Mahia Coordinated Management Area Feral Goat Control

Operational & Risk Management Plan

Prepared for the Hawkes Bay Regional Council By Habitat BPM Ltd

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 programis proposed in the Whangawehi Catchment over the next three years. The required control of feral goats to enable this plantingalso gives opportunity toexpand the control anddevelop improved management offeral 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 theywould 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 willbe 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 stage3) 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*
- 6,000plants 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 asfollows:

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 sectionis 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 is unable to 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
1nd 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 beingeradication.

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
Heli 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).

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

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

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

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

2015/16Hunter **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 isGraham 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 startinga review of the following operationalrisk 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 musterers. 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).

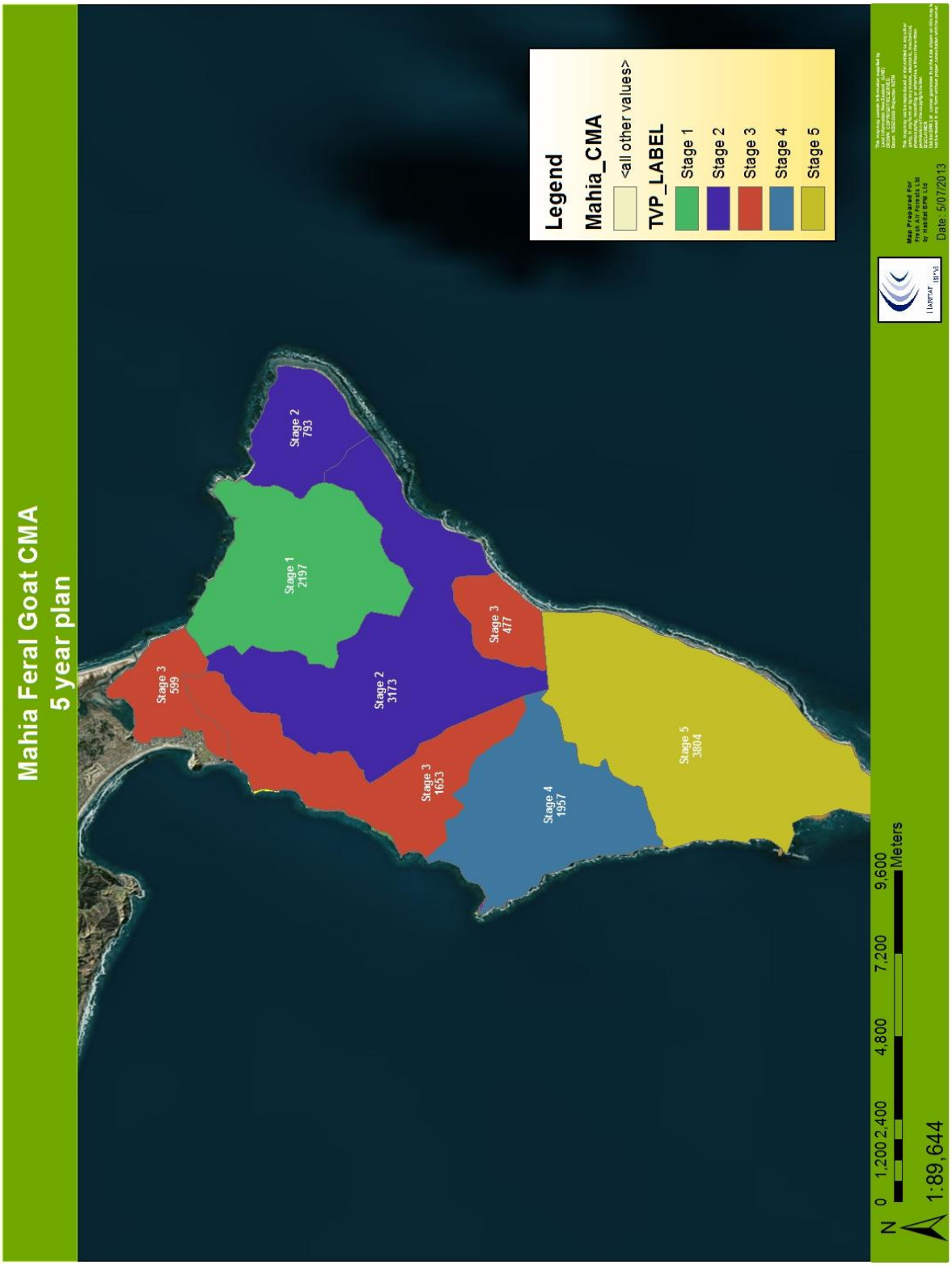
The land holder agrees to contain the goats with a one or two paddock buffer from the respective sensitive boundary and conduct the weed control in the buffer paddocks by another method.

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

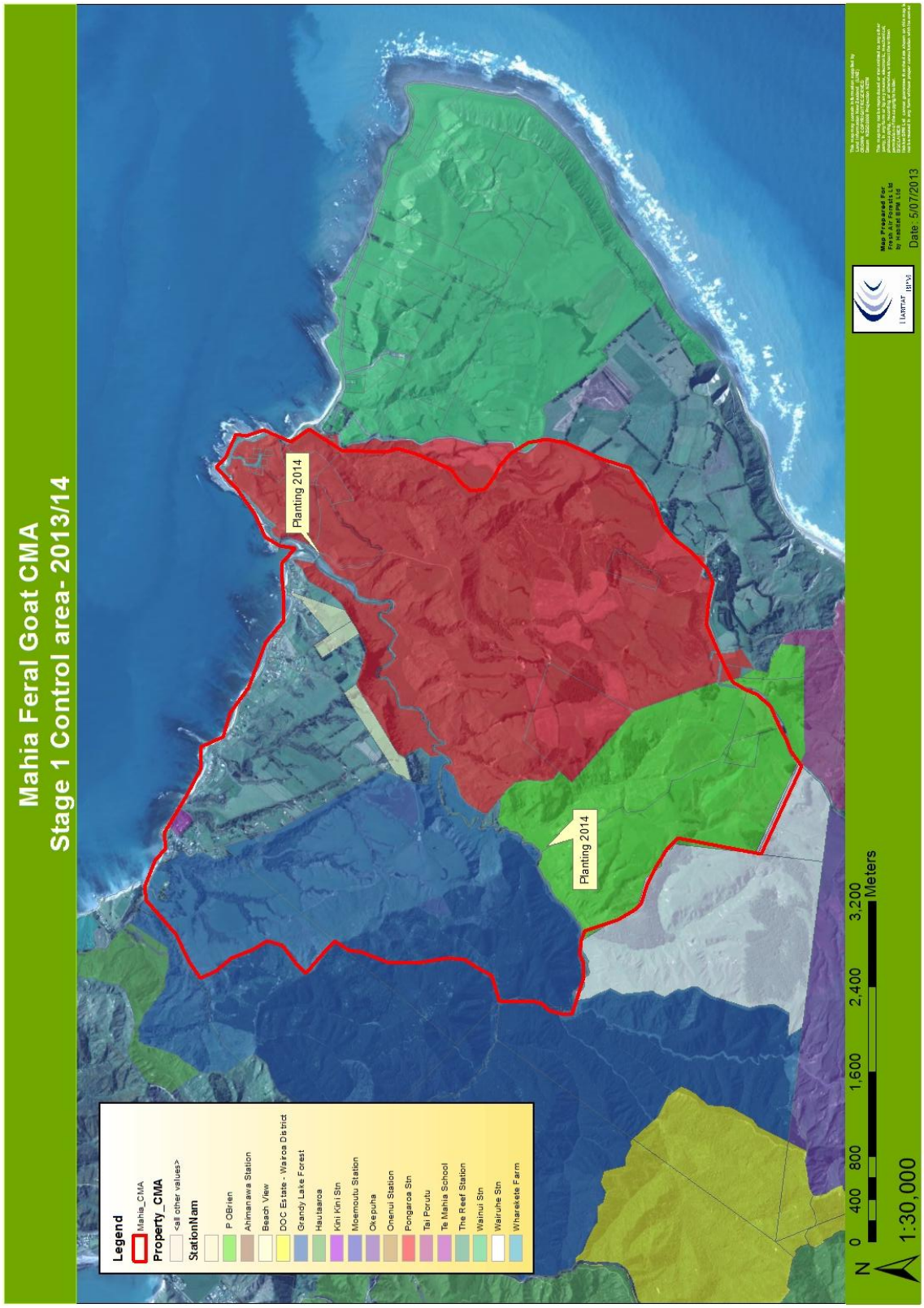
Daily work procedure:

- 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 ofwalkie 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 2: Stage 1


Mahia Feral Goat CMA
Stage 1 Control area- 2013/14
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Property_CMA
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P OBrien
Ahimanawa Station
Beach View
DOC Estate - Wairoa District
Grandy Lake Forest
Hautaroa
Kini Kini Stn
Moemoutu Station
Okepuha
Onenui Station
Pongaroa Stn
Tai Porutu
Te Mahia School
The Reef Station
Wainui Stn
Wairuhe Stn
Wharekete Farm
Planting 2014
Planting 2014
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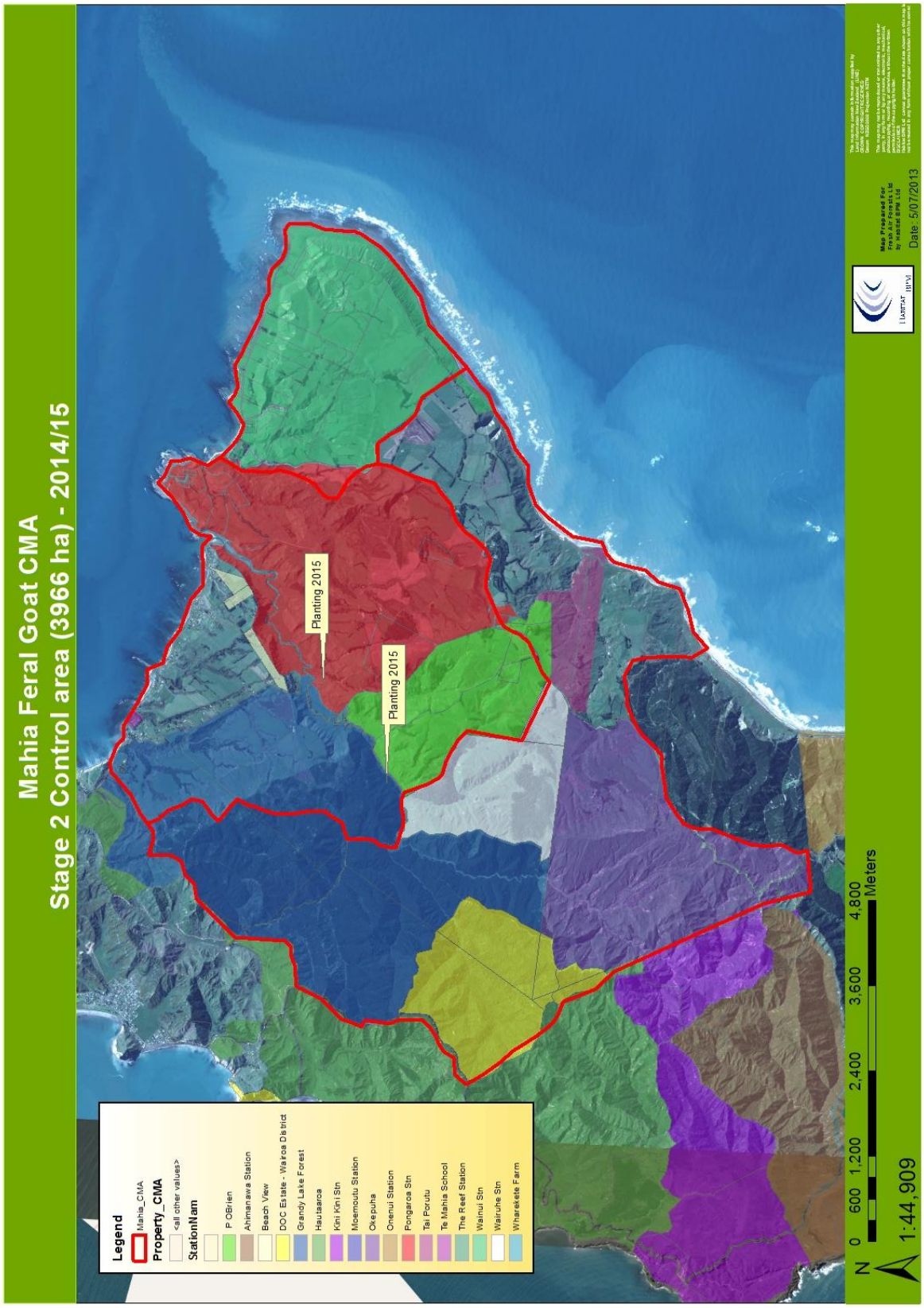
Date: 5/07/2013

Map 3: Stage 2


Mahia Feral Goat CMA
Stage 2 Control area (3966 ha) - 2014/15
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Property_CMA
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P OBrien
Ahimanawa Station
Beach View
DOC Estate - Wairoa District
Grandy Lake Forest
Hautaiarca
Kini Kini Stn
Moemoutu Station
Okepuha
Onenui Station
Pongaroa Stn
Tel Porutu
Te Mahia School
The Reef Station
Wainui Stn
Wairuhe Stn
Wharekete Farm
Planting 2015
Planting 2015
0 600 1,200 2,400 3,600 4,800
Meters
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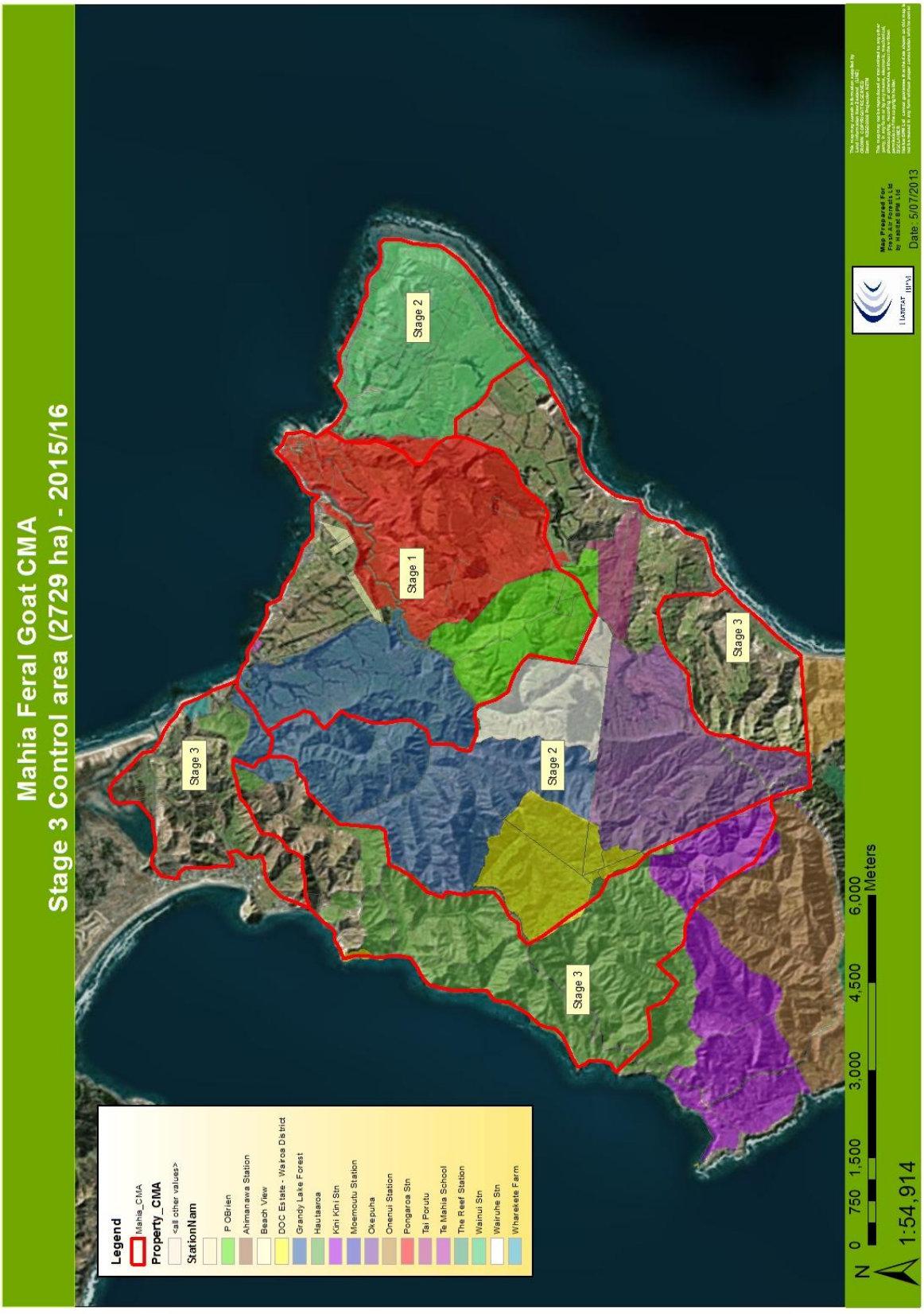
Map Prepared For
Fresh Air Forests Ltd
by Habitat BPM Ltd
Date 5/07/2013

Map 4: Stage 3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Stage 3 Control area (2729 ha) - 2015/16
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Ahimanawa Station
Beach View
DOC Estate - Wairoa District
Grandy Lake Forest
Hautaanoa
Kini Kini Stn
Moemoutu Station
Okepuha
Onenui Station
Pongaroa Stn
Tai Porutu
Te Mahia School
The Reef Station
Wainui Stn
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Map Prepared For Fresh Air Forests Ltd by Habitat BPM Ltd
Date: 5/07/2013