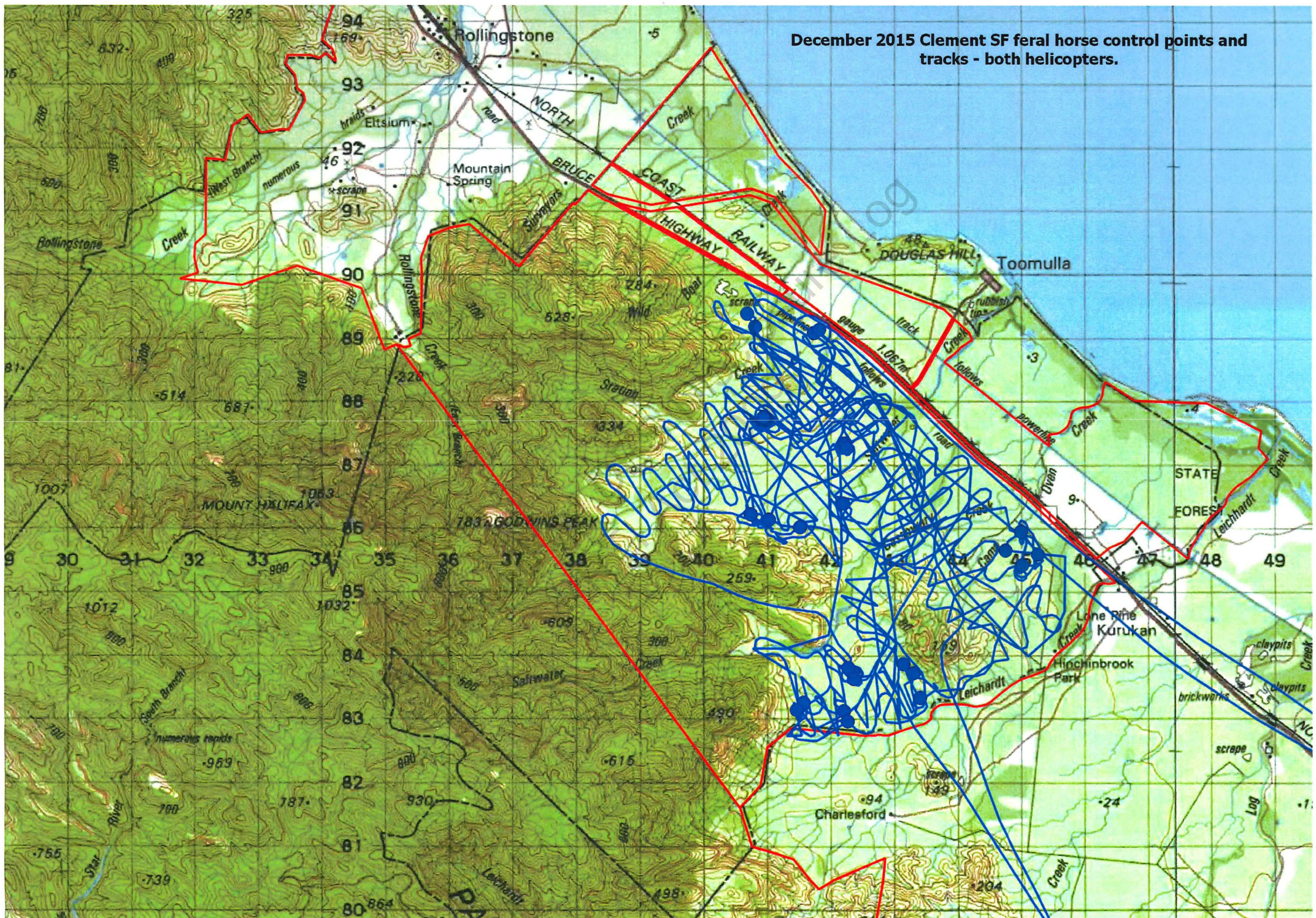
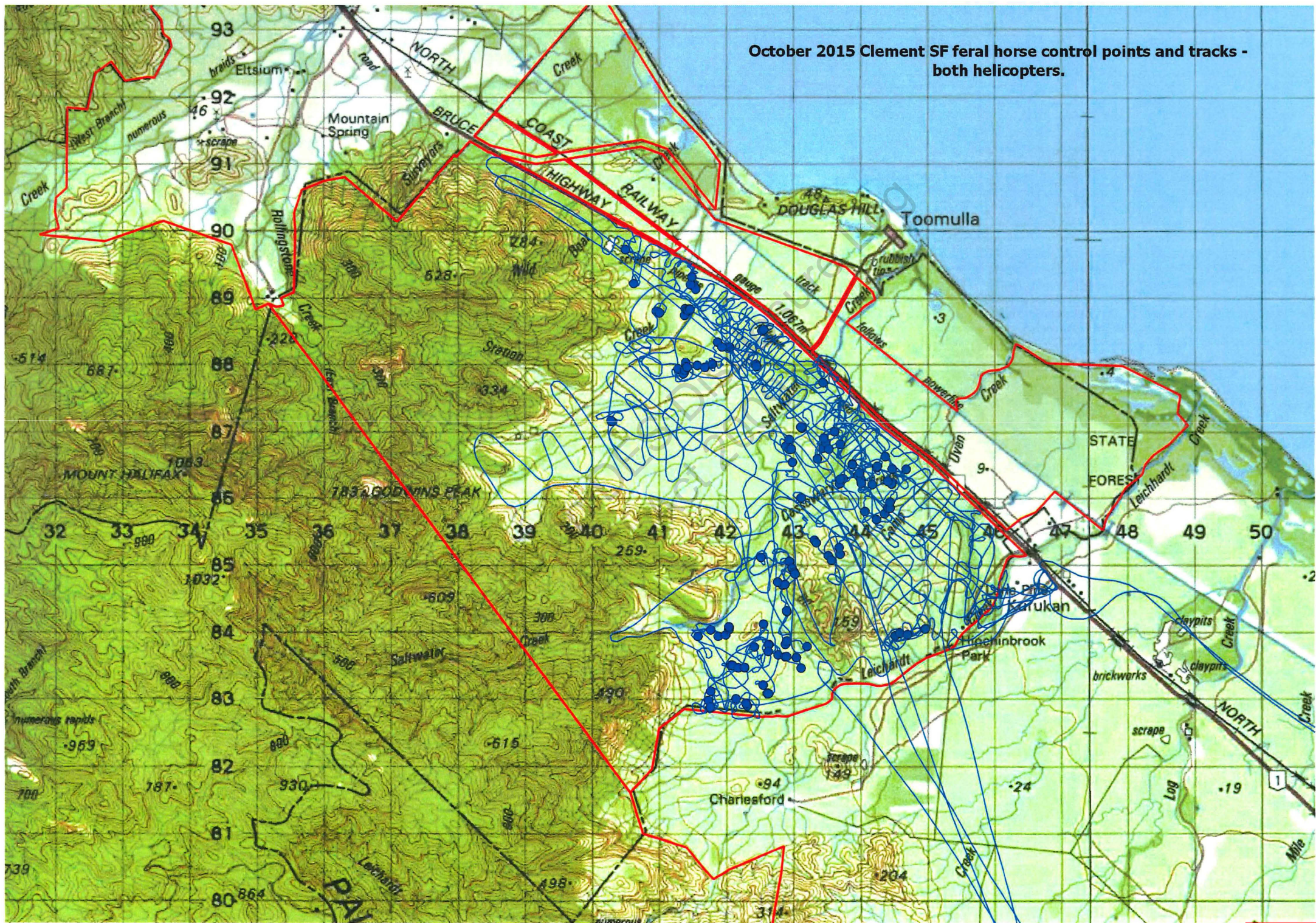


December 2015 Clement SF feral horse control points and tracks - both helicopters.





October 2015 Clement SF feral horse control points and tracks - both helicopters.



Clemant State Forest

Existing Fence: Clemant SF Working Boundary

Freehold Property
2RP742572

Leichardt Ck

Bruce Hwy

Setter Road

Legend

- Leichardt Ck Clemant SF Corridor
- Setter Rd
- Existing fence
- Protected Areas of Queensland



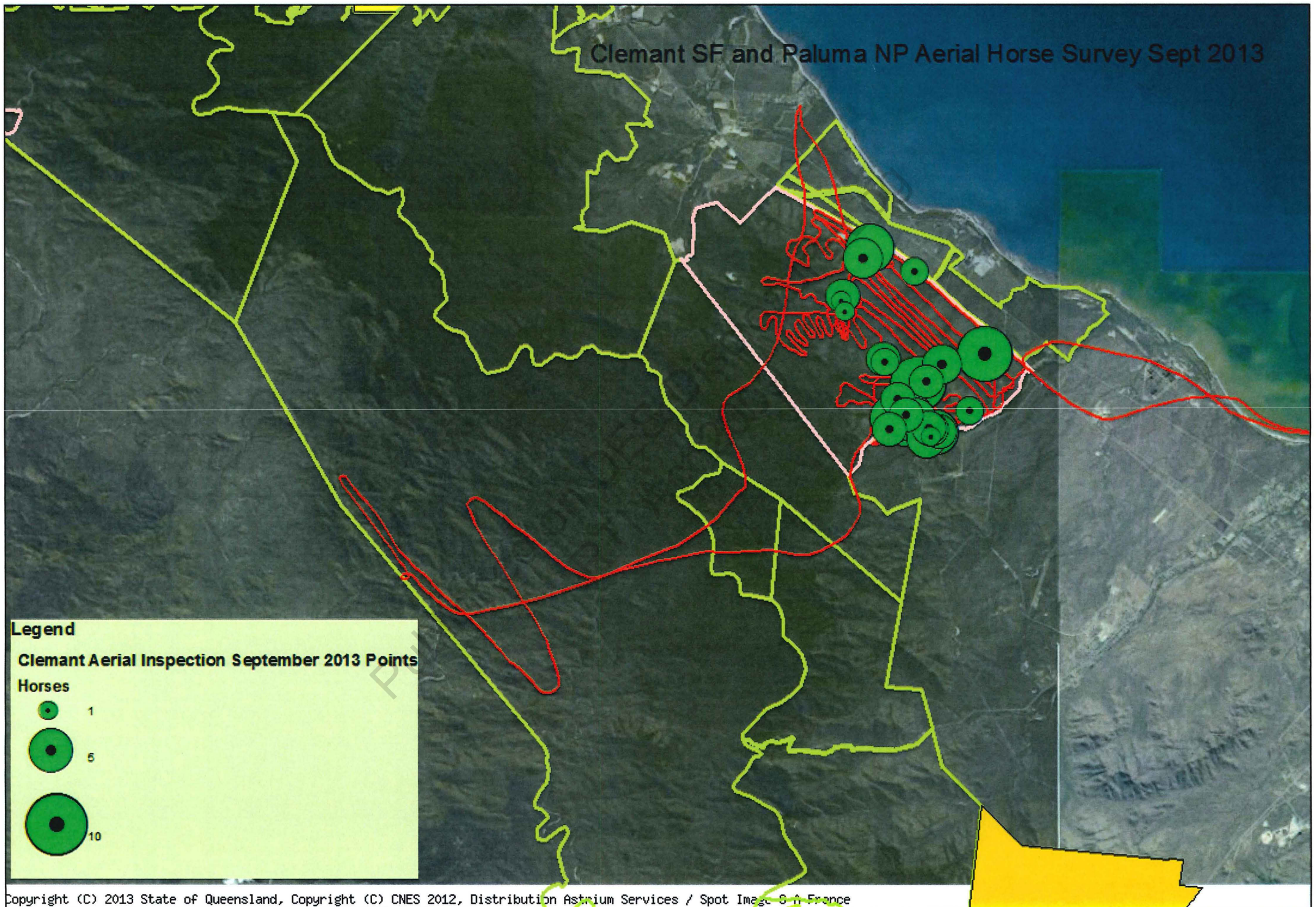




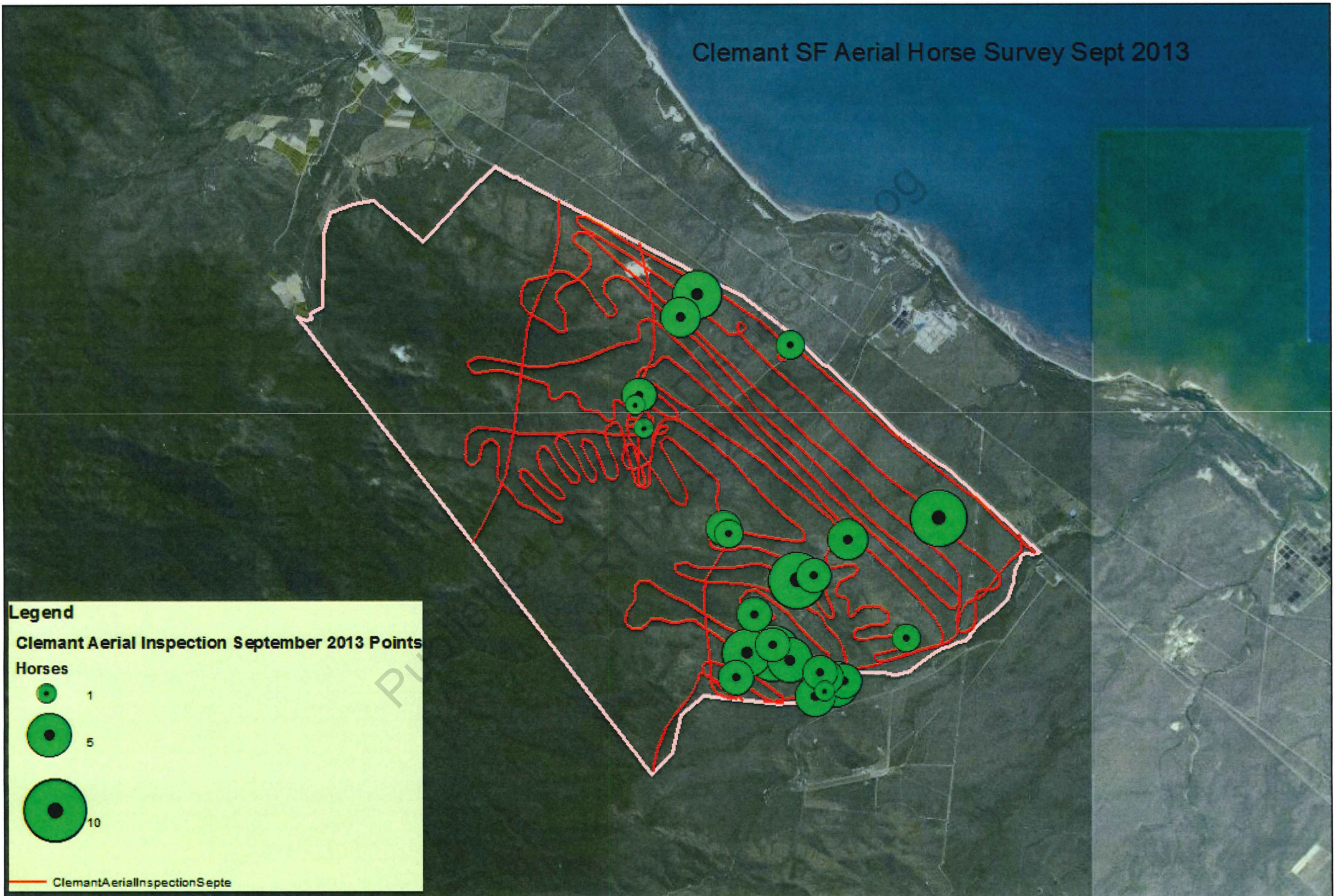


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Clemant SF and Paluma NP Aerial Horse Survey Sept 2013



Clemant SF Aerial Horse Survey Sept 2013



Level 2 Pest Management Strategy

File reference:

Coverage

Region: Northern

Work Unit:

Jourama Falls

ParkInfo Instance/s: Paluma Aggregation

Objectives

The following pest program objectives for the Paluma Aggregation apply:

- Meet obligations under the *Land Protection (Pest and Stock Route Management) Act 2002*, other legislative requirements, and the model codes of practice for the control of feral livestock;
- Control known or perceived environmental weeds or feral animals that may not be declared but which are considered to be a specific threat within the context of protecting the natural, cultural and recreation values of the Paluma Aggregation;
- Implement best management practice, through review and attention towards appropriate PPE, choice of herbicides and delivery, and vigilance with vehicle and machinery clean down procedures;
- Support joint efforts with shire councils and stakeholders for controlling weeds or feral animals of common concern;
- Be aware of and vigilant for critical incursions of key weeds not known to occur within Paluma Aggregation, but known or suspected in adjoining localities;
- Utilise fire programs to reduce the distribution of lantana, particularly utilising post fire herbicide or mechanical control where appropriate
- Remove the feral horse population of Clemant State Forest using aerial shooting techniques with possible follow up by ground shooting by rangers as determined appropriate. Ground shooting only with permission of RD Northern.
- Maintain fencing around appropriate boundary sections of Paluma Aggregation for stray cattle exclusion. Consideration given to renewing the southern boundary fence along Leichardt Creek.

Pest & Location	Status	Threats	Feasibil ity	Priority	Management
Lantana	s.73				
Grader Grass Guinea Grass Thatch Grass Other high biomass					

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Hygrophila, Hymenachne At Leichhardt Crk	s.73
Various woody herbs, vines & shrubs	

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RTI Act 2009

Feral Horse Clemant State Forest Mobs known to traverse across Bluewater Range onto Defence training area & AWC Taravale. NB* small isolated mobs of feral cattle also known to occur within remote areas of Clemant SF.	Undeclared	Level: Major Details: Feral horse contribute to <ol style="list-style-type: none"> 1. erosion, 2. high level of browsing in paperbark communities, habitat of ground orchids 3. spread of entrenched weeds in endangered communities, 4. Erratic fire patterns by dissecting pads on terraces and slopes. Feral horse mobs and other stock present a proven very high risk of straying onto the Bruce Highway presenting a significant hazard to road users. This has resulted in fatalities.	Medium;	Extremely High	Aim: <ol style="list-style-type: none"> 1. Reduce the feral horse population at Clemant SF as rapidly and as comprehensively as possible to reduce the threat of feral horses straying onto the Bruce Highway. 2. Reduce the impacts of feral horses on the natural and cultural resources of Clemant SF. Control: Aerial shooting to rapidly reduce the population. Other control methods may be used depending on circumstances. Ground shooting only with the express permission of RD Northern. Supporting documents: Clemant State Forest Trapping Program Report (2014) Clemant SF Feral Horse Impacts Monitoring Report (2013) Clemant SF Feral Horse Impacts Monitoring Report (2014)
Feral Pig Waterview Creek Clemant	Class 2	Level: Major Details: Feral pigs contribute to <ol style="list-style-type: none"> 1. erosion/ soil disturbance, 2. spread of easily transported weeds into endangered communities, 3. predation/competition on native fauna 	Low	Extremely High	Aim: To support integrated and combined pig trapping ventures through community partnership Control: <ol style="list-style-type: none"> 1. Implement actions as per endorsed PMAP
Feral Goat	Class 2	Level: Minor Details: Incidental observation of a small herd of feral goats recorded from Jacobsen's Track; potential/ likely population Bluewater Range	Low	Low	Aim: To record distribution & occurrence, understand potential population level & possible env impacts Control: No specific control program; potential incidental opportunistic shooting under endorsed FACP.

Emerging Pests

Pest & Location	Status	Threats	Notes:
Siam – Hervey Range	s.73		

Monitoring

Pest	Contact	Location	Notes
Lantana			
Feral Horse	RIC	Clemant SF – 3 sites (Leichardt Creek; Vern's Hut, Pine plantation)	Established 2007, Each site contains 4 treatments (fenced& fire exclusion; unfenced & fire exclusion, fenced; unfenced). 25m veg transect located across each transect. See Clemant SF Feral Horse Impacts Monitoring reports 2013 and 2014.
Lantana			
Mother of Millions			

Review

s.73
Name – Reviewing officer

A/Senior Ranger
Position

s.73
Name – Reviewing officer

Senior Ranger Pests
Position

sch4p3(3) Prejudice the protection of an individuals right to privacy

Signature
sch4p3(3) Prejudice the protection of an individuals right to privacy

Signature

6/10/2015

Date

6/10/2015

Date

Attachments

Pest Management Activity Proposal

General Instructions

A pest management activity proposal is used to detail specific operational information about pest's, on any number of reserves, where the management or control activities are the same or very similar.

For example a single activity proposal would be required for each of these situations:

- Wild dogs are to be baited with 1080 across all reserves in a ParkInfo instance
- Feral pigs are to be controlled through an initial aerial shoot followed by ground baiting with 1080 in x, y and z reserves
- Feral pigs are to be trapped in reserves a, b and c in the same ParkInfo instance as example 2
- Exotic grass species x, y and z are to be sprayed with Glyphosate across all reserves in a ParkInfo instance

Separate proposals will be required for unrelated control activities within the same area such as for pest plants and pest animals. When completing activity proposals it is important to take a broad and integrated view of pest management.

Relevant QPWS policies and procedural guides must be used when completing this proposal.

Specific instructions occur at the end of the form. Ensure that you make full use of these instructions and read them carefully.

1. **Proposal number:** 1/2015
2. **ParkInfo Instance(s):** Paluma Aggregation
3. **Name of QPWS Managed Area(s):** Clemant State Forest
4. **Prepared by:** Officer: s.73 Position: Senior Ranger Pest Management
5. **Date prepared:** 1/10/2015
6. **Project Manager:** Officer: s.73 Position: Senior Ranger Pest Management

7. List the target species covered by this proposal and indicate their status under the *Land Protection (Pest and Stock Route Management) Act*:

Species	Declared status			Declared under Local Govt	WONS	Other Significance
	Class 1	Class 2	Class 3			
Feral Horse (<i>Equus caballus</i>)				X		

8. Approval:

Approval for this proposal is required until 2016

9. Status of control actions (tick relevant box):

- ☒ Initial action
 ☐ Follow-up action
 ☐ Final action
 ☐ Once off action

If it is part of an ongoing program indicate:

expected completion time _____

review time(s) _____

10. What planning supports this proposal:

Is there a QPWS Pest Management Strategy for the area

☒ Yes ☐ No

If yes, name of strategy

Paluma Aggregation Level 2 Pest Strategy

What other plans / agreements are relevant (tick relevant boxes and provide details where applicable):

Type of plan / agreement / program	Name of plan	Species involved
☒ Local Govt Area Pest Management Plan	Townsville City Council Pest Management Plan	Various. Feral horses are currently being added.
☐ Regional Pest Management Plan		
☐ Species Management Plan		
☐ Cooperative program with neighbours or other stakeholders		
☐ Other		

11. Record of interest in pest species:

Is there an external interest in the species covered by this proposal?

☒ Yes ☐ No

Feral horse management is an emotive issue and one that attracts significant community interest. Community groups such as the Brumby Alliance have a strong interest in feral horse management both nationally and locally. There is significant, although varying, interest in feral horse management in the local area surrounding Clemant SF. Local opinion varies from supporting the removal or "culling" of feral horses in the general area to complete opposition to any form of management control.

QPWS undertakes feral horse management activities at various locations around Qld. All of these feral horse management programs are primarily concerned with the impacts of feral horses and strategies to reduce these impacts. At Clemant SF, feral horses not only impact the natural resources of the reserve, they also present a clear safety hazard to users of the Bruce Highway; with two recent road accident fatalities. These recent incidents have given rise to strong community sentiment that feral horse populations in the general vicinity of Clemant SF need to be significantly reduced in order to help prevent the incidence of feral horses on the Bruce Highway.

Domestic horses and feral horses often occur together. As such, there are potential ownership issues. It can be difficult to differentiate between true feral horses and un-branded stray domestic horses. It is clear however that all straying horses, whether feral or domesticated, present road safety hazards.

12. Detail the desired outcomes of the Pest Management Activity Proposal for each target species or site:

Activities to be undertaken on:

☒ QPWS lands
 ☐ Other lands, specify _____

For programs undertaken on both QPWS lands and other lands, use separate rows in the table for the activities.

Species/Site	Extent: Area (ha) or linear distance (m, km)		Number / density / abundance within area to be managed	Impacts caused by pest species	Overall objectives	Measurable outcomes (covered by this proposal)	How to be assessed
	Total extent	To be managed under this proposal			Example: Promote regeneration of blue gum by eradicating goats	Example: >20% increase in average survival of blue gum seedlings in years following eradication	A Monitoring Proposal is generally not required – see notes provided below
Feral Horse (<i>Equus caballus</i>)	5402 ha	App 4000 ha	Estimated to be between 100 and 200 feral horses.	<p>Public safety along the Bruce Highway. Feral horses in the vicinity of Clemant SF have strayed onto the road and been involved in two vehicles accidents, resulting in fatalities.</p> <p>Overgrazing of ground layer vegetation altering floristic and structural compositions and changing fire regimes.</p>	<p>To significantly reduce the feral horse population to a level where;</p> <ol style="list-style-type: none"> 1. The threat of feral horses straying onto the Bruce Highway are negligible. 2. The environmental impacts are at levels considered acceptable such that ground layer vegetation outside of grazing exclosures is similar to that inside the exclosures. 	<ol style="list-style-type: none"> 1. Monitoring the grazing exclosure reveals the floristic and structural composition of ground layer vegetation outside of the exclosure is similar to that inside. 2. Ground observations from QPWS staff undertaking park patrols reveals few incidences of feral horses in close proximity to the State Forest boundary adjacent to the Bruce Highway. 	<ol style="list-style-type: none"> 1. Continued monitoring of grazing exclosures at Clemant State Forest. 2. Recorded observations of feral horses during regular park patrols.

13. Proposed control methods (group species if the control methods will be the same):

Species / site	Activity type (see instructions for definitions)	Methods (include disposal where applicable)	Follow-up methods (if applicable)	Timing and duration
Feral horse in control area.	H1	<p>Aerial shooting of feral horses from within the control area (see attached map). The plan as proposed is.</p> <ul style="list-style-type: none"> - Animal welfare and staff safety are the two major and overriding objectives of all operational activities under this Activity Proposal. - Aerial shooting operations under this Activity Proposal will involve two (2) R44 helicopters working in combination. One R44 will act as an observer platform whilst the other R44 is engaging animals. The two machines are to be separated by vertical height and horizontal distance with both pilots in constant radio communication and visual contact. - Only animals within the control area will be targeted. - Animals outside of the control area may be mustered into the control area if practical. - Strict compliance with an "over kill" policy will be adhered to. Only one animal at a time will be targeted and the helicopter will not move on until the targeted animal is destroyed to the satisfaction of shooter and pilot. - An independent veterinarian will be in one of the helicopters and will observe the operation and report on humane destruction outcomes. Ground autopsies of a selected number of horses may occur if practical. - Strict compliance with relevant Codes of Practice and Standard Operating Procedures. - Semi-automatic .308 firearms to be used. - 168 grain OTM ammunition to be used. This ammunition has been audited many times and found to be particularly effective on feral horses. - Track logs to be recorded by each helicopter. Each destroyed animal will be accurately marked with a GPS waypoint. - This program requires control activities to occur adjacent to the Bruce Highway. Animals located in close proximity to the Highway will be "mustered" away from the road before being controlled. - Feral horse animal carcasses 		

		<p>within the retrieval zone are to be removed and disposed of using QPWS staff and equipment.</p> <ul style="list-style-type: none"> - Ground support crew positioned at major access points to prevent access during the operation. - Will require the closure of the entire SF (with the exception of the active quarry) for a period of up to a month for each operation. - Multiple operations may be necessary. - Closure periods will be communicated using regulatory notices. - Stock and Rural Crime Investigation Squad from QPS have been notified. - QPS support to manage traffic along the Bruce Highway. 		
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14. Will this Pest Management Activity Proposal require closure of any part or all of the area:

- ☐ No
- ☒ Yes, all of area
- ☐ Yes, part of area

15. Provide a map for each target species showing (tick relevant boxes to indicate information shown on map(s) or write n/a):

- | | |
|--|--|
| ☐ Population/infestation extent | ☒ Area to be closed |
| ☒ Area where control activities will be undertaken | ☒ Location of regulatory signs |
| ☐ Trap/bait station locations | ☒ Danger Zone(s) |
| ☐ Infrastructure/visitor use areas | ☒ Access roads/tracks |
| ☐ Topography | ☒ Neighbours relevant to management activities |
| ☐ Vegetation | ☐ Aircraft landing site/helipad |
| ☐ Fuel stations | |

If map becomes too cluttered it may be necessary to provide more than 1 map.

16. Environmental risks Indicate the potential level of risk associated with the pest management activities. Use Very High (VH), High (H), Medium (M), Low (L) or Not Applicable (N/A) and how any identified risks will be minimised. Do not copy and have a separate table for each herbicide.

Type of risk	Level of risk	Details of risk	How to be minimised
Impacts on non-target species	L	No non-target species will be affected by these control operations.	No particular actions needed.
Interactions with other pests	L	Possible food resource for feral pigs but removing carcasses greatly reduces this.	No particular actions needed.
Increase in target species activity	L	Possible increase in feral horse movement due to control activities. Of particular concern is increased horse activity adjacent to the Bruce Highway.	Police patrolling the Bruce Highway to control traffic. Helicopters to muster horses away from the Bruce Highway.
Impacts due to timing of activity	N/A	N/A	N/A
Detrimental impacts on natural values	N/A	N/A	N/A
Erosion	N/A	N/A	N/A
Contamination of waterways and water bodies	L	Dead animals in water bodies or creeks.	No animals to be controlled near creeks or water bodies.
Detrimental impacts on cultural values	N/A	N/A	N/A
Other			

17. Resources required (complete as applicable – figures are indicative only):

Item	Source	Quantity	Time (hrs)	Cost rate	Approx costs (\$)
Personnel	QPWS staff				
	Non-departmental				
	Contractors to QPWS				
	Volunteers				
Allowances	Travel				
	Other				
Equipment	Internal				
	External				
Vehicles					
Aircraft hire					
Materials	Chemicals				
	Baits				
	Ammunition				
	Other				
Total:					\$60 000 (as per DG Reserve budget submission prepared by RD Northern).

Attachment A: Risk Assessment – Safety Strategy

This attachment must be completed for all Pest Management Activity Proposals Note: It may be possible to use/refer to regional/local Risk Registers, or links to approved procedural guides that already identify risk reduction controls, to populate table (e.g. compliance with Feral Animal Aerial Shooting Operations Policy and Procedural Guidelines).

Step in task	Hazards in carrying out this step	Risk (Harm)	Existing risk controls	Risk rating with existing treatment s/ controls			Additional risk controls required	Risk rating with additional treatment s/ controls		
Helicopter aerial shooting	Falling from helicopter, helicopter crash, person contact with blades, electric shock, accidentally shot, hitting non-targets with firearm,	Injury, burn, cut.	<ul style="list-style-type: none"> Shooters are qualified though an independent external certification process accepted by stakeholders and in line with Aust. standards. Each shoot has a pest management plan including a risk assessment and set of emergency procedures. Staff to comply with Policy & Procedure guide for Feral Animal Control Aerial Shooting Tool box talks and task briefings to remind staff of safety issues. Visitors excluded from area during shooting operations. before operations commence; http://qpws/common/piweb_media/cms/60426/JSA/aerial_shooting_firearms.pdf and http://qpws/common/piweb_media/cms/60426/JSA/aerial_shooting_helicopters.pdf Refer to Northern Region Risk Register.	Rare	Minor	Medium 10	No additional controls required.			

Attachment B: Safety and Medical Evacuation Plan

Only required for Pest Management Activity Proposals involving firearms or other serious risk.
 To be completed in conjunction with Attachment A.

Emergency contact details are provided on the Pest Management Contact List found at the beginning of the program. This list must be readily available to all participants during all pest management activities.

B1. What medical assistance is available on site and where are the nearest medical facilities:

Description	Location
On-site medical assistance	
First-aid kit/s	Both helicopters and all support vehicles.
Trained personnel	Both helicopters and all support vehicles.
Nearest professional medical help	
Ambulance station	Townsville
Hospital	Townsville

B2. Provide information on currently trained personnel involved in the pest management activity:

Name	Training
s.73	Firearms and first aid
	Firearms and first aid
	Firearms and first aid
	First aid

B3. What transport and facilities are available on site for a medical evacuation:

Transport

Yes/No	Type	Description
Yes	Helicopter	Two helicopters will be on site and available for emergency use.
Yes	Vehicle	A number of QPWS vehicles will be on site and available for emergency use.
Yes	Police	Police will be on site and available to assist with emergencies.

Facilities

Yes/No	Type	Description (e.g. length, size)	GPS location
No	Airstrip	There is no airstrip on site.	
No	Helipad	There is no helipad on site.	
N/A	Vessel landing area	N/A	

B4. Provide details of how the medical evacuation would be achieved:

Phase	Details
Initial response	Notify on site Police and or other emergency services. When assistance dispatched notify QPWS management.
Transport to accessible location	Helicopter or Police vehicle or QPWS vehicle.
Transport to professional medical facility	Ambulance or Helicopter or Police vehicle depending on circumstances.

Pest Management Cover and Approval Sheet – Activity Proposals involving feral horses

This cover and approval sheet is to be used only for Pest Management Activity Proposals involving feral horses as these require approval by Deputy Director-General QPWS

Page: 1

Name of QPWS Managed Area(s): Clemant State Forest

Attachments:

- Pest Management Activity Proposal/s, any ParkInfo maps, and the Pest Management Program Contact List (optional)

Endorsement:

Endorsement is required by relevant officers only. Page: 1

Add any additional officers to the table as required. The Regional Firearms Coordinator and the Regional Workplace Health and Safety Officer must endorse all strategies or programs covering activities involving firearms.

Please note the "Approval for this proposal is required until 2016" under section 8 of the Pest Management Activity Proposal/s attached and provide comment or alternative date/s if required in the Notes section below.

Category D firearms - Where an activity proposal involves the use of a Category D firearm, the regional pest referral group must include at least one of the internal QPWS firearms trainers.

One of the following endorsements is to be inserted into the following table (as the number 1, 2, 3, or 4):

1. Endorsed without changes
2. Endorsed subject to minor changes
3. Endorsed subject to revision and must be resubmitted for final endorsement
4. Not endorsed

<u>s.73</u>	Regional Director	Endorsement	Notes
Name	Position	(see above)	
<u>s.73</u>	A/-Principal Ranger	Endorsement	Notes
Name	Position	(see above)	
<u>s.73</u>	A/-Senior Ranger	Endorsement	Notes
Name	Position	(see above)	
<u>s.73</u>	Regional WPHS Officer	Endorsement	Notes
Name	Position	(see above)	

sch4p3(3) Prejudice the protection of an individuals right to privacy

Signature _____ Date 9/10/2015

sch4p3(3) Prejudice the protection of an individuals right to privacy

Signature _____ Date 8/10/15

sch4p3(3) Prejudice the protection of an individuals right to privacy

Signature _____ Date 8/10/15

sch4p3(3) Prejudice the protection of an individuals right to privacy

Signature _____ Date 9/10/15

QPWS Pest Management System

Name	Position	Endorsement	Notes	Signature	Date
s.73	Regional Firearms Coordinator	(see above)		sch4p3(3) Prejudice the protection of an individuals right to privacy	8/10/2015
Name	Position			Signature	Date
s.73	Senior Ranger Pest Management	Endorsement (see above)	Notes	sch4p3(3) Prejudice the protection of an individuals right to privacy	8/10/2015
Name	Position			Signature	Date

Approval:

Ben Klaasen	Deputy Director-General QPWS		
Name		Signature	Date

Notes:

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Policy and Procedural Guide

Safety Management & Conduct of Operations – aerial shooting

Attachment 1

AERIAL SHOOT PLAN

Region	Northern Region	
Park/Reserve Name & tenure	Clemant State Forest	
Location of operational base	Clemant State Forest Mobile Base	
Dates of operation	From: 15 October	To: 15 October
Prepared by	s.73	Phone: s.73 Phone:

Endorsed by:	Signature	Date
Ranger-in-Charge s.73	sch4p3(3) Prejudice the protection of an individuals right to privacy	9/10/2015

Endorsed by:	Signature	Date
Senior/Operations Manager s.73	sch4p3(3) Prejudice the protection of an individuals right to privacy	9/10/2015

Endorsed by:	Signature	Date
On-site Operations Controller s.73	sch4p3(3) Prejudice the protection of an individuals right to privacy	9/10/2015

Approved by:	Signature	Date
Regional Director s.73	sch4p3(3) Prejudice the protection of an individuals right to privacy	9/10/2015

¹ For operations involving the destruction of feral horses, and subject to the prior approval of the Assistant Director-General (QPWS) for the Pest Activity Proposal, the Regional Manager may approve the ASP.

Policy and Procedural Guide

Safety Management & Conduct of Operations – aerial shooting

Two Robinsons R44 Helicopters will be used for this operation, due to close proximity to the Bruce Highway, and to ensure the target species is dealt with quickly and humanely. Having two helicopters and shooters will address the potential public safety and animal welfare concerns when working in such close proximity to fences and roads.

While one helicopter is carrying out aerial shooting activities, the other will be used to ensure that no horses are allowed to venture near the highway and boundaries of the State forest. This will allow the shooter to remain focussed on humane destruction of engaged targets, while any animals that stray do not end up posing a public safety threat or injure themselves on boundary fences.

Having two helicopters will also allow better use of a very short window of opportunity, ensuring the population reduction objective is met within the activity timeframe.

4. Job Safety Analysis – aerial shooting

Refer to Attachment 2.

Significant elements of the appended JSA will be common to all aerial shooting operations. However, it should be reviewed by the Project Manager prior to the operation, and by the on-site Operations Controller together with the on-site operational group, including the pilot(s) and the aerial shooter(s), as part of the on-site pre-shoot briefing process.

5. Risk Assessment – aerial shooting

Refer to Attachment 3.

In addition to the information that must be provided in the "Risk Assessment – Safety Strategy" section of the Pest Management Activity Proposal, significant elements of the appended risk assessment will be common to all aerial shooting operations. However, it should be reviewed by the Project Manager prior to the operation, and by the on-site operational group, e.g. - Operations Controller, the pilot(s) and the aerial shooter(s), as part of the on-site pre-shoot briefing process.

6. Operational Command Structure

Refer to PART B, Section 1.2.5.1 and PART C, section 1 of this document.

7. Aerial Shoot Operational Planning

*Provide a brief text description of the location and critical information for management of the key elements of the operation detailed below. The text detail should be supported by an operational map containing all the necessary information required to enable the Operations Controller, pilots, shooters and ground support personnel to conduct the operation. **The map will need to be attached to this plan, including one that has been divided into an alpha-numeric grid to delineate shoot zones***

Control Area	Control area is where highest densities of horses were identified during the previous aerial survey. No operations will occur outside of this area (see attached map).
Danger Zone	Special caution will be taken when within 500 metres of the Bruce Highway and the southern state forest boundary. When inside this area, shooters will only

Policy and Procedural Guide

Safety Management & Conduct of Operations – aerial shooting

	discharge firearms towards the interior of the state forest (see attached map).
No shoot zones	No operations will occur in areas within 500 metres of: <ul style="list-style-type: none">• the residences near the southern boundary of Clemant State Forest• the incident control centre, or• all other areas outside the specified control area. See attached map.
Access management, closure and signage	All of Clemant State Forest, with the exception of the active quarry, will be closed for the duration of the project with all access points being locked. Regulatory Notices will be installed at all access points to the State forest.
Aircraft fuel – supply, delivery, storage and handling	Helicopters will be chartered as 'wet hire', with the operator responsible for the management of refuelling, either on-site or at the local airport.
Infrastructure – roads, access tracks, utility infrastructure, e.g. – power lines, towers, etc.	The State forest will be closed so the access roads will have no unauthorised access. Power lines are in Clemant State Forest. Pilots assisting with the control activity will be informed of their location before the operation commences.
Camping – accommodation and catering	Staff will be camping onsite at Clemant State Forest and will supply their own food.

7.1. Map formats

Maps produced for aerial shooting operations should include, but not be limited to, the following features;

Operational Base Map features

- Full Colour
- Grid squares appropriate to the scale of the map
- Use full Lat/ Long (DDD° MM' SS.S") as tic marks and UTM coordinates displayed as grids
- Cadastral boundaries
- Scale (text and bar scale)
- Roads and access tracks
- 500m buffer along roads as no shoot zone
- Roads closed and sign locations
- Infrastructure (power lines, rail lines, gas pipelines, radio/communications towers)

Policy and Procedural Guide

Safety Management & Conduct of Operations – aerial shooting

- Public visitor sites (camping and day-use, formal)
- Rivers and water holes as relevant
- No shoot zones
- Boundary of operational shoot area
- Air strips and landing pads
- Operational control point

Helicopter Map Features (Digital moving map for use in aircraft)

- Grey scale; this map is created in grey scale or hatching to ensure that the map is sunlight readable for the pilot.
- Grid squares appropriate to the scale of the map
- Use full Lat/ Long (DDD° MM' SS.S") as tic marks and UTM coordinates displayed as grids
- Cadastral boundaries
- Scale (text and bar scale)
- Roads and access tracks
- Infrastructure (power lines, radio/communications towers) - GPS location of these are to be added to the map in the grid square where the structure is located
- No shoot zones – indicated as hatched areas
- Boundaries of operational shoot area - this will also be a hatched area, so pilot can clearly see that it is the boundary.
- Air strips and landing pads
- Operational control point
- Formatted and tested prior to operations in the intended GPS device to ensure 'moving map' functionality and accuracy

8. Firearms and ammunition

Firearms			
Make	Serial no.	Calibre	Responsible Officer (Form 23 employee issue register)
DPMS Panther x 3		7.62 x 51	s.73
Springfield M1A x 2		7.62 x 51	

Ammunition		
Calibre	Projectile weight	Quantity
7.62 x 51 NATO	168 grain HPBT	2000

Policy and Procedural Guide

Safety Management & Conduct of Operations – aerial shooting

8.1. Firearms and ammunition transport and storage

Outline the specific arrangements for the transport, storage and security of firearms and ammunition at all stages of the operation

Each of the two aerial shooters will be responsible for the safe transportation of their firearms to Clemant State Forest. Once at Clemant State Forest, all firearms will be locked in QPWS vehicles while on the ground, or in the possession of the aerial shooter while in the helicopter.

8.2. Job Safety Analysis –

Firearms

Refer to Attachment 4

Significant elements of the appended JSA will be common to all aerial shooting operations. However, it should be reviewed by the Project Manager prior to the operation, and by the on-site Operations Controller together with the on-site operational group, e.g. the pilot(s) and the aerial shooter(s), as part of the pre-shoot briefing process.

9. Stakeholder communication and notifications

This list must be readily accessible, e.g. - in vehicles or carried by persons where activities are being conducted a considerable distance from a vehicle.

Contact (as applicable)	Name	Telephone W Work M Mobile H Home S Satellite	Radio contact details* HF VHF UHF	Communication task required	Communication task completed (Y/N)
Police	Ingham	4776 5500		Final notification	Partially
Ambulance	Ingham	13 74 68		Final notification	Partially
Doctor	Ingham	4776 2101		Final notification	Partially
Hospital	Ingham	4720 3000		Final notification	Partially
RFDS					
SES					
Marine Rescue					
Poisons Info Centre					
AQIS					
Neighbours	sch4p4(6) Personal information				

Policy and Procedural Guide

Safety Management & Conduct of Operations – aerial shooting

Contact (as applicable)	Name	Telephone W Work M Mobile H Home S Satellite	Radio contact details* HF VHF UHF	Communication task required	Communication task completed (Y/N)
	sch4p4(6) Personal information				
BQ Inspector(s)	s.73				
Local Govt	Thuringowa City Council	1300878001			
Other					

*Include details of Type: UHF, VHF etc; channel, call sign, frequency, etc. as applicable.

Policy and Procedural Guide

Safety Management & Conduct of Operations – aerial shooting

10. Operational communications planning

This information must be readily accessible, e.g. - in vehicles or carried by persons where activities are being conducted a considerable distance from a vehicle.

Operational Communications Plan				
Operational Base Location: Clemant State Forest		Telephones: Landline _____ Satellite ^{s.73} _____ Mobile _____		GPS Coordinates: Easting 0443322 Northing 7887787 (19°06'08"S, 146°27'40"E)
Radio	Primary band & channel:		Secondary band & channel	
PERSONNEL				
Role	Name	Primary contact (include channel if radio)	Alternative contact (inc channel if radio)	Call sign (if applicable)
Project Director	s.73			
Project Manager				
Operations Controller				
Deputy Operations Controller				
Senior Pilot				
2 nd Pilot (if applicable)				
Senior Shooter				
Other shooters (if applicable)				
SAR watch delegate				
Ground crew				

Policy and Procedural Guide

Safety Management & Conduct of Operations – aerial shooting

Operational Communications Plan			
Carcass retrieval and disposal	s.73		sch4p4(6) Personal information

11. SAR Watch procedures and emergency response planning

The following provides for standard SAR watch arrangements. Appropriate emergency response planning will ensure all necessary contingencies are considered and planned to affect emergency response and recovery operations if required.

Contact (as applicable)	Location	Primary contact (include channel & call sign if radio)	Alternative contact (include channel & call sign if radio)
Police *	Ingham	4776 5500	
Ambulance	Ingham	13 74 68	
AusSAR **	Canberra	1800 815 257 (24hr emergency contact)	02 6279 5000
Doctor	Ingham	4776 2101	
Hospital	Ingham	4720 3000	
Neighbours	sch4p4(6) Personal information		

* The Queensland Police Service has primary responsibility for responding to life-threatening or time-critical emergency responses.

** Australian Search and Rescue – for coordination of Australia's civil search and rescue activities

Refer also to PART B, section 1.2.5.5 of this document and the SAR Watch Log in Attachment 6

Attachment 2

Job Safety Analysis – Aerial Shooting

<p>Project / Activity: Aerial Shooting - Helicopters</p> <p>Site: ___Clemant State Forest___</p> <p>Department of National Parks Sport and Racing</p>	<p>Contractor: _____ ABN: _____ (if applicable)</p> <p>Phone No: _____</p>
<p>Persons completing this statement:</p> <p>Signature: _____ Date: ___ / ___ / ___</p> <p>Signature: _____ Date: ___ / ___ / ___</p>	

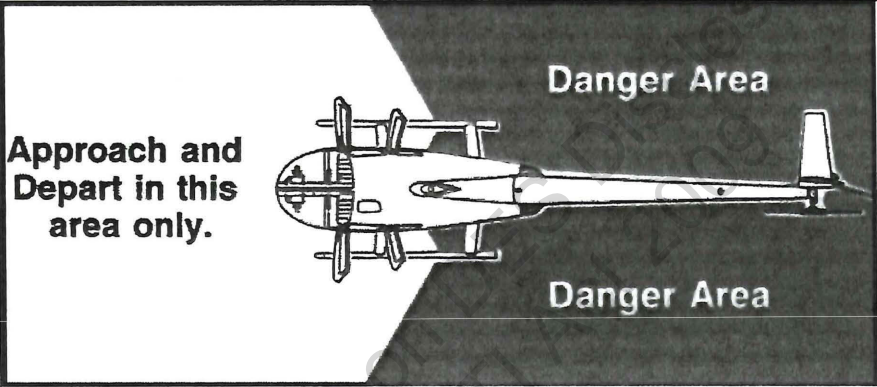
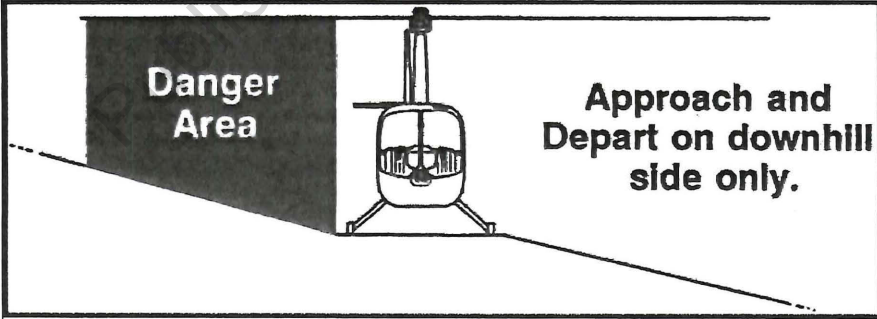
WARNING – Prohibited Activities

- Shooting from a helicopter cannot be undertaken in adverse weather conditions (e.g. strong wind, rain, low cloud).
- Shooting should only be performed by competent, trained personnel who have been tested and accredited for suitability to the task and marksmanship and who hold the appropriate licences.
- Helicopter pilots must hold the appropriate licences and permits and be skilled and experienced in aerial shooting operations.
- Helicopter operators must have approval from the Civil Aviation Safety Authority to undertake aerial shooting operations.
- Aerial shooting should comply with all relevant Federal and State/Territory legislation, policy and guidelines.
- Storage, use and transportation of firearms and ammunition must comply with relevant legislative requirements.

Key Steps	Equipment / Plant/ documents required	Possible hazards	Safety controls including PPE	Licences, qualifications or work permits	Who will Monitor / Review
Accreditation and Insurances	Helicopter	Not to CASA standards	Relevant CASA standards in place. Refer to <u>Specifications for the provision of helicopters and pilots for aerial services</u> (SOA standard) requirements for Category 4 operators	CASA Certifications	Ops. Controller to view documents prior to commencement of operations
	Pilot	No CASA licence, permits, flying endorsements and experience relevant to task	Relevant CASA standards in place. Refer to SOA standard requirements for Category 4 operators,	CASA Certifications, permits and licences	As above plus permits and licences
	Insurance and Workers Compensation Policies	No workers compensation or insurance coverage	Liability insurance and Workers Compensation policy. Refer to SOA standard	Insurance Policy and Workers Compensation Policy	As above
Maintenance	Helicopter	No maintenance schedule and pilot log books	Relevant maintenance schedules to be completed by the Helicopter contractor Current maintenance release for each aircraft Log books to be maintained	Relevant paper work to be available for viewing prior to commencement of operations	Ops. Controller
Safety	Helicopter	No pre-shoot and daily safety briefings	Ensure that pre-shoot and helicopter safety briefings are conducted	Pre-flight/safety briefs & JSA are available on site	Pilots/Ops Controller/Snr Marksman
	Towers and power lines	Possible collision/contact	Identify locations of all towers and power lines prior to operations and map	Maps with locations/GPS coordinates	Pilots/Ops Controller/ Marksmen Ops Controller

Key Steps	Equipment / Plant/ documents required	Possible hazards	Safety controls including PPE	Licences, qualifications or work permits	Who will Monitor / Review
	Park closure	Unauthorised entry of persons into operational areas	Ensure all relevant road/track entry points and airspace closure notifications are completed and all agencies notified	Approvals and physical closures of entry points in place prior to commencement of operations	and Senior pilot Project Manager and Operations Controller
Transportation in helicopters	Firearms and ammunition Marksmen & other passengers	Unsafe and insecure storage of ammunition and firearms Incorrect and unsafe carriage of firearms/ammunition into, out of and around helicopter Not seated in position and secured correctly Helmets and seat belts not worn or removed before helicopter has stopped as machine may be moved to a	Ammunition and firearms to be stored as per requirements of <u>Weapons Act 1990</u> Ensure that firearms are tested so that cartridge case ejection is at 45° forward and not above the horizontal, prior to use to ensure ejected cartridges cases do not affect the safe operations of the helicopter Practices in accord with CASA regulations and aerial platform marksmanship accreditation training Muzzle of firearms to be facing down while accessing, leaving and in transit and not above 30° while engaging targets – CASA CAR <u>143</u> & <u>144</u> Seating and securing as per CASA regulations Helmets and seat belts must remain on	Aerial Platform Marksmanship accreditation Aerial Platform Marksmanship accreditation JSA	Ops Controller, pilot-in-command, and shooter(s) Pilot-in-command and shooter(s) Pilots, shooter(s) & other passengers Pilots, shooter(s) & other passengers

Key Steps	Equipment / Plant/ documents required	Possible hazards	Safety controls including PPE	Licences, qualifications or work permits	Who will Monitor / Review
		safer location, e.g. – long grass or machine unstable	until pilot has indicated he/she is satisfied with location of machine		
Fuel	Storage	Possible ignition of aviation fuel from smoking, camp fire, and electrical source	Fuel storage area to be a minimum of 50m from infrastructure, field campsites and ammunition storage	Large Dangerous Goods Licence	Ops Controller
	Refuelling	Possible ignition source of aviation fuel such as static electricity, cigarettes, matches, camp fire, mobile phones, radios, vehicles	No potential ignition sources such as cigarettes, matches, mobile phones, radios and vehicles are not to be taken into the hazardous area (within 30 metres)	Compliance with provisions of <u>Dangerous Goods Safety Management Act 2001</u>	Senior Pilot & Ops Controller
	MSDS	Serious injuries to personnel Nylon and synthetic clothing Failure to supply MSDS for avgas Lack of knowledge about Dangerous Goods product by on-site personnel MSDS out of date	Pre-shoot task briefings, appropriate PPEs All refuelling will be undertaken by the pilot(s). No other personnel are to be involved unless under the direct supervision of the pilot(s) All personnel to review the MSDS prior to handling fuel Ops Controller to ensure the MSDS is in date and readily assessable	Current avgas MSDS on site	Ops Controller & Senior Pilot Ops Controller & Senior Pilot

Key Steps	Equipment / Plant/ documents required	Possible hazards	Safety controls including PPE	Licences, qualifications or work permits	Who will Monitor / Review
		MSDS not assessable to staff in an emergency			
Helicopter Operation	Approach, departure and DANGER areas			As per CASA requirements	Pilot and all on-site personnel during pre-shoot brief and while accessing and leaving the helicopter
Helicopter Operation	Approach, departure and DANGER areas			As per CASA requirements	Pilot and all on-site personnel during pre-shoot brief and while accessing and leaving the helicopter

Key Steps	Equipment / Plant/ documents required	Possible hazards	Safety controls including PPE	Licences, qualifications or work permits	Who will Monitor / Review
Helicopter Operation	Seat Belts – Note: Check seat belt operation on each Helicopter during pre-flight check Sweat belt extensions (where applicable)	no illustration		As per CASA requirements CASA approved seat belt extensions and installation	Pilot as per pre-shoot brief for each Helicopter Pilot as per pre-shoot brief for each Helicopter
Helicopter Operator	ELT location identified during pre-flight check for each Helicopter Note:- Check all ELTs are the new 406 type Location of ELT varies from helicopter to helicopter	Note:- The location and operation of the ELT is to be explained by pilot during safety & emergency task briefing		As per CASA requirements	Pilot and passengers during pre-shoot brief
Communications	Radios, EPIRBs, Communications & recovery plan	No communications and emergency response planning or procedures in place	Communications, daily SAR watch procedures and recovery and emergency response plans developed	As per CASA regulations and QPWS operational communications plan	Ops Controller, pilots, shooters

Key Steps	Equipment / Plant/ documents required	Possible hazards	Safety controls including PPE	Licences, qualifications or work permits	Who will Monitor / Review
	Notifications to RFDS, Police & QFRS		Radios and EPIRBs checked and working Task briefings undertaken prior to operational flying All notifications completed	As per CASA regs. & QPWS operational procedures	
Personnel welfare	Flight crew and pilots	Mental & physical fatigue, distress	<u>Pilots</u> Consistent with CASA & contractor's fatigue risk management systems <u>QPWS personnel</u> Sufficient numbers of accredited shooters and appropriate rostering commensurate with the duration & intensity of operational task(s) <u>All personnel</u> Pilots and shooters are to stop work immediately fatigue and/or distress becomes apparent and relevant persons notified Counselling services through QPWS early intervention	Pre-shoot briefings Staff welfare plan COPs & SOPs	Ops Controller Senior Pilot Senior Shooter Training & Safety Coordinators Operations Controller, Pilot(s) and Shooter(s)
Other Operational requirements	Suitable aircraft are used for the operation	Compromised safety margins for flight crew Poor operational performance/capacity and	Advice from experienced helicopter operator(s) and QPWS/DAFF(QLD) specialists	CASA and/or QPWS operational requirements	Ops Controller Senior Pilot Senior Shooter

Key Steps	Equipment / Plant/ documents required	Possible hazards	Safety controls including PPE	Licences, qualifications or work permits	Who will Monitor / Review
	GPS and computer mapping equipment	endurance of helicopters Compromised humane destruction standards Discharge of firearms in no-shoot zones	Daily task briefings	CASA and/or QPWS operational requirements	Ops Controller Senior Pilot Senior Shooter
	Flight helmet (with intercom)	Compromised safety and humane destruction standards due to poor communications between pilot and flight crew (shooters)	Flight helmets with functional intercom worn by pilots and air crew at all times Operational procedures and daily briefings	CASA and Contractor's requirements	Pilots and shooters
	PPE including lace-up boots, gloves, eye and hearing protection and fire resistant clothing.	Accident and/or injury including, foreign body in eye and hearing loss	Detailed pre-shoot briefing on operational plan to be undertaken on site for all personnel All personnel (flight crew and ground support crew) advised and to strictly observe all aspects of helicopter and firearm safety procedures. Adequate hearing & eye protection worn by all persons		Ops Controller Senior Pilot Senior Shooter
	Deployment of two helicopters flying in unison	Mid-air collision Contact with obstacles Inadequate flight planning that comprises safety and humane	Daily flight and operation planning to ensure vertical and horizontal separation distances between each helicopter ensures that visual contact between each		Ops Controller Senior Pilot Senior Shooter

Key Steps	Equipment / Plant/ documents required	Possible hazards	Safety controls including PPE	Licences, qualifications or work permits	Who will Monitor / Review
	Survival kit (including first aid kit) EPIRB	destruction standards Accident/Injury	helicopter is maintained at all times Detailed daily briefings and operational planning As per Contractor's survival kit As per survival kit carried by each shooter		Ops Controller Senior Pilot Senior Shooter

Attachment 3

Risk Assessment – Aerial Shooting

The following is based on the DAFF(BQ) Risk Assessment Plan & Risk Management Plan – Helicopter Marksman Qualification Training Exercise by s.73 – BQ Helicopter Shooter Instructor.

In addition to the information that must be provided in the “Risk Assessment – Safety Strategy” section of the *Pest Management Activity Proposal*, significant elements of the following additional risk assessment will be common to all aerial shooting operations. However, it should be reviewed by the Project Manager prior to the operation, and by the on-site Operations Controller together with the on-site operational group, including the pilot(s) and the aerial shooter(s), as part of the on-site pre-shoot briefing process.

Risk description What can happen and how can it happen?	Control measures How the risk will be managed	Risk assessment Bearing in mind planned control measures		
		Consequence	Likelihood	Level of risk
Flying in helicopters (generally) <ul style="list-style-type: none"> • Helicopters provide an intrinsically safe flying platform. However, compared to fixed wing aircraft their accident rate is higher. Helicopters were involved in about 36% of all accidents in general aviation in the last 10 years since 2011, and 47% of all fatal accidents even though they account for only 13% of the Australian civil fleet². The Australian Transport Safety Bureau (ATSB) has published other reports on the safety of light utility helicopters³ • Fatality rates for helicopters in Australia is 2/100,000 <p>....continued next page</p>	<ul style="list-style-type: none"> • Helicopter operator procured pursuant to the <u>State's whole of government SOA # QGCPO609 for the Brokerage Services for Chartering Aircraft.</u> • Individual pilots and aircraft have been audited successfully by the Broker against the <u>SOA # QGCPO609 specifications</u> • Project Manager, Operations Controller and Senior Marksman will plan and implement all flight operations consistent with QPWS operational practices, guidelines and standards identified by the JSA 	major	unlikely	high

² Aviation Occurrence Statistics 2002-2011; ATSB Aviation Research Report AR-2012-025 <http://www.atsb.gov.au/media/3607162/ar2012025.pdf>

³ Light Utility Helicopter Safety in Australia; ATSB Aviation Research Paper BE04/73 http://www.atsb.gov.au/media/36750/Light_utility_helico.pdf
Robinson R22 Helicopter Aerial Mustering Usage Investigation; Aviation Research & Analysis Report B2004/0292 <http://www.atsb.gov.au/media/29947/b20040292.pdf>

Risk description What can happen and how can it happen?	Control measures How the risk will be managed	Risk assessment Bearing in mind planned control measures		
		Consequence	Likelihood	Level of risk
<p>Flying in helicopters (generally)continued from previous page</p> <ul style="list-style-type: none"> • Mid-air collision with other aircraft 	<ul style="list-style-type: none"> • Pilots will be familiarised with QPWS operational guidelines, and will contribute to specific operational planning as part of the on-site pre-shoot briefing process and participate in all briefing sessions. • When an operation involves the deployment of more than one aircraft, the primary collision avoidance strategy will be the "see and be seen" principle, i.e. - VFR or Visual Flight Rules (day only). Vertical and horizontal separation distances between each helicopter must ensure that visual contact between each helicopter is maintained at all times • QPWS shooters have been trained and passed competency tests for the safe handling of firearms in helicopter • Personal protective equipment (PPE) as identified in the JSA will be worn when flying and SAR kits carried in all helicopters. • Comprehensive on-site operational and safety briefings for all participants prior to operations commencing • A helicopter safety briefing for all on-site personnel that is delivered by the pilots is an integral component conducted before any flying activity commences. 			

Risk description What can happen and how can it happen?	Control measures How the risk will be managed	Risk assessment Bearing in mind planned control measures		
		Consequence	Likelihood	Level of risk
Low Level Flying 1. Hitting obstacles, e.g. - wires, trees 2. Limited ability to perform safe landing if engine or component failure is exacerbated by thick timber, rough terrain. 3. Stress-induced pilot errors, i.e. – stress from concentration, difficulties associated with low flying, compounded operational demands on the pilot due to spotting target animals, setting up for shooting, navigation, etc.	<ul style="list-style-type: none"> • Best control measure is to select pilots experienced in low level operations, especially mustering and shooting. Pilots have been audited by the Broker against SOA specifications for low-flying endorsements by CASA • Power lines, other wires and towers are to be identified on locally prepared maps and these are to be used in the pre-shoot briefing process. <p>All shooters and pilots will familiarise themselves with all wires and obstacles on the ground and air familiarisation sessions prior to the commencement aerial shooting activity.</p> <ul style="list-style-type: none"> • Aircraft Operations Plans for each flying segment of the program must include briefings for the avoidance of wire and obstacle strikes. • Specifically, ensure all PPE worn and thorough SAR planning and procedures are being applied. • Operations Controller, Senior Marksman and Senior Pilot will scrutinise all daily flight plans and briefings for adequacy in relation to this issue 	major	unlikely	high

Risk description What can happen and how can it happen?	Control measures How the risk will be managed	Risk assessment Bearing in mind planned control measures		
		Consequence	Likelihood	Level of risk
Flying in remote areas 1. Delayed search, rescue and evacuation times if lost, injured. 2. Limited recovery and evacuation options. 3. Limited fuel disposition induces stress on pilot, leading to errors of judgement.	<ul style="list-style-type: none"> • Comprehensive emergency response and SAR plans and procedures documented prior to implementation of operations • As part of the pre-shoot briefing process, the On-site Operations Controller, Senior Marksman and Senior Pilot will ensure all emergency response and SAR plans are adequate. • On-site Operations Controller, Senior Marksman and Senior Pilot will apply operational plans and safe flying systems that incorporate pre-determined emergency response and SAR plans and procedures. • On-site Operations Controller to provide full details of the pre-determined emergency response and SAR plans and procedures as part of the pre-shoot and daily operational briefing processes • The Emergency Action Plan for the local QPWS management unit (if available) will compliment associated systems and procedures to ensure safe flying operations. This plan will be included in briefing sessions. • Fuel dumps to be established in accordance with pre-determined plans specific to the operation. 	moderate	possible	medium

Risk description What can happen and how can it happen?	Control measures How the risk will be managed	Risk assessment Bearing in mind planned control measures		
		Consequence	Likelihood	Level of risk
Inexperienced pilots and inappropriate helicopter type 1. Use of inexperienced pilots and inappropriate helicopter types can bring about a whole range of safety risks associated with low flying, shooting and flying beyond the performance parameters of the particular aircraft. 2. Best practice standards for humane destruction of target animals can be significantly compromised 3. Compromised efficiencies of tasks	<ul style="list-style-type: none"> • Pilots and aircraft engaged for this program have been audited successfully by the Broker against the SOA specifications; and verified by the QPWS Project Manager. • All QPWS aerial shooters involved in the operation are provided prior opportunity to comment on proposed pilot(s) and aircraft type(s) that are being procured for the operation. 	major	rare	low
Poor maintenance of helicopters Increased chance of helicopter accident caused by engine or component failure.	<ul style="list-style-type: none"> • Air Charter Operator and procured aircraft have been audited successfully by the Broker against the <u>SOA # QGCPO609 specifications</u> • Upon arrival at the operational base, both the on-site Operations Controller and the Senior Marksman will sight maintenance releases and pilots' log books to ensure helicopters are in-hours and will remain in-hours for the duration of the operation by reconciling logged flying hours since the last service against the aircraft's hour meter. • On-site Operation Controller and Aerial Shooters will ascertain daily maintenance requirements for each type of helicopter and observe these being done by the pilot(s). 	major	unlikely	high

Risk description What can happen and how can it happen?	Control measures How the risk will be managed	Risk assessment Bearing in mind planned control measures		
		Consequence	Likelihood	Level of risk
Use of aviation fuel (Avgas 100LL) 1. Fuel spillage and/or fire due to punctured drums resulting from events such as incorrect handling, transportation or vehicle accidents. 2. Refuelling fires. 3. Fuel scalding in spillage accidents. 4. Helicopter accident on landing site, rupturing drums and starting fire. 5. Back injuries from incorrect manual handling of drums. 6. Fire in camp from using fuel for campfires. 7. Burns in helicopter accidents. 8. Accidents from engine malfunctions associated with water in fuel or use of out of date fuel	<ul style="list-style-type: none"> Operational planning and briefings include safety management systems for the on-site placement, carriage and handling of aviation fuel Refuelling practices will be consistent with the Air Charter Operator's Safety Management System and will be under the direct supervision and direction of the Senior Pilot Refuelling to be conducted by pilots in accordance with company and industry standards. The applicable QPWS standard is that refuelling is the pilot's responsibility. Unless directed otherwise by the pilot, all QPWS personnel will stand clear and observe refuelling from a distance of not less than 30 metres. On-site Operations Controller and Senior Marksman will audit such plans for adequacy and monitor procedures for compliance. All persons will peruse and apply <u>avgas MSDS</u> requirements. Appropriate fire extinguishers (other than those in helicopters) will be provided at the helicopter landing site (HLS) 	serious	unlikely	medium

Risk description What can happen and how can it happen?	Control measures How the risk will be managed	Risk assessment Bearing in mind planned control measures		
		Consequence	Likelihood	Level of risk
Use of aviation fuel (Avgas 100LL).....continued from previous page	<ul style="list-style-type: none"> Fuel dumps to be located as far as practicable from landing zone and in accordance with — <ul style="list-style-type: none"> the <i>Dangerous Goods Safety Management Act 2001</i>; all applicable CASA regulations; and the QPWS JSA & Risk Mgt. Plan for storage of large dangerous goods Drum handling in accordance with OH&S requirements. Flammable liquids not to be used as accelerant 			
Contact with spinning rotor blades 1. Severe or fatal injury from walking into main or rear rotors. 2. Severe or fatal injury from putting head or fuel pump into main rotor or horizontal stabilisers while refuelling.	<ul style="list-style-type: none"> All on-site personnel will attend the Senior Pilot's' pre-shoot safety briefing on helicopters Pilots and all other personnel on-site will check and caution anyone not observing proper approaches to helicopters, regardless of experience. All personnel will treat shut down helicopters with the same respect as ones that are idling – this is in the context of positively attempting to avoid complacency around helicopters. All persons must not approach or leave a helicopter other than from the front quarter, and unless under the direct supervision of the pilot; never when the engine and rotors are running down or starting up. Operations Controller, pilots and shooters will ensure untrained personnel do not approach HLS unsupervised 	major	rare	low

Risk description What can happen and how can it happen?	Control measures How the risk will be managed	Risk assessment Bearing in mind planned control measures		
		Consequence	Likelihood	Level of risk
Landing site hazards 1. Landing sites pose potential safety risk associated with critical flight manoeuvres, e.g. - take-offs and landings; multiple machines, presence of fuel, refuelling activity, obstacles, dust, debris and disorientation from noise, down wash and presence of personnel. 2. Specific risks are those associated with take-off or landing accidents/incidents that can compound in severity by the striking of other aircraft, fuel, obstacles and personnel on ground. 3. Refuelling fires (addressed separately). 4. Injury from spinning rotors (addressed separately).	<ul style="list-style-type: none"> • HLS to meet the minimum requirements of <u>CASA Advisory Publication (CAAP) 92-2(1)</u> for basic HLS (copy on site) • Develop and implement Aerial Shot Plan and briefings in relation to— <ul style="list-style-type: none"> - landing site selection and controls - flying and communications disciplines - refuelling - handling and storage of fuel - Senior Pilot responsibilities - take-offs and landings not over water or camp facilities • Senior Pilot will check that landing site selection and procedures are adequate, both initially and on an on-going basis. 	major	unlikely	high
Engine and rifle noise Hearing loss	<ul style="list-style-type: none"> • All personnel will wear aviation helmets on a mandatory basis at all times when flying. • Earplugs (in addition to helmets) should be worn by shooters and pilots on a preferred basis. • Hearing protection to be worn by ground crew personnel during aircraft takeoffs and landings • All personnel will wear hearing protection at the on-site firing range on a mandatory basis. 	serious	possible	high

Risk description What can happen and how can it happen?	Control measures How the risk will be managed	Risk assessment Bearing in mind planned control measures		
		Consequence	Likelihood	Level of risk
Aerial shooting activities 1. Activities associated with aerial shooting are hazardous in that they create the potential for a range of undesirable outcomes 2. Financial loss associated with legal liability issues, e.g. - neighbour's stock shot, property, infrastructure or visitors shot or alarmed 3. Compromised best practice standards for humane destruction of animals and associated risks of breaches of the <u>Animal Care and Protection Act 2001</u> 4. Loss of reputation and integrity, e.g. poor marksmanship 5. Financial losses through voiding of third party liability insurance cover, or personal life insurance cover, i.e. - insurers will try to reduce their exposure by looking for breaches of law, policy exclusions for shooting activity, failure to disclose shooting activity etc. 6. Breaches of the <u>Workplace Health and Safety Act 1995</u>	<ul style="list-style-type: none"> Only appropriately trained and qualified QPWS personnel will engage in shooting of animals. Pilots will ensure flight operations do not compromise any CASA statutory requirements. On-site Operations Controller, pilots and shooters will develop daily flight operation plans to prevent incidents and accidents Pilots and shooters will ensure QPWS operational procedures for best practice humane destruction outcomes are rigorously applied. Pilots and shooters will ensure the <u>SCARM code of practice</u> guidelines are known and applied in all shooting activity. All personnel are to stop work immediately if subjected to any unsolicited media attention. Under no circumstances will media be allowed to view or film operations without specific approval the Operations Director. Audit operator's insurance cover to ensure it meets the SOA specification. Audit operations to ensure constant compliance with CASA and other civil legislation. Individuals should discuss flying activities with insurer for personal life cover. Ensure disclosure and express coverage. 	serious	unlikely	medium

Risk description What can happen and how can it happen?	Control measures How the risk will be managed	Risk assessment Bearing in mind planned control measures		
		Consequence	Likelihood	Level of risk
Non-compliance with statutory requirements 1. Compliance with a range of legislation pertaining to the use of helicopters and firearms creates some associated risks. Relevant statutes include;- - <u>Work Health and Safety Act 2011</u> - <u>Weapons Act 1990</u> - <u>Dangerous Goods Safety Management Act 2001</u> - <u>Stock Act 1915</u> - <u>Animal Care and Protection Act 2001</u> - <u>Nature Conservation Act 1992</u> - <u>Environmental Protection Act 1994</u> - <u>Criminal Code</u> - <u>Civil Aviation Act 1988</u> - CASA directives and advisory notes 2. Compromised departmental credibility 3. Compromising third party liability insurance in the event of breaches of relevant legislation.	• Project Director, Project Manager, on-site Operations Controller, Senior Pilot and all other relevant personnel to ensure developed and implemented Aerial Shoot Plan complies with all relevant statutory requirements.	moderate	possible	medium
Unskilled shooters The deployment of unskilled and inexperienced shooters can increase the likelihood of risks such as— - helicopter safety incidents - stress-induced pilot errors - legal liability	• The aerial platform marksmen have been selected for the task based on their demonstrated aptitude, experiences, competencies, and current accreditations • Peer review will be encouraged in the daily debriefing sessions to highlight and help address operational weaknesses (if any)	major	rare	low

Risk description What can happen and how can it happen?	Control measures How the risk will be managed	Risk assessment Bearing in mind planned control measures		
		Consequence	Likelihood	Level of risk
Unskilled shooterscontinued from previous page <ul style="list-style-type: none"> - animal welfare incidents - shooting accidents - wrong animals being targeted and shot - compromised relations with neighbours - compromised QPWS credibility 	<ul style="list-style-type: none"> • Pilots and all other personnel will be briefed by the on-site Operations Controller to report unsafe and undesirable incidents, practices and attitudes. • Based on advice/recommendations from either the pilots or the Senior Shooter, the on-site Operations Controller will exclude any shooter from the on-going involvement in the operation if deemed necessary 			
Inadequate maintenance of rifles <ol style="list-style-type: none"> 1. Eye, facial and hearing injuries from head spacing/locking failure, blow-back/explosions. 2. Exploding barrels from obstructions, etc. 3. Sub-standard levels of accurate shooting resulting in poor humane destruction outcomes 4. Costly interruptions to operational flying owing to unscheduled landings and take offs to attend to unserviceable firearms 	<ul style="list-style-type: none"> • Consistent with the <u>QPWS Firearms Manual</u>, all rifles are to have clearance by a licensed armorer and certified safe before being used. • Rifles will be cleaned daily, with any problems referred to armourers for appraisal and repair, as necessary. • Rifles will be allocated to individuals either prior to or for the duration of operations to ensure familiarity with individual firearms. • Only high quality factory ammunition will be used; no reloads. • Shooting glasses will be worn during all practice firing range shooting on a mandatory basis, and on a preferred basis during aerial shooting. 	moderate	possible	medium

Risk description What can happen and how can it happen?	Control measures How the risk will be managed	Risk assessment Bearing in mind planned control measures		
		Consequence	Likelihood	Level of risk
Hazards associated with practice firing range shooting 1. Gunshot injury to a shooter, observer or visitor 2. Hearing and eye damage. 3. Possibility of visitor being alarmed or being critical of seeing or hearing rifle range activity.	<ul style="list-style-type: none"> • The practice firing range will be positioned, planned and built through collaboration with the Senior Shooter, and it will conform to safe template requirements for .308WIN calibre cartridges • All range shooting will be in accordance with established range rules and procedures, under the supervision of the Senior Marksman • Shooting glasses and hearing protection will be worn during all practice firing range shooting on a mandatory basis • Implementation of appropriate controls to limit access to practice range by unauthorised personnel 	major	rare	low
Hazards associated with camping and temporary living arrangements 1. Fatigue/stress induced performance problems	<ul style="list-style-type: none"> • Rostering and deployment of pilots and shooters will be consistent with the <u>CASA fatigue management standard</u> • Operations Controller, Senior Shooter and Senior Pilot will collaborate to identify and address any perceived problems. • Aerial Shoot Plan and daily briefings will consider the issues and monitor to ensure appropriate rostering, etc. 	serious	rare	low

Risk description What can happen and how can it happen?	Control measures How the risk will be managed	Risk assessment Bearing in mind planned control measures		
		Consequence	Likelihood	Level of risk
Hazards associated with camping and temporary living arrangementscontinued from previous page 2. Fatigue/stress induced performance problems 3. Personal conflicts. 4. Alcohol induced problems	<ul style="list-style-type: none"> • Operational planning group will ensure best possible levels of camp comfort, food/cooking, etc. • Carry water in aircraft and drink regularly to avoid dehydration while flying (pilots and shooters). • Operations Controller, Senior Marksman and Senior Pilot must collaborate to recognise and control problems. • Ensure best possible camp/food conditions. • Mediation by Operations Controller, assisted as necessary by Senior Marksman and Senior Pilot • On-site Operations Controller has overall responsibility to monitor and control the consumption of alcohol • Following consultation with Senior Shooter and/or Senior Pilot, on-site Operations Controller will stand down any person offending (pilot, shooter or other personnel). 			

Are risks acceptable? Yes – provided that all of the risk control measures are implemented



RISK CALCULATORS

Qualitative measure of consequence or impact

Level	Example detail description
Minor	First aid treatment no lost time, insignificant financial loss and or environmental damage
Moderate	Medical treatment required. Injury/illness resulting in less than 4 days off work. Notable financial loss and/or environmental damage
Serious	Serious bodily injury/illness resulting in the loss of a part of an organ or requiring more than 4 days off work. Substantial financial loss and/or environmental damage
Major	Single fatality or permanent disability, significant financial loss, and/or serious environmental loss
Catastrophic	Multiple fatalities, extensive financial loss, disruption to services and/or disastrous environmental damage

Qualitative measure of likelihood

Level	Description
Almost certain	Is expected to occur in most circumstances
Likely	Will probably occur => 50% chance or above of occurring
Possible	Might occur at some time. There is clear evidence of such occurrences or there is a general view that such events could occur
Unlikely	Unlikely to occur, but there is a history of the event within the type of work, industry or environment
Rare	May occur only in exceptional circumstances but no history of such an event occurring

Qualitative risk analysis matrix – Level of risk

Likelihood	Consequences				
	Minor	Moderate	Serious	Major	Catastrophic
Almost certain	High	High	Very High	Extreme	Extreme
Likely	Medium	High	High	Very High	Extreme
Possible	Low	Medium	High	High	Very High
Unlikely	Low	Low	Medium	High	High
Rare	Very Low	Low	Low	Low	Medium



Extreme

Outcome *Risk not acceptable. Immediate urgent action required. Stop activity immediately*

Very High

Outcome *Risk not acceptable. Immediate management action required to reduce risk. Stop activity immediately.*

High

Outcome *Risk not acceptable. Prompt management action required to reduce risk*

Medium

Outcome *Risk not acceptable. Scheduled management action required to reduce risk.*

Low

Outcome **Schedule corrective actions as part of normal operations**

Very Low

Outcome **Monitor and review as a routine practice no direct action required.**

Hierarchy of controls as per the Workplace Health & Safety Risk Management Advisory Standard 2000

1	Elimination	Firstly try to eliminate the hazard. This may mean discontinuing dangerous work practices or removing dangerous substances or equipment.
2	Substitution	Substituting a less hazardous material or equipment.
3	Redesign	Redesigning the workplace equipment or work processes so work can be done differently
4	Isolation	Isolating the hazard from the person, or the person from the hazard
5	Administrative controls	Introduce administrative controls, which involve using procedures or instructions eg. education and training
6	Personal Protective	Use Personal Protective Equipment (PPE) as the final barrier between people and the hazard.

Attachment 4

Job Safety Analysis – Use of Firearms for Aerial Shooting

<p>Project / Activity: Use of firearms for Aerial Shooting</p> <p>Site: __Clemant State Forest__</p> <p>Department of National Parks Sport and Racing</p>	<p>Contractor: _____ ABN: _____ (if applicable)</p> <p>Phone No: _____</p>
<p>Persons completing this statement:</p> <p>Signature: _____ Date: __ / __ / __</p> <p>Signature: _____ Date: __ / __ / __</p>	

WARNING – Prohibited Activities

- Shooting from a helicopter cannot be undertaken in adverse weather conditions, e.g. - strong wind, rain, low cloud.
- Shooting must only be performed by trained and competent QPWS personnel who have been tested and accredited for suitability to the task and marksmanship and who hold the appropriate licences.
- Helicopter pilots must hold the appropriate licences and permits and be skilled and experienced in aerial shooting operations.
- Helicopter operators and shooters must have current CASA authorisations to carry and discharge firearms from an aircraft - CASA CAR 143 & 144
- Aerial shooting should comply with all relevant Federal and State/Territory legislation, policy and guidelines.
- Storage, use and transportation of firearms and ammunition must comply with relevant legislative requirements and the QPWS Firearms Manual.

Policy and Procedural guide
Safety Management & Conduct of Operations – aerial shooting

Key Steps	Equipment / Plant/ documents required	Possible hazards	Safety controls including PPE	Licences, qualifications or work permits	Who will Monitor/ Review
Accreditation	Training and licences	No accreditation	<ul style="list-style-type: none"> • Holds a current category A and B firearms licence • Completed and competent in a QPWS Level 2 Firearms Course • Completed and be competent in a DAFF-BQ Helicopter Marksmanship Course (QPWS Level 3) • To retain the QPWS Level 3 accreditation, shooter must have current Level 2 accreditation • Re-qualification for • Level 3 accreditation must be undertaken every 2 years • Helicopter Operator and shooter must have current CASA approval to discharge a firearm from an aircraft • All authorized QPWS shooters must possess a current First Aid Certificate. 	<ul style="list-style-type: none"> • Firearms licence issued pursuant to the <u>Weapons Act 1990</u> • Training, accreditations and authorizations pursuant to the <u>QPWS Firearms Manual</u>. • CASA authorities pursuant to CAR 143 & 144 • Current St John's Ambulance "Apply First Aid" certificate 	<p>QPWS Firearms Coordinator</p> <p>Project Manager</p> <p>On-site Operations Controller</p>
Safety and Maintenance	Firearms	<ul style="list-style-type: none"> • Unintended stoppages and personal injury • Firearms not 'zeroed' or 'shot in', leading to adverse humane destruction outcomes 	<ul style="list-style-type: none"> • All firearms must be checked by a qualified gunsmith every 12 months and before a major operation, and certified as being in a safe operating condition. • Firearms to be 'zeroed' (shot in) to suit terrain and other related conditions relevant to the operation 	<ul style="list-style-type: none"> • Certification of the serviceability of firearms to be undertaken by a licensed armourer pursuant to the <u>Weapons Act 1990</u> • Training, accreditations and authorizations pursuant to the <u>QPWS Firearms Manual</u>. 	<p>On-site Operations Controller</p> <p>All licensed and accredited shooters</p>

Key Steps	Equipment / Plant/ documents required	Possible hazards	Safety controls including PPE	Licences, qualifications or work permits	Who will Monitor/ Review
Safety and Maintenancecontinued from previous page	Firearms	<ul style="list-style-type: none"> Cartridge case ejection angles not right, i.e. – risk of ejected cartridge cases contacting aircraft rotor blades 	<ul style="list-style-type: none"> Ensure that cartridge cases are ejected at an angle of 45 degrees forward (approximately) and not above the horizontal 		
Registers	Firearms	<ul style="list-style-type: none"> Breach of <u>Weapons Act 1990</u> Breach of <u>QPWS Firearms Policy and Procedures</u> 	All firearms must be signed out on <i>Form 23 – Employees issue Register</i> , before departure from base		All licensed and accredited shooters
Transportation	Firearms	<ul style="list-style-type: none"> Breach of <u>Weapons Act 1990</u> Breach of <u>QPWS Firearms Policy and Procedures</u> 	All firearms must be transported to and from the operational base in conformity with the <u>Weapons Act 1990</u> and the <u>QPWS Firearms Policy and Procedures</u>		All licensed and accredited shooters
Storage	Firearms	Firearms not stored correctly	All firearms must be stored in accordance with Section 60A of the <u>Weapons Regulation 1996</u>	Weapons Regulation 1996	All licensed and accredited shooters
	Ammunition	Ammunition not stored correctly	All ammunition is to be stored separately from the firearm and locked away in a cool dry place	Section 21 <u>QPWS Firearms Policy and Procedures Manual</u>	

Key Steps	Equipment / Plant/ documents required	Possible hazards	Safety controls including PPE	Licences, qualifications or work permits	Who will Monitor/ Review
Operational requirements	<p>Suitable firearms and ammunition</p> <p>Spare firearms and ammunition</p> <p>Servicing and maintenance of firearms</p> <p>Ammunition</p> <p>Firearms</p>	<p>Ammunition not matched to firearm. Firearm or ammunition in bad condition</p> <p>No back up firearms and ammunition</p> <p>If firearms are not serviced and maintained regularly they will malfunction</p> <p>Ammunition not correct for firearm or target species</p> <p>Empty cardboard boxes left in helicopter that will get blown out and caught in the controls or mechanical parts of the helicopter</p> <p>Returning loaded firearm into the cockpit of the helicopter while in flight could result in accidental discharge endangering life and machinery</p>	<ul style="list-style-type: none"> Ensure that ammunition is correct for each firearm Ensure that all firearms and ammunition are in good condition. Ensure that spare firearms and adequate supplies of ammunition are taken to the operation Ensure that servicing is conducted each day after completion of operation or if in dusty conditions or the firearm is malfunction as required Ensure correct ammunition for firearm and target species Ensure that ammunition is removed from cardboard boxes and stored in a heavy duty bulk container for use in the helicopter and magazines are loaded from these boxes Ensure that firearms are unloaded before entering the helicopter and before leaving the helicopter and before cleaning and storage During operational flying, ensure that the firearm is unloaded before returning it into the helicopter cockpit 	<p>Section 17 of the <u>QPWS Firearms Policy and Procedures Manual</u></p>	Operations officer and accredited shooters

Attachment 5

**Decision Support Tool for using
R22 Beta II and R44 Helicopters for QPWS Aerial Operations**

Before using a helicopter for aerial operations, QPWS staff should ensure that everyone involved is comfortable with the proposed operations, familiarise themselves with the different types of helicopters and calculate the weight parameters for the helicopter to maximise safety.

The generic parameters for the R22 Beta II, R44 Raven I and R44 Raven II helicopters are provided in Table 1.

Table 1: Parameters for R22 Beta II, R44 Raven I and R44 Raven II helicopters

Parameter:	R22 Beta II	R44 Raven I	R44 Raven II
Seat weight (kg)	109	136	136
Generic empty weight – doors on (kg)	395	654	680
Maximum Take Off Weight (kg)	622	1089	1134
Number of Persons On Board	Pilot +1	Pilot +3	Pilot +3

The checklist provided on page 3 must be approved by the Regional Manager prior to the conduct of any QPWS aerial operations.

Important Background Information:

Empty weights vary slightly from helicopter to helicopter. Helicopters are weighed at the factory and the specific weight, depending upon configuration, is included in the Pilots Handbook. QPWS staff should refer to the Pilots Handbook for exact weights of each helicopter. The calculation tables include a generic empty weight which is over and above typical empty weights to allow for individual variations.

This decision tool / approval process only applies to Robinson R44 Raven I, R44 Raven II and R22 Beta II helicopters. It does not apply to other R22 helicopters (such as R22 Alpha and R22 Beta helicopters), which have a smaller engine size and are deemed unsuitable by QPWS for aerial operations.

Helicopter seats are designed to crush in the advent of an accident. Overloading the seat reduces the efficacy of the crumple features of the seat. Seat weight is the total weight being applied to the seat. Firearms, crash kits, ammunition etc are included in the Maximum Take Off Weight.

Aerial shooting is conducted with one or more doors removed which lightens the generic empty weight per door. The weight calculators used on the following page are based on both doors being left on the helicopter. If you intend to remove one or more doors, reduce the empty weight of the helicopter by:

- for R22 Beta II helicopters —2.36 kg for each door removed;
- for R44 helicopters —3.4 kg for each front door removed; and/or
- for R44 helicopters —3.17 kg for each rear door removed.

Weight parameter calculators

Use the relevant calculation table below to calculate the weight parameters for the helicopter that is being used for the aerial shooting operation.



Table 2: R22 Beta II Helicopters

Parameter:	Example	Use to Calculate
<i>Empty weight</i>	395 kg	
<i>Pilot weight</i>	80 kg	
<i>Shooter weight</i>	75 kg	
<i>Cargo total</i>	19 kg	
Zero fuel weight (ZFW) total of above	= 569 kg	
Max take off weight (MTOW)	= 622 kg	
Available fuel weight (AFW) = (MTOW – ZFW)	= 53 kg	
Available fuel volume (AFW / 0.72sg) Note: 112 L = full fuel	= 73 litres (Max. 112 L)	
Endurance at 30 litres / hour	= 2.4 hours (Max. 3.7hrs)	
Allow 30 mins reserve	= 1.9 hours	

Table 3: R44 Raven I Helicopters

Parameter:	Example	Use to Calculate
<i>Empty weight</i>	654 kg	
<i>Pilot weight</i>	80 kg	
<i>Shooter weight (Passenger One)</i>	75 kg	
<i>Passenger Two</i>	85 kg	
<i>Passenger Three</i>		
<i>Cargo Total</i>	19 kg	
Zero fuel weight (ZFW)	= 913kg	
Max take off weight (MTOW)	= 1089 kg	
Available fuel weight (AFW) = (MTOW – ZFW)	= 176 kg	
Available fuel volume (AFV / 0.72sg) Note: 185 L = full fuel	= 244185 litres (Max. 185 L)	
Endurance at 60 litres / hour	= 3 hours (Max. 3hrs)	
Allow 30 mins reserve	= 2.5 hours	

Table 4: R44 Raven II Helicopters

Parameter:	Example	Use to Calculate
<i>Empty weight</i>	680 kg	
<i>Pilot weight</i>	80 kg	
<i>Shooter weight (Passenger One)</i>	75 kg	
<i>Passenger Two</i>	85 kg	
<i>Passenger Three</i>		
<i>Cargo Total</i>	19 kg	
Zero fuel weight (ZFW)	= 939 kg	
Max take off weight (MTOW)	= 1134 kg	
Available fuel weight (AFW) = (MTOW – ZFW)	= 195 kg	
Available fuel volume (AFV / 0.72sg) Note: 185 L = full fuel	= 270185 litres (Max. 185 L)	
Endurance at 60 litres / hour	= 3 hours (Max. 3hrs)	
Allow 30 mins reserve	= 2.5 hours	

R22 Beta II and R44 Helicopter Risk Management Checklist for QPWS Operations

A yes answer is required for each of the questions below:

For all helicopter types:

- | | Y | N |
|---|--------------------------|--------------------------|
| 1. Have the weight parameters for the helicopter been calculated – using the calculation tables provided (Table 2, 3 or 4)? | ☐ | ☐ |
| 2. Is the total combined weight of the pilot, shooter, passengers, equipment, ammunition, firearms, fuel and empty weight of helicopter below the maximum take off weight for the type of helicopter? | ☐ | ☐ |

If using an R22 Beta II:

- | | | |
|---|--------------------------|--------------------------|
| 3. Does the helicopter pilot have a minimum of 1000 hours mustering flight time in an R22 helicopter? | ☐ | ☐ |
| 4. Are operations being conducted below 1500 feet ASL? (note: this question relates to air density – ASL = above <u>sea</u> level, NOT above <u>ground</u> level) | ☐ | ☐ |
| 5. Are operations being conducted over open terrain? | ☐ | ☐ |
| 6. Are the QPWS staff conducting operations comfortable that they will be flying in an R22 Beta II? | ☐ | ☐ |
| 7. Do individual QPWS staff conducting operations each weigh less than 109 kg including clothing? | ☐ | ☐ |

If using an R44:

- | | | |
|---|--------------------------|--------------------------|
| 8. Do individual QPWS staff conducting operations each weigh less than 136 kg including clothing? | ☐ | ☐ |
|---|--------------------------|--------------------------|

If carrying a spare firearm:

- | | | |
|--|--------------------------|--------------------------|
| 9. Can a spare firearm be carried in a manner that does not interfere with the controls of the helicopter? (R22 Beta II helicopter only) | ☐ | ☐ |
| 10. Is the pilot of the helicopter comfortable with method of carrying the spare firearm? | ☐ | ☐ |

Submitted by: Project Manager / Aerial Shooter

Approved by: Regional Director

Date:



Attachment 6

OPERATIONS CONTROLLER'S CHECKLIST

Location of operation: _____

Period of operation: From: _____ To: _____

Operations Controller: _____

Item #	Action check item	Action/Check completed date	Initial
Pre-ops. checklist			
1	Pest Activity Proposal and Aerial Shoot Plan approved		
2	Higher level approval to proceed with operation sighted (as necessary)		
3	Delegations of responsibility identified:-		
	a) Operations Controller		
	b) Senior Pilot		
	c) Senior Marksman		
	d) SAR watch delegate		
	e) Ground support delegate		
4	Aerial contractor requirements:-		
	a) Copy of current public liability insurance policy covering legal liability to third parties for bodily injury or property damage for \$10,000,000 at a minimum.		
	b) CASA authority to carry and discharge firearms		
	c) Pilot qualifications sighted for CASA low-level flying and mustering endorsements		
	d) CASA approved aeronautical VHF radio and transceiver, UHF and preferably satellite phone installations		
	e) Helicopters fitted with a satellite tracking system to track the aircraft movements, with capacity to transmit the position of the helicopter when initially powered up and position updates at set time intervals to a web server, or similar, during all operational flights.		
	f) Helicopters fitted with fully functional Global Positioning System (GPS).		
	g) Maintenance Release document for each aircraft inspected and verified		
5	Aviation fuel requirements:-		
	a) Copy of MSDS for relevant aviation fuel kept on site		
	b) Correct storage (e.g. – bunded storage)		
	Fire extinguishers and fuel spill containment kit on site		
6	Notifications to neighbouring landholders		
7	Copies of signed landholder agreements on site where off-park shooting activity is intended		

8	Relevant maps and copies of COPs and SOPs on site		
Pre-ops. safety management & briefings			
9	Risk assessment and JSA reviewed with shoot team		
10	Emergency Response Plan for location reviewed and copy available on site		
11	Public access closures in place and monitoring arrangements identified		
12	Local radio communications in place and tested		
13	On-site organisational (command) structure and responsibility delegations identified, described and understood.		
14	On-site induction briefing by Operations Controller		
	a) All on-site personnel to be present		
	b) Operations objectives described		
	c) Organisational (command) structure and responsibilities described		
	d) Senior Pilot or pilot-in-command –		
	<ul style="list-style-type: none"> • Outlines safety management requirements for in-flight and helicopter landing site (HLS) • Operational parameters, vertical and horizontal separation protocols for multiple aircraft operations discussed and understood • Identifies and describes radio communications and satellite tracking arrangements that will be implemented • Identifies and describes SAR watch and response arrangements that will be implemented • Identifies and describes aviation fuel and refuelling arrangements that will be implemented at the HLS 		
	e) Senior Marksman –		
	<ul style="list-style-type: none"> • Outlines firearms and ammunition storage and handling arrangements • Outlines safety management requirements relating to access and use of on-site firing range 		
	f) Public access closures and monitoring arrangements described and monitoring arrangements delegated		
	g) Media response arrangements identified and discussed		
	h) Camp rules identified and discussed		
	i) All personnel to provide individual emergency contact details on relevant form		
15	Helicopter safety induction briefing by Senior Pilot or pilot-in-command		
	a) All on-site personnel to be present		
	b) Helicopter approach procedures described		
	c) Fixed ELT location and emergency in-flight procedures identified and described, e.g. emergency crash procedures		
	d) Preferred limits (restrictions) on the numbers and permitted activities for shooters and ground support staff around helicopter		
	e) Procedures for loading of firearms and ammunition identified, described and understood		
	f) Procedures for manual handling of drums and aircraft refuelling		

Attachment 7

SAR Watch Log

Date:		Location:		SAR Watch Officer:			
Flight #							
Aircraft rego #							
Pilot							
Passenger(s)							
Endurance							
	Time	Position	Time	Position	Time	Position	Time
Engine start ⁴							
Airborne ⁵							
Coms. ⁶							
Coms.							
Coms.							
Landed.							

⁴ radio check with each aircraft to be performed before take off

⁵ radio check with each aircraft to be performed within 5 minutes of take off

⁶ radio schedules to occur every 30 minutes on the half hour

(the following text appears on the reverse page of the SAR Watch Log)

ACTION TO BE TAKEN IN AN EMERGENCY OR COMMUNICATIONS FAILURE

UNCERTAINTY PHASE

- No known accident
- Failure to cancel flight following communication failure of less than 30 minutes beyond the half hourly radio schedule

Do the following –

1. Advise Operations Controller
2. Check/confirm last known position of aircraft, or last position report
3. Advise other contracted aircraft in area to obtain visual and/or call missing aircraft
4. Call the aircraft satellite or mobile phone as applicable
5. Contact QPWS ground crew in area (if applicable) and instruct them to maintain a watch
6. Notify Regional Manager

DISTRESS PHASE

- Possible or known accident
- Distress (MAYDAY) call received, or
- Communication failure in excess of 30 minutes beyond the half hourly radio schedule

Do the following –

1. Operations Controller to advise aerial contractor's headquarters
2. Operations Controller to notify OIC of local Police Station to activate coordinated emergency response procedures.
3. Advise "AUSSAR" - 1800 815 257



Attachment 8

Personnel Registration Form

Location of operation: _____

Period of operation: From: _____ To: _____

Person's Details

Given Name(s) _____

Surname _____

Address _____

Emergency contact details

Given Name(s) _____

Surname _____

Address _____

Home Phone _____

Work Phone _____

Mobile Phone _____

Relationship _____

(....continued overleaf)

(The following text appears on the reverse page of the Personnel Registration Form)

Induction checklist

	YES	NO
Attended briefing/induction prior to commencement of operations	☐	☐
Aims and objectives of the planned operations explained	☐	☐
Staffing structure & lines of authority explained	☐	☐
Your responsibilities explained	☐	☐
Operational base layout and amenities explained	☐	☐
General health & safety policies & procedures explained	☐	☐
Daily SAR watch procedures explained	☐	☐
Recovery and emergency response plans explained	☐	☐
Accident/incident reporting procedures explained	☐	☐
Attended and understood helicopter safety briefing	☐	☐
Aviation fuel storage and handling risk management explained	☐	☐
Firearms and ammunition storage risk management explained	☐	☐

I, _____ have been inducted in all of the topics listed above and I know my responsibilities as a member of the operational team

Signature of inductee _____ Date _____

Signature of Operations Controller _____ Date _____

Attachment 9

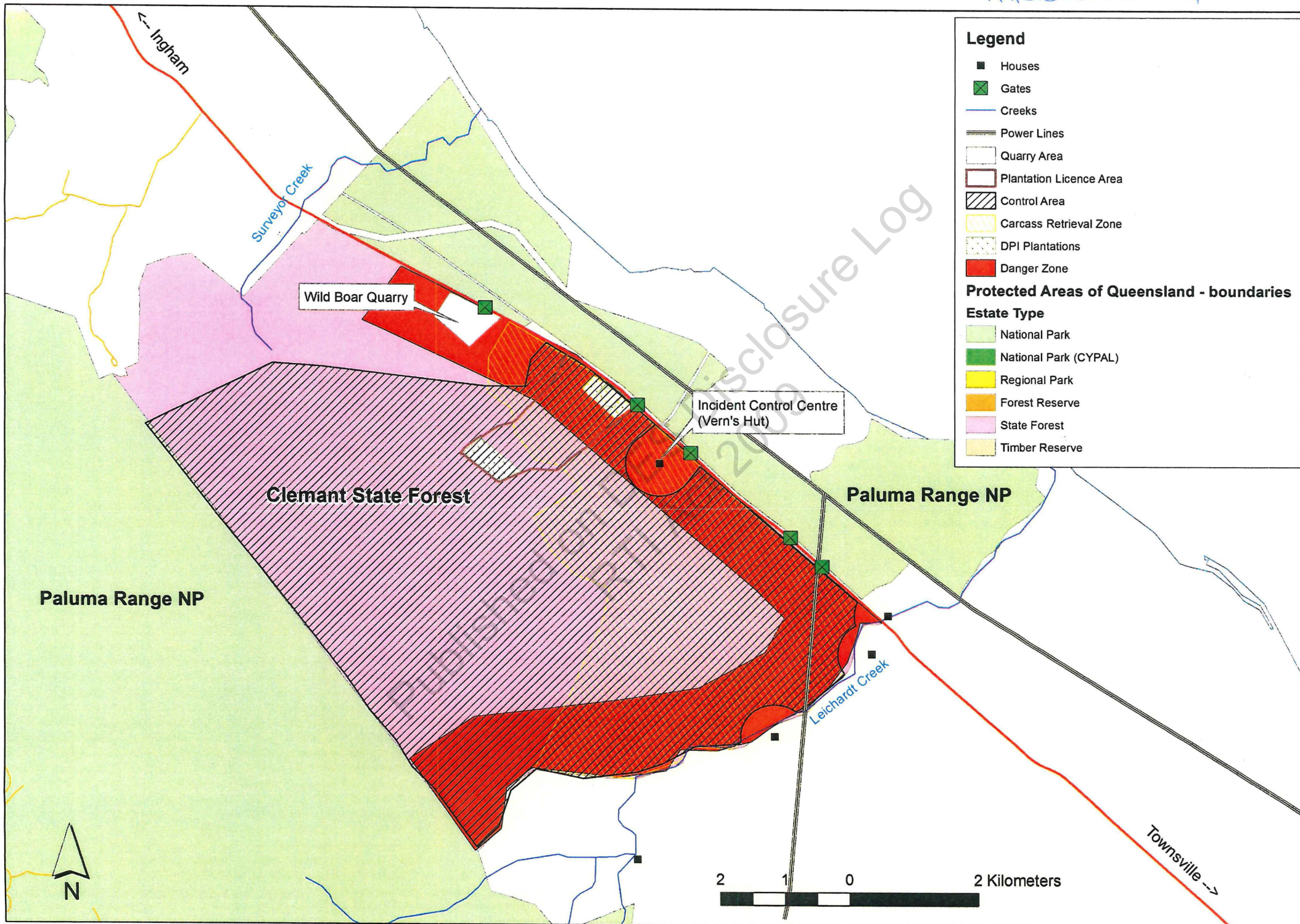
Operations Debriefing Report

Management Unit/Region		Prepared by:	Name:	
Location of operation			Position:	
			Date:	
Activity Date/s:		Endorsed by:	Name:	
			Position:	
			Date:	
Personnel in attendance:	See attached list	Location of Debrief:		

Functional Area	Identified Successful Practices	Identified Problems and Remedial Actions
Preparation levels (e.g.) <ul style="list-style-type: none"> Operational procedures in place; Pre-emptive maintenance (e.g. – logistical support, equipment and communications strategy). 		
Implementation of operations (e.g.) <ul style="list-style-type: none"> Adequacy of objectives, strategies and tactics; Operational briefing; Incident management function and coordination; Access / egress; Resourcing; Equipment performance; HR considerations (e.g. - shifts, catering, accommodation, transport); Environmental considerations. 		

Functional Area	Identified Successful Practices	Identified Problems and Remedial Actions
Health & Safety issues (e.g.) <ul style="list-style-type: none"> Injuries, “near hits”, counselling requirements etc. Emergency evacuation plan, Adequacy of SAR Watch arrangements 		
External considerations (e.g.) <ul style="list-style-type: none"> Social & political issues / implications etc; Media issues. 		
Other Functional Areas		
Comments		
Recommendations		

- Outcomes of all debriefings are to be referred to senior District and Regional staff, including the Regional Safety Co-ordinator, in accordance with local operational directives.
- Information gained in debriefings should be—
 - ~ Used to immediately address any urgent problems or failings; and
 - ~ Used to make improvements to pest management activity procedures, workplace health and safety procedures, personnel training systems, personnel management practices and other policies and procedures.



Pest Management Activity Proposal

General Instructions

A pest management activity proposal is used to detail specific operational information about pest's, on any number of reserves, where the management or control activities are the same or very similar.

For example a single activity proposal would be required for each of these situations:

- Wild dogs are to be baited with 1080 across all reserves in a ParkInfo instance
- Feral pigs are to be controlled through an initial aerial shoot followed by ground baiting with 1080 in x, y and z reserves
- Feral pigs are to be trapped in reserves a, b and c in the same ParkInfo instance as example 2
- Exotic grass species x, y and z are to be sprayed with Glyphosate across all reserves in a ParkInfo instance

Separate proposals will be required for unrelated control activities within the same area such as for pest plants and pest animals. When completing activity proposals it is important to take a broad and integrated view of pest management.

Relevant QPWS policies and procedural guides must be used when completing this proposal.

Specific instructions occur at the end of the form. Ensure that you make full use of these instructions and read them carefully.

1. Proposal number: 1/2015
2. ParkInfo Instance(s): Paluma Aggregation
3. Name of QPWS Managed Area(s): Clemant State Forest
4. Prepared by: Officer: s.73 Position: Senior Ranger Pest Management
5. Date prepared: 1/10/2015
6. Project Manager: Officer: s.73 Position: Senior Ranger Pest Management

7. List the target species covered by this proposal and indicate their status under the *Land Protection (Pest and Stock Route Management) Act*:

Species	Declared status			Declared under Local Govt	WONS	Other Significance
	Class 1	Class 2	Class 3			
Feral Horse (<i>Equus caballus</i>)						

8. Approval:

Approval for this proposal is required until 2016

9. Status of control actions (tick relevant box):

- ☒ Initial action
 ☐ Follow-up action
 ☐ Final action
 ☐ Once off action

If it is part of an ongoing program indicate:

expected completion time _____
 review time(s) _____

10. What planning supports this proposal:

Is there a QPWS Pest Management Strategy for the area

☒ Yes ☐ No

If yes, name of strategy

Paluma Aggregation Level 2 Pest Strategy

What other plans / agreements are relevant (tick relevant boxes and provide details where applicable):

Type of plan / agreement / program	Name of plan	Species involved
☐ Local Govt Area Pest Management Plan	Townsville City Council Pest Management Plan	Various, feral horses are currently being added.
☐ Regional Pest Management Plan		
☐ Species Management Plan		
☐ Cooperative program with neighbours or other stakeholders		
☐ Other		

11. Record of interest in pest species:

Is there an external interest in the species covered by this proposal?

☒ Yes ☐ No

Feral horse management is an emotive issue and one that attracts significant community interest. Community groups such as the Brumby Alliance have a strong interest in feral horse management both nationally and locally. There is significant, although varying, local interest in feral horse management in the local area surrounding Clemant SF. Local opinion varies from support to remove or "cull" feral horses in the general area to complete opposition to any form of management control.

QPWS undertakes feral horse management activities at various locations around Qld. All of these feral horse management programs are primarily concerned with the impacts of feral horses and strategies to reduce these impacts. At Clemant SF feral horses not only impact the natural resources of the reserve they also present a clear safety hazard to users of the Bruce Highway with two recent road accident fatalities. These recent incidents have given rise to strong community sentiment that feral horse populations in the general area around Clemant SF need to be reduced significantly in order to reduce the incidence of feral horses on the Bruce Highway.

There are also potential ownership issues with domestic horses and feral horses often occurring together. It can be difficult to differentiate between true feral horses and un-branded stray domestic horses. It is clear that all straying horses, whether feral or domesticated present road safety hazards.

12. Detail the desired outcomes of the Pest Management Activity Proposal for each target species or site:

Activities to be undertaken on:

☒ QPWS lands ☐ Other lands, specify _____

For programs undertaken on both QPWS lands and other lands, use separate rows in the table for the activities.

Species/Site	Extent: Area (ha) or linear distance (m, km)		Number / density / abundance within area to be managed	Impacts caused by pest species	Overall objectives	Measurable outcomes (covered by this proposal)	How to be assessed
	Total extent	To be managed under this proposal					
Feral Horse (<i>Equus caballus</i>)	5402 ha	App 4000 ha	Estimated to be between 100 and 200 feral horses.	Public safety along the Bruce Highway with feral horses straying onto the road causing road accidents and two fatalities. Overgrazing of ground layer vegetation altering floristic and structural compositions and changing fire regimes.	To significantly reduce the feral horse population to a level where; 1. The threat of feral horses straying onto the Bruce Highway are negligible, and 2. The environmental impacts are at levels considered acceptable such that ground layer vegetation outside of grazing exclosures is similar to that inside the exclosures.	Example: >20% increase in average survival of blue gum seedlings in years following eradication 1. The grazing exclosure monitoring reveals the floristic and structural composition of ground layer vegetation outside of the exclosure is similar to that inside. 2. Ground observations from QPWS staff undertaking park patrols reveals few incidences of feral horses in close proximity to the State Forest boundary fronting the Bruce Highway.	A Monitoring Proposal is generally not required – see notes provided below 1. Continued monitoring of grazing exclosures at Clemant State Forest. 2. Recorded observations of feral horses during regular park patrols.

13. Proposed control methods (group species if the control methods will be the same):

Species / site	Activity type (see instructions for definitions)	Methods (include disposal where applicable)	Follow-up methods (if applicable)	Timing and duration
Feral horse in control area.	H1	<p>Aerial shooting of feral horses from within the control area (see attached map). The plan as proposed is.</p> <ul style="list-style-type: none"> - Animal welfare and staff safety are the two major and overriding objectives of all operational activities under this Activity Proposal. - Aerial shooting operations under this Activity Proposal will involve two (2) R44 helicopters working in combination. One R44 will act as an observer platform whilst the other R44 is engaging animals. The two machines are to be separated by vertical height and horizontal distance with both Pilots in constant radio communication & visual contact - Only animals within the control area will be targeted. - Animals outside of the control area may be mustered into the control area if practical. - Strict compliance with an "over kill" policy will be adhered to. Only one animal at a time will be targeted and the helicopter will not move on until the targeted animal is destroyed to the satisfaction of shooter and pilot. - An independent veterinarian will be in one of the helicopters and will observe the operation and report on humane destruction outcomes. Ground autopsies of a selected number of horses may occur if practical. - Strict compliance with relevant COP's and SOP's. - Semi-automatic .308 firearms to be used. - 168 grain OTM ammunition to be used. This ammunition has been audited many times and found to be particularly effective on feral horses. - Track logs to be recorded by each helicopter. Each destroyed animal will be accurately marked with a GPS waypoint. - This program requires control activities to occur adjacent to the Bruce Highway. Animals located in close proximity to the Highway will be "mustered" away from the road before being controlled. - Feral horse animal carcasses within the retrieval zone are to be 		

		<p>removed and disposed of using QPWS staff and equipment.</p> <ul style="list-style-type: none"> - Ground support crew positioned at major access points to prevent access during the operation. - Will require the closure of the entire SF for a period of some months. - Stock and Rural Crime Investigation Squad from QPS have been notified. - QPS support to manage traffic along the Bruce Highway. 		
--	--	--	--	--

14. Will this Pest Management Activity Proposal require closure of any part or all of the area:

- ☐ No
- ☒ Yes, all of area
- ☐ Yes, part of area

15. Provide a map for each target species showing (tick relevant boxes to indicate information shown on map(s) or write n/a):

- | | |
|--|--|
| ☐ Population/infestation extent | ☒ Area to be closed |
| ☒ Area where control activities will be undertaken | ☒ Location of regulatory signs |
| ☐ Trap/bait station locations | ☒ Danger Zone(s) |
| ☐ Infrastructure/visitor use areas | ☒ Access roads/tracks |
| ☐ Topography | ☒ Neighbours relevant to management activities |
| ☐ Vegetation | ☐ Aircraft landing site/helipad |
| ☐ Fuel stations | |

If map becomes too cluttered it may be necessary to provide more than 1 map.

16. Environmental risks Indicate the potential level of risk associated with the pest management activities. Use Very High (VH), High (H), Medium (M), Low (L) or Not Applicable (N/A) and how any identified risks will be minimised. Do not copy and have a separate table for each herbicide.

Type of risk	Level of risk	Details of risk	How to be minimised
Impacts on non-target species	L	No non-target species will be affected by these control operations.	No particular actions needed.
Interactions with other pests	L	Possible food resource for feral pigs but removing carcasses greatly reduces this.	No particular actions needed.
Increase in target species activity	L	Possible increase in feral horse movement due to control activities. Of particular concern is increased horse activity adjacent to the Bruce Highway.	Police patrolling the Bruce Highway to control traffic. Helicopters to muster horses away from the Bruce Highway.
Impacts due to timing of activity	N/A	N/A	N/A
Detrimental impacts on natural values	N/A	N/A	N/A
Erosion	N/A	N/A	N/A
Contamination of waterways and water bodies	L	Dead animals in water bodies or creeks.	No animals to be controlled near creeks or water bodies.
Detrimental impacts on cultural values	N/A	N/A	N/A
Other			

17. Resources required (complete as applicable – figures are indicative only):

Item	Source	Quantity	Time (hrs)	Cost rate	Approx costs (\$)
Personnel	QPWS staff				
	Non-departmental				
	Contractors to QPWS				
	Volunteers				
Allowances	Travel				
	Other				
Equipment	Internal				
	External				
Vehicles					
Aircraft hire					
Materials	Chemicals				
	Baits				
	Ammunition				
	Other				
Total:					\$60 000 (as per budget submission prepared by RD Northern).

Attachment A: Risk Assessment – Safety Strategy

This attachment must be completed for all Pest Management Activity Proposals Note: It may be possible to use/refer to regional/local Risk Registers, or links to approved procedural guides that already identify risk reduction controls, to populate table (e.g. compliance with Feral Animal Aerial Shooting Operations Policy and Procedural Guidelines).

Step in task	Hazards in carrying out this step	Risk (Harm)	Existing risk controls	Risk rating with existing treatment s/ controls			Additional risk controls required	Risk rating with additional treatment s/ controls		
Helicopter aerial shooting	Falling from helicopter, helicopter crash, person contact with blades, electric shock, accidentally shot, hitting non-targets with firearm,	Injury, burn, cut.	<ul style="list-style-type: none"> Shooters are qualified through an independent external certification process accepted by stakeholders and in line with Aust. standards. Each shoot has a pest management plan including a risk assessment and set of emergency procedures. Staff to comply with Policy & Procedure guide for Feral Animal Control Aerial Shooting Tool box talks and task briefings to remind staff of safety issues. Visitors excluded from area during shooting operations. before operations commence; http://insite2.dnr.qld.gov.au/workingsafe/robin_content/docs/whs_risks_tools/job_safety/aerial_shooting_helicopters.pdf and http://insite2.dnr.qld.gov.au/workingsafe/robin_content/docs/whs_risks_tools/job_safety/aerial_shooting_firearms.pdf Refer to Northern Region Risk Register.	Rare	Minor	Medium 10	No additional controls required.			

Attachment B: Safety and Medical Evacuation Plan

Only required for Pest Management Activity Proposals involving firearms or other serious risk.
To be completed in conjunction with Attachment A.

Emergency contact details are provided on the Pest Management Contact List found at the beginning of the program. This list must be readily available to all participants during all pest management activities.

B1. What medical assistance is available on site and where are the nearest medical facilities:

Description	Location
On-site medical assistance	
First-aid kit/s	Both helicopters and all support vehicles.
Trained personnel	Both helicopters and all support vehicles.
Nearest professional medical help	
Ambulance station	Townsville
Hospital	Townsville

B2. Provide information on currently trained personnel involved in the pest management activity:

Name	Training
s.73	Firearms and first aide.
	Firearms and first aide.
	Firearms and first aide.
	First aide.

B3. What transport and facilities are available on site for a medical evacuation:

Transport

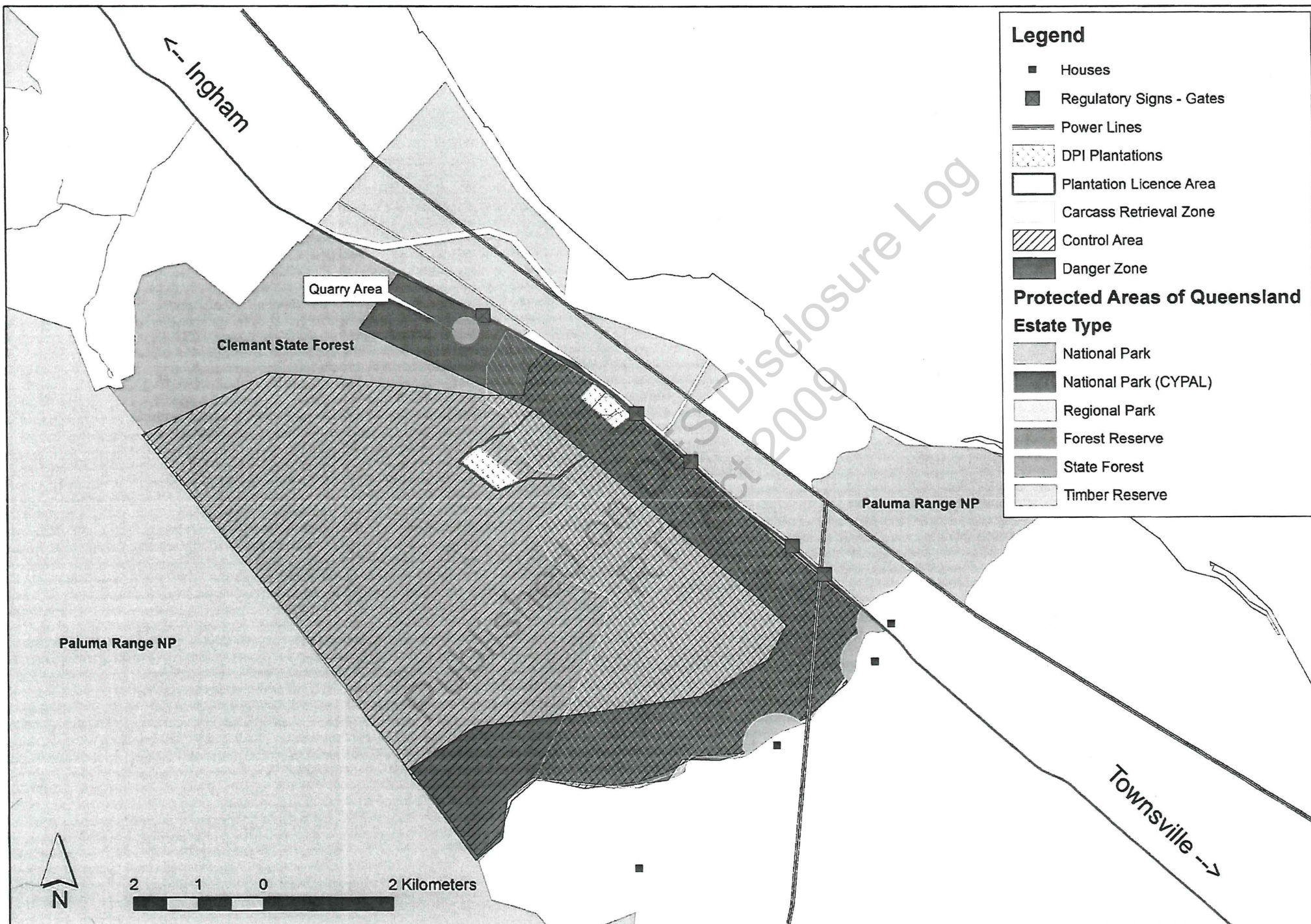
Yes/No	Type	Description
Yes	Helicopter	Two helicopters will be on site and available for emergency use.
Yes	Vehicle	A number of QPWS vehicles will be on site and available for emergency use.
Yes	Police	Police will be on site and available to assist with emergencies.

Facilities

Yes/No	Type	Description (e.g. length, size)	GPS location
No	Airstrip	There is no airstrip on site.	
No	Helipad	There is no helipad on site.	
N/A	Vessel landing area	N/A	

B4. Provide details of how the medical evacuation would be achieved:

Phase	Details
Initial response	Notify on site Police and or other emergency services. When assistance dispatched notify QPWS management.
Transport to accessible location	Helicopter or Police vehicle or QPWS vehicle.
Transport to professional medical facility	Ambulance or Helicopter or Police vehicle depending on circumstances.



Pest Management Cover and Approval Sheet – Activity Proposals involving feral horses

This cover and approval sheet is to be used only for Pest Management Activity Proposals involving feral horses as these require approval by Deputy Director-General QPWS

Page: 1

Name of QPWS Managed Area(s): Clemant State Forest

Attachments:

- Pest Management Activity Proposal/s, any ParkInfo maps, and the Pest Management Program Contact List (optional)

Endorsement:

Endorsement is required by relevant officers only. Page: 1

Add any additional officers to the table as required. The Regional Firearms Coordinator and the Regional Workplace Health and Safety Officer must endorse all strategies or programs covering activities involving firearms.

Please note the "Approval for this proposal is required until 2016" under section 8 of the Pest Management Activity Proposal/s attached and provide comment or alternative date/s if required in the Notes section below.

Category D firearms - Where an activity proposal involves the use of a Category D firearm, the regional pest referral group must include at least one of the internal QPWS firearms trainers.

One of the following endorsements is to be inserted into the following table (as the number 1, 2, 3, or 4):

1. Endorsed without changes
2. Endorsed subject to minor changes
3. Endorsed subject to revision and must be resubmitted for final endorsement
4. Not endorsed

Name	Position	Endorsement (see above)	Notes
s.73	Regional Director		
s.73	A/-Principal Ranger		
s.73	A/-Senior Ranger		
s.73	Regional WPHS Officer		

sch4p3(3) Prejudice the protection of an individuals right to privacy	Signature	Date
		9/10/2015
sch4p3(3) Prejudice the protection of an individuals right to privacy	Signature	Date
		8/10/15
sch4p3(3) Prejudice the protection of an individuals right to privacy	Signature	Date
		8/10/15
sch4p3(3) Prejudice the protection of an individuals right to privacy	Signature	Date
		8/10/15

QPWS Pest Management System

Name	Position	Endorsement	Notes	Signature	Date
s.73	Regional Firearms Coordinator	(see above)		sch4p3(3) Prejudice the protection of an individuals right to privacy	9/10/15
s.73	Senior Ranger Pest Management	(see above)		sch4p3(3) Prejudice the protection of an individuals right to privacy	9/10/15

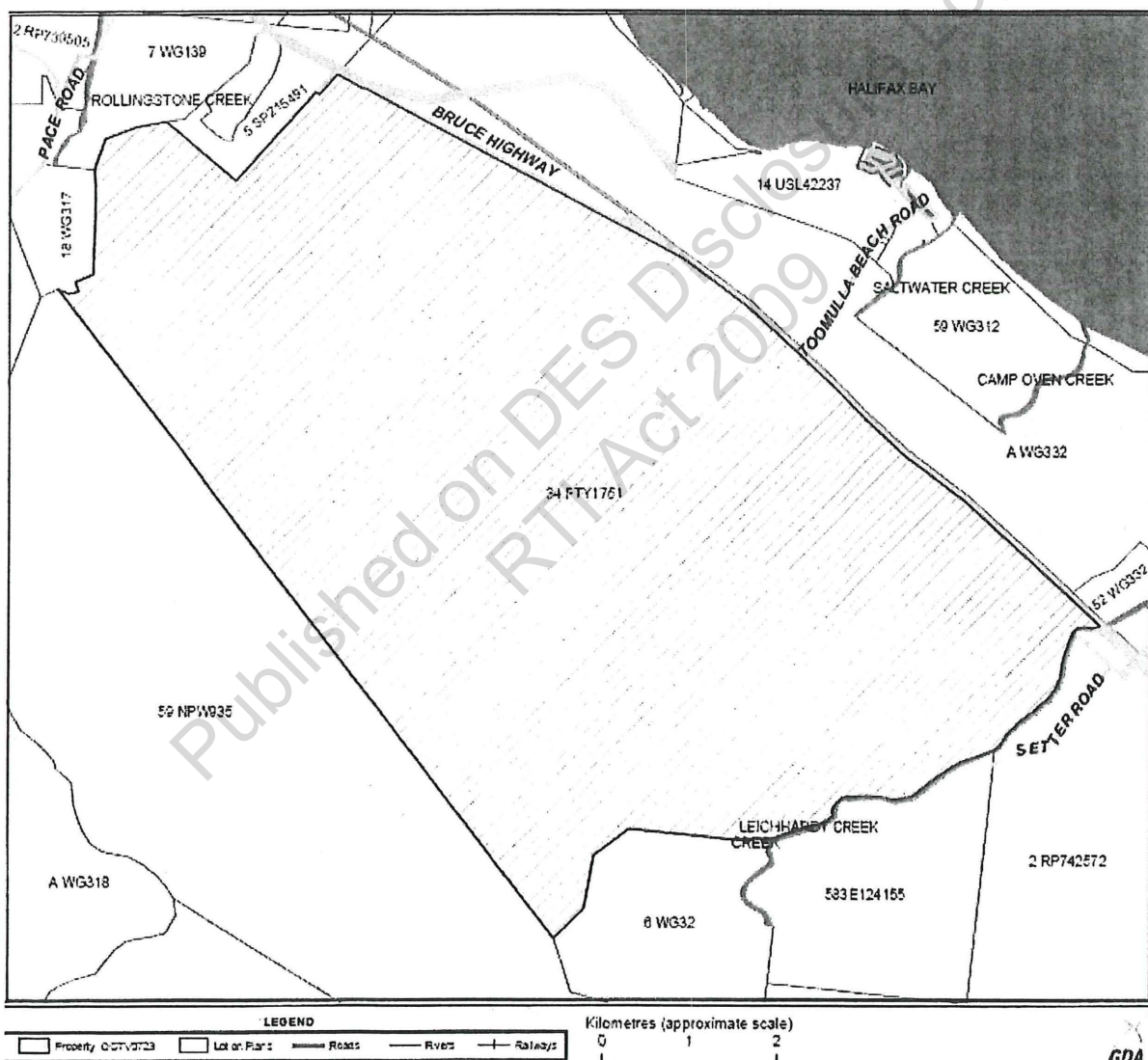
Approval:

Ben Klaasen	Deputy Director-General QPWS	sch4p3(3) Prejudice the protection of an individuals right to privacy
Name		Date

Notes:

Published on DES Disclosure Log
RTI Act 2009

Report on the operation and effectiveness of feral horse management outcomes as a result of contract no. DNPRSR 1209.



sch4p4(6) Personal information

BVSc

October 2013

Contents

Acronyms.....	3
Executive Summary	4
Review of the passive trapping program	5
Audit of contractor documents	5
Audit of program outcomes and intentions.....	7
Determine the project costs and benefits	13
Areas for further development.	15
Conclusions.....	17
Recommendations	20
Cost benefit assessments.....	20
Population reduction methodology	20
Stakeholder relationships.....	21
Bibliography	22

Acronyms

ABA	Australian Brumby Alliance
CSF	Clemant State Forest
DAFF	Department of Agriculture, Fisheries and Forestry
DNPRSR	Department of National Parks, Recreation, Sport and Racing
TFTA	Townsville Field Training Area

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Executive Summary

This report reviews the operation and effectiveness of contract DNPRSR 1209 for the reduction of feral horse population within the boundaries of Clemant State Forest.

A population reduction program operated during the period August 2012 to September 2013. The program was operated by a contractor with the dual intention of removing horses to satisfy DNPRSR community benefit outcomes and producing a profit from the sale of horses for the contractor.

This review of the operation of the program identifies a number of areas where the program failed to meet expected objectives for both DNPRSR and the contractor. Reasons for these failures and possible solutions are discussed.

The program removed 34 horses from an estimated population of 200 horses. This rate of removal did not meet the contract requirements and is less than the annual population increase to be expected from a healthy population of 200 animals.

Nine (9) of the captured animals died before being released from the required post capture acclimatisation period. Cause of death was not established in any case. The potential for social disharmony between groups of horses existed and nutritional stress could not be excluded as the cause of death.

All parties made deliberate efforts to adhere to the legislation, standards and guidelines for the capture and relocation of wild horses. However the physical confinement in un-segregated yards of mares, foals and stallions would be considered to be unacceptable particularly if the animals were from different family units and mixed after trapping. The contractor should have made provision for more segregation or removal to other areas during the program.

There are options for population reduction of horses (and pigs) within the boundaries of CSF. It is unlikely on the evidence of a low population density, reduced values and demand for riding horses and low prices for horse meat that any of the non-lethal trapping options would be attractive to a commercial contractor.

The reduction in risk from straying horses or pigs causing traffic accidents on the adjacent Bruce highway should be considered in the cost benefit equation for control actions undertaken on CSF.

Review of the passive trapping program

Audit of contractor documents

Facilities and handling of the stock

[sch4p4(6) Personal information] trading as [sch4p4(6) Personal information] offered to provide passive trapping services and an initial period of feeding and quietening of seven weeks before transporting the trapped horses from the CFS precinct. [sch4p4(6) Personal information] while mention is made of repairs to the main yard there is no evidence of intention to subdivide these yards to allow for segregation of family groups and to decrease the size of the yards available to each horse or unit. Smaller sized yards are beneficial as horses have less room to gather the speed required to jump fences and allows greater options for segregation of horses into suitable social groups as well as segregation of horses requiring special care.

There is no detail of the proposed trapping protocol or trap yard design. Lure appeared to be 20 litre buckets containing some molasses to lead animals into the trap. The trap mechanism consisted of a single trip wire and spring mechanism. Trapping horses requires skill and attention to detail, a single trip wire has the potential to separate foals and dams with consequent stress to the animals and potential injury. Larger and more complex yard designs with spear trap mechanisms or trip wires placed deep within the trap complex would assist to minimise these issues.

The traps and the yards seen at the time of review did not make provision for segregation. Considerable effort and costs would have been required to make improvements to the infrastructure available at CSF to allow for adequate segregation.

Segregation is recommended (CRC 2011) to prevent injuries and domination of feed or water points. It is not possible to be definite but in the current trapping program there were traumatic injuries reported while the contractor was absent and horses were observed to lose weight during the period of time they were held in the yards. Segregation may have reduced these issues. Certainly the contractor or a delegate should have been present to ensure competition for food and water did not initiate fighting and traumatic injuries.

It is noted in the offer that [sch4p4(6) Personal information] indicated a veterinary check for horses but the facility for examination the race was in disrepair when inspected in August 2013. The contractor's veterinarian commented that the horses were quiet enough for the facility to be used. This is not suitable for the future.

Population reduction

Clemant State Forest (CSF) is approximately 50 kilometres north of Townsville, Queensland. The horses that currently inhabit the area are presumed to be descendants of animals used for draught power in the times when sugar cane and small crops were dominant. The area has been progressively urbanised and while CSF remains surrounded by agricultural properties the main highway frontage experiences high traffic flows of heavy vehicles and passenger cars.

In the procurement plan documents (Hargreaves 2012) the horse population estimate for CSF is noted to be 200 animals. The contract document (DNPRSR1209 2012), requires a reduction in the population greater than natural increase and states a rate of 30% (60 animals) of the estimated population of 200 animals, would be the required number of animals removed annually.

A survey in December 2006 (Scrofa 2007) reported the population to be in the order of 116 horses with an error of 41 animals. A 30% reduction of this population estimate would equate to between 25 and 52 horses as the annual target.

The contractor asserts in the offer document that during a 21 day period during September 2011 a number approximating 360 horses were counted in CSF. This estimate would require 120 horses to be removed annually. The contractor most likely based his estimates of income based on this number of animals that would be available for sale.

The number actually trapped by the completion date in August 2013 was 34 horses comprising stallions, mares and foals.

The low trapping number could be affected by a number of factors. The contractor was only offering molasses in small buckets as the lure for entering the traps. At the time of inspection there was abundant feed and it is doubtful the lure would have been sufficient to draw large numbers of animals to the traps.

Subsequent aerial inspection reveals the population of horses on CSF are largely confined to small family groups scattered throughout the favourable grazing areas. A single fixed site trap will not be sufficient to attract these scattered populations resulting in low levels of trapping unless multiple trap sites or regular movement of the trap facility was possible and employed.

A single trap yard with a trip wire located close to the entrance is not suitable for capture of larger groups of horses and runs the risk of separation of the family unit with consequent stress and traumatic injury during attempts to leave the trap and re-join the remainder of the unit.

The contract document has provision for additional financial assistance required as a result of the higher than nominated horse numbers. The payment schedules notes the payment of additional monies as expenses to be paid during the first three months of the contract. It is apparent that the additional payments were paid as start-up capital and were not dependant on removal of a high number of animals. It is unlikely that recovery of any monies due to lower than expected population reduction would be successful as the contractor terminated the operation due to high costs and low yield of horses.

Disposal of animals

The contract was based on the contractor being allowed to sell trapped horses for his own profit provided the animals were not recognisably branded (owned) by any third party.

The contract does not specify the manner of disposal of trapped horses. The contract does imply horses should be re-homed or if stock were deemed not appropriate for re-homing due to health issues they should be humanely destroyed.

The contractor has had discussions with members of the Australian Brumby Alliance (ABA) and some local persons who have an interest in the re-homing of wild horses. ABA do not arrange the re-homing process, they act as a repository of knowledge and assist in networking efforts only. Purchasers of re-homed wild horses are expected to pay reasonable costs for the animal which may be in the order of \$1500.00.

The distinction between Brumby and wild horse is blurred, the original designation Brumby is thought to derive from the surname of Sergeant James Brumby who transported horses from Victoria to Tasmania in 1806. Brumbies are now held in regard as they roam as wild horses in a similar manner to the horse did prior to domestication. As such the re-domestication of a Brumby or wild horse should be a contradiction of the trait for which the wild (Brumby) is valued. Wild horses in CSF do not have a long history of roaming wild and are most likely descents of horses used for draught power and transport prior to the introduction of mechanisation.

It was the contractor's belief sch4p4(6) Personal information that all horses had to be re-homed and no animals were to be consigned for slaughter either as human consumption or for the pet meat trade. The contract document is clear that the contractor would be entitled to dispose of all stock not lawfully identified and retain all proceeds from the sale of animals. The contractor did not provide details of horses re-homed or proceeds of sales.

The options for disposal of wild horses are limited and particularly so in north Queensland. Advertisements in the Queensland Country Life indicate a reasonable level of interest in horses for the pet meat trade. Enquiries resulted in a flat rate of \$150 per horse as an offer. The annual return in this instance would be less than \$4,000.

A brumby suitable for re-homing for riding could possibly be worth \$1,500. A considerable investment in feeding and handling would be required for a return of this sum. Save The Brumby a volunteer group dedicated to re-homing brumbies in NSW estimates the cost of capture and handling a horse to a suitable level for re-homing would be \$1200 (STB 2000). Using these figures the potential return would be a potential \$12,000 annually.

Potential sales of wild horses for pleasure riding are limited by the ready availability of domesticated horses from the performance horse industry. Young educated horses are available for approximately \$500 as they exit the industry due to poor performance.

Removal of the CSF population of horses on the basis of capture and re-homing or sale for slaughter is unlikely to be a cost effective, profitable undertaking.

Audit of program outcomes and intentions

Did the program progress as expected and did it achieve the desired outcomes?

The intention of achieving a population reduction of 30% annually for three years was not met within the first year and the program was terminated.

The termination was by mutual consent as the principal driver for the contractor, an economic return from the animals trapped from the wild, was not able to be realised.

The contractor certainly wished to end the contract when a number of factors impacted on the potential profit of the venture. The initial property secured to use for relocation of the horses became unavailable. Horses died and were injured and the cost of feeding horses held in the yards at CSF increased the costs of the animals. Prospective buyers of horses were also affected by issues that prevented them taking delivery of horses.

The program did remove horses from CSF and was supported by national horse re-homing groups. The program was not profitable for the contractor.

Low numbers of horses were trapped and some trapped horses suffered injury and death. This may have been different if better trap and holding yard designs were implemented and a greater level of supervision of the horses was undertaken by the contractor.

The program despite being advertised in local newspapers was not entirely accepted by neighbours and persons who used CSF for other purposes. The reasons for this are not entirely clear and may be confused by other concerns the complaints hold. The Queensland Police Service would like to see horses removed to decrease the risk of vehicle accidents on the adjacent highway. DNPRSR has expended effort and finances to fence the highway and maintain cleared areas between the boundary and the highway.

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Were program staff and contractors adequately trained and supported?

There were some initial changes in the program staff due in part to Departmental changes in reporting and responsibility arrangements. This did lead to some delays in implementation and potentially caused some misunderstanding by both program staff and contractors of the objectives and procedures to be followed in the program.

The objective of outsourcing a contractor should be to provide expertise that is not available within the Department in a cost effective manner. To train staff to be able to assess the adequacy of the contractor and progress of the contract would tend to be unjustified duplication of effort and cost.

The contractor has had excellent support from staff of the Department of National Parks, Recreation, Sport and Racing (DNPRSR). Supply of portable panels for trap yards and regular contact by telephone and in person was maintained by Cairns, Townsville and Ingham based DNPRSR staff.

Were the appropriate controls and systems in place and did they work?

The contract was managed as an annual program and when issues presented with meeting the targets and expectations the contractor was advised that no future extensions of the contract would be permitted.

During the program operation, welfare concerns were investigated by inspectors from Department of Agriculture Fisheries and Forestry (DAFF) with no follow up action or directions being applied to any person or agency.

It is reasonable to assume that in a situation where income was limiting that the contractor would try to curtail expenses to the extent necessary to avoid financial loss. The contract did direct that compliance with all relevant legislation was a condition of contract acceptance.

In this instance when the contract was in the final stages and fewer than expected horses had been sold, there is evidence (Figure 1 and Figure 2) that horses were not being provided with abundant supplies of satisfactory feed. The situation was rectified when it was brought to the attention of the contractor but it is reasonable to suggest that the condition of the horses at the time was in part due to reduced feed offerings.

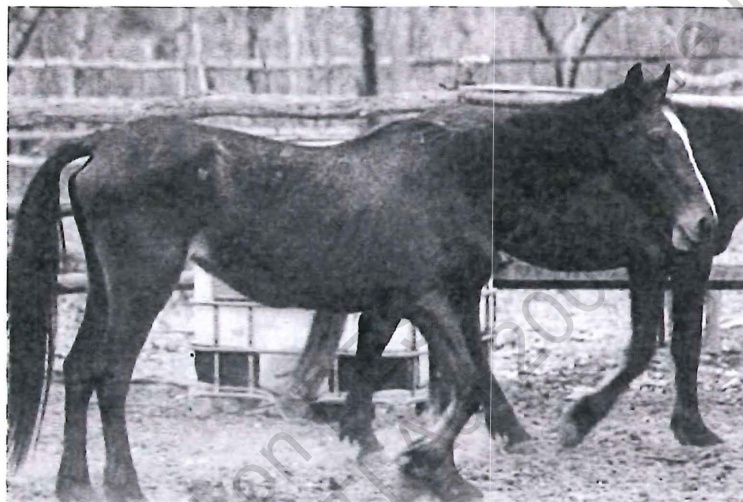


Figure 1. Brumby mare with body condition score 1/5. Note evidence of ventral oedema following delivery of dead full term foal a few days previously.



Figure 2 Horses standing in the yard at Clemant State Forest. Absence of waste feed is evident.

Two days after these pictures were taken two horses died overnight. There was no veterinary examination of the animals so it is impossible to determine the cause of death. It is possible that as light rain fell during this period that chilling of a debilitated animal lead to hypothermia and metabolic failure.

The contract did specify veterinary examinations of any animals that were not healthy. Certainly a veterinarian did administer a general health check as some stages of the program and anti-parasite medication was administered. The contract required an identification sheet and disposal report for each horse, it would be prudent for future programs to require documentation of health checks by a veterinarian and examination of any ill, injured or dead horses to determine cause of the illness, injury or death.

If there were problems, how should they be addressed?

The program was specified as a passive (lure) trap and re-home program for suitable horses. Passive lure trapping was selected as the most suitable program following community concern of lethal methods of population control. Both the contractor and DNPRSR staff experienced issues with the passive trapping program. The contractor could not realise the expected numbers or returns for trapped horses and DNPRSR staff experienced additional work in monitoring the program as well as responding to concerns of other stakeholders and the contractor.

The passive trapping program obviously did not function effectively as a commercial profit driven activity. More trap yards could have been utilised over a greater area and to a greater effect if profit was not a consideration for the operator.

Trap yard design was limiting in that a single yard was utilised. Traps of this design will trip with the initial animals entering and often limit the number of animals that can be trapped usually resulting in separation of mares and foals which is undesirable and in this instance may have led to injuries in trapped animals.

The removal of the profit outcome would not guarantee the success of any population reduction program by passive trapping. The dispersed nature of the population, the difficulties of access to some sectors of CSF and the abundance of both territory and feed for the horse population would suggest passive trapping to be a labour intensive and protracted operation if the aim was to achieve total removal of the population.

The presence of mobs of pigs would also interfere with the passive lure traps particularly in the latter stages of population reduction.

Season will affect attractiveness of the lure used in the trap yards. It is probable that this factor will have reduced the rate of capture and population reduction in this program.

The concept that all horses had to be re-homed was a factor in the program not achieving the target population reduction. Horses sold for slaughter for pet meat trade would not require holding and feeding for as long as horses required to be acclimatised for re-homing. This would mean less mixing of social groups and less feed and labour costs for managing the horses after trapping.

Trapped horses that are deemed to be unsuitable for any purposes either due to poor condition, injury, disease or temperament should be euthanased immediately after trapping to minimise risks.

It is probable that some of the deaths of horses that were trapped but not yet removed from the property were due to mixing of social groups in the yards. The contractor was not permanently based on the property in the latter stages of the program and reported finding horses dead on his return the following day. Trapped horses should have constant monitoring and the potential for immediate remediation should aggression between horses be noticed. The presence of humans constantly will also assist and even accelerate with the acclimatisation process.

At present the market for re-homed horses is not known. There are published accounts (Atkinson 2007) of excess racing and other performance horses saturating the market for potential re-homed horses. The market for re-homed horses is likely to be very poor particularly in north Queensland and also for horses with no intrinsic connection to iconic horse populations such as in the Snowy Mountains or the Waler populations in NSW. If further non lethal population control is undertaken the full range of disposal methods should be considered. Sale for human consumption, pet meat or re-homing will provide little financial return but would allow horses to be removed after a short initial period of assessment and acclimatisation.

How does the end result compare to the original plan in terms of outcome, timing and budget?

The end result of the passive trapping program did not match the objectives in terms of population reduction.

The implementation of the program was protracted for any number of reasons. The original discussions began in September 2011 and the program concluded in August 2013. The norm for healthy feral horse populations in Australia is an increase in population of 20 to 25 per cent annually. In the two years development and operation of the CSF program the population may have increased from 200 in 2011 to 254 in 2013 despite the removal of 34 trapped animals.

There are two significant factors in the failure to achieve the required population reduction. The first is the poor market for re-homing of wild horses. It could be argued that the capture and domestication of a wild horse is counter to the value the animal has as a wild animal. The second factor was the application of the passive trapping process to the designated area and type of animal to be captured. The horse population in CSF consists of small social (family) groups widely dispersed over a large area of the park. Trapping in a central area is unlikely to attract horses from outside of the home range of the trap site. Water is available in many areas of the park and it would appear mixing of the social groups is rare. Trapping and holding members of different social groups is known to cause issues with dominance unless segregation is adequate.

There was an inadequate plan to rectify the issues of disposal or trapping of horses within CSF.

Direct budget costs were as planned and stated in the documents.

Determine the satisfaction of stakeholders.

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sch4p4(6) Personal information Few were aware of the details of the program and most thought the effort would be futile as horses would repopulate from the Paluma range area and further west in the military training area known as the Townsville Field Training Area (TFTA). As discussed below this is an unrealistic scenario as the area (TFTA) has largely been depopulated and continues to feature an annual survey and cull of horses

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concerns over safety of straying stock onto the adjacent Bruce highway. As previously identified DNPRSR does invest in maintaining a clear and secure fence line along the highway frontage. Straying stock are possible from the coastal side of the highway or from neighbouring properties to the north and south of CSF boundary. Apart from depopulation of CSF, it is possible that DNPRSR could seek assistance from local government rangers to capture and identify straying stock to determine their origin.

sch4p4(6) Personal information

concerns of aerial operations driving the horses onto the busy highway sch4p4(6) Personal information There is little evidence that experienced operators would initiate or allow this event to cause disruption to highway users. The land type and vegetation would allow movement of animals away from the highway before any destruction was attempted.

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The Environmental Officer for the TFTA was supportive of moves to reduce the population of horses to the east of the military controlled area. An annual survey and aerial cull of horses has been undertaken by the military since 2005 and it is now unusual to find a mob of more than three horses within the training area west of CSF. Horses are entering in small numbers to the south of the training area but are being removed annually and the general opinion is that it is very unlikely due to terrain and vegetation that horses would enter CSF from this source.

The Australian Brumby Alliance (ABA) is satisfied that passive trapping was investigated at this site and that some horses were re-homed. ABA is currently seeking support for reproductive management techniques to avoid the need for destruction of horses in environmentally sensitive locations. Despite work in overseas countries and Australia there is no suitable product available for use on horses within CSF. The genetic value of the horses within CSF has not been determined but it is unlikely that any significant value would attach to such a small population. Reproductive management techniques are expensive and not completely reliable. All methods of treatment require helicopter dart application. While the population would not continue to increase the remaining animals would of necessity die of old age or misadventure with questionable welfare outcomes.

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could not

make any money from the contract. sch4p4(6) Personal information. To be successful in removing the population the program should be operated by at least two experienced persons on a constant basis for a protracted period probably in excess of three years. This is not a commercial proposition at current market demand levels for horses or horse meat.

The needs of DNPRSR agency was not met as the population may have increased by up to eight animals over the year of operation despite the removal of 34 animals. Nine animals died during the trapping program. If the intention was to relocate the trapped horses entirely this objective was not met. The contract documents do note the need to euthanase horses but in this program horses died from injury or ill health without veterinary intervention which is not a satisfactory outcome.

What have been the effects on DNPRSR clients?

The trapping program produced minimal effects on clients. A single complaint was received from a person claiming they were ordered out of the park by an unidentified person. It could not be established that the complaint related to the operation of the trapping program.

There are fenced grazing exclusion areas present in CSF. The difference in both vegetation bulk and species variety is evident in these exclusions. Removal of the horse and pig populations would benefit the environment of CSF.

Public activities within CSF were not disrupted.

Determine the project costs and benefits

Costs of the passive trapping program.

The contract direct costs were \$30,000 paid over three months from July 2012.

Additional cash costs of \$8,500 were incurred for assessments of the welfare of the horses prior to completion of the contract, aerial survey of the park and audit of the program. These costs have not been considered in the calculation of the per animal costs for the trapping program.

Indirect inputs included transport and use of portable yards, sundry materials associated with monitoring wild dog behaviours and supervision of the contractor.

The benefits accruing to the program and community included some reduction in the population of horses and an assessment of the effectiveness of passive trapping and re-homing on the population of horses in CSF.

On a direct cost basis the removal of 34 horses cost \$882 per horse and it is likely the operation did not produce a net decrease in the population of horses on CSF.

It is difficult to be certain that the population was not reduced by a margin greater than the natural increase as there are not accurate figures available and the seasonal effect was not measured.

It is fair to say that if the operation had continued for the full three years and seasonal conditions remained favourable it is unlikely the population would have been severely depleted and certainly the contractor would not have achieved a net profit which was the original intention of the trapping contract.

Could the outcome in terms of costs and benefit be improved?

The outcome for the contractor is very unlikely to be improved by any changes to the contract terms or conditions. The market values for salvage or re-homed horses and the low numbers of horses currently estimated to be present would not support a profit driven operation. The need to operate all year or at least with sufficient flexibility to maximise trapping efficiency in relational to seasonal conditions precludes any part time or casual operators.

Active mustering and trapping is not feasible as a commercial operation and has additional risks associated with the potential to drive stock from CSF onto neighbours property or the adjacent Bruce highway. Success of active mustering either by aerial or mounted is determined by access to the area where concentrated groups of horses are located. Within CSF the aerial survey indicates a dispersed population of low density and difficulty in access to set up a suitable yard and to block other routes of "escape."

The cost of removal of the population on a per head basis could be improved by undertaking aerial population destruction. Assuming a population of 250 animals and helicopter costs of \$5,000 with additional costs of \$1,000 and all indirect staff and administrative costs were equal to the trapping contract, it is possible to remove the total effective population for a cost of \$24 per animal destroyed.

Aerial destruction has the advantage of rapid removal of the risk of escape of stock onto the highway. However annual monitoring to ensure horses are not re-entering the park would be necessary.

As the passive trap and re-home program has demonstrated there is no commercial advantage for operators in the CSF it is very doubtful another operator could be found who would undertake the venture on the basis of profit in return for investment.

The alternative is for DNPRSR to employ a team to work full time on the area with a range of options from immediate destruction in the trap, removal for salvage slaughter and potentially in a small number of cases re-homing.

Costs for employment, equipment, feeding and veterinary oversight would possibly exceed \$150,000 or \$600 per animal and it is likely only half of the population could be trapped effectively. The rate of passive trapping effectiveness decreases with population reduction as the lure becomes less effective when the small population has alternative food supply in abundance. Some ground or aerial shooting would be required to achieve near total population reduction.

The risk of escape onto the highway would be reduced but there would be a need to continue trapping for a long period of time and it is unlikely that effective elimination of the population would be achieved.

Management or control of pig populations would be possible by utilisation of immediate slaughter animals for baits. A concurrent program to reduce the pig population will decrease the numbers of recreational pig hunters who trespass on the park and cause concern for neighbours.

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sch4p4(6) Personal information It is unlikely a qualified operator could be found who would consider relocation to CSF to undertake the program.

Areas for further development.

The assumptions used for considering the areas for further development include;

- i. Reduction of the horse population is a primary aim of DNPRSR for preservation of the ecological aspects of the CSF.
- ii. Reduction in risk of escape to the highway and neighbouring properties is significant in terms of public safety and community relationships.
- iii. All population reduction activities are to be undertaken within a framework of acceptable to normative community values.
- iv. Activities need to be cost effective and conform to policies of public accountability.

During conversations with landowners and others concerned with horse welfare and management it was found that very few people were fully informed of the current situation, the current efforts to reduce the population or the issues relating to the various options for removal.

A potential activity to assist in keeping the stakeholders and community informed of the current risk assessment and management programs would be the development of a fact sheet for distribution to local stakeholders and placement on DNPRSR web page.

Engagement of the local landholders would also benefit DNPRSR with prevention of unauthorised persons using CSF and maintenance of fences to prevent escape of horses.

The military have had considerable success in reducing the population of horses in the TFTA to the west of CSF and have data to suggest the risk of reintroduction of horses from this area is very low.

The annual meeting between operational staff of DNPRSR and the military environmental officer can be utilised to confirm data of population size, movements and issues encountered during control operations. If some of the data could be included in the fact sheets for

neighbours a complete picture of responsible and humane management in the region would be available to the community.

The ABA promotes the use of reproductive management strategies as an alternative to destruction for populations of wild horses. The CSF horse population provides an easily accessible population for field based research of the technology.

However these technologies do not remove the immediate risk of environmental damage, nor do they remove the risk of straying stock to landowners or highway traffic.

Reproductive management is only of benefit if a residual population of animals is expected to remain within the area. In this case it is the intention to remove the entire population therefore reproductive management is not a suitable strategy.

The positive aspects of utilisation of trial technologies at CSF of a small population of horses close to a major town and research institution are outweighed by the negative aspects of failure to achieve reduction in risk of environmental damage and public risk and the potential for failure of the technique and at some point within the next decade aged and infirm wild horses will need to be destroyed to prevent welfare criticism by the community.

Table 1 provides an analysis table of control options proposed for the horse population within CSF.

Conclusions

The passive trapping program did not deliver a profitable outcome to the contractor.

The program did not deliver a population reduction required by DNPRSR.

Trapping and relocation programs are not cost effective and require careful and skilled operation to avoid potential animal welfare issues.

The initial establishment costs and ongoing infrastructure and assistance provided by DNPRSR to the program extended the length of the trapping but not the effectiveness of population reduction.

The contracting of the population reduction program was not effective due to a disconnect between the DNPRSR aims and the contractors objectives. While departmental staff did make considerable efforts to assist, the commercial nature of the contract imposed some limitations on the level of assistance provided. The contractor was progressively led into making financial decisions based on the declining numbers of horses trapped and market failures for the suitable horses.

The contractor admitted re-homing of horses was not assured and trapped horses were not always suitable for re-homing.

A trapping program would require a protracted period to achieve success. The length of the program would vary with seasonal influences and the amount of resources available to conduct the operation. Almost certainly the majority trapped horses would be consigned for pet meat or euthanased soon after trapping to minimise the costs of the program.

The risks to public safety and the CSF environment support a horse and pig population management program.

Table 1. Analysis table for control options of horses at Clemant State Forest.

Control option	Outcome	Humaneness	Effectiveness	Cost Benefit	OHS Risk	Capacity	Public Opinion	Preference
No management of horses.	Population will continue to vary and move into neighbouring properties and public areas.	In times of drought or fire there would be welfare issues. Damage to environment and watercourses.	Does not provide management control.	Cost of fencing and asset protection may be high.	Very little, some risk from stallions to users and staff.	Requires little input from DNPRSR.	Would not be acceptable to neighbours.	Not acceptable.
Passive trapping Preferably at multiple sites.	Long term population reduction or removal.	Horses best euthanased after trapping due to market uncertainty and low return. Horses likely to be injured during process.	Could reduce pressure on highway and sensitive areas.	High cost for a number of years, very labour intensive.	Risks to staff placing traps and removing horses.	Would require additional resources and skills not currently employed by DNPRSR.	The result may be acceptable to neighbours and welfare groups.	Not acceptable.
Contractor removal by trapping.	Control of population. Unlikely a contractor can be found.	Would be acceptable.	Would be acceptable.	High cost for a number of years.	Little risk to DNPRSR, contractor to carry risk mgmt.	No internal capacity, unlikely to find external supplier.	No adverse comment	Not acceptable

Control option	Outcome	Humaneness	Effectiveness	Cost Benefit	OHS Risk	Capacity	Public Opinion	Preference
Fertility control.	Long term option (>30 yrs).	Horses die of old age or issues arising from tooth wear, foot problems or during drought periods.	Not reliable, repeated injections required. Would require repeated monitoring and removal of aged or injured horses.	Very expensive and requires additional resources for monitoring the program.	Helicopter operations required to inject and monitor animals.	Require additional resources.	May be some concern if aerial operations disturb stock.	Not acceptable.
Ground shooting	Control of population over medium time frame	Can be humane but issues if wounded animals escape. This is a likely event in CSF due to dispersed nature of population.	Over time horses would be wary of people and vehicles. May tend to induce horses to move to neighbours.	Moderate expense for a longer period of time.	Issues of firearms and operation in remote areas, some country may be inaccessible.	Possibly within DNPRSR.	Low impact unless horses move into their properties.	Not acceptable.
Aerial shooting	Effective control within short time frame.	Experienced operators can do humanely.	Effective in rough terrain of CSF.	Cost effective due to low numbers of animals.	Issues of firearms and aerial operations can be managed.	Currently exists within DNPRSR.	Some concerns but manageable.	Recommended.

Recommendations

The following recommendations are based on the findings of the review and assessment of other horse population control programs.

Cost benefit assessments

Within the charter of public accountability the focus on the cost equation cannot be objectively balanced by estimates of community benefit for intangible or future events. The quantum in dollar terms of preservation of the environment or prevention harm to individuals or property by reduction in risk of a future event is always going to be a subjective estimation.

The population of feral horses in the CSF would have some intrinsic benefit if they were a significant reservoir of threatened genetic material or had a strong connection to the current community. The current population of horses is most likely derived from animals escaped or released into the wild when mechanisation was introduced into the farming areas of the district. The population will have sought refuge in the CSF as encroaching urbanisation reduced the area of land available to them for grazing.

As such the current population is neither representative of a significant contribution of horses to the local community nor sufficiently localised for a long standing period of time to establish their position within the ecology of the region.

It is recommended that DNPRSR financially support activities to remove the population of horses in CSF as they pose a significant risk to public safety and environmental management.

Population reduction methodology

The population within the CSF is reasonably isolated from other populations of feral horses and neighbouring properties. The terrain is a mixture of very steep mountainous rainforest interspersed with grassy flats where small mobs of horses graze. Access to the horses is problematic by vehicle and the rainforest while not supporting horses does provide cover and protection when disturbed.

Trapping and ground shooting would be possible for some of the animals particularly those near the established forestry blocks. Trapping could not be expected to provide a resolution to the problem within five years and would be an expensive activity if assessed on a per head of population removed cost basis. It is however low impact with the community and consistent with other uses of the CSF.

Aerial shooting provides a cost effective per head removed basis of population control. For the situation at CSF it is the most reliable and rapid method of reducing the population and risk to public safety by horses.

It is recommended that an aerial shooting program be implemented and combined with destruction of pigs within the boundaries of CSF as the most humane and appropriate manner of achieving the objectives for the park.

Stakeholder relationships

At present stakeholders do not know the value of CSF or understand the management strategy for the area. There is a consistent recognition of the risk to public safety from escaping stock and an implied criticism common to the perceptions of the role of national park estates in the harbouring of reservoir populations of feral animals and pests.

It is recommended that awareness material and consultations be developed to allow greater inclusion of local landholders in the management of CSF.

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