td>☐ Work related</td> <td>☐ Non work related</td> </tr> <tr> <td>☐ First Aid</td> <td>☐ Medical treatment</td> <td>☐ Lost time/restricted</td> <td>☐ Serious harm</td> </tr> <tr> <td colspan="3">Review item</td> <td>Yes/No</td> </tr> <tr> <td colspan="3">Project Manager notified Signed: _____</td> <td>Date: _____</td> </tr> <tr> <td colspan="3">Hazard Register updated</td> <td></td> </tr> <tr> <td colspan="3">Training organised</td> <td></td> </tr> <tr> <td colspan="3">Process or procedure amended</td> <td></td> </tr> <tr> <td colspan="3">Corrective action completed and discussed with employee and Team Leader/Manager</td> <td></td> </tr> <tr> <td colspan="3">Environmental Incident: ☐ Near Miss ☐ Minor Spill/Release ☐ Remediation Work Required</td> <td></td> </tr> <tr> <td colspan="3">☐ Serious Effect ☐ Major Effect</td> <td></td> </tr> </table>				HBRC Only				Severity of injury/illness		☐ Work related	☐ Non work related	☐ First Aid	☐ Medical treatment	☐ Lost time/restricted	☐ Serious harm	Review item			Yes/No	Project Manager notified Signed: _____			Date: _____	Hazard Register updated				Training organised				Process or procedure amended				Corrective action completed and discussed with employee and Team Leader/Manager				Environmental Incident: ☐ Near Miss ☐ Minor Spill/Release ☐ Remediation Work Required				☐ Serious Effect ☐ Major Effect			
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Environmental Incident: ☐ Near Miss ☐ Minor Spill/Release ☐ Remediation Work Required																																															
☐ Serious Effect ☐ Major Effect																																															

H&S Officer's Signature: _____ Date: _____

Contractors Health and Safety Booklet (Minor Works)

CMW5 - Health and Safety Post Contract Evaluation

Contractor's Name	
Period of Contract	
Nature of Contract	
Attendees	

Item	Criteria	Acceptable	Requires Attention	Comment
Incident and Accident reporting and recording including environmental incidents	Were there any incidents/accidents involving the Contractor during the contract period? - If yes, was the incident/accident reported to the Principal within the required timeframe? - Were the outcomes of the investigation shared with the Principal as appropriate?			
Hazard Identification	Did the contractor participate in hazard management including reporting hazards to the Principal as appropriate, including hazards they might bring to the site?			
Health and Safety Processes	- Were the company processes available for inspection on site including the relevant registers – for example, hazard, injury and training? - Did the Contractor complete the required Daily Project Report?			
Personal Protective Equipment (PPE)	Were the Contractors' employees observed wearing the required PPE on the work site?			
Safety Equipment	Was the safety equipment on site regularly checked and certified as appropriate?			
Restricted work areas identified	Was the required signage, chains, fencing or tape used to isolate the contract work as appropriate?			
Worksite inspections	- Did the Principal carry out "formal worksite inspections"? - Did the Contractor complete the corrective actions within the required timeframe? - Were the same issues being raised with the Contractor?			
Feedback	Any Health and Safety comments from other Principal project managers or employees?			
Recommendation	Are there any suggested improvements for the Contractor?			

Any concerns about using this Contractor in the future? _____

General Comments/Outcomes: _____

CMW5a - Contractor Performance Review (as required for specific contracts)

Contract	
Contract Number	
Contractor	
Contract Duration	

ITEM	PASS	COMMENT
Performance		
Health and Safety		
Cert Practical Completion		
Defects Liability Cert		

Other Comments:

om: Malcolm Smith [MHSMITH@doc.govt.nz]
nt: Thursday, 26 June 2014 9:14 a.m.
nt: Nicolas Caviale - Delzescaux
bject: Emailing: js03



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- [Documents/Procedures](#)
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- [User Manual](#)
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 - [Standard Reports](#)
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- [All Training Records](#)
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 - [Standard Reports](#)
 - [DOC Built Reports](#)
- [Safety Plan](#)
 - [Add New Safety Plan](#)
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 - [DOC Built Reports](#)
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 - [DOC Built Reports](#)
- [Competency](#)
 - [All Employee Licenses](#)
 - [All Competencies](#)
 - [All Employee Competencies](#)
 - [Standard Reports](#)
 - [DOC Built Reports](#)

[Logout](#)

Safety Plan Summary: 9349-Whangawehi Stream Planting

Details		Actions Required
Project/Program Name	Whangawehi Stream Planting	Action Title Person Responsible Date Due
Reporting Line	Conservation Services : CS Lower NI	
Site		No Associated Actions
Location	O'Briens Farm	
Person Responsible	Malcolm Smith	Notes & Document Links Hazard/Risk Register [Select Task Select a task which will transfer all the tasks hazards into this] safety plan. Note: You can add and delete hazards or add local controls specific to this plan in the hazard section below
Start Date	25 Jun 14	
Review Date	25 Jun 15	
Work Description		
Planting native trees on river flats adjacent to the Whangawehi Stream with volunteers and others involved and supporting the Whangawehi Catchment		

azard and Emergency Requirements

General Comments on Safety Plan

ssisting Whangawehi Catchment Management Group to plant native trees on
it and Sue O'Briens property on the Mahia East Coast Road.

Emergency Plan

alcolm Smith Cell Phone 0274998527
OC VHF radio Channel 4 Te Kapu.
allsign Waitoa 3

Emergency Contacts

rst Aid Kit to be held on Site Designated First Aider Malcolm Smith
olunteer Ambulance Crew at Mahia Beach.
all 111 for back up. Subject also to a overarching H & S plan for the O'Brien
rm.

OSH Notifiable Work

Work Permit Required

Last Updated

Malcolm Smith on 25 Jun 14 17:02
[Change Log] [Return]

s Identified

azard Title

Significant

Controls

**Residual
Work
Risk
Permit
Rating**

Local Controls

Delete

quad use

Description

ipping over. Load falling off.
ire/explosion, spills. Falling off
amp, spray residue splashing onto

Yes

[]

No passengers shall be carried unless specified
in manufacturers specifications. Ensure
manufacturers weight limits are shown on front
and rear carriers of all quads. Follow the
manufacturers / suppliers recommended
maintenance plan for all servicing / repairs.

4. High

rider or impact with ute cab.
Sliding, rolling, bouncing, losing control. Poorly maintained vehicle. All could result in serious injury or fatality.

Causes

<p>Rollover, loss of control leading to fatality</p>

380

Backcountry work/remote locations/Field travel

Yes

Description

Field visits required for concession/licence inspections. Usually short and rarely overnight, but preparations should include this possibility

Prolonged period in the backcountry. Isolation. Weather extremes. Becoming lost. Injury due to slip, trip or fall. Negotiating steep or rough terrain. Pre-existing medical condition. Being shot by hunters.

Team leader appointed and ensure; -
Communications and backup comms as per local procedures - Emergency procedures in place. Training and mentoring for less experienced staff -
Be aware of medical conditions of staff -
Only experienced and authorised staff may work alone. Detailed trip intentions supplied

[]

4. High



460

Handtool use

Yes

Description

Use of variety of handtools including manual/electric screwdrivers. hammer, grubber etc. Heavy objects. Flying objects. Extended use (loss of control). Sharp blades/objects. Impacts,

Correct sharpening procedure used and tools maintained regularly checking for loose heads on axes, slashers, grubbers etc. Tools maintained regularly. Where necessary, warning signs in area of operations where public have access.

[]

2. Low



entanglement. Vibration. Public access.

Causes

>Hit by tool of flying

jects</p>

asp, bee, insect stings

Description

llergic reaction, anaphylactic

lock etc.

diverse weather (sun, heat)

Description

xposure to direct sunlight/UV.

eat exhaustion.

adiation/dehydration/hyperthermia

Causes

p>Exposure could result in
diverse health effect</p>

isitor/Public management

Description

risks to safety of visitors in the

orkplace - falls, tool injury, other

odily injury, etc. Dealing with

motional people.

WD use

Description

Vehicle sliding out of control.
Vehicle rolling. Loose equipment
within the vehicle. Rolling onto or

Yes

Yes

Yes

Identify areas of possible wasp
activity. Identify allergies within team
members

[]

2. Low

Staff awareness of environment

[]



[]

Ensure vehicle is registered for towing
weight and correct label is
displayed. Vehicles will have CIMS and
effective communications in place

[]

4. High



[]

crushing by vehicle. Vehicle being the cause of fire. Inadequate rated tow hook could cause serious injury.

Causes

<p>Loss of control causing serious injury or death</p>

1147 Adverse weather (rain, cold, storm) Yes Prepare for adverse weather and monitor staff []

Description

Wind, cold, glare, rain (flooding), lightning storm, hail. Hypothermia, frostbite

3.
Medium

Causes

<p>Adverse weather could result in serious harm or fatality</p>

2732 Livestock, working around Yes Staff awareness []

Description

Working around potentially dangerous livestock like bulls, stags, rams etc.

2. Low

12469 Contact with dogs Yes If contact with dogs is anticipated, discuss fully with staff on how the situation is going to be managed []

Description

Dog bites causing injury.

3.
Medium

[Delete Selected Hazards]

Change Comments

Please enter brief details of your changes to this safety plan.

Date

26 Jun 2014 08:55

Details of Change

[Add]

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